LACAN & SCIENCE

Edited by

Jason Glynos

and

Yannis Stavrakakis

KARNAC
LONDON NEW YORK

First published in 2002 by
H. Karnac (Books) Ltd.
6 Pembroke Buildings, London NW10 6RE
A subsidiary of Other Press LLC, New York

British Library Cataloguing in Publication Data

A C.I.P. for this book is available from the British Library

ISBN 1 85575 921 7

Edited, designed, and produced by The Studio Publishing Services Ltd, Exeter EX4 8JN

Printed in Great Britain

10 9 8 7 6 5 4 3 2 1

www.karnacbooks.com

Acknowledgements

Almost 4 years have gone by since the emergence of the original idea to collect a series of essays on the topic of *Lacan & Science*, though its publication is as timely as ever. We would like to thank the contributors for their patience, a virtue we relied upon heavily as we weathered the transition from one publishing house to another.

Chapter 5 is a reprint of Miller, J.-A. (1989) 'Elements of Epistemology'. *Analysis, 1*. Translation by Leonardo S. Rodriguez.
Chapter 8 is a reprint of Glynos, J., & Stavrakakis, Y. (2001) 'Postures and Impostures'. *American Imago, 58*(3).

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CONTRIBUTORS

Bernard Burgoyne is a psychoanalyst, founder member of the Centre for Freudian Analysis and Research, and member of the Ecole Européenne de Psychanalyse and the Association Mondiale de Psychanalyse. He was educated at the University of Cambridge, the London School of Economics and the University of Paris. He is Professor of Psychoanalysis and Head of the Centre for Psychoanalysis in the Institute for Social Science Research at Middlesex University. He has published numerous book chapters and journal articles, including 'From the Letter to the Matheme' in *The Cambridge Companion to Jacques Lacan* (CUP, 2002). He is editor and co-editor of, and contributor to, *Drawing the Soul: Schemas and Models in Psychoanalysis* (Rebus Press, 2000) and *The Klein–Lacan Dialogues* (Rebus Press, 1997).

David Corfield is Lecturer at the Department of History and Philosophy of Science, University of Cambridge. He read mathematics at Cambridge, after which he spent a period in analysis in Paris before returning to do an MSc and PhD in philosophy of mathematics at King's College London. He has taught philosophy and psychology in Leeds, and conducted research in London on the

interrelation between machine learning and philosophy. He has published in a range of fora, including *Studies in History and Philosophy of Science* and *Philosophia Mathematica*. His *Towards a Philosophy of Real Mathematics* is forthcoming from Cambridge University Press.

Bruce Fink is a practicing Lacanian psychoanalyst, supervisor, and Professor of Psychology at Duquesne University in Pittsburgh, Pennsylvania. He trained in Paris with the psychoanalytic institute Lacan created shortly before his death, the École de la Cause freudienne, and obtained his Ph.D. from the University of Paris VIII. He is the author of three books on Lacan, *The Lacanian Subject, A Clinical Introduction to Lacanian Psychoanalysis*, and *Lacan à la Lettre: Reading Écrits Closely*, and has coedited three collections of papers on Lacan's work: *Reading Seminar XI, Reading Seminars I and II*, and *Reading Seminar XX*. He is also a prominent translator of Lacan's work into English and has brought out a translation of Seminar XX, *Encore: On Feminine Sexuality* and a retranslation of *Écrits: A Selection* (Norton, 2002).

Jason Glynos is Lecturer in Political Theory at the Department of Government, University of Essex. He read natural sciences at the University of Cambridge, and was trainee analyst for a number of years in London. He is an associate member of the Centre for Freudian Analysis and Research. He is the author of articles and book chapters on discourse analytic and psychoanalytic approaches to social and political analysis. Articles have appeared in journals such as the *Journal of Political Ideologies*, *Philosophy and Social Criticism*, and *Theory & Event*.

Rik Loose is Head of the Unit of Psychoanalysis at DBS, School of Arts in Dublin. He works in private practice and he is a member of the Association for Psychoanalysis and Psychotherapy in Ireland. He has published in the *Letter*, *Psychoanalytische Perspectieven* and *JCFAR*. He is also a member of the Board of Editors of the *Journal of Lacanian Studies*.

Jacques-Alain Miller is a psychoanalyst and president of the AMP (World Psychoanalytic Association). He is the editor of all of Lacan's seminars.

Dany Nobus is Senior Lecturer in Psychology and Psychoanalytic Studies at Brunel University, and a Visiting Scholar at the Boston Graduate School for Psychoanalysis. He is the editor of *Key Concepts of Lacanian Psychoanalysis* (The Other Press, 1999), author of *Jacques Lacan and the Freudian Practice of Psychoanalysis* (Routledge, 2000) and the editor-in-chief of *Journal for Lacanian Studies*, to be published by Karnac Books/The Other Press in the Spring of 2003.

Yannis Stavrakakis is Humanities Research Fellow at the School of Politics, University of Nottingham. His recent publications include *Lacan and the Political* (Routledge, 1999), the co-edited volume *Discourse Theory and Political Analysis* (Manchester University Press, 2000), and a variety of articles on the theory and politics of risk, social constructionism, and environmental politics.

Paul Verhaeghe is Professor at Ghent University, Belgium, where he is head of the Department of Psychoanalysis and Clinical Consulting. He is the author of *Does the Woman Exist?* (Other Press, 1997), *Love in a Time of Loneliness* (Other Press, 1999), *Beyond Gender: From Subject to Drive* (Other Press, 2001).

Slavoj Žižek is a philosopher and psychoanalyst. He is Senior Researcher at the Department of Philosophy, University of Ljubljana, Slovenia. Recent publications include *On Belief* (Routledge, 2001), *Did Somebody Say Totalitarianism?* (Verso, 2001), and *The Fright of Real Tears* (BFI, 2001).

Introduction

Jason Glynos and Yannis Stavrakakis

It is a profound paradox of our age that the huge strides in scientific research—especially in the fields of psychology, neurology, pharmacology, and genetics—have only had the effect of making more pronounced the intractability of the human mind. In *The Undiscovered Mind*, for example, the American science journalist John Horgan (1999) claims that, if there is one thing that dominant approaches to treating mental "disorders" have succeeded in proving it is their singular failure to come to grips with the workings of mental processes. This paradox is only heightened when it is noted that cases of depression are now reaching epidemic proportions, threatening society's *de facto* ideal of a smooth and efficient wealth-creating power house. And this in the most affluent societies—in those societies where, it is claimed, people have never had it so good.

We can think of at least two possible responses to this predicament. One response involves the self-administration of a liberal dose of modesty, bowing humbly before the enigma we call the mind. Are we not often reminded that its material substrate, the brain, is the most complex object in the universe? If this is so, it is only to be expected that it will be some time before science reveals to us its secrets. This might leave unexplained why mental

"disorders" should *now* be advancing toward us apace, but at least it promises hope. In this view, faith in the way science is presently prosecuted is left intact. The realization of its promises is displaced onto the future.

Another response is to put into question the scientific enterprise itself. Perhaps it is time to take seriously the idea that science, as traditionally conceived, is simply ill-equipped to deal effectively with understanding those parts of the mind that interest us most as human beings concerned to lead a life visited less by suffering. Things don't look any better when we are reminded that practicing scientists today outnumber all scientists who ever lived since the dawn of history. So far, the facts speak for themselves. Current scientific approaches—however voluminous and sophisticated their descriptions and models of cells, synapses, and genes—have not yielded fruitful insights regarding how to cope successfully with questions of identity and mental suffering. This fact is a loud fact, especially in view of the hugely disproportionate distribution of research funding—both private and public—in favour of standard science approaches to this matter. But it is a loud fact that is made louder by an apparent paradox: As societies become wealthier they become increasingly averse to entertain alternatives to standard methods of investigation, opting instead to adhere rigidly to constraints of low-risk efficiency and positive proof of profit potential. It is worth pausing to consider whether it is time other approaches should be more thoroughly researched.

In this vein, our contributors investigate the potential insights that psychoanalysis has to offer on questions of science. More specifically, we have chosen to concentrate on a psychoanalytic current of thought that has received a hostile reception by the scientific establishment: Lacanian psychoanalysis. This prompts a two-pronged intervention. First, it raises the question of the relation between science and psychoanalysis. Second, it raises the possibility that science itself might need to be reconfigured to suit the particular problems thrown up by taking seriously the unconscious as constitutive of human subjectivity. In other words, the contributors to this volume critically examine not simply the relation between modern science and psychoanalysis in approaching the question of suffering, but also the role and logic of scientific practice in general.

The decision to focus on Jacques Lacan is not completely arbitrary. After all, he spent a considerable portion of his time and energy investigating the nature of modern science and its relation to psychoanalytic theory and practice. His "Science and truth" is exemplary in this regard (Lacan, 1989). More specifically, however, mathematical formalization—its power and limits—is a topic that especially preoccupied Lacan. It is a line of inquiry he took up as early as the 1950s, his incursions into mathematics and logic becoming for him of ever-greater importance in trying to come to terms with psychic processes. His aim was to rearticulate traditional concepts in these domains, especially logic, without abandoning the rigour he had come to expect of them. Such disciplines, he felt, could be suitably revamped in a way that would address the peculiar features encountered in the clinic and mental processes more generally. It is a view which is not peculiar to Lacan. Indeed, it is a view expressed with greater frequency from within the scientific establishment itself. In his *Goodbye, Descartes*, for example, the mathematician Keith Devlin concludes "that the existing techniques of logic and mathematics—indeed of the traditional scientific method in general—are inadequate for understanding the human mind" (1997:viii). He argues that

> mathematicians and scientists have come to realize that the truly difficult problems of the information age are not technological; rather, they concern *ourselves* ... Meeting these challenges will almost certainly require new kinds of science ...—new analytic techniques, new conceptual tools with which to analyze and understand the workings of the human mind. [1997:ix]

Even so, opting for psychoanalysis as a productive way forward on the question of mental processes may seem surprising. Has not psychoanalysis, both Freudian and Lacanian, not featured as the *bête-noire* of so many historiographers, scientists, and philosophers of science keen to discredit its claims by attacking their scientific integrity? The proper names of Masson (1984) and Sokal and Bricmont (1998) summarize this tendency—a tendency which the media, like birds of prey, raise to its shrillest pitch. On a more serious note the names Grünbaum (1984) and Popper (1962) also serve as exemplars of this tendency.

But if psychoanalysis has assumed the role of a thorn—a thorn

that never fails to prick science's side—perhaps this is because of its uncanny proximity to *and* distance from science, an ambiguity reproduced in Lacan's assessment of the Cartesian legacy. At the very least, this calls for a more precise articulation of the relation between science and psychoanalysis. More than that, science's failure to advance on the front of mental suffering and its simultaneous onslaught on psychoanalysis, far from serving as a reason to abandon psychoanalysis serves as a reason to revisit it. If it is the case that psychoanalysis is disqualified on the basis of scientific standards this means, at most, that psychoanalysis is not a science *as defined by those standards*. What this leaves uninterrogated is whether such standards are appropriate, either for psychoanalysis—a discipline that takes the unconscious as central to its investigations—or even for modern science itself. Might this not force us to reconsider what ought to be taken as an appropriate demarcation criterion in the determination of a discipline as scientific?

This is not to suggest that psychoanalysts are united in their views on science or have a clear sense of the status of psychoanalysis in relation to science. Far from it. This absence of consensus is demonstrated in a publication by the International Psychoanalytic Association (IPA), reviewing the evidence of psychoanalytic psychotherapy's effectiveness in treating patients the world over (Fonagy, 1999). In this cautiously optimistic report it is very telling that it was felt necessary to include *two* introductory commentaries on the epistemic and research problems of psychoanalysis. One explicitly reflects the Anglo-Saxon perspective, another the French-speaking perspective. The one is sympathetic to, the other much more reserved toward, a more traditional scientific approach to psychoanalysis. The former urges psychoanalysts to adopt methodologies that allow for controlled observations over large periods of time and many individuals. The aim here would be to minimize reliance upon single case study methods in order to generate a large evidential data base. This, it is supposed, would legitimate comparative statistical studies that could justify widening its field of applicability. This (Anglo-Saxon) perspective also seeks to ally psychoanalysis more closely with other disciplines, such as neurobiology and psychology. The continental view, on the other hand, is worried by what it sees as an empiricist reductionist

ideology that can very easily become blind to the complexity and specificity of individual cases. It is worried also by a perspective, often backed by staggering institutional and monetary weight, that attaches value only to those things that are readily quantifiable and subject to measurement. Today's much traversed channel tunnel, in other words, reinforces the idea that the channel symbolizes a divide which cannot be overcome by any mere alteration of positive physical facts.

Lacan & Science features a series of essays that investigate the views of a French-speaking psychoanalyst who, however, has the dubious honour of having been "excommunicated" from the IPA. These essays explore Jacques Lacan's conception of science and its relation to psychoanalysis from what could be broadly construed as a double perspective. This involves first, an inquiry into the "scientificity of psychoanalysis", and second, an examination of what could be called a kind of "psychoanalysis of science". Each chapter's essay is self-contained and can be read on its own terms. Nevertheless, without minimizing the importance of tensions between them, it is worth emphasizing that the essays do exhibit strong family resemblances linking them to a common project. Central themes that are addressed and reworked from different angles include the use of mathematics in Lacanian psychoanalysis, the importance of linguistics and Freud's texts in Lacan's approach, and the significance attached to ethics and the role of the subject.

In the first chapter ("Theory and evidence in the Freudian field: from observation to structure"), Jason Glynos provides a sympathetic narrative of the Freudian enterprise in relation to science, tracing how Freud very quickly subordinated therapeutic concerns to scientific and ethical concerns. Such an account is necessary, not simply because Lacan's views on science can be understood as a response to the Freudian problematic, but also because it serves as a simple and succinct way of demonstrating how the peculiarity of psychoanalytic phenomena forces a reconsideration of the methods and evidence appropriate to a systematic, even scientific, approach to its field of study. Lacan's fidelity to Freud expresses itself in the seriousness with which he tackles the epistemological and ontological issues raised by, for example, "false-connections" and processes of meaning-construction. In the following companion piece ("Psychoanalysis operates upon the subject of science: Lacan

between science and ethics"), Glynos shows how an engagement with Freud leads Lacan, via Descartes, to consider the structure of language and mathematical formalization as tools to apprehend structure as such. In doing so he suggests that recent historiographical and philosophical studies of scientific and mathematical practice are moving hesitantly toward a position not too far removed from one expressed by Lacan some time ago. The chapter aims to elucidate the Lacanian praxis of psychoanalysis by comparing and contrasting it with Lacan's view of modern science and, to a lesser—though no less important—extent, ethics. Glynos argues that considerations of the roles played by mathematical formalization and the divided subject in the two disciplines are crucial to this exploration.

The above pair of essays serves as an introduction to several themes developed in subsequent chapters. The essays by Dany Nobus ("A matter of cause: reflections on Lacan's 'science and truth'") and Paul Verhaeghe ("Causality in science and psychoanalysis"), for example, address the question of causality and its link to the divided subject. Both take their bearings from, among other sources, a set of Aristotelian distinctions that Lacan appeals to in articulating the relation between psychoanalysis and science. In his piece "Science and truth" Lacan (1989) picks up on a set of distinctions directly pertaining to causality. Aristotle lists four types of cause: final cause, formal cause, efficient cause, and material cause. Nobus's contribution makes explicit the operative Levi-Straussian conceptual background to Lacan's text in order to better situate his attempt to invoke this set of distinctions to distinguish psychoanalysis not only from science, but also from magic and religion. In doing so Nobus elaborates upon several themes also explored by Glynos, especially the significance of Descartes's cogito in Lacan's conception of the subject of science—a subject divided between truth and knowledge. Nobus argues that what magic, religion, and science have in common is their tendency to equate truth as cause with knowledge. In contrast, psychoanalysis emphasizes the centrality of the cause in the subject, seeking to maintain its division between truth and knowledge.

Invoking another Aristotelian opposition developed by Lacan in *Seminar XI* (Lacan, 1977)—*automaton/tuché*—Verhaeghe explores Lacan's move from a view in which he allied scientific determinism

with the operation of unconscious processes to a view in which he opposed the determinism of unconscious formations to the contingency of the unconscious *qua* chance encounters. In this view, causality is conceived no longer as a function of deterministic laws, but as that which *disrupts* the smooth functioning of such laws. In more technical terms, this shift of perspective marks in Lacan a corresponding shift of emphasis from the symbolic order of desire to the real order of the drive. Verhaeghe concludes his chapter by linking the question of causality to the division of the subject and to sexual difference.

In the following essay, "Elements of epistemology"—originally one of a series of lectures delivered in Caracas, Venezuela, in 1979—Jacques-Alain Miller reminds us, *inter alia*, of the explicitly sexual character of prescientific theories of the universe. For Lacan all meaning is essentially imaginary and phallic, in-so-far as it tends to aspire to some form of unity or wholeness, in which the sexes are joined as One. Miller argues that the significance of the scientific revolution for Lacan lay in the mathematical formalization of modern physics. The impact upon our understandings was momentous, for it made unnecessary the attachment of (ultimately sexual) meanings to the universe. The fact that processes were not graspable in a straightforward intuitive or meaningful way was no longer a barrier to analysing them scientifically. It was sufficient that scribbles on a piece of paper "worked".

Bruce Fink develops this theme in greater detail. He argues that Lacan opposes psychoanalysis to any kind of prescientific Aristotelian knowledge structured by fantasies of Wholeness or sexual harmony that attempt to paper over the subject's constitutive division. He reminds us that though modern science made possible a break from the illusion of Oneness and the necessity to infuse the universe with imaginary meaning, it is always tempted by the seductive perfection of all things round and spherically whole. Fink's point is that modern science, including much contemporary science, does not avoid projecting an illusion of unity upon Nature, supported as it is by a faith homologous to religion's faith in God. However, as Miller also notes, substituting Nature for God leaves the structure of faith *qua* guarantee untouched. In short, it is difficult to escape references to a subject-supposed-to-know the Truth. Given this view, Fink argues that Lacan is justified in deflating the status

of Copernicus as inaugurating a revolutionary move. Copernicus suggested substituting the earth for the sun within a spherical universe. Far more unsettling than remaining within the confines of circles and epicircles, however, is Kepler's substitution of the circle with an ellipse, or Newton's substitution of intuitively graspable figures with squiggles on a page.

This, at least, explains the fascination Lacan had with geometrical objects that defied immediate intuitive grasp. No matter how big the challenge presented by the workings of the human mind, Lacan felt it possible to render them amenable to rigorous analysis without succumbing to obscurantist narratives pregnant with significations of sexual harmony. Mathematical formalization, he felt, was an ideal that psychoanalysis could legitimately aspire to.

Nevertheless, as David Corfield points out in "From mathematics to psychology: Lacan's missed encounters", Lacanians have yet to develop a psychoanalytic mathematics akin to that developed within physics. Whether or not one decides to pursue this line of research, Corfield argues that an alternative avenue is to engage in a more sustained fashion with recent advances in neurobiology and discursive psychology, rearticulating the latter in a way that takes seriously psychoanalytic concepts such as transference. This is especially the case when tackling issues of obedience to commands issued by persons in positions of authority. Corfield also discusses this possibility with reference to Stanley Milgram's well-known psychological experiment of the early 1960s.

Far more sceptical, hostile even, towards Lacan's attempts to enlist mathematical formalization to the psychoanalytic cause are, notoriously, Alan Sokal and Jean Bricmont. In their essay "Postures and impostures" Jason Glynos and Yannis Stavrakakis tackle Sokal and Bricmont's chapter on Jacques Lacan in *Intellectual Impostures* (Sokal and Bricmont, 1998). Glynos and Stavrakakis acknowledge that the use of mathematical tools, such as topology or knot theory in psychoanalysis, remains an ongoing research project, noting how Lacan's powerful intuitions in this field have brought many interesting and intriguing issues to the forefront—issues that are currently pursued by professional mathematicians working within a Lacanian framework. Their point is that whether mathematical formalization yields fruit that can be operationalized in a sustained fashion within a clinical setting is an open question that cannot be

settled in advance. This open-endedness, however, cannot justify Sokal and Bricmont's systematic misunderstanding of the nature of Lacan's project. Glynos and Stavrakakis argue that this misunderstanding occurs both in relation to Lacan's style and in relation to the substance of the mathematical interventions he makes.

Bernard Burgoyne is more optimistic regarding the initially counterintuitive invocation of mathematical formalization in the domain of psychoanalysis. In "What causes structure to find a place in love?" Burgoyne traces the reasoning in both Freud and Lacan, demonstrating in clear terms why mathematical problems and solutions are not really all that foreign to the concerns that preoccupy psychoanalysts. Indeed, as Burgoyne points out, Lacan is by no means the first to highlight the affinity shared by the two domains. He argues that Lacan relies on a series of "transfer principles" that link mathematical relations to the field of sexual love.

In his "A Lacanian approach to diagnosis and addiction" Rik Loose homes in on Lacan's rearticulation of Freud's formal approach to clinical structures, demonstrating how it generates a fresh perspective on a live and pressing issue confronting contemporary society: addiction. Loose argues that history demonstrates how psychiatry has repeatedly failed to generate a coherent framework in its approach to psychopathology, often lapsing into an *ad hoc* nosological exercise in classification. He suggests that taking Freud and Lacan seriously entails abandoning these gestures of positive science. This is because they do not create the space necessary for the subject to emerge as such, thereby enabling it to assume full responsibility for its own fantasmatically-structured *jouissance*. Suggesting we draw a strict line of separation between ethical responsibility and traditional notions of morality, Loose draws out the consequences this view harbours for how society might think of responding to such an increasingly widespread symptom as addiction.

Also keen to explore the potential of Lacan's thought to shed light upon wider social issues is Slavoj Žižek. In the final chapter "Lacan between cultural studies and cognitivism" Žižek offers a Lacanian reading of the present hegemonic struggle over who can legitimately claim the position of public intellectual. As he sees it this trench war—the so-called "science wars"—has proponents of Cultural Studies lined up on one side, and proponents of the so-

called Third Culture on the other. While Cultural Studies advocates are keen to highlight the culturally-evolving, non-teleological, character of science, Third Culture advocates offer positive accounts of the mathematico-material universe in terms accessible to the public. Žižek argues, however, that the two positions are not as distinct as might first appear. Rather, he implies, they give body to two faces of the same coin.

Žižek identifies a characteristic that unifies the Cultural Studies approach. This characteristic comes in the form of a prohibition, an injunction to suspend ontological questions about what the Universe actually is or about how the human psyche really works. Cultural Studies advocates keep Truth in abeyance, concentrating instead on the culturally-infused discursive mechanisms that give rise to a variety of truth-effects. In this view, the burgeoning Third Culture popularizing literature on evolutionary psychology, the origins of the universe, genetics, etc., appears as an attempt to fill a void carved out by Cultural Studies. Third Culture cognitivism seeks to redignify the search for an objective Truth—and this in a way that transforms otherwise meaningless mathematical writing and complex scientific apparatuses into holistic narratives that immediately appeal to our already established intuitive understandings. In the domain of quantum mechanics, for example, interpretations range from "hidden variables" to "many worlds," all the way to new age, Eastern renditions. Žižek suggests that maybe the Cultural Studies/Third Culture dichotomy simply obscures a more fundamental split that, from a Lacanian perspective, characterizes the subject as such. Neither objective nor subjective, this subject, Žižek argues, is split between its emptiness (*qua* subject of desire) and its inaccessible phenomenon (*qua* fantasmatic object).

Perhaps it is possible to claim that the subject is the most important category for Lacan in grasping the relation between science and psychoanalysis. By subject, as already hinted however, is not meant the psychological person in-so-far as this is understood in terms of observable behaviour, or conscious beliefs, thoughts, emotions, etc., however private these may be. The subject, for Lacan and Freud, is opposed to the *indivisible* individual. It is characterized by its *division* between the conscious and the unconscious. In more

precise, technical terms, the subject is taken as divided between desire and *jouissance* (*enjoyment*).

But this division also appears in the guise of several other oppositions: knowledge/truth and symbolic/real. Thus, the bulk of the essays in this volume can be said to investigate the implications this conception of the subject has for questions of scientific evidence, modern scientific practice, conceptions of causality, the so-called "science wars", diagnosis, direction of treatment, and more besides.

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CHAPTER ONE

Theory and evidence in the Freudian field: from observation to structure

Jason Glynos[1]

There can be little doubt that today, at the dawn of the new millennium, modern scientific discourse occupies a privileged position within the horizon of our everyday experience. It is a position it has occupied since at least the middle of the 19th century; and it would not be exaggerating too much to claim that science—both natural and social—exercises a *de facto* monopoly over truth in contemporary institutional and popular practices. Just think of the batteries of expert advisors installed in governments and corporations. Witness how modern advertizing relies not only on offering us ever-new products that take advantage of the latest scientific advances but also on the scientific establishment's seal of approval, its guarantee. Science books, ranging from evolutionary biology, to genetics, to physics and mathematics, enjoy unprecedented popularity. Even those of a devout religious persuasion do not hesitate to invoke science in bolstering the credibility of claims proffered in sacred texts. The fact that we now live in a so-called risk society—wherein science no longer merely seeks to protect us from risks but becomes the very source of risks[2]—does not threaten its hegemonic grip. Nor do the "acronymically" designated crises implicating scientific expert knowledge directly (BSE, GMO, etc.)—

crises which cannot but stoke the fires of environmentalism ("ludditic", deep, holistic, mystical, etc.). Even if science appears to have suffered a bit in the popular imaginary, it remains the case that the very detection and regulation of risks created by new science-driven technologies relies on science itself. Institutional and popular faith in science effectively remains intact; and when it suffers set-backs, such faith is merely displaced on to the future, just as it was in the early days of the 17th century scientific revolution.[3] We are told that, soon, science will provide us with the necessary knowledge, procedures, and products, that will finally put an end to civilization's discontents, satisfy our desires, and usher in an era of Hollywood happiness. Or maybe not so soon. In the meantime we are advised to take out insurance, whether private or public. In other words, natural scientists refer us to their younger siblings, the actuaries, while they concentrate on pushing back the boundaries of knowledge—a knowledge whose exponential, multidirectional, and virtually uncontrollable expansion is fast becoming a typical feature of today's capitalist liberal democratic societies.

But contemporary modern science is not only used to blaze ahead, to make advances in knowledge and spur on technological development. The authority of science is also invoked to expose false claims to truth. Spoon-bending, telekinesis, telepathy, astrology, black magic, and creationism are well-known casualties. Now, we are repeatedly told, we can finally add psychoanalysis to this list. Of course, psychoanalysis was the subject of critique, like any newly emerging discipline, from its very inception.[4] But science's onslaught on psychoanalysis over the last three decades or so has been relentless.[5] And, finding himself on the receiving end of most of these attacks, Freud has not fared well. Either Freud mistook the shadows cast by grammar as an "inner" unconscious (Bouveresse); or subscribed to a crypto-evolutionary biologism (Sulloway); or adopted a faulty scientific method and dubious epistemology (Popper, MacMillan, Crewes, Esterson); or compromised his intellectual integrity through a self-deluded descent into pseudoscience (Cioffi, Webster, Humphrey); or if one granted him proper scientific methodology, he lacked sufficient evidence to substantiate his hypotheses (Grünbaum); or if one excused him from recognized scientific methods by reason of the peculiarly private and non-reproducible nature of the psychoanalytic encounter his

personality, for the very same reason, was not: his character became fair game (Masson, Thornton, Swales, Cioffi).

No doubt, one might be tempted to take the wind out of such critiques with the disarming admission that Freudian practice does not, and should not, pretend to be anything more than a hermeneutic exercise (Habermas, Ricoeur), or that Freud's writings should be likened to works of literature (Phillips). This is not the path I intend to follow. But nor do I intend to offer an exhaustive, or even direct, defence of Freud's claim to the scientificity of psychoanalysis. In any case, such defences have already been made elsewhere.[6] Instead, I will offer a narrative outlining Jacques Lacan's return to Freud, focusing on his views on modern science and its relation to psychoanalysis.

In this regard it is worth pointing out that, from the very start, the history of psychoanalysis has been characterized by a series of schisms that has resulted in a proliferation of schools, each claiming the title of psychoanalysis, and each claiming to have refined and developed Freud's insights, raising them to a higher level of sophistication.[7] Their differences often penetrate deep into their respective theoretical frameworks, affecting both their onto-epistemological presuppositions and their orientation in treatment. It follows, therefore, that it is no longer credible to critique psychoanalysis *tout court*. Any serious critique of psychoanalysis today must take issue with the theory offered up by a precisely specified school: what matters is the manner in which a particular school's fidelity to the letter and spirit of Freud's texts is exercised, and how this is brought to bear on contemporary psychoanalytic praxis.

In this vein, the purpose of the present chapter is to offer a Lacanian reading of the basic Freudian problematic surrounding unconscious processes and the birth of psychoanalysis itself. I track the development of Freud's thought and attitude toward his field of study, showing how the specific phenomena he grappled with required the revamping of some of our most basic assumptions regarding issues of observation and, more generally, epistemology and ontology. Crucial in this regard was his move away from predominantly therapeutic considerations toward a more systematic investigation of psychoanalytic phenomena, the significance he attached to language and the concept of "false-connection," and the implications these harboured for questions of evidence and theory.

This narrative will make clear why Lacan accepts the basic thrust of Freud's innovations. He accepts, for example, Freud's intuition regarding the importance of meaning and language in psychoanalytic discourse. Following Freud up on this intuition prompts Lacan to investigate the relevance of structural linguistics for psychoanalysis, leading him to adopt an explanatory model based on structure rather than phenomena. It is a move that will make possible his later recourse to mathematics in developing his psychoanalytic theory.

Freud's scientific attitude

Freud lived in an era that enjoyed an ambiguous relationship to science—a relationship very much shaped by the latter's relatively short history. At the dawn of modern science in the 16th and 17th centuries, the details of the new perspectives on nature inaugurated by Bacon, Descartes, Galileo, and Newton found an audience in an elite minority and were understood by even fewer. Their ideological differences and wranglings became the talk of high-society salons, and their apparently wild ideas became a rich source of jokes and caricatures. This, however, did not hinder a growing respect for their perceived *attitude* toward knowledge: "Be sceptical of the written word (whether Aristotle's or the Bible's); rely on your own (publicly confirmed) observations and reason." And though this attitude did little to dent faith in God—often surviving in the attenuated form of Deism—an equally powerful faith grew up in conjunction with this newly emerging attitude, a faith in science's capacity to contribute to progress; more specifically, to improve our material well-being. It is this attitude and faith that spread across Europe during the latter part of the 17th century, setting the stage for what has become known as the Age of Enlightenment.

This new attitude and faith, however, did not spread beyond the echelons of the upper classes until the end of the 18th century. And when it did it was clear that the optimistic promises made on behalf of science to improve the condition of mankind were found sorely wanting. Virtually no practical consequences of basic science were visible even as late as the first third of the 19th century. Technological inventions until then were still largely the result of

pragmatic innovations emerging out of immediate local demands. Early technological progress, in other words, was inspired little—if at all—by theoretical developments in the newly emerging field of modern science. This gap between promise and reality was to be the source of a new breed of discontent and ridicule aimed at the nascent scientific establishment; and it fed directly into the Romantic movement's dissatisfaction with the coldly mechanical approach to nature that privileged reason. In its drive to understand the workings of nature, science appeared to neglect human sentiment and the importance of appreciating man's place in nature.

The intellectual influence of the content—as opposed to the attitude—of science was finally to be seen most clearly through the impact of Darwin's views on evolution, published in the mid-19th century. But the practical fruits of basic science were also to make themselves felt by ordinary people, even if the details of their theoretical origins were not. Electricity, telecommunication, medicine's increased capacity to cure, chemical industry, all began to make a profound impact on the everyday lives of people. Yet this impact was ambiguous. It simultaneously renewed faith in science's promise to improve the lot of mankind and seriously put it into question. Rapid industrialization and urbanization gave rise to new concerns, most famously voiced by Marx and Engels.

It is in this context that Freud's own thoughts were being developed. But there can be no doubt that Freud's view of the scientific approach was positive. The inculcation of the attitude associated with the scientific revolution over two centuries left its mark on Freud. At its most elementary, science for him entailed the investigation of an object that was systematic and evidence-based, coupled with the faith that such an object could be understood in terms of a set of laws that were in principle accessible to an enquiring mind without recourse to authoritative dogma. Freud, in other words, fully assumed a scientific attitude: he wanted to know and supposed that knowledge was there to be had.

From therapeutic treatment to scientific investigation

This scientific attitude is described very well in the survey of Freud's early trajectory offered by Filip Geerardyn (Geerardyn,

1997a). Geerardyn demonstrates how Freud's approach still harbours a fresh relevance in the context of today's attitude toward hypnosis and psychotherapy.

It is an apparently curious fact that one can find today, in our late modern western society, a readiness to resort to hypnosis and psychotherapy not simply in the context of self-help, self-confidence, and self-improvement manuals (to increase one's memory, to relax, to bolster one's self-esteem, to become wealthier, to lose weight, etc.). One also finds hypnosis being practised within the very fortress of so-called objective medicine: the hospital (to conduct open heart surgery without anesthetic, for instance). But the fact that the mechanism of hypnosis or psychotherapy is not understood constitutes no objection when one's aim is wholly therapeutic, entailing the eradication of illnesses that threaten our well-being. Indeed, many post-therapeutic studies (Fonagy, 1999) are optimistic about the success of psychotherapies, even if the criteria used in such studies constantly shift or are mixed. (Does one simply ask the patient or the therapist for their opinion about whether the treatment was successful? Does one objectively determine whether or not the presenting symptom has reappeared within a specified time-frame ignoring the status of their relations with other people? etc.)[8]

Despite the frequent conflation of psychoanalysis with psychotherapy today, it is interesting to note how Freud's efforts aimed to separate them right at the outset of his investigations. This becomes evident when one looks at the way Freud rearticulated the approaches of those individuals who were most influential in the development of his thought during the time he became interested in the question of hysteria.

Jean Martin Charcot, Hippolyte Bernheim, and Joseph Breuer each relied heavily upon the power of suggestion and hypnosis in the psychotherapeutic treatment of hysteria. When Freud was introduced to hysterical neurosis at Paris's Salpêtrière in the Winter of 1885–6, he found that Charcot had established it as a subject worthy of clinical study. Charcot had invoked the term "psyche" as a theoretical category that was not only meant to account for the hysteric's anatomico-clinical symptomatology ("clinical psychology") but also to suggest the possibility of psychical treatment (via hypnosis). Charcot's scientific approach was aimed at systematically

linking the observable symptomatology to the psyche which, in turn, he felt was reducible to biological causes (such as lesions in the brain). Freud's brief but formative stay in Paris resulted in his translation of Charcot's lectures (Charcot, 1991).

Freud would return to Vienna for 3 years before making a visit, in 1889, to Hippolyte Bernheim's clinic in Nancy. During this time his faith in hypnosis as a therapeutic technique continued to increase. This was especially so in view of the limited success of other techniques used in treating the neuroses (such as massage, hydrotherapy, electrotherapy, etc.). Freud visited Nancy, then, with the intention of investigating Bernheim's techniques of suggestion at his clinic, in addition to translating his book on that subject (Bernheim, 1899). There, he found not only that Bernheim's approach to the neuroses was not restricted to treating hysteria; he also found that Bernheim's approach was almost exclusively therapeutic. Exploiting the group effects afforded him in his clinic, Bernheim devoted himself to bolstering his authoritative stature. This, he felt, was a necessary prerequisite for the successful operationalization of hypnosis and, therefore, of therapeutic treatment. The mechanics of hypnotic suggestion (other than the fact that it functioned best when the doctor was invested with sufficient authority by the patient) was unimportant because his primary aim was the dissolution of symptoms through suggestion. He criticized Charcot's symptomatological classification and his rigid phasic account of the progress of hysterical development because he was not persuaded that the personality of the doctor did not unduly influence the specificity of symptoms and their treatment, thereby putting into doubt the reliability of Charcot's findings. In addition, he believed the psyche was independent of biological determinants, feeling that therapeutic success was linked to the clinician's authority and the patient's faith invested in him.

When Freud resumed his practice in Vienna he tried to think through the differences between Charcot and Bernheim, keeping from each what he thought valuable in order to generate a more satisfactory synthesis. He retained from Charcot his scientific attitude, both in terms of his systematic approach to the object under study and in his attempt to seek explanatory causes that an exclusive focus on therapeutic efficacity would obfuscate. Nevertheless, Bernheim's criticisms of Charcot were well taken, and Freud

felt convinced that the psyche's principles of operation were autonomous, they being neither reducible to biological causes nor, as his own clinical experience with obsessional neuroses would later also suggest, explanatory only of hysterical neurosis. The question at the back of his mind, then, was: How can one systematically investigate the psyche?

Meanwhile, his psychotherapeutic practice relied primarily upon the technique he had most confidence in: hypnosis. Nevertheless, the use of hypnosis was not simply invoked to make the patient more successfully susceptible to suggestion, as was largely the case in the French context. Instead, it was subordinated to what Breuer had come to call the cathartic method, namely, the use of hypnosis to assist the patient in retrieving a traumatic memory whose conscious assimilation would invariably lead to the dissolution of the presenting symptom (through the discharge of an associated quantum of affect). The insight Freud retained from Breuer's treatment of Anna O. was the suggestion that the symptom was linked to the ideational content of the patient. Two subsequent events, however, helped set the stage for the birth of psychoanalysis proper. First, Freud realized that many of his attempts to hypnotize patients failed. He could not rely on his authority to the extent that Bernheim did. Later he would equate the resistance encountered within analysis to the resistance of a patient to be hypnotized in the first place. The second event, however, was crucial. It was the observation by his friend Breuer (in the context of his treatment of Anna O.) that it was *speech* that affected the symptom. It was the articulation by the patient of certain memories through the medium of speech that brought about the dissolution of the symptom. Hence the expression, "the talking cure".

With these events in mind, Freud was forced to adopt an alternative way of approaching the psyche. Instead of hypnosis, the psychotherapeutic technique consisted only in "free association," with the aim of recollecting events in the life history of the patient. Freud, in other words, did not adopt Bernheim's technique which involved deflecting the patient's attention away from uncomfortable memories and onto the authoritative suggestions of the doctor. Instead, his confrontation with patients such as Emmy von N. and Lucy R. led him to pursue the free-associational technique to bring to light the patient's own "auto-suggestions", with all its attendant

resistances (usually in the form of erotic transference). Freud's use of this technique led him very quickly to link the suffering of the patient to sexual factors, much to the dismay of Breuer. It was a technique that he also found applicable to all neuroses, implying that the psychic mechanisms were universal processes, not simply applicable to hysterical neuroses.

In addition, Freud fully assumed a shift in the material he considered important to focus on for purposes of treatment. Observation was focused not on the positive properties received by the eye (Charcot's visual tableau of hysterical symptomatology) but the sound and meaning of the patient's speech received by the ear. There was thus a privileging of auditory data at the expense of visual data. Lying on the couch meant excluding the analyst from the visual field of the patient, thereby minimizing factors extraneous to speech. And keeping the analyst's interventions to a minimum had the effect of minimizing the interference which would be introduced by the personal life of the analyst.

Thus, at a very early stage in Freud's investigations the two elements of sexual desire on the one hand and, on the other, a resistance to "remembering" (what Lacan would call the passion of ignorance) allowed the concepts of defence and repression to emerge as central to his thinking. It forced Freud to postulate the existence of not simply a force at work "elsewhere" in the patient (Geerardyn, 1997a:85–6), but that this force functioned in accordance with precise psychical laws that were ultimately accessible from a theoretical point of view—what he would later call unconscious processes. Thus, the treatment of the patient involved working through the free associations governed by those unconscious processes in a way which would allow the full assumption of one's desire through subjective judgement (Geerardyn, 1997a:129 and 221ff.; Geerardyn, 1997b).

Freud was convinced that such laws of the unconscious were autonomous and not reducible to neurobiological or mechanical processes associated with the physical world. That he used terminology derived from those sciences should not obfuscate this fact. This is especially confusing given the *Project for a Scientific Psychology* (Freud, 1950[1895]), his first systematic theoretical elaboration based on the clinical material amassed up until that point.[9] It becomes even more tempting to transform Freud into a

physicalist theoretician on account of his explicit allegiance to such authors as Darwin, Herbart, du Bois-Reymond, Helmholtz, and Brucke.[10] As Geerardyn points out, however, concepts derived from the biological and physical sciences were invoked to serve his own research programme, and a careful reading of his texts demonstrates how far he was from succumbing to the reductionist temptation.

If this account of the roots of psychoanalysis has been necessary it is so in order to emphasize Freud's *attitude*—one that can tentatively be qualified as scientific. It may very well be true that others before him were observationally acute enough to detect in individuals a reluctance to confront certain ideas specific to their life history. Freud's novelty, however, derives from his obstinate determination to investigate this resistance in a systematic fashion, accompanying his inquiry with plausible postulates and hypotheses which, throughout his career, he would test, modify, and replace on the basis of his psychoanalytic experience. It is his attitude to the nature of the psyche that is characteristically scientific, propped up as it is by the faith that his object of study is not only universal but also accessible to systematic study—a study which, with sufficient perseverance, would yield its object's secrets. This, after all, accounts for his ready subordination of therapy to scientific study. His primary aim was to use the fundamental rule of psychoanalysis (free association) as an instrument of scientific study, and only secondarily as a therapeutic means. As Freud himself was to remark in 1924:

> While [psychoanalysis] was originally the name of a particular therapeutic method, it has now also become the name of a science—the science of unconscious mental processes. [Freud, 1925a:70]

This subordination of therapy to systematic study, then, effects a split between (psycho)therapy and (psycho)analysis. It means that the ends of therapy are to be distinguished from the ends of analysis, thereby bringing the question of ethics and technique to the forefront.[11] Moreover, this split could be said to overlap with the opposition eclecticism/scientificity. If one is preoccupied only with bringing about therapeutic effects at the service of an ideal of well-being one does not have to be systematic; one can pick and choose from this or that theory and technique in order to achieve one's therapeutic aims. Right from the outset, however, Freud pursued an

approach that aimed at constructing a unified theoretical field, one that was applicable to all psychic structures and all people, independent of age, cultural background, racial origin, etc., a faith mirrored in the Newtonian ideal of a universal scientific theory.

Groundwork: from epistemological limitation to ontological condition of possibility

From a Freudian perspective, the peculiar—and sometimes spectacular—fact that psychotherapy cures with words is something that demands explanation. And psycho*analytic* theory and practice, as opposed to psycho*therapies*, is an attempt to systematically investigate this peculiar fact and offer up just such an explanation.

Of prime importance here is the clear link between speech and symptom. If one takes this reference to speech seriously one is inexorably led to investigate the properties of language in order to discern how it is possible that our physical organism gets hooked up to discourse.[12] Language is here taken as constitutive of a subject's experience. It suggests that words and meanings permeate the human organism, transforming it into a body. Language *constitutes* a body by parceling up the organism with signifiers. And this means that the fundamental psychoanalytic concept of drive has less to do with biological instincts than with the laws of language.[13] In this view, hysterical paralysis finds its proper explanation not in an organic malfunction, but in the specificity of the subject's symbolic universe. Which is why an appropriate subjective judgement expressed through speech can dissolve the paralysis. The aim is not, therefore, the well-being of the patient (which depends on some ideal of what constitutes normality), but rather on the "well-said". The aim is not to bring about an ideal happiness, but rather to make an ethical judgement whose *by-product* is a modicum of relief from suffering. One patient, discussed in *Studies on Hysteria*, for example, found that her inability to walk was linked to the idea that she did not consider herself to be on an "equal footing" with others (Mannoni, 1971:56)—an articulation that resulted in the disappearance of her symptom. From very early on, then, Freud emphasized that speech and word-plays, such as puns, had a non-trivial explanatory value in the treatment of

neuroses—the apparent superficiality of which Fliess, and even his patients, would be quick to reproach him for. It is the importance Freud attributed to speech and language (in their relation to unconscious formations) that led Lacan to more systematically deploy (and modify) concepts derived from the field of structural linguistics in the context of the research programme of psychoanalysis.

This is not to say that new discoveries in medicine or neurobiology have no relevance to psychoanalysis. From a psychoanalytic point of view, such new discoveries are important, particularly in making more precise their demarcation from psychoanalysis. After all, their fields of investigation are oriented by very different objects of study. But in-so-far as medicine is able to discover a recognized physiological explanation for a physical impediment, it means that such an impediment is not a symptom *qua* signifier in the psychoanalytic sense—which is not to say that it will not have acquired a particular meaning and significance for the subject. The point is simply that psychoanalysis has learnt (and will learn) nothing from other disciplines in-so-far as they claim to *reduce* concepts in psychoanalysis to their own without regard to their different objects of study.[14]

But once the significance of language for subjective experience has been established, one is in a position to unify a whole array of phenomena that once may have seemed quite disparate and unconnected, all the way from the more transient and fleeting to the more stable and inertial: jokes, slips of the tongue, bungled actions, dreams, symptoms, and fantasies. The function of language or, more broadly speaking, discourse (in-so-far as this encompasses the generalized field of meaning), permits one to universalize the field of psychoanalysis in the same way that Newton's equations of motion and gravitation managed to link the molecular motion in a beaker to the parabolic trajectory of a projectile on the earth to the planetary motion in the heavens.

But aren't these merely analogies designed to bolster psychoanalysis' credibility by aligning it with physics? Or just metaphors seeking to persuade the sceptic via rhetoric, rather than demonstrate the scientific status of psychoanalysis in a more precise fashion? These questions bring us to the heart of the problem, namely, what exactly is the relation between psychoanalysis and science? For so far, we have adopted an apparently weak conception of scientificity

in describing Freud's approach to his object of study. In this view, it is his attitude that matters most, embodied in the systematic investigation of unconscious processes, and the faith that this object is accessible to rigorous theorization.

The relation between science and psychoanalysis is often reduced to the question, "Is psychoanalysis a science?" Assessments or critiques of psychoanalysis are often simply elaborate answers to this question. This presupposes, of course, that one has a clear idea of what science is. But it is a remarkable fact that many such assessments and critiques take for granted that there is such a thing as the essential nature of science and are content with the most sketchy accounts of science (often modelled on physics or biology), whether explicitly articulated or left implicit, feeling it too obvious to be worth spending much time on. Whether explicit or not, the assumption is that only when we have established a positive ideal of science will we be able to answer the question whether or not psychoanalysis is a science.[15]

Often, what emerges as the defining criterion of science is its method. Which method, one might ask? The method of controlled experiments, which would put geology and astronomy into doubt? The mathematical method, which would put many evolutionary and biological subdisciplines into question? A method that emphasizes the importance of quantitative exactitude, repeatability, or predictability, which would exclude another array of recognized sciences? Even at the level of common sense, it is possible to put into question the supposition that science is unified through its reference to a single method.

But even if one broadens the scope of this inquiry by asking the general question, "What are the criteria of demarcation that allow us to distinguish science from non-science (whether in terms of method or otherwise)?" Even if our investigation departs from commonsense naiveté and engages in the sophisticated historiographical and philosophical analysis of science, one might be shocked to find that a consensus on this issue is manifestly lacking. A casual reference to the literature on the history and philosophy of science reveals a very wide spectrum of elaborate and now-classic views concerning the nature of science: Inductivism, the Verificationism of Logical Positivism, Critical Realism, or the approaches associated with the proper names of Popper, Lakatos, Kuhn,

Laudan, Feyerabend, Koyré, Hacking.[16] It exposes many attempts to dismiss or bolster a discipline by demonstrating its fidelity (or lack thereof) to some conception of the *nature* of science as either naive or tragi-comical.[17]

Let us nevertheless persist in this inquiry by supposing that each discipline adopts a set of problems and develops its own discourse, methods, and procedures of verification/falsification specific to those problems.[18] In this view, each discipline seeks to understand or theorize a set of phenomena it deems worthy of investigation. It is in response to this challenge that methods and techniques are developed. Thus, in the context of psychoanalysis, instead of asking whether psychoanalysis *is* a science, it is perhaps more productive to begin by asking what are the difficulties and proper method appropriate to psychoanalysis *given* the phenomena it wishes to study and explain?[19] If we accept this more modest line of inquiry, we are immediately presented with the following question: What is peculiar to the psychoanalytic field that requires the development of methods specific to it?

Of capital importance in any answer to this question is the Freudian concept of "false connections." Though the idea of false connections appeared in the work of Bernheim, it was Freud's elevation of it into a crucial concept in understanding the nature of symptoms that will mark the true beginning of psychoanalysis, a notion that will appear in his later formulations of unconscious processes as displacement and transference. As Verhaeghe (1996) puts it, the term "false connection" was used to articulate the discovery that "every neurotic symptom expresses something ["energy", "quantum of affect", "desire"] for which it is not the right, the normal form of expression" (16–7). Moreover, this desire "concerns a *psychosexual* desire about which the patients do not want to know anything at all and against which they erect a resistance" (p. 17).

The most dramatic demonstration of an individual's compulsion to construct false connections is to be found in cases of post-hypnotic suggestions, suggestions whose effects are realized at the conclusion of the hypnotic session (hence "post-"). Under hypnosis, various suggestions are made to the patient to do, or refrain from doing, certain things. Moreover, these suggestions can be designed to create either positive hallucinations (in which case the patient

sees or hears things that do *not* exist) or negative hallucinations (in which case the patient does not see or hear things that *do* exist). Among his many cases in *Suggestive Therapeutics*, Bernheim describes one such effect of post-hypnotic suggestion:

> One day I suggested to ... [a] subject that as soon as he waked, he should go to a certain patient in the same room and ask how he was. He did so as soon as he awoke, and when I asked him why he did it, and whether he was especially interested in that patient, he replied, "No, it was just an idea." Then after thinking a moment, added, "He would not let us sleep last night." Thus he tried to explain the idea to himself by the wish to know whether the sick patient would allow them to sleep that night or not. [Bernheim, 1899[1887]:32, as cited in Geerardyn, 1997a:52]

Demonstrations such as this, along with a whole array of more spectacular examples, can be endlessly cited, drawing from work conducted in the context of both hypnosis and psychoanalysis.[20] It is only within the latter domain, however, that the full theoretical implications are systematically analysed. The psychoanalytic account suggests that "[t]he affect of an unconscious representation is falsely connected to a conscious representation ... [As regards the symptom] the process is [thus] to be understood as a rationalization: the patient does not know the relationship between symptom and unconscious determination and produces a plausible explanation" (Verhaeghe, 1996:22). Conscious explanations and reasoning can thereby only appear suspect.

The importance of Freud's appropriation and elaboration of the concept of false connections should not be underestimated. In his attempt to give an account of post-hypnotic phenomena, Freud discovered that false connections were a prominent feature of psychic life that was not confined to Bernheim's clinic. Common, every-day conscious thought and behaviour was also subject to the same compulsion to construct false connections.[21] And all this in order to avoid confronting something unbearable: the subject's unconscious psychosexual desire.

What consequences follow from taking the notion of false connections seriously? From a psychoanalytic perspective, these consequences are far more disturbing than the cases of post-hypnotic suggestion may lead us to expect. Take, for example, a

case in which it is suggested to a patient under hypnosis that the large table in the room he occupies does not exist (a case of negative hallucination). Upon waking, the patient is asked to leave the room; and here it is important to note that the position of the table makes it impossible for him to walk directly to the door. The result is predictable. The patient makes a detour around the table in order to fulfil the demand. And when he is asked why he chooses to take such a circuitous route, rationalizations (false-connections) are ready-to-hand (attempting to avoid a cold draft, for no reason at all, because he thought that he had deposited his umbrella on one side of the room but was mistaken, etc.).[22] By analogy, then, it would be tempting to say that psychoanalytic work aims to recover a "lost" memory, a memory of a real, material event. In this view, it is clear that psychoanalysis would involve a kind of "reality testing". Since it is obvious to any one what the real, objective state of affairs is, it is simply a matter of convincing the patient of this reality.

It could be said that the very early Freud viewed analytic work in just such terms. Freud would appeal to his own experience in order to test the "reality" of his patient's accounts, even going to the trouble of reading texts that his patients would describe to him during sessions, or interviewing the patient's family members in order to validate his patient's claims. Complications arising in his practice, however, would lead him to rely less on this tactic of "reality testing" as part of the therapeutic process, leaving it behind at around 1914 (Miller, 1996:16–7). That things become more complicated is evident when we recall Freud's gradual abandonment of the trauma theory of seduction between 1897 and 1899. As Verhaeghe puts it, Freud discovered that "[t]he neurotic defends himself not only with, but also against, falsified memories and fantasies," (Verhaeghe, 1996:26), thereby leading him to the conclusion—as expressed in a letter to Fliess—"that there are no indications of reality in the unconscious, so that one cannot distinguish between the truth and a fiction cathected with affect."[23]

The significance of this discovery should not be missed: the patient's narratives are populated by false connections which act as a defensive barrier *not* against a traumatic event that actually took place "in reality," but against imagined *fantasies* built in response to an experience of extreme excitation, one that is irreducible to any

kind of reality objectively "out there". It is clear, then, that this ushers in a huge epistemological problem that is brought into relief in the context of the psychoanalytic clinic. If our observations are always fantasmatically-structured, if we can not rely on "objective" criteria residing in an independently existing and transparently accessible "reality", how does one judge the effectiveness of a psychoanalytic intervention? It is precisely this problem that psychoanalytic theory must take into account in developing methods suitable to its practice, inclusive of standards of evidential assessment. But it is also this problem that must be accommodated by those who wish to assess the merits or integrity of psychoanalysis, whether Freudian or Lacanian. Indeed, it is in the attempt to come to terms with this epistemological limitation that psychoanalysis may, somewhat paradoxically perhaps, further our understanding of other disciplinary practices, including modern science.

The consequence of this insight is the abandonment of standard theories of truth conceived as a function of representation of, or correspondence with, an external reality. It means that psychoanalysis must put into question what many critiques of psychoanalysis regard as unproblematic, namely, the assumption that epistemological criteria of validation are ascertainable without complication. But if psychoanalysis puts into question standard correspondence theories of truth, this should not lead us to believe that a simple coherence theory of truth is our only other option. As Jacques-Alain Miller has pointed out, while a psychoanalytic theory of truth jettisons both, they nevertheless remain as ghosts transformed almost beyond recognition.[24] It retains them by rearticulating them in a novel way.

Thus, the analytic encounter does not aim to represent something beyond the subject's discourse because the "something" psychoanalysis is interested in is not external to his or her discourse. Instead it turns around something internal to it, something *intimate*, but which is simultaneously irreducible to it—not an *external* reality, then, but—to use the Lacanian neologism—an *extimate real*. In addition, the psychoanalytic aim is achieved, ultimately, not simply by filling in the gaps of the subject's discourse through interpretation, through recollection of memories and their integration into a coherent narrative without any reference to a real. It does not aim to render the subject's discourse hermeneutically coherent *à la* Ricoeur

(1970) or Habermas (1971), for example, however endless this process may turn out to be. The aim is not to represent or *interpret* this real (since the real is, from a psychoanalytic point of view, impossible to represent with words, to apprehend in a network of signifiers), but to *construct* this real so as to retain its status as simultaneously intimate to the subject's discourse *and* foreign to it. In this view, psychoanalytic construction is to be distinguished from another kind of construction, often going by the name "social construction." While the former falls on the side of deduction, the latter falls on the side of interpretation. Psychoanalytic interpretation is considered preliminary to, it sets the stage for, construction. Indeed, it is this "foreignness", this *inaccessibility* of the subject's most *intimate* kernel, that is responsible for the epistemological incapacity I mentioned earlier. Thus, instead of lamenting this epistemological limitation, psychoanalysis transforms it into the very condition not only of what it means to be a speaking being but also of the emergence of reality as such. "[W]hat appears as an *epistemological limitation* of our capacity to grasp reality (the fact that we are forever perceiving reality from our finite, temporal standpoint), is the positive *ontological condition* of reality itself" (Žižek, 1998a:5).

In concluding this section, it is worth emphasizing that it is the dimension of inaccessibility that distinguishes the psychoanalytic conception of fantasy from the commonsense notion of fantasy. The commonsense idea of fantasy corresponds to the subject's most intimate self-experience, referring to his or her most private psychological inner states. The dimension of inaccessibility, however, introduces an unbridgeable gap separating the subject from his or her fantasmatic object, what Lacan calls the *objet petit a*. What is most intimate to the subject is also what is most foreign to it; which is why fantasy, at least in its fundamental sense, cannot be experienced as such, only constructed.[25] As Žižek puts it:

> What characterizes human subjectivity proper is ... the gap that separates the two: the fact that fantasy, at its most elementary, becomes inaccessible to the subject—it is this inaccessibility which makes the subject "empty" ($). We thus obtain a relationship that totally subverts the standard notion of the subject of phenomenal (self-)experience (ie., of the subject who directly experiences himself, his "inner states"): an "impossible" relationship between the *empty, nonphenomenal subject* and the *phenomenon that remains inaccessible to the subject*—the very relation registered by Lacan's formula of fantasy, $\$\Diamond a$. [Žižek, 1998b:268]

The problem of evidence and method

My aim in the previous section was to present those features peculiar to the psychoanalytic experience that demand to be taken seriously when thinking about what methods and standards of evidence are appropriate to it.[26] I began with Freud's concept of false connections and ended with the Lacanian concept of (fundamental) fantasy. What the account made clear, I hope, is that any reference to so-called "external" reality in order to validate the claims both of psychoanalysis and analysands is seriously misdirected.[27] This is because the analysand's speech is primarily "ego" speech, a speech populated by false connections whose function is to defend the subject not simply from an objectively ascertainable traumatic event, nor even from his or her most private and illicit desires and fantasies but, rather, from the (inaccessible) extimate real of his or her discourse that can never be experienced as such.

This, however, by no means serves as a reason to exempt psychoanalysis from criticism. It simply means that any assessment of psychoanalytic theory and practice must begin by appreciating the specific challenges that confront it.[28] For a start, it means that any such assessment *must* make reference to the analysand's unique discourse, *inclusive* of "external" reality. The problem, here, of course, is that our only access to the subjects' discourse is through the accounts given to us by the analysands and analysts themselves. The integrity of the analyst is thereby brought into the limelight. And yet this problem is not unique to psychoanalysis. Issues of integrity and technical abuse of power emerge in the context of a whole host of other (scientific and non-scientific) professions too—ones which are addressed through proper training procedures and the standards upheld by relevant professional communities. In the case of psychoanalysis, the analyst's own training analysis is meant to address his or her own resistances, the aim being to minimize their interference and to acknowledge their operation in the analyst–analysand transference relation.

Thus, the point about the crucial importance of the analysand's discourse in exercises of assessment remains intact. But given that references to an external reality cannot operate as a valid standard of assessment, how does psychoanalysis' privileging of the analysand's speech avoid the "anything goes" charge? What kinds of evidence qualify as legitimate indices of the effectiveness of the analyst's interventions? Is, as it is often suggested by critics of psychoanalysis, the analysand's *assent*, or the analyst's confidence in the correctness of his intervention, sufficient to validate the analyst's intervention? Freud, of course, was not unaware of this kind of criticism. Referring to "a certain well-known man of science", Freud complained that

> he gave expression to an opinion upon analytic technique which was at once derogatory and unjust. He said that in giving interpretations to a patient we treat him upon the famous principle of "Heads I win, tails you lose." That is to say, if the patient agrees with us, then the interpretation is right; but if he contradicts us, that is only a sign of his resistance, which again shows that we are right. In this way we are always in the right against the poor helpless wretch whom we are analysing. [Freud, 1937a:257]

So how does one address such criticisms while simultaneously avoiding the Scylla of a correspondence/representational theory of truth on the one hand, and the Charybdis of a coherence theory of truth on the other? Freud's "man of science" assumed that the analyst's interventions are like statements that can be verified by establishing a correspondence with some true state of affairs in an external reality which the patient or analyst was in a position to validate. And yet, what "Freud shows is that the yes or no of the analysand forms part of the analysis, that the analysand's yes or no does not occupy a position of metalanguage, but rather that with it the analysis continues. And that his yes or no is furthermore susceptible to interpretations" (Miller, 1995:24). Freud explained that an intervention is not confirmed by the analysand's assent; and that the confirmation of an intervention is to be found elsewhere. For Freud (as well as Lacan), "the direct responses of the analysand, his acceptance or rejection of an interpretation, have no value. What does have value is the indirect response" (Miller, 1995:24). How, then, shall we understand such an indirect response?

At this point it is worth highlighting a seemingly curious fact that is nevertheless a common feature in the context of the analytic experience. We recall, first, that the fundamental rule of Freudian psychoanalysis, its method of psychical investigation, is free association. Now, it might be thought that asking the analysand to say whatever occurs to her to be a recipe for a chaotic proliferation of associations without end. And, usually, this is exactly what appears to happen, at least in the first few sessions. Soon, however, one discovers how the injunction to free associate proves impossible to carry out in practice. Very quickly definite patterns in the analysand's discourse begin to emerge—patterns that clearly exhibit the property of repetition, whether in the context of dreams, symptoms, parapraxes, actings out, complaints having to do with his or her relations with significant Others, transference-induced resistances, etc. Rather than a proliferation of more and more material, the analysand's attempt to free associate only generates the same material repeated over and over again. The analysand's discourse is characterized not by fluidity, but by stagnation.

We are thus presented with an opportunity to answer the question concerning what evidence is appropriate in assessing the effectiveness of an analytic intervention. The epistemological obstacle highlighted in the previous section, no doubt, could very quickly have led to the pessimistic view that no such answer could be forthcoming. Psychoanalytic experience, however, permits a certain optimism. This is because we can now entertain a new criterion—one that takes the epistemological problem of psychoanalysis into account—in deciding what evidence is appropriate to it. And its formulation is as novel as it is deceptively simple. As Bernard Burgoyne puts it, the effectiveness of an intervention "is judged by whether or not it facilitates the production of more material; not by whether it has other effects on the analysand, whether the analysand refuses it or agrees to it, or whether the analysand is pleased with it. That is, it is effective only if it overcomes to some extent the resistance" (Burgoyne, 1997:47). And in what guise does this new material appear? Of course, the new material can only appear within the discourse of the analysand. The crucial point, however, is that this material is largely the stuff of unconscious formations *that the analysand's ego is in no position to control*. This is one way to understand what is meant by the notion

of an "indirect response". Thus, the new material typically comes in the form of new "memories" and associations, the modification of otherwise recurring dreams, etc., all of which constitute evidence that the analyst's handling of the transference has succeeded in catching the ego "off-guard", in touching something of the order of the analysand's extimate real.[29]

Three important points must be stressed here. First, this view highlights the necessity of taking into account the unique experience of psychoanalysis if one is to consider one's assessment of it as legitimate. Second, it demonstrates the crucial role that the analysand's singular discourse plays in any such assessment. The evidence against which the analyst's interventions are judged effective or not is to be found in the analysand's discourse, not in the mythical ideal of the "typical" subject, the so-called normal subject, nor in a supposed objective reality subsisting somewhere "out there". Finally, my account demonstrates the crucial significance of the analyst's own training analysis. As has already been pointed out, reality itself is always coloured by one's perspective. As Jacques-Alain Miller puts it, we all live in an invisible prison called the fundamental fantasy (Miller, 1992:7). And it is only by achieving a certain distance from this fundamental fantasy, only when the invisible contours of this prison gradually become visible, that one can minimize the fantasmatic contamination of our observations, not simply of external reality generally (an issue which science itself has yet to fully confront) but the analysand's discourse more specifically. Thus, psychoanalysis is as far as possible from suggesting that it need not appeal to evidence in the validation of its claims. This, no doubt, would be a silly claim to make. On the contrary, it begins by taking seriously the notion of an epistemological incapacity—an incapacity which pervades all human practices—in order to present a more sophisticated account of the subjective experience of truth, which not only parts company with standard correspondence and coherence theories of truth, but which also points to what should count as legitimate evidence in its field of investigation.

But once the type of evidence supporting a successful intervention has been accepted, the ultimate validation of some such evidence as adequate is accomplished as it is in modern science. Ultimately, the acceptance of such evidence in support of a successful intervention,

or even in support of the existence of unconscious mechanisms, is not dependent on some *further* evidence. Instead, it is dependent on the assent of the relevant community, in this case the psychoanalytic community. It is collective assent based on common experience that grounds the validity of the evidence *as* (relevant) evidence, just as it is within modern scientific praxis. This dependence upon the relevant community has been sharply brought into relief in the field of quantum mechanics. As Žižek points out,

> when John Wheeler, one of those who have consistently tried to work out the philosophical consequences of quantum physics, was cornered by an interviewer who asked him about the exact moment of the collapse of the wave function, he offered as a last refuge the intersubjective community of scientists: one can be absolutely sure of a collapse only when the result of a measurement is integrated into the intersubjectively acknowledged scientific discourse ... [Žižek, 1996:223]

Truth in psychoanalysis is linked to the experience of *surprise*, to the subject's confrontation with unconscious formations which escape the subject's conscious control but which, nevertheless originate in the subject's "elsewhere". This is why a large part of the analyst's function is geared toward operationalizing the analytic method, the fundamental rule of free association. But while the clinical method remains one, the techniques are many. The analyst must tailor his or her interventions, invent new techniques that are sensitive, to the specificity of the analysand's discourse, to catch a *particular* ego off-guard. In this view, then, analytic progress is indexed by the production of new material in the form of unconscious formations. The ultimate aim of analysis, however, is to bring the subject to a point where she can fully assume (through construction), or develop an ethical relation to, the extimate kernel of his or her being. It is aimed at effecting a change in one's subjective stance—in Freudian terms, to make possible a form of judgement for which the subject assumes full responsibility—which is not reducible to some sort of coherent narrative account of the multitude of material produced during the sessions, nor to the alignment of his or her discourse with some sort of objective reality "out there", nor to the analysand's simple assent. As Freud puts it in relation to dreams,

> one must hold oneself responsible for the evil impulses of one's dreams. What else is one to do with them? Unless the content of the dream ... is inspired by alien spirits, it is a part of my own being. [Freud, 1925b:133]

The problem of theory

So far I have tackled the issue of method and evidence largely from a clinical point of view. Of course, theoretical presuppositions were always there in the background. Nevertheless I would like now to focus in more detail upon the theoretical aspect of psychoanalysis. A more direct consideration of such issues is called for since it is clear that one's theoretical outlook plays a crucial role in orienting psychoanalytic practice and the direction of treatment. But our discussion of theoretical issues in psychoanalysis will also serve as an introduction to Lacan's views on modern science and its relation to psychoanalysis.

In approaching the issue of theory from a psychoanalytic perspective, it is worth recalling our discussion of false-connections in the context of free associations. False connections, as a conceptual category, served as Freud's starting point in investigating the psychoanalytic field. It was felt that false connections were make-shift rationalizations compulsively deployed by the ego in order to defend itself against unbearable secret desires and fantasies. Nevertheless, it was found that these (psychosexual) desires would not cease returning in the guise of enigmatic unconscious formations (symptoms, dreams, parapraxes, etc.). Indeed, their inverted or ciphered form served precisely to protect the ego from confronting the truth residing therein. Secret desires, fantasies, and unconscious formations were then understood as themselves defences against something real that defied representation, fantasmatic or otherwise. And as we saw in the previous section, analytic progress was seen to be a function of the production of new material. When an intervention successfully touches the analysand's truth *qua* real, there typically follows the production of new "memories" and unconscious formations.

From a theoretical point of view, then, how does one begin to give an account of these clinical facts? How can one keep track of these shifts of meaning, and unconscious formations, in order to orient the direction of treatment in a coherent and systematic fashion? What resources can one appeal to in constructing a theoretical framework that is sensitive to the epistemological problem I have been repeatedly highlighting?

One approach, of course, would be to engage in an extensive classificatory exercise. This would involve constructing a table whose vertical axis would comprise the names of various psychopathologies and whose horizontal axis would be occupied by the positive descriptions of the symptoms (types of dreams, hallucinations, relationship to others and to society generally, etc.) typically found to correspond to those pathologies. On the basis of such a symptomatology one could categorize the patient and treat him accordingly, whether through the use of drugs, or through the use of other therapeutic means. Here, symptoms are typically treated as epiphenomena of an underlying developmental disorder which is not yet fully understood. Difficulties arise, of course, when practitioners are confronted with "borderline" cases, when patients suffer from symptoms that appear in more than one psychopathological class. This is the way of the DSM[30] and the ICD,[31] the dominant approach to problems of psychopathology in the world of psychiatry. And, despite the glaring absence of any coherent account underpinning its practice (both in cases of success and failure), despite the ongoing *ad hoc* proliferation of new categories and reorganization of old categories, its advocates are remarkably determined to cling to this approach (Kirk & Kutchins, 1992; Kirk et al., 1997).[32]

In order to give some sense to the multifarious symptomatology exhibited in clinical practice—whether across patients at a specified historical epoch, by individual patients over his or her life-time, or across generations of patients—the Freudo–Lacanian approach begins by positing the existence of an underlying unconscious *structure*. In this view, unconscious structure is not only distinct from unconscious *formations* and ego speech, but provides the latter with their principle of explanation. The approach, in other words, signals a shift in focus from phenomena to the structuring of phenomena, and is a direct result of taking seriously the epistemological problem issuing from the inaccessibility of the subject's fundamental fantasy to him- or herself, even as it exerts

structuring effects in the form of unconscious formations.

Freud's theoretical elaborations made use of metaphors drawn from biology and physics. His aim was, as we have seen, to give an account—a structural account—of unconscious processes, to be distinguished from any kind of reduction of those processes to either a biological or physical substratum. Lacan, however, taking his cue from the importance Freud gave to speech and language in his texts (*The Interpretation of Dreams*, *The Psychopathology of Everyday Life*, *Jokes and their Relation to the Unconscious*), and securely grounded in the field of structural linguistics, sought to develop the mechanisms of unconscious processes by modelling them upon the structure of language. According to Lacan, what gave the apparent continual shifts of meanings and unconscious formations a certain stability was the way these shifts themselves obeyed laws analogous to those of language. Hence his famous motto "the unconscious is structured like a language". Of course, the conceptual framework derived from linguistics did not survive in psychoanalysis without modification. Conceptual boundaries of terms taken from linguistics were subjected to systematic rearticulations to suit the phenomena studied in psychoanalysis. Indeed, in order to theorize psychoanalysis in a more precise fashion, Lacan would later turn to the science of structure *par excellence*: mathematics—especially projective geometry, surface topology, general topology, and knot theory.

I would like to make three points before concluding. First, the privileging of structure over phenomena does not render phenomena irrelevant to considerations of diagnosis and direction of treatment. On the contrary. As Rodriguez notes, the structural approach "views symptoms and signs as essential components of the psychopathological structure, not as mere epiphenomena. In other words, it regards psychopathological phenomena as productions of a structure which follows an order (with its flaws, inconsistencies and destructive effects, but an order nevertheless) and not as mere disorder, that is, 'negative' phenomena, or deficits" (Rodriguez, 1999:103).[33] In determining the structure, in other words, one must pay close attention to all elements, including not only the subject, its objects, and its significant Others but also any accompanying unconscious phenomena. Only by studying the *relations* between all elements will any structure emerge as such.

The second point I would like to make is similar in tone. Just as the shift of emphasis from the positivity of phenomena to the relationality of structure does not imply the neglect of the former, so too Lacan's later recourse to mathematics does not imply a devaluation of the importance of language. In this case, recourse to mathematics is actually an attempt to formalize more precisely the "linguistricks" featuring so prominently in psychoanalytic experience. Indeed, for Lacan, accession to language is the very condition of possibility of structure as such, and therefore of mathematics as well. In this view, the functioning of mathematics itself relies on language. But it is also the most sophisticated instrument for formalizing structures, capable, therefore, of exploring structures up to their very limits. And if we recall that the aim of psychoanalysis is the circumscription of what in the subject's discourse is inarticulable, that which resists all attempts at representation, we immediately see the attraction mathematics has for Lacan—not only for purposes of theorization—but also for acquiring the greatest possible precision in guiding the analytic work itself.[34]

Finally, I would like to make a general comment regarding the relation between theory and practice from a Lacanian point of view. As we have seen, the Freudo–Lacanian theoretical elaboration does not follow the inductive method. It is not reducible to a sequential process of observation, classification, and inductive generalization. Instead, it proceeds by inventing conceptual structures (not without assistance from other disciplines) that ground hypotheses which are tested, typically during the course of a single case study. Theoretical constructs therefore both shape and are shaped by clinical observations. They serve to guide both the investigation of psychoanalytic phenomena and the direction and techniques of treatment. Issues of falsification and verification therefore are strictly linked to the theoretical foundation from which the practitioner's hypotheses spring. This carries important consequences. It means, for example, that any assessment of psychoanalytic interventions can only legitimately proceed by systematically relating observed phenomena not only to proffered hypotheses but also to the theoretical constructs inspiring them. It also highlights why any critique of psychoanalysis *in toto* is no longer acceptable. It is incumbent on any such "assessor" to specify the psychoanalytic school one has in

mind (Kleinian, Winnicotian, Lacanian, etc.). This is true not only in the case in which one approaches psychoanalysis from the "outside", so to speak, but also in the case of critiques conducted *among* schools of psychoanalysis.

Conclusion

In this essay's presentation of the development of Freud's thought, I tried to show how it is only by taking seriously an epistemological impasse—one which is transformed by psychoanalysis into an ontological condition of possibility—that one can understand Lacan's return to Freud and his theoretical engagement with structural linguistics and mathematical formalization. In this view, it is structure (whether linguistic or mathematical) that permits one to place the ever-shifting productions of the analysand within the context of a theoretical framework. But it must be remembered that while Freudo–Lacanian theory aims to give a unified account of psychoanalytic phenomena, it simultaneously aims to allow the subject's singularity to emerge as such. The connection to ethics, here, should not be missed. For it is not a question of guiding the subject toward some positively defined normative ideal, but rather of creating a space in which the subject's *desire* can be foregrounded, thus creating the circumstances within which a shift can take place in the subject's *relation* to ideals as such. Moreover, it is only by adhering to a systematically elaborated framework that the experience of analysands as they reach a theoretically specified end can contribute to psychoanalytic knowledge, either by confirming it, or by generating anomalies (in the Kuhnian sense) that will cause the rearticulation of the theory, including its conception of ethics and the end of analysis. This, after all, is what prompted a whole series of displacements in Lacan's formulation of the end of analysis during the course of his career.

Notes

1. For offering comments on earlier versions of this chapter, I thank Richard Day, Mark Devenney, Jes Fernie, David Howarth, and Yannis Stavrakakis.

2. See, for example, Beck (1992, 1997) and Beck et al. (1994).
3. See Brian Silver's (1998) very readable account of the *Ascent of Science*, where he places the development of early modern science in the context of parallel developments in the fields of literature, philosophy, and religion.
4. See, for example, James (1950[1890]).
5. As to commentaries on Freudian psychoanalysis that put its scientificity into question, see, for example, Popper (1962), Sulloway (1979), Swales (1982), Thornton (1986), Grünbaum (1984), Masson (1984), Gellner (1985), Crewes (1986), Esterson (1993), Bouveresse (1995), Webster (1995), Humphrey (1996[1995]), Cioffi (1998), Phillips (1995), and MacMillan (1997). See also Wittgenstein (1938, 1942–6, 1978), MacIntyre (1959), and Nagel (1959). For critiques of Freudian psychoanalysis from a feminist perspective, see, for example, Greer (1970), Williams (1977), Gilligan (1982), and Lerman (1986).
6. See, for example, Robinson (1993) and Levy (1996).
7. For an account of such a history which looks at the politics and schisms both between the Lacanian School and other Schools of Psychoanalysis and within the Lacanian School itself, see Turkle (1992), Marini (1992), and Roudinesco (1997).
8. Note that such overarching assessments rely on coming up with some watered-down notion of what the "norm" is in order to assess the degree to which a patient conforms with it. This not only ignores the meaning norms have for a particular subject but, more importantly, it ignores the question of the subject's *relation* to them. For empirical studies relating to child development see Frosh (1989) and Muller (1996).
9. As to the relevant literature by Freud prior to his project see, for example, the forewords to the translated texts of Charcot (Freud, 1892–4) and Bernheim (Freud, 1888–9), his monograph on aphasia (Freud, 1953[1891]), and *Studies on Hysteria* (Freud and Breuer, 1895).
10. On the issue of Freud's scientific outlook and his influences, see also Burgoyne and Leader (1988). See also Leader (2000) and Lacan (1988:6).
11. For a classic discussion of issues of psychoanalytic technique see Fenichel (1941); cf. also Lacan (1988).
12. This insight led Freud to develop a perspective on language relevant to psychoanalytic practice. See, for example, his early monograph on aphasia (Freud, 1953), especially the passage "Words and Things" as excerpted in Freud (1991:216). Influences on this facet of his development include John Stuart Mill and William Hamilton. On this, see Burgoyne (this volume).
13. On this point see Shepherdson (1997).

14. That neuroscience, medicine, etc., cannot contribute to psychoanalytic theory is obvious when one engages in the following thought experiment. Imagine it is possible to fulfil a version of the 19th century deterministic dream, namely, to reduce word sounds—as they impact upon an individual's auditory apparatus—to precise neuro–genetico–biological mechanisms. Let us even assume that it is possible to fiddle with these mechanisms to alter the effect such words have on him or her. Now, instead of feeling satisfied with this state of affairs, what we find is that the original question troubling the subject (why do these particular words have such an effect on me?) is not answered, but nor is it fruitfully reformulated. Rather it is *erased*. This, of course, is because it leaves aside what matters most to the subject, namely, what the word *means* in the context of that particular subject's life history. Even if the full explanatory principle does not reside at the level of meaning, it must surely begin there if one is to address the subject's singularity. Cf. Žižek (1999b) and Barrow (1998:232–237).
15. On the relation between the ideal science/ideal of science and ideal ego/ego ideal see Žižek (1996) at 84, note 36.
16. For secondary literature, see for example, McGuire (1992), Chalmers (1994[1982]), Hacking (1981), Bird (1988), Cohen (1985), Silver (1998), Harre (1996), Preston (1997), Jardine (1998), Lindberg and Westman (1990), McMullin (1990), Papineau (1996), Steiner (1992). For primary texts, see, for example, Koyré (1978[1939], 1956, 1965), Quine (1951), Hall (1954, 1963, 1970), Popper (1968), Kuhn (1996[1962]), Lakatos (1974), Feyerabend (1975), Lakatos & Feyerabend (2000), Baskhar (1975, 1979), Laudan (1977, 1981, 1984) and Hacking (1975, 1983, 1992).
17. For a general, yet sensitive, statement by Freud on the methodology of science, see Freud, 1915:117.
18. Cf. Foucault's conception of discourse in terms of a regularity in dispersion rather than simply in terms of an object of analysis (Foucault, 1972:31–9).
19. Of course, the psychoanalytic object, according to Freud, is nothing other than the unconscious process, Lacan's linguistic reformulation of which will result in the more precise specification of the psychoanalytic object as the *objet petit a* (denoted by the matheme *a*) (Lacan, 1989:12). No doubt, Lacan's *objet petit a* is a peculiar object since it not only denotes the multifarious array of imaginary incarnations undergoing continual displacements from one to the other, but also refers to its status as a cause that coincides with a void, the lack in the big Other. This second dimension of the psychoanalytic object is crucial from a Lacanian perspective. For it ushers in the possibility of formulating a logically precise account of the end of analysis, one opposed both to

Freud's view that analysis is interminable and to conventional science's search for a totalizing theory of the universe (in the form of GUTs, ToEs, etc.) whose only result is the endless proliferation of objects. This latter proliferation is clearly seen in domains ranging from neurobiology to particle physics. In the case of particle physics, just as the prospect of the unity of nature's four forces seems within reach, we stumble across a whole set of new particles and mysterious interactions. It is as if the closer science gets to grasping its objects, the more determined they are to escape. The story of modern science's investigative efforts is one of continual displacement from one to another object. This impasse—an impasse driven by a specific *attitude* to nature: the optimistic faith that we will soon be able to grasp nature in its totality, a faith fueled by totalizing fantasies—is avoided only if one takes it as axiomatic that there is no ultimate "Answer" to nature's "Question." The psychoanalytic formulation of this axiom appears in a variety of forms within the Lacanian framework: "There is no Other of the Other", "Woman does not Exist", and "There is no such Thing as a Sexual Relation". This lack of totalizing guarantee is what the second dimension of Lacan's *objet petit a* aims at. Indeed, one could perhaps argue that this particular (non-positivistic) conception of the object allows one to define the discipline of psychoanalysis in relation to this object without falling into the traps Foucault brings to our attention in grasping the characteristic features of a discipline or discourse. On the relation between intervention and object within Marxism, quantum physics, and psychoanalysis, see Žižek, 1996:208.
20. In relation to suppressed motives, Freud makes the connection to Bernheim explicit:

> This explanation [of the beautiful butcher's wife] struck me as unconvincing. Inadequate reasons like this usually conceal unconfessed motives. They remind one of Bernheim's hypnotized patients. When one of these carries out a post-hypnotic suggestion and is asked why he is acting in this way, instead of saying that he has no idea, he feels compelled to invent some obviously unsatisfactory reason. [Freud, 1900:147–8, as cited in Geerardyn, 1997a:264–5, note 23]

See also Geerardyn's note for additional comments on the occurrence and analysis of "false connections" in the Freudian corpus.
21. On this see Freud's *The Interpretation of Dreams* (Freud, 1900), *The Psychopathology of Everyday Life* (1901) and *Jokes and their Relation to the Unconscious* (1905).
22. This illustration is modelled on an example frequently invoked by the psychoanalyst Bernard Burgoyne during his lectures at the Centre for Freudian Analysis and Research, London.

23. As cited in Verhaeghe (1996:26). The introduction of the notion of "retroactive" construction will allow Freud to elaborate a second, more sophisticated, theory of trauma. As Verhaeghe notes, however, the concept of fantasy (as well as the notions of repression and the father) will acquire a new significance in his later "analytic" period—the period following the pre-1900 period of Freud the "discoverer" and the 1900–1914 period of Freud the "master" and "university man"—through its reincorporation in the concept of "primal fantasy" (paralleled in the concepts of "primal repression" and "primal father").
24. On this point, see Grigg (1999).
25. Cf. Žižek (1996:36).
26. For a classic discussion of the scientificity of the psychoanalytic method, see Hook (1959) and Bernfeld (1985).
27. As to the term "analysand", Rodriguez explains that "[a]n analysand is not simply a patient ("he/she who suffers"). The analysand suffers, but it is not only on that account that he/she is called "analysand". The analysand *analyses*, i.e. works in his/her analysis according to the method and the fundamental rule established by Freud. Any speaking being is, at least potentially, eligible for analysis; that he/she becomes an analysand or not depends on the work done conjointly with an analyst in the first encounters, not on supposed "criteria for analysability" external to the analytic experience itself" (Rodriguez, 1999:xviii).
28. For empirical evidence supporting Lacan's structural approach to developmental psychology, see Muller (1996).
29. On the relationship between memory and knowledge in the real see Miller's discussion of this in relation to Freud (Miller, 1995:21).
30. Diagnostic and Statistical Manual, published by the American Psychiatric Association.
31. International Classification of Diseases, published by the World Health Organization.
32. See also Loose (this volume).
33. Elsewhere, in the context of a discussion on psychosis, he elaborates upon this point further:

> In the Lacanian view, childhood and adult psychoses are related: not in the sense of a temporal continuity, but structurally—they are identical from the viewpoint of their structure. In making of psychosis a "developmental" disorder, what the psychiatric orientation represented by the DSM ... does is, in the first place, consider the psychotic phenomenon as a deficit ("disorder"), rather than a production; and secondly, defines the deficits of the patient in terms of developmental norms external to the structure of the subject as such: the diagnosis is based on the subject's deviation from norms which combine medical and educational criteria, with adaptation to conventional social demands as a key point of reference. This is a questionable criterion for clinical phenomenology, since the emphasis is placed on what is absent and not on what is phenomenologically observable, which is the result of a production. For psychoanalysis the psychotic phenomenon is a production, a view taken already by Freud from the beginning of psychoanalysis and illustrated so well by his analysis of President Schreber's *Memoirs*. A clinic of production (as opposed to a clinic of the deficit) is an indispensable conceptual component of psychoanalytic treatment. A clinic of the deficit emphasizes the presence of a malfunction or disorder, and is less interested in the order present in every psychopathological structure. [Rodriguez, 1999:189]

34. On this point see Glynos (1999).

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CHAPTER TWO

Psychoanalysis operates upon the subject of science: Lacan between science and ethics

Jason Glynos[1]

Unlike modern scientific theories which are meant to shed light on nature and not on their practices as such (leaving this task to historians and philosophers of science), psychoanalytic theory is meant to give just such an account of its own practice. And yet, as a praxis, psychoanalysis maintains that it cannot be reduced to theory.

How then are we to make sense of Lacan's appeals to mathematical formalization as a theoretical ideal for psychoanalysis? It is an aspiration that has created not inconsiderable confusion, leading many to assume that Lacan feels that psychoanalysis *is* a (mathematical) science. The picture, however, is a lot more complex, not to say paradoxical. For, on the one hand, Lacan argues that psychoanalysis can be made scientific while, on the other hand, he clearly resists subsuming it under science.

So instead of asking the standard question "Is psychoanalysis a science?" this chapter addresses the broader question "What was Lacan's view on the relation between psychoanalysis and modern science?"[2] In pursuit of this objective, I conduct a double inquiry, examining his views both on the scientificity of psychoanalysis and what is tempting to call the "psychoanalysis of science."

In approaching the first leg of this inquiry I begin by showing that Lacan regarded the birth of modern science as psychoanalysis' necessary precondition. Of central importance here is Alexandre Koyré's work on the philosophy of science, especially his account of the scientific revolution—an account Koyré appropriated and developed from the work of Bachelard. References to Freud's method of investigation, (Cartesian) subjectivity, and the (Newtonian) mathematization of the natural world, are also of crucial import in grasping the meaning Lacan ascribes to the scientificity of psychoanalysis. Certainly, there were aspects of modern science (in terms of its systematic approach to its object of study and its inclination toward mathematical formalization) that he felt psychoanalysis could legitimately aspire to. Yet he was also keen to demonstrate why psychoanalysis is not only *not* a science but that it also does not aspire to be a (mathematical) science.

It is this latter aspect of Lacan's thought that opens the way to the second leg of my inquiry. More specifically, the modern scientific enterprise, for Lacan, is characterized by its tendency to exclude or "suture" the subject, a subject which, as we will see, he conceives as split between truth and knowledge, and as intimately linked to questions of ethics. It is this feature ("suturing the subject") which emerges out of his psychoanalytic experience as a criterion of demarcation, capable of distinguishing science from non-science in a novel way. In this view, instead of suturing the subject, psychoanalysis brings the modern subject of science within its field and operates on it.

For Lacan, psychoanalysis occupies a peculiar place, wedged as it is between the rock of mathematical science and the hard place of ethics. In this chapter, therefore, I argue that while it is true that Lacan places considerable faith in the power of language, structure, and mathematical formalization in coming to grips with our knowledge of unconscious processes, this faith is tempered by the central importance ascribed to ethics, conceived as a function of the subject's truth in desire—a truth which modern science forecloses.

Modern science as psychoanalysis' precondition

It is true that Freud frequently appealed to modern science as an ideal to which psychoanalysis ought to aspire. The science which often gave body to this ideal for Freud was physics' subdiscipline of thermodynamics. This apparently contrasts with Lacan's explicit rejection of a (scientific) ideal for psychoanalysis. Nevertheless, there is evidence to suggest that Freud's scientism was also part of a necessary strategic manoeuver to bolster psychoanalysis' credibility given the context in which he was operating. According to Jean-Claude Milner, "Freud, in order to clear the way for psychoanalysis in a conjunction dominated by philosophical idealism, had to support himself on the scientism of the scientific ideal; the price to pay was nothing other than the scientism of the ideal science." In a somewhat similar fashion, however, "Lacan, in order to clear the way for psychoanalysis in a conjunction where the psychoanalytical institutions had let themselves be dominated by the scientism of the ideal science, had to relativize and nominalize; the price to pay was the discourse of periodicity." (Milner, 1991:108).

With this reference to the "discourse of periodicity" we are in a position to examine Lacan's theory of science in a little more detail. For the notion of periodicity indexes perhaps the most important source in the determination of Lacan's perspective on science: Alexandre Koyré.[3] Koyré, like Kojève, held the view that history was punctuated by major cuts. But his views are, according to Lacan, special cases of Kojève's theses (Milner, 1991:28), tailored to give an account of the scientific revolution, the inception of modern science proper. Milner summarizes Koyré's perspective in the form of three theses:

1. Modern science is entirely distinct from the *episteme* of Antiquity.
2. Modern science is defined by the combination of two features: (a) it is mathematized; (b) it is empirical.
3. Modern science holds that there is no boundary limiting its material domain. It supposes two things: (a) there exists nothing material that modern science cannot treat as one of its objects (in other words, the set of existent material objects, usually called a universe, is in principle coextensive with the set of objects of modern science); (b) both sets are mathematically infinite (hence the notion of the modern infinite universe as opposed to the closed world of Antiquity). [Milner, 1991:29][4]

In aligning himself with Koyré's periodization of history, Lacan also rejects Duhem's gradualist thesis (Lacan, 1977b:8) according to

which the overthrow of Aristotelianism began in the 13th century, only gradually culminating in the so-called scientific revolution of the 17th century. Since Koyré's popularization of the major cut approach, though, further historiographic research has occasioned a more sophisticated revitalization of the gradualist thesis. And though refined accounts of pre-17th and -18th century thought continue to emerge to this day,[5] Rupert Hall felt compelled in 1970 to defend what the title of his article declared to be "the Historical Singularity of the Scientific Revolution in the Seventeenth Century" (Hall, 1970).

"If medieval studies have," Hall remarks, "left the concept of the unique scientific revolution in the 17th century relatively unscathed, though rendering its occurrence less abrupt, another kind of historiography would destroy its historical character by assimilating it into a succession of such events" (Hall, 1970:209).[6] The gradualist objection is particularly poignant given the supreme significance attributed by Koyré (and Lacan) to mathematical physics in its role as *the* index of the scientific revolution. Yet to regard mathematical science as the paradigm of modern science is not the same as reducing the former to the latter. More recently, Peter Dear notes that a gradualist account of the changing conditions up to and beyond the 17th century is not incompatible with a discontinuous interpretation of the scientific revolution (Dear, 1995:12,15). One can, for instance, regard such a gradualist account as the description of a kind of Hegelian weaving of the Spirit whose (discontinuous) significance can only be apprehended retrospectively (the owl of Minerva spreads its wings at dusk). In this view, mathematical science simply marks—in a particularly spectacular fashion—a discontinuous shift in perspective made possible only through a gradual diffusion and confluence of many currents of thought, and entailing a shift in the subject's stance toward nature and knowledge.

This more generous rendition of Koyré's position is affirmed by means of the theorem Milner derives from the above-listed theses, namely, that "a particular expression, a particular thought are modern only in-so-far as they belong to a system of thought in which a mathematized empirical science is possible" (Milner, 1991:29). Privileging the general *conditions of possibility* for the emergence of mathematical physics over mathematical physics in

itself as constitutive of modern science is crucial. For, as Hall points out, "to insist excessively on the role of mathematics ... may be to court the objection that the drama was partial ... [I]f it concerned only the mathematical sciences, it could hardly have dominated the intellectual life of the age" (Hall, 1970:213).

In this view, it is possible to retain mathematized empirics as paradigmatic of the scientific revolution, so long as one insists that it is paradigmatic of a new *attitude* that was to spread across Europe, thereby laying the foundations for the Enlightenment. "[I]t furnished an alternative and *real* conception of Nature. It was a conception promising man limitless knowledge and power within the cosmos, one which unified the cosmos that Aristotle had divided, and one that conduced both to enquiry into the properties of things and to mathematicism" (Hall, 1970:220). It is this novel stance toward nature which, in this view, accounts for the singularity of the scientific revolution. Thus, Hall can admit "that the grand organizing principles of modern biology, like those of modern chemistry, appeared only later. But this (only relative) insuccess is less important than the occurrence among some (not all) of the biologists, chemists and physiologists of *attitudes* to their work which were identical with those of their colleagues in physics" (Hall, 1970:214).

Perhaps this is one way to understand Lacan's claim that Freudian psychoanalysis was made possible by the emergence of modern science in the 17th century (Lacan, 1977b:47, 1989:6):[7] the birth of modern science made possible Freud's own attitude to his field of study. In his case, of course, the aspect of "nature" he sought to grasp in a principled and logical fashion was the unconscious. But his faith that it was amenable to systematic study is nothing but an expression of the modern scientific faith that any object will yield its secret with sufficient perseverance. As Lacan puts it, "to subject an experience to a scientific examination always implies that the experience has of itself a scientific subsistance" (Lacan, 1977b:9).

Lacan and the Cartesian subject of modern science

> We must come to the definite conclusion that this proposition: *I am, I exist*, is necessarily true each time that I pronounce it, or that I mentally conceive it. [Descartes, 1972:150]

As we have just seen, while mathematical science occupied a special place in Lacan's assessment of the birth of modern science, he nevertheless regarded it as paradigmatic of a more widespread attitude or subjective stance. If Newton, as a historical figure, represented for Lacan the first, the figure who epitomized the second was none other than Descartes. Indeed, in referring more specifically to Freud's approach to the study of the unconscious he explicitly describes his method as Cartesian (Lacan, 1977b:35), even if the former ends up subverting the latter. So, since Lacan modelled the subject of modern science on the Cartesian cogito, perhaps an examination of his views on Descartes will furnish us with a suitable entry point in the determination of his conception of the relation between science and psychoanalysis.

Crucial in understanding the significance Lacan attributes to the modern subject is Descartes' *desire*. But if this desire will *lead* to knowledge, it is nevertheless *not* a desire *for* knowledge. Instead, it is a desire for *certainty through the exercise of his own reason*. In Seminar XI, Lacan asks:

> What is Descartes looking for? He is looking for certainty. *I have*, he says, *an extreme desire to learn to distinguish the true from the false*—note the word desire—*in order to see clearly*—in what?—*in my actions, and to walk with assurance in this life*. [Lacan, 1977b:222]

As Lacan also points out, however, "[t]his desire for certainty led Descartes only to doubt" (Lacan, 1977b:224). Doubt thus appears as a consequence, not a starting point.[8] For Descartes, doubt appears as a temporary consequence of his desire for certainty. And, as is well known, his method leads him—not without risking madness—to doubt every single thought he cared to consider, all except thinking as such. Ultimately, it is precisely what sustains the thinking process itself—the subject emptied of all thought content—that Lacan considers to be equivalent to the substanceless subject of the unconscious, a subject that exists only in-so-far as it fades. In Lacan's opinion, Descartes clearly formulates, for the first time in history, and in very precise terms, how the process of systematic doubting generates a purely punctual and fleeting subjective pulsation.

Of course, Descartes goes on to eliminate a potentially all-engulfing doubt by collapsing the thinking process itself into the

certainty of his existence. The only thing we can be certain of, Descartes concludes, is the following: "I think, therefore I am". Descartes, Lacan claims, illegitimately collapses the subject of enunciation with the subject of the enunciated.[9] For this "I think" "cannot be detached from the fact that he can formulate it only by *saying* it to us ...—a fact that he forgets" (Lacan, 1977b:36) What Descartes forgets, in other words, is the fact that the certainty appears only so long as he repeats it. "Certainty, for Descartes, is not a moment that one may regard as acquired, once it has been crossed. Each time and by each person it has to be repeated. It is an ascesis. It is a point of orientation ..." (Lacan, 1977b:224). As Bruce Fink puts it, "[t]he Cartesian subject concludes that he is every time he says to himself 'I am thinking'. He must repeat to himself the words 'I am thinking' in order to be able to convince himself that he exists. And as soon as he stops repeating those words, his conviction inevitably evaporates" (Fink, 1995a:42–3). Thus, it is only "when the Cartesian subject says to himself, 'I am thinking', [that] being and thinking coincide momentarily" (Fink, 1995a:43). This is why Lacan will offer alternative ("corrected") versions of Descartes' "cogito ergo sum": "I think: 'therefore I am'" (Lacan, 1989:13), "Either I am not thinking or I am not" (cited in Fink, 1995a:45), etc.

What is important to salvage from our account of Descartes thus far is the attitude and method he gives expression to, without which modern science and psychoanalysis would not have been possible. What most characterizes Descartes, in this view, is his desire for certainty and his method of doubt, the fact that Descartes' desire for certainty generates an evanescent subject of thinking emptied of all content, what Lacan refers to as the subject of desire.

But while Lacan is keen to align Freud with Descartes on one level, he is also keen to show, on another level, not simply how Freud differs from Descartes, but also how the former subverts the latter. In order to appreciate the significance of this Freudian departure, it is worth recalling how Descartes manages to expand the field of certainty beyond the little knowledge of his mere existence so as to include not only other knowledge about himself but also knowledge of Nature in general. How does he accomplish this? As is well known, Descartes' solution involves invoking God, a non-deceiving agency who guarantees the truth of our knowledge (Lacan, 1989:14). This, then, frees up the subject to exercise his or her

individual reason in the pursuit of knowledge, while God *qua* Guarantor is posited as the Subject-Supposed-to-Know the Truth about Nature.

With this move Descartes indexes the historic split between knowledge and truth that is, for Lacan, one of the defining characteristics of modern subjectivity, of the modern subject of science. Our living in a secular world obscures the fact that the function of Truth-Guarantor is not the sole prerogative of God. It may very well be that faith in God is not as widespread as it once was. But God has many names. From the perspective of the contemporary layperson, this faith is typically placed in Science itself—a faith spurred by scientists' confidence in dealing with difficult and complex esoteric matters, and further bolstered by the many technological products that we have come to depend on. From the perspective of social and natural scientists, this faith is implicitly articulated through a reference to the scientific community. Explicitly, their faith is invariably placed in the historically-constituted social environment, or in the physical universe itself (whether in terms of empiricism's sensory perceptions, forces of nature, neurons, or genes; or in terms of rationalism's logic or mathematics). What remains constant, therefore, is not only the modern subject's desire for certainty and the belief that such certainty can be found in knowledge, but that this knowledge is accessible on the condition that its truth is guaranteed by something/someone outside it. As to the nature and significance of this truth, it is sufficient that we have faith in it—a faith that is implicitly assumed to be irrational, which is why it is often left for art and philosophy to deal with. What characterizes modern subjectivity, the subject of modern science, then, is the simultaneous pursuit of knowledge and disavowal of its truth. *This* is the (typical) subject that enters analysis. The subject (the analysand) who enters analysis demanding certainty, desperately seeks knowledge; but what psychoanalytic experience repeatedly demonstrates is that this subject is simultaneously desperate not to know the truth about his or her desire. Perhaps we can now understand why Lacan claims that "the subject upon which we operate in psychoanalysis can only be the subject of science" (Lacan, 1989:7), thereby offering us another perspective on why psychoanalysis is only possible after the birth of modern science.

It is time to specify more precisely how Freud departs from Descartes' path. As I have already noted, Freud shares with Descartes both his desire for certainty and his method of doubt. But where, in the face of an all-consuming doubt, Descartes appeals to God to support his certainty; where Descartes appeals to something *outside* himself to guarantee the truth of the knowledge he acquires by exercising his conscious individual reason; Freud, on the contrary, transforms doubt itself into the support for his certainty (Lacan, 1977b:35). It is as if Freud rescues Descartes from a God-guaranteed certainty, returning instead to his certainty in doubt. Instead of appearing as a *consequence* of a desire for certainty, doubt serves to *found* certainty (cf. Žižek, 1993:69). Doubt serves as the support for the certainty of the existence of an unconscious—an "elsewhere" which, however foreign it may appear to the conscious subject of reason, is something for which the subject is responsible. As Lacan puts it,

> Freud, when he doubts—for they are *his* dreams, and it is he who, at the outset doubts—is assured that a thought is there, which is unconscious, which means that it reveals itself as absent ...
>
> It is here that the dissymmetry between Freud and Descartes is revealed. It is not in the initial method of certainty grounded on the subject. It stems from the fact that the subject is "at home" in this field of the unconscious. It is because Freud declares the certainty of the unconscious that the progress by which he changed the world for us was made. [Lacan, 1977b:36]

Thus, as the paradigmatic model of the modern subject, Descartes wants to know nothing about his truth (the subject's "Why? Who am I?"), simultaneously reducing it to a knowledge (the scientific object's "How? How does it work?") and projecting it, by means of symbolic faith, onto another Subject-Supposed-to-Know. In complete contrast to this, Freud wishes to locate this truth in the unconscious, another place to which, nevertheless, the subject is tethered, making it responsible for the *jouissance* (enjoyment) it procures in its formations and the desire it sustains.[10] Thus, we assume that today the subject who enters analysis is the modern subject of science, the one who is capable of acquiring knowledge through the exercise of his individual reason only in-so-far as his faith is sustained by a Subject-Supposed-to-Know, a modern subject

who does not want to have anything to do with the truth of his or her desire. In this way, we could say that what Freud effected is an "extension" of reason beyond the conscious realm. The unconscious, according to Freud, is also accessible through the exercise of reason. This gives a rationale to the title of one of Lacan's *Écrits*, "The agency of the letter in the unconscious or reason since Freud" (Lacan, 1977a).

Of course, the subject who enters analysis becomes an analysand only when the analyst embodies the Subject-Supposed-to-Know the truth about his or her desire. When s/he enters analysis, the patient exhibits his or her faith by supposing that the symptom s/he brings harbours a certain meaning, a knowledge, which the analyst will be able to decipher. Similarly, the analysand's faith is demonstrated when s/he submits to free association, thereby presupposing the analyst's function as a guarantee that all the supposed nonsense that s/he will utter will finally mean something. This is why the whole psychoanalytic operation is aimed at deflating the analyst's own status as Subject-Supposed-to-Know by making the patient him- or herself do the work, only intervening so as to facilitate the subject's confrontation with his or her truth, namely, that there is no universal symbolic Guarantee (... instead there is only the certainty of the subject's singular *jouissance* and the desire it sustains ...).

Science forecloses the Name-of-the-Father, or, science sutures the subject

In the above account we have seen how Descartes fully assumed his desire for certainty, feeling confident that, with the invocation of the method of hyperbolic doubt, he could establish such a foundation. According to Lacan, however, Descartes only goes so far as to achieve the pulsating certainty of an empty subjectivity guaranteed by the repetition of his "I am thinking".[11] Lacan aligns Freud with this side of Descartes. In other words, Freud does not follow him in-so-far as Descartes abdicates responsibility for the truth and certainty of knowledge, placing it instead in the hands of God, a guarantee supported by symbolic faith (Lacan, 1989:20).[12]

Now, one could perhaps say that, with Descartes' attempt to guarantee the truth of knowledge with an appeal to God,[13] the history of modern science can be characterized as a progressive attempt to *reduce* truth to knowledge, a reduction which, Lacan claims, modern science accomplishes only at the price of *suturing* the subject.

We already have the elements with which to understand this claim. We have seen how Descartes wished to get rid of his subjectivity by transferring responsibility over to an "external" God. God, in this view, is meant to act as truth-guarantor of the knowledge we gain by exercising our individual reason, something that requires the subject's *faith* in God. Thus, Descartes implicitly acknowledges a link between truth and knowledge mediated by the subject, even though this link is effectively denied. With the progress of modern science, however, what we see is an attempt to do away with all traces of God *qua symbolic* guarantee, replacing him instead with a *real* guarantee—one that is rooted in either empirical facts, or a rationalist logico-mathematics.[14] It is no coincidence that the philosophical schools of empiricism and rationalism should have emerged as our symbolic faith in God weakened (on account of a growing awareness of His fictional status). In this view, there is an attempt not simply to deny the role of God and the subject but to *foreclose* God *qua* symbolic guarantee of truth, thereby erasing or suturing the subject—a subject conceived as constitutively divided between knowledge and truth (Lacan, 1989:5).[15]

This marshaling of forces against God (by practitioners, and philosophers and historians of science alike), however, simply amounted to a series of substitutions which left the function of God *qua* guarantee intact in everything but name. In this view, if we call God the symbolic Other *qua* Name-of-the-Father, there is an attempt to substitute a symbolic guarantee (the symbolic Other) with a real guarantee (a real Other). We find, for example, the attempt to establish a foundation for the certainty of knowledge in experiments designed to verify hypotheses generated by a process of generalization from a wide range of sensory data. Here, sensory perception constitutes the bedrock of certainty. But criticisms of such an inductive approach to science led to more sophisticated attempts to ground science in the falsification of hypotheses. Experiment mediated by logic constituted the bedrock of certainty here.[16] What contemporary philosophers and historians of science teach us,

however, is that such foundationalist attempts to ground and explain the practice of science always fail. Indeed, it is by pointing to what all such failed attempts have in common, that allows Lacan to propose a novel demarcation criterion for what constitutes scientific practice: the tendency to foreclose the symbolic Other by reducing truth to knowledge; and—since such a foreclosure is impossible so long as subjects are engaged in its practice—the correlative attempt to suture the subject. It is sufficient to leaf through any modern textbook on science to witness not only the predominant references to facts (sensory data) and mathematical formulae, but also the absence of any reference to subjectivity: "Let X be ...", "Assume that ...", etc.

But what about the practice of mathematicians? Of all the sciences, surely the science of mathematics constitutes the one in which we can hope for apodictic certainty without reference to any external guarantee, nor to the subjectivity of its practitioners? The classic versions of such foundationalist aspirations within mathematics go by the names of formalism, intuitionism, logicism, and Platonism—names which, ironically, have now come to be associated with the crisis in the philosophy of mathematics.[17] Today, we are certainly familiar with the widespread belief that a new era of postfoundationalism has arrived on the scene. This is usually expressed within the context of disciplines associated with the humanities, social sciences, and even in the physical sciences. But we find the same story being played out in mathematics. Anyone familiar with the literature in the philosophy and history of mathematics will find that ever since Russell's critique of Frege, and the crushing effect Gödel's incompleteness theorems had on Hilbert's programme, the foundation of mathematics is itself in crisis.

Even so, more than any other science, mathematical practice demonstrates the concerted effort to rid itself of any external guarantee of its truth, attempting to prop itself up with its own bootstraps, so to speak. This, as we have seen, involves the equally impossible task of suturing the subject, even with such an inert thing as a number:

> To show you that the presence of the Other is already implied in number, I need only point out to you that the series of numbers can only be figured by introducing the zero, in a more or less masked way. Now, the zero is the presence of the subject who, at this level, totalizes. We cannot extract it from the dialectic of the subject and Other. The apparent neutrality of this field conceals the presence of desire as such. [Lacan, 1977b:226]

Indeed, according to Lacan, this failed attempt to foreclose the symbolic Other and suture the subject is what mathematics effectively acknowledges in Gödel's theorems of 1931:

> [Modern logic] is indisputably the strictly determined consequence of an attempt to suture the subject of science, and Gödel's last theorem shows that this attempt fails, meaning that the subject in question remains the correlate of science, but an antinomial correlate since science turns out to be defined by the deadlocked endeavor to suture the subject. [Lacan, 1989:10][18]

Indirect support for Lacan's proposition that the practice of modern science and the science of mathematics involve the suturing of the divided subject (divided between knowledge and truth), is to be found in contemporary trends in the philosophy and history of science and mathematics. What many recent studies have in common is their attempt to highlight the importance of the individual-subjective experiences of the scientists and mathematicians themselves within particular socio-historical contexts. Only in this way, it is felt, will an adequate account of scientific and mathematical practice—including its philosophy—be forthcoming.[19]

Such philosophers and historians have turned to the "actual" practice of workers in those fields, instead of relying on foundations external to the subject's activities. In this view, it is important to take note of the fact that

> [m]athematicians at work speak and write as if they perform dynamic operations and constructions. Taken literally, this language presupposes that mathematicians envision creating their objects, moving them around, and transforming them. In contrast to this dynamic picture, the traditional realist in ontology, or Platonist, holds that the subject matter of mathematics is an independent, *static* realm. In a deep metaphysical sense, this mathematical realm is eternal and immutable, and so the universe *cannot* be affected by operations, constructions, or any other human activity. [Shapiro, 1997:14]

By looking closely at the practice of mathemeticians and physicists one realizes that any history or philosophy of their respective disciplines cannot pretend to be comprehensive by linking together a series of static formulae or factual statements in a linearly progressive way. This is also true in relation to the standard (mistaken) idea that axioms *ground* branches of mathematics in an *a priori* fashion. In this view, axioms are seen as either obvious or actually *preceding* the work in the field that generates related theorems. In contrast to this, however, Shapiro points out that while

> Gödel [1964] is correct [to say] that the axioms of set theory "force themselves on us as true", ... the axioms [actually] do not force themselves on a first (or a second, or third) reading. For any branch of mathematics, the psychological necessity of the axioms and inferences, and the feeling that the axioms are natural and inevitable, comes only at the *end* of a process of training in which the student acquires considerable practice working within the given system, under the guidance of teachers. [Shapiro, 1997:212]

As has been pointed out by Lakatos, the axiomatization of any branch of mathematics is always preceded by a dynamic preformal stage (Lakatos, 1979). Such a period is "characterised as one of experimenting with the possibilities of various moves within ... unarticulated vague structures ..."—an experimentation that is prompted by wondering, for example, what might happen "if the square root operation is extended to negative numbers, or how multiplication might work on infinite cardinal numbers." The point is that such activities are crucial to the understanding of mathematical practice. "[I]t does not become determinate until later what is to count as acceptable construction and, thus, as correct inference" (Shapiro, 1997:213).

In a similar way, though clearly avoiding any kind of psychological reductionism, Lacan is keen to highlight the modern scientist's activity, his subjective drama, in making a novel contribution to scientific knowledge—a subjective drama which is not infrequently accompanied by suffering, often resulting in admissions to mental institutions. Lacan's point is that the scientist's attitude to his work, his attempt, in the typical case, to exert maximum effort in suturing his subjectivity, bears a direct relation to that subject's mode of being. According to Lacan, what is

foreclosed from the symbolic (the Name-of-the-Father) returns in the real of hallucinations.[20]

A Lacanian reading, then, suggests that from the time of Descartes the history of modern science is one of a growing momentum in the direction of foreclosing the symbolic guarantee in favour of adopting a real guarantee, one that is grounded in either the real of the senses, the brain, and genes, or in the real of logico-mathematical structures. Lacan's response to this (impossible) task is his aphorism, "There is no Other of the Other". The point is that behind the symbolic guarantee (eg., God, the symbolic Other) there is no (real) Other (Nature or some sort of Gnostically-inspired malevolent manipulator). Instead what the symbolic guarantee conceals is the fact that it conceals a lack in the Other, what Lacan calls the "abyss of castration" (Lacan, 1977b:77). And so long as scientific practice attempts to seek an Other of the Other, it will only end up desperately trying to close the gap with grander and ever-more elaborate theories. In this view, scientific knowledge will suffer a proliferating growth with correspondingly unending displacements from one object of investigation to another. This is why, for Lacan, modern scientific practice resembles paranoia. For paranoia is characterized by the foreclosure of the Name-of-the-Father and the production of highly elaborate, though rigorously logical, delusional systems.

But perhaps we are also in a position to understand Lacan's claim that with the development of methods and theories that are suited to the pursuit of its own object (the *objet petit a*), psychoanalysis "may even enlighten us as to what we should understand by science" (Lacan, 1977b:7). To begin with, we note that it is clear that the relation between psychoanalysis and modern science cannot be conceived as a function of their respective objects. It cannot, for example, be said that psychoanalysis can be *reduced* to science by showing that the former's object can be cast in terms of the latter's objects, if only because the objects of modern science constantly change. As Lacan puts it, "[w]hat specifies a science is having an object." The problem is that "this object changes ... as a science develops. We cannot say that the object of modern physics is the same now as at its birth ... [or that] the object of modern chemistry [is] the same as at the moment of its birth, which I would date from the time of Lavoisier ..." (Lacan, 1977b:8).

But if the relation of psychoanalysis to science cannot be articulated in terms of their respective objects, it nevertheless can be so articulated in terms of the subject. Thus, while modern science can be characterized by its attempt to exclude the subject through an always-failed process of suturing, psychoanalysis brings it into its fold, making it precisely what it operates on. Modern science, according to Lacan, actively forgets the subjective drama of its practitioners (Lacan, 1989:17–8); it forgets the very apparatus with which it functions; modern science effectively "enable[s] [the scientist] to forget his subjectivity" (Lacan, 1977a:70). And it is by pointing to the significance of this active forgetting that psychoanalysis "may enlighten us as to what we should understand by science." In fact, even if Freud held modern science (usually in the guise of the physics of thermodynamics) as an ideal that psychoanalysis ought to emulate, this must be understood to function only in certain respects, especially as the ideal of systematicity and logical rigour with which to structure its investigations. Freud—at least the later Freud—was far from aspiring to any sort of reduction of psychoanalysis to modern science. As he puts it,

> [e]very science is based on observations and experiences arrived at through the medium of our psychical apparatus. But since *our science has as its subject that apparatus itself*, the analogy ends here. [Freud, 1940a:159; italics added]

Modern science, language, and mathematical structure

Given this account of modern science and mathematics by Lacan, how should we understand the claim he made in 1973, on behalf of the analytic community, that "[m]athematical formalization is our goal, our ideal?" (Lacan, 1998:119). It is an aspiration he gave expression to as early as 1953: "Psychoanalysis will provide scientific bases for its theory or for its technique only by formalizing in an adequate fashion the essential dimensions of its experience . . ." (Lacan, 1977a:77). In a first approach, we can understand this statement as declaring his opposition to any kind of empiricism, any attempt to "ground" psychoanalysis in empirical facts, whether confirmatory or falsificatory. A second reason is, as Lacan tells us, "to ensure its own rigour" (Lacan, 1977a:75). And without claiming

to be comprehensive, a further reason for aspiring to formalization concerns the issue of transmission; how, in other words, to transmit psychoanalytic knowledge without having to qualify such knowledge with a proper name, and without regard to its meaning: only mathematical formalization "is matheme, in other words, it alone is capable of being integrally transmitted" (Lacan, 1998:119). "We haven't the slightest idea what they mean, but they are transmitted" (Lacan, 1998:110). And here one is reminded of Feynman's famous quip: "I think I can safely say that nobody understands quantum mechanics" (as cited in Silver, 1998:357). Or of Heisenberg's comment that "exact science starts from the assumption that in the end it will always be possible to understand nature, even in every new field of experience, but that we may make no *a priori* assumption as to the meaning of "understand" (as cited in Barrow, 1998:185).

Where lies the power of mathematics in achieving its rigour and integral transmission? The answer to this is clear: structure. For structure aims not at describing the content of things in themselves as an empiricist approach is prone to suggest. Structure highlights what remains constant in the flux of our senses, namely the *relations* between sensory perceptions. Descartes' desire for certainty, we recall, led him to doubt, thereby emptying, all thought content. This is what makes possible the emergence of little algebraic letters purified of content, empty of meaning, leaving only the relations between them intact.[21] This is the significance mathematical formalization has for Lacan. Given the ever-changing content of unconscious formations, including symptoms, such formalization (of the laws of displacement and condensation, for example) offers up the possibility of a much more stable theoretical reference—a reference to an underlying structure, along with its promise of rigour and transmissibility. This is the significance attributed to mathematics by modern physical science too:

> Einstein went so far as to declare that "the creative principle [of science] resides in mathematics." If mathematics cannot tell us any facts about the world, and it surely cannot, then why is it so invaluable for science? Poincare's insight is a first step toward an answer: the greatest objective value of science lies in the discovery, not of things or facts, but of relations between them. "Sensations are intransmissible . . . But it is not the same with *relations* between these sensations . . . Science . . . is a system of relations . . . it is in the

> relations alone that objectivity must be sought." Mathematics is the most appropriate vehicle for the *description of relations and for their logical exploitation*. [Newton, 1997:135]

According to Freeman Dyson, "a physicist builds theories with mathematical materials, because the *mathematics enables him to imagine more than he can clearly think*" (as cited in Newton, 1997:140). This might suggest, then, that mathematics is inextricably linked to thought, and thus to language. It suggests that mathematics allows us to explore the very limits of thought and language in a rigorous and systematic way, precisely the use which Lacan wishes to put mathematics. Formalization, in other words, is a way of condensing a teaching and of formulating, in a more precise way, the problems that require resolution or, alternatively, the impossibilities in terms of which it offers to explain physical events. Indeed, Lacan's formulation of the real as impossible derives from just such a perspective, one inspired by Koyré in the latter's discussion of Newton (Koyré, 1965).

Of course, his definition of the real *qua* impossible will shift later to denote formalization's impasses. But the idea of explaining phenomena in terms of the impossible remains. The curious fact, here, is that modern physical science proceeds to explain its phenomena in terms of something which is impossible to apprehend intuitively (as in the case of Newtonian infinite space) or to realize in practice. For example, we can explain planetary movement through a reference to ellipses, even though, in practice, no planet ever moves in a perfect ellipse. And it is worth pointing out that such references to impossibilities as the basis of scientific explanation do not function as regulative ideals to which physical phenomena can only approach asymptotically. Nor is this a view of science that is marginal or dated. John Barrow, for example, has recently affirmed how "science exists only because some things are impossible" (Barrow, 1998:190). In his book, which features the very Lacanian title of *Impossibility: The Limits of Science and the Science of Limits*, while acknowledging the contingent value of the speed of light, he points out how, for example, it is precisely because of the "impossibility of transferring information faster than the speed of light . . . [that it is] possible to discriminate and organize any form of information" (Barrow, 1998:25).

But the basic idea, fundamental to Lacan's perspective, is that both our observations and our thoughts are structured by language. No doubt, the phenomena that Lacan wishes to investigate are not our conscious thoughts and observations, but rather the (unconscious) structure that underlies and subverts our conscious machinations as manifested in unconscious formations. Nevertheless, the link to language remains. Indeed, this link between mathematics and linguistic structure is something that is being affirmed with greater assurance by contemporary philosophers of science and mathematics. Stewart Shapiro, for instance, describes the perspective of his book on the philosophy of mathematics as suggesting that "there is no sharp boundary between the mathematical and the physical. In both cases, the way the universe is divided into structures and objects—of all kinds—depends on our linguistic resources" (Shapiro, 1997:261).[22] Roger Newton makes a similar point when he suggests that

> [w]hen we speak of the truth of something, the first point to note is that this something has to be a statement or an assertion; contrary to frequent usage, it makes no sense to speak of the truth of a fact or of a property . . . To insist on this is not pedantry or hairsplitting. Formulating an assertion is attempting to communicate and therefore requires transmissible concepts and language: truth thus cannot be separated from human concepts and our linguistic apparatus. [Newton, 1997:203]

So far, then, we could say that Lacan aligns himself with theoretical physics and mathematics as the science of structures. But structures are typically construed as static, thereby neglecting the dynamic element of the human activity that supports those structures. Think, for instance, of Newton's gravitational law. All we are presented with are algebraic letters and their relations, leaving the question of "causality" aside. The question which so bothered Leibniz in his critique of Newton was what "caused" the attraction between bodies. For such "uncaused" attraction seemed to betray traces of the occult. And yet Newton's refusal to feign hypotheses ("*non fingo hypothesis*") implied that causal issues were only of secondary concern.[23] It was sufficient that his formulae worked (cf. Shapin, 1996:62–4).

What separates Lacan from the full-scale adoption of such a

mathematical–structural approach with respect to psychoanalysis, however, is the attempt by modern science and mathematical practice to *exclude* the dimension of the subject—where the subject, it is worth emphasizing, does *not* refer to some sort of whimsically subjective opinion. Thus, the Lacanian subject offers us an insightful way to approach the practice of modern science and mathematics—an approach which, as we have seen, shares certain affinities with ones propounded in one way or another by contemporary philosophers and historians of mathematics and science.

Lacanian psychoanalysis: between science and ethics

From the above account, it is clear that mathematical formalization is attractive to Lacan because its reliance on structure brings with it the hope of rigour and integral transmission. In addition, mathematical formalization severs what might have appeared to be a necessary link to quantification. For mathematics is as rigorous in the domain of qualities as it is in quantities. General topology, for example, is a mathematical domain that focuses on notions of proximity, boundaries, and the like. But while Lacan is quick to point out that it is legitimate to strive for mathematization, psychoanalysis' relation to such formalization is not to be such as to reduce its entire field to it. What distinguishes his efforts from attempts to turn psychoanalysis into a mathematical science is, as we have seen, the tendency of modern scientific and mathematical practice to exclude the subject. A psychoanalytic approach puts into question the attempt to erase the dynamic character of mathematical constructions by neglecting the subjective drama of the theorist via appeals to neutrality and "hard" objectivity.[24]

In the context of a psychoanalytic praxis, therefore, Lacan insists that "[t]he analytic thing [trick] will not be mathematical. That is why the discourse of analysis differs from scientific discourse" (Lacan, 1998:117). The aim is thus not to make mathematics foundational. Rather, mathematics is meant, through its rigour, to highlight more precisely its impasses, circumscribing the space in which the subject's temporality must appear. For Lacan, what "good" mathematical practice reveals is the recognition of its limits. The task is to circumscribe and foreground that which is not

formalizable (the real *jouissance* of the subject and the desire it sustains) by pushing formalization up to its very limits. Hence his constant references to logical and mathematical paradoxes, and his claim that "[t]he real can only be inscribed on the basis of an impasse of formalization" (Lacan, 1998:93).

Thus Lacan puts mathematics to a different use than in typical mathematical or modern scientific practice. Instead of invoking it to ground its practice in the certainty of a formalized structure, he uses it to delimit the field of universal knowledge in order for the subject to experience its own singular truth. The relation between truth and knowledge in psychoanalysis is not conceived in terms of externality, nor in terms of reduction. If anything their relation is better characterized in terms of the mobius strip (Lacan, 1989:5). The subject's truth (his or her psycho-sexual desire) is related to the symbolic structure in a dynamic temporal fashion.[25] And if the psychoanalytic intervention aims at the subject's (i.e., analysand's) truth, this means that psychoanalysis, for Lacan, does not hold a theoretical conception of its knowledge, but rather a *practical* conception of its knowledge. From this point of view, the praxis of psychoanalysis is *ethical*. It seeks to intervene in such a way as to move the analysand to act ethically in relation to his or her desire. In this sense, mathematical construction is structurally homologous to what Lacan calls the construction of the fundamental fantasy during the concluding part of analysis.[26]

From a psychoanalytic perspective, then, the scientist or mathematician occupies a structurally equivalent position to the analysand. Just as the scientist faces a symbolically-structured reality, the symbolic Other, so too the analysand faces the analyst as the stand-in for the analysand's Culture, again the symbolic Other. Just as the analysand supposes that the analyst knows the truth about his or her desire, so too the scientist supposes Nature to hold the key to its truth. In both cases, the subject's participation in this symbolic Other is "forgotten". Equally, however, both scientist and analysand often come up against the limits of the symbolic Other. Occasionally they catch a glimpse of the lack in the Other. It is this void that is filled with totalizing fantasies, with fantasies of the Whole, of a complete Other. In mathematics, these fantasies find expression in the foundationalisms of Platonism, formalism, logicism, and classical intuitionism. In science, these fantasies are

expressed in the foundationalisms of realism, rationalism, and empiricism. Just think of today's Theories of Everything (ToEs), Grand Unified Theories (GUTs), or the Genome Project (whose aim in the popular imaginary is to provide a comprehensive mapping of human nature). In psychoanalysis, the fantasy of wholeness one encounters, of course, is the Ideal Sexual Relation.

In the context of psychoanalytic practice, the analyst occupies the place of, alternately, the symbolic Other and the lack in the Other, in an attempt to bring to the surface the analysand's fantasies. This means that the position of the analyst is exactly that: a position, designated by Lacan as the *objet petit a*. The analytic position, therefore, has absolutely nothing to do with his or her "actual" person, his or her personality. It is sufficient to listen to the accounts given by Freud's patients of their analytic experience, particularly their views on Freud himself. What emerges are strikingly divergent portraits that cannot possibly be made compatible with each other. We see, in other words, that if the analyst is operating properly, what emerges is not a unified picture of the analyst but a series of portraits, each dramatizing a particular analysand's symbolic Other and the fantasies which cover up the Other's lack.

What this means is that the analyst, to function effectively as the *objet petit a* (the fantasmatic embodiment of the lack in the analysand's symbolic Other), his or her own desire must be pure. In this respect, Lacan likens psychoanalysis to alchemy rather than to chemistry (Lacan, 1977b:9). For alchemy demanded for its practice the purity of the practitioner's soul, something that is meant to be fulfilled, in psychoanalysis, by the training analysis. In this view, the analyst's desire must be purified. It must be purified to such an extent that his or her own symbolic Other and fantasies do not interfere—or are at least instrumentalized—in the treatment. Only in this way can the analyst properly occupy the place of the *objet petit a*, which is nothing other than the cause of the subject's desire. This is the (dynamic) cause that modern science and mathematics evacuate in their attempt to reduce everything to a (static) structure that is Whole, a cause whose proper status is that of a disruption, of the failure of the structure to include everything, what causes the law to fail.[27] If for modern scientific practice the subject has disappeared, for psychoanalytic practice, the subject is always in a dynamic state of disappearing.

Thus, psychoanalysis invokes mathematical formalization not to reduce its field to a complete structure, but rather to foreground the impossibility of a complete formalization, and in this way to use it for purposes of orienting its practice. But to what end? The aim of such an orientation is to effect a change in the subject's ethical stance toward his or her truth *qua* fantasmatic desire; a shift, moreover, which is almost always accompanied by surprise, the same surprise that Newton must have felt when he produced a formula which his symbolically structured Nature seemed to "know". In other words, psychoanalytic theory leaves a space open (literalized by the *objet petit a*) in the context of treatment to allow the singularity of the analysand to emerge as such—both as subject of desire and as object of *jouissance*. It takes it for granted that a value for this unknown cannot be deduced within the framework of psychoanalytic theory itself, nor does it try to do so. This is what its practice is meant to achieve with each analysand it encounters, one by one. In short, theory is subordinated to praxis.

But if psychoanalytic praxis distinguishes itself from the predominant mode of practice established by modern science and mathematics, this should not lead one to the false conclusion that Lacan is implying the abandonment of mathematics. After all, his concerted effort to invoke mathematical formalization in psychoanalysis suggests the opposite. But an opposite with a twist. As Bruce Fink remarks, modern science, including mathematical science,

> sutures the Lacanian subject, suturing its cause (as Truth) in the same gesture. As it excludes the psychoanalytic subject and object, Lacan's view in the 1960s is that science will have to undergo some serious changes before psychoanalysis can be included within its scope. In other words, the formalization of psychoanalysis into mathemes and rigorously defined clinical structures—so characteristic of Lacan's work at that stage—does not suffice to make psychoanalysis into a science, for science itself *is not yet capable of encompassing psychoanalysis*. Science must first come to grips with the specificity of the psychoanalytic object. At that time, then, Lacan's view is that *science is not yet equal to the task of accommodating psychoanalysis*. [Fink, 1995a:140; italics added]

If anything, this account suggests that Lacanian psychoanalysis may

furnish modern scientific practice with an insight which, if incorporated, may lead to a changed ethical relation between the scientist and his or her work.

I would like to conclude this section by suggesting that Michael Detlefsen's recent reassessment of mathematical intuitionism, and Brouwer in particular, provides the contours of such a model.[28] Detlefsen's "return to Brouwer" seeks to emphasize mathematics as an activity and an experience.[29] He proposes to "take this emphasis on the actional or practical character of mathematics seriously, and thus to investigate the possibility of treating Brouwerian epistemology as based on a practical rather than a theoretical conception of mathematical knowledge" (Detlefsen, 1990:521). In this view,

> the emphasis on experience may also be partly an attempt to express the idea that there is somehow something of greater value in a kind of knowledge that brings with it a capacity to *do* something than in a kind of knowledge which consists solely in an intellectual "acknowledgment" or "acceptance" of a proposition. Genuine knowledge—so the idea would go—enlivens and enables. It moves to action. It is more than just the doffing of one's intellectual hat to a proposition. Practical knowledge therefore penetrates to a level of our cognitive being to which theoretical knowledge or purely intellectual knowledge typically does not. [Detlefsen, 1990:522]

What is clear from our account, therefore, is how Lacan approaches the relation between psychoanalysis and science by a double inquiry aimed both at the scientificity of psychoanalysis and the "psychoanalysis of science." The first is approached through mathematical formalization; and the second through the ethics of the subject's relation to its truth *qua* lack in the symbolic Other. Thus if psychoanalysis is not reducible to mathematical science, neither is it reducible to ethics, though it maintains a relation to them both. It seems, then, that "psychoanalysis takes its place—maybe an impossible place—between science and ethics, and experience then has the double meaning, for Lacan, of experience and experiment, whereas in science those two meanings are separated. It is an experiment on the subject that gives an experience of ethics" (Regnault, 1991:44).

Conclusion

In this chapter I have tried to clarify Lacan's views on modern science and how he articulates its relation to psychoanalysis. If I have insisted on qualifying science as modern, this is in order to distinguish it from the ancient episteme that preceded it. This much Lacan owes to Koyré. Yet Lacan supplements this mutational conception of the scientific revolution with an insight derived from psychoanalytic praxis: the subject.

In this view, modern science is distinguished from non-science by virtue of the former's foreclosure of the Name-of-the-Father, the symbolic guarantee of Truth. It thereby sutures the subject by divorcing it from its truth—a subject whose proper status is that of division (between the "how" of knowledge and the "why" of truth). Thus the question "Is psychoanalysis a science?" is substituted by "Under what conditions would science be *capable* of including psychoanalysis within its scope?" It is not a question of whether psychoanalysis conforms to a predetermined scientific ideal, but what theory and practice are appropriate given the specific type of phenomena it wishes to study and the epistemological problems these engender.

From a Lacanian perspective what is crucial in appreciating the distinct character of the practice of modern science is not the methods it relies on, nor the objects it studies. What is important is the subject's *stance* toward Nature and its work, something overlooked by traditional histories and philosophies of science and mathematics. "Let us say that the subject is not often studied", Lacan remarked in 1965 (Lacan, 1989:18). It is only within the last little while that historians and philosophers of science have been making overtures in this direction.[30]

In paying attention to Freud's attitude toward his field of study, Lacan established a connection with Descartes' method of doubt by grounding them both in a desire for certainty—a certainty that would allow one to pursue one's reason without reference to textual authorities. In this fashion, Lacan was able to claim both that modern science was a necessary condition for the emergence of psychoanalysis, and that Freud extended the scope of reason beyond a level of conscious self-mastery which required the support of God *qua* Name-of-the-Father. Moreover, this extension was made

explicit by linking unconscious processes to linguistic tropes and the dream work, something Lacan himself would systematize by appropriating concepts from linguistics, especially from the latter's theories concerning the structure of language.

It is this reference to structure that ushers in a positive dimension to the relation between psychoanalysis and science. In-so-far as psychoanalysis studies structure, the science of mathematics is a legitimate source not only of inspiration but also of knowledges that are rigorously developed and transmissible. Psychoanalysis wishes to maintain its aspiration to be scientific without, however, reducing itself to a (mathematical) science. This ushers in a negative dimension to the relation between psychoanalysis and science. For the foundationalist impulse of mathematical science dreams of a complete Other, thereby suturing the subject. It is precisely this excluded subject of science that psychoanalysis operates upon. Psychoanalysis, in other words, posits a lack in the Other, a lack which can be circumscribed through formalization but which is reserved as a space within which the ethical dimension (linked to the singularity of the subject) may find expression.

We are thus presented with a curious relation between mathematics as paradigmatic of modern science on the one hand, and psychoanalysis on the other. This relation suggests first that problems of structure and formalization encountered in psychoanalysis may find a more manageable formulation if translated into problems situated in well-developed branches of mathematics, such as general topology. In this view, the positive dimension of the relation is homologous to the one obtaining between mathematics and, say, physics. Second, however, it suggests that problems concerning the foundations of mathematics can be fruitfully formulated in terms of sexual love, as dealt with in psychoanalysis.[31] In this view, the concerted effort in the daily practice of mathematicians to suture the subject generates a disciplinary symptom—a symptom which appears in the form of a crisis of foundations. Psychoanalysis suggests that this crisis is linked to the attempt to reduce truth to knowledge, thereby obscuring the role played by the subject of desire and its fantasmatically-structured *jouissance*.

No doubt, psychoanalysis has not yet formalized itself to the degree we have come to expect from a modern science like

physics—at least that part of it which is susceptible to such treatment.[32] In Lakatosian terms, psychoanalysis is still at a preformal stage of development, which, of course, is not the same as saying that it is not rigorous. But through no small measure on Lacan's part, such efforts find their place at the cutting edge of today's psychoanalytic research programme.[33] On the other hand, however, psychoanalysis does not adopt mathematical formalization as its only, or even main, ideal. Even if it were to develop a comprehensive branch of psychoanalytic mathematics, it would still be illegitimate to consider it a (modern) science. This is because psychoanalytic praxis incorporates a further dimension of at least equal importance, namely, the ethical dimension of the singular subject's truth. One could even say that the incorporation of this latter dimension into science itself would involve nothing short of its radical reconceptualization. Such an incorporation, in other words, would constitute a necessary condition for science to become capable of including psychoanalysis within its ambit.

Notes

1. For offering comments on earlier versions of this chapter, I thank Richard Day, Mark Devenney, Jes Fernie, David Howarth, and Yannis Stavrakakis.
2. On this, see also the 2000 issue of the journal *Umbr(a)*, entitled "Science and truth", especially Morel (2000), Milner (2000), and Groome (2000).
3. Other influences on Lacan's conception of science include Bachelard, Canguilhem, and Meyerson. See Koyré (1956, 1965, 1978), and Meyerson (1930, 1991).
4. As to the distinction between the modern notion of a mathematized empirical science and the mathematics of the ancient episteme (as a function of the couples contingency/impossibility and infinite/finite) see Milner (1991:34–8, 1997:109–114; and 2000) and Žižek (1996:209, 1997:159–60). Cf. also Foucault (1973). On Lacan's views regarding the relationship between conjectural and human science, see Lacan (1989:11) and Leupin (1991:4–21).
5. For an excellent bibliographic essay on this, see Shapin (1996). For some recent historiographic work on the emergence of modern science in the 17th century, see Dear (1997, 1998), Eamon (1994), Shapin (1994), Gooding (1990, 1992), Wallace (1992), and Huff (1993). For a critical

overview of recent literature on the history of science, see Golinski (1998). On the role of the experiment within the English context, see Shapin and Schaffer (1985). On the influence of continental Jesuit mathematicians on the work of Newton (generating the physico-mathematical–experimental conception of science) and the general concern of continentals with how singular experiential–experimental statements could properly attain the status of universal statements, see Dear (1995).

6. Hall suggests that such an argument would require

> the following moves to be made: firstly, the series of historical events embraced under the term "scientific revolution" are fragmented into the Versalian revolution, the Copernican revolution, the Harveian revolution, the Galilean revolution, and so on, as a series of discrete episodes; secondly, it is to be recognized that "revolutions" (of sometimes greater effect) have occurred in the eighteenth century and later, linked with the names of Lavoisier, Young-Fresnel, Darwin, Joule-Clausius, Faraday-Maxwell, Einstein, Planck, and so forth. Finally, it is argued that science is not concerned with a search for reality, but rather (to use a convenient phrase) with "probable stories"; the scientist at any period of history (including the present of course) cannot say whether or not any particular proposition corresponds to the real structure of the Universe, but can only explain why this proposition seems more credible than others and how it is consonant with all or most of the relevant data. As the reasons for finding any particular proposition acceptable vary, and the data change, so do scientific propositions. [Hall, 1970:209–10]

7. As to other conditions of possibility (for the emergence of psychoanalysis) that have been proffered, these include Kantian ethics (signaling a break with ethics conceived in terms of a Sovereign or Christian Good) and the decline of the paternal function in modern western societies.
8. As to the relation between Cartesian and classical scepticism, see Burnyeat (1983).
9. On the subject of the enunciated and the subject of enunciation, see Dor (1997:147–155). Cf. also Benveniste (1971:195–246).
10. By *jouissance* is meant a psychosexual enjoyment which is not necessarily pleasurable, the (unconscious) enjoyment we must suppose we experience when we cling to a symptom that causes us (conscious) displeasure. On the concept of *jouissance*, see Evans (1996) under the entry "*Jouissance*", and Evans (1998).
11. In his "Meditation II", for example, Descartes claims that "[w]e must come to the definite conclusion that this proposition: *I am, I exist*, is necessarily true each time that I pronounce it, or that I mentally conceive it" (Descartes, 1972:150). A different translation reads: "I must finally conclude that this proposition, *I am, I exist* is necessarily true whenever it is put forward by me or conceived in my mind" (Descartes, 1984:17).
12. The distinction between these two sides of Descartes, perhaps, offers a rationale for recent calls by Žižek for a return to the Cartesian cogito. In this view, a return to the Cartesian cogito is a return to the punctual subject whose certainty is founded in the act of doubting itself, a return to a subject recognizably split between truth and knowledge (rather than an undivided individual made possible by divorcing or collapsing truth and knowledge through separation or reduction). Such a return, then, would bring with it a necessary supplementary task, namely, to show how the empty Cartesian subject of knowledge is always haunted by its obverse, the saturated subject of *jouissance*-truth. See Žižek (1998:1–7, 1999a:1–5). Cf. also Dolar (1998) on the relation between the Cartesian cogito and the subject of the unconscious.
13. Perhaps we could say that the event (of which Descartes' writing effectively constitutes an eloquent expression) dramatizing this awkward relation (between truth and knowledge) was the meeting of Galileo's knowledge and its threat to the Catholic Church's Truth.
14. Cf. logical positivism. See, for example, Ayer (1971). For a critique of this position, see Austin (1962).
15. On Lacan's concept of foreclosure, see Grigg (1998).
16. For a clear and simple account of these transitions, see, for example, Chalmers (1994).
17. For secondary literature on the history and philosophy of mathematics see, for example, Detlefsen (1996), Irvine (1996), and Whiteside (1960).
18. On the role of zero in effecting the suturing of the subject in the context of Frege's *Foundations of Arithmetic*, see Jacques-Alain Miller's classic "Suture" (Miller, 1977–8).
19. For reappraisals of mathematical practice, taking into account the elements of subject, language, society, and cultural context, see Resnik (1992), Putnam (1975), Hersh (1979, 1998), Goodman (1979), Kitcher (1983), Mahoney (1990), Mancosu (1996), Rouse (1987), Shapiro (1983), Thurston (1998), and Tymoczko (1998). For similar reappraisals of the practice of physical scientists, see Bloor (1976, 1981, 1983), Gooding (1990, 1992), Latour (1987), Latour and Woolgar (1986), Hatfield (1990), and Pickering (1992, 1995). On the relation between physical science and social/human science, see Salmon (1992), Hollis (1994), Cohen (1994), Dallmayr and McCarty (1977), and Ryan (1970).
20. The individual consequences of suturing subjectivity are often manifested through brushes with (or dives into) madness. In the realm

of mathematics, consider the mental anguish suffered by a Cantor and Mayer (Lacan, 1989:18; see also Charraud, 1994). Or in the realm of psychoanalysis, think of Ferenzi or Rank. From a psychoanalytic point of view, the ethical scientist does not recoil from the lack in the Other, attempting to fill it with fantasies of Wholeness (see Fink and Miller, this volume); the ethical scientist, instead, invents. Perhaps this is one way of reading the difference between Saussure's "paranoiac" discovery of secret anagramatic meanings everywhere, and Jakobson's poetic route of invention. Or, in the context of the seeming inconsistencies in quantum mechanical theory, this provides us with a matrix to read the relation between Einstein-Bohm on the one hand, and Bohr-Heisenberg on the other. At the social level, a concerted effort to suture the subject by the scientific enterprise as a whole may have homologous consequences, ranging from the sublimated sort (modern literature and poetry as an answer to the science of linguistics—cf. Foucault (1973:299–300) and Milner (1990:38–9)—to the violent sort (racism as a consequence of social science's erasure of the subject's singularity via statistization).

21. On the significance of letters for Lacan, see Goux (1991), chapters 4 and 6 in Chaitin (1996), and chapter 11 in Julien (1994).
22. Indeed, according to Shapiro, mathematics is the science of structure. Thus,

> [t]he subject matter of arithmetic is the natural-number structure, the pattern common to any system of objects that has a distinguished initial object and a successor relation that satisfies the induction principle. Roughly speaking, the essence of a natural number is the relations it has with other natural numbers. There is no more to being the natural number 2 than being the successor of the successor of 0, the predecessor of 3, the first prime, and so on. The natural-number structure is exemplified by the von Neumann finite ordinals, the Zermelo numerals, the arabic numerals, a sequence of distinct moments of time, and so forth. The structure is common to all of the reductions of arithmetic. Similarly, Euclidean geometry is about Euclidean-space structure, topology about topological structures, and so on. [Shapiro, 1997:5–6]

In a similar fashion, then, psychoanalytic mathematics is about the unconscious structure. Of course any formalization, just like any theorization, must pay attention to, and face head-on, the particular difficulties of the psychoanalytic experience, whether epistemological or technical. In other words, one must resist allowing the injunction to formalize from overtaking its instrumental function, transforming it into an end in itself, papering over troubling issues of resistance and transference. On this point, see the debate between Langs and Badalamenti on the one hand, and Burgoyne on the other (1994–5).

23. In Aristotelian terms, Newtonian science's "cause" is formal. In his "Science and truth", Lacan links Aristotle's efficient cause with magic and alchemy, the final cause with religion's teleological eschatology, and the material cause with psychoanalysis (Lacan, 1989). For an account of this, see Nobus (this volume).
24. Not only is the dimension of the subject erased on the side of the theorist, this dimension is also erased on the side of those subjects under study. How? By reducing the subject to a position in a closed structure in a way that masks the subject's split character. In game theory, for instance, the subject is reduced to exactly such a position (attacker or defender) and is attributed a preconceived end in terms of which the moves one makes are explained–calculated as a combinatory and rendered palpable in matrix form (Lacan, 1989:9).
25. In his *La Topologie Ordinaire de Jacques Lacan* at p. 30, Jeanne Granon-Lafont (1985) explains that "[o]nly a temporal event [the second turn or the repetition of the inscription] differentiates the reverse and the right side, which are separated by the time necessary to accomplish a supplementary turn. The dichotomy between these two notions, reverse and right side, reappears only by the intervention of a new dimension, the one of time. Time, as a continuum, produces the difference between the two sides. If there are no longer two measures for the Mobius strip but only one side, time is indispensable to account for the strip" (as cited in Leupin, 1991:21, note 28).
26. Here it is worth pointing out that the activity of formalization is found both on the side of the analyst and on the side of the analysand. In the former case, formalization proceeds in the mode of theorization, even if it is a theorization that is sensitive to its limits. In the latter case, formalization proceeds in the mode of compactification. The analytic material is systematically reduced to reveal both a pattern or structure that unifies the subject's free associations and the rim of a hole around which they turn.
27. Cf. Lacan's discussion of *tuché* and *automaton* in chapter 5 of *Seminar XI* (1977b). Cf. also Miller (1989b) and Verhaeghe (this volume).
28. For a similar reconsideration of the relation of philosophy of mathematics to mathematical practice, see Tymoczko (1998:385–398).
29. On the relation between intuition and mathematical invention, see Hadamard (1945). Though dated and highly personal, his account includes many interesting illustrations, both historical and contemporaneous.
30. It is perhaps worth pointing out here that the injunction to take the subject into account does not imply a kind of subjective relativism. A more appropriate formulation would be to say that psychoanalysis

incorporates the dimension of the "objectively subjective." On this point, see Žižek (1997:119–22).

31. Of course, Lacan was by no means the first or only one suggesting a connection between mathematics and the unconscious. Such was the case, for example, with I. Hermann, W. Bion, and I. Matte-Blanco. See also Burgoyne (this volume).
32. For a critical assessment of Lacan's use of mathematics, see Dor (1996).
33. See Burgoyne (2000), Morel (1994), Vappareau (1985), and Charraud (1997, 1999). Other ongoing questions orienting the psychoanalytic research programme include, "Is the end of analysis different for men and women?" and "What can form the basis of a psychoanalytic community comprising subjects who have reached the end of their analysis?"

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CHAPTER THREE

A matter of cause: reflections on Lacan's "Science and truth"

Dany Nobus

The main purpose of this contribution is the reconstruction and clarification of Lacan's argument in his 1965 paper "Science and truth" (Lacan, 1989[1965]). As such, I am concerned neither with the way in which Lacan's stance towards science developed during the 40 odd years of his engagement with psychoanalysis, nor with how his ideas have been received within the various psychoanalytic schools, even less with the value of his assertions for judging the scientific status of contemporary psychoanalytic theory and practice. Over the past 15 years, numerous writings on Lacan's changing conceptions of science and their significance for the interface between the psychoanalytic and the scientific discourses have been produced (Regnault, 1985; Milner, 1991, 1996–97; Miller, 1994; Strauss, 1994; Verhaeghe, 1994; Laurent, 1995[1994]; Fink, 1995; Grigg, 1999), yet this is not the main reason why I have restricted myself to the confines of just one of Lacan's texts. Indeed, my decision was not so much inspired by the weight of an already existing body of materials, but rather by the consideration that an accurate assessment of Lacan's formulations on science must be predicated upon a systematic explanation of the core texts in which these formulations are embedded. Since "Science

and truth" is one of these key interventions, and since a detailed exposition of its contents does not exist, my contribution may serve both as a benchmark for evaluating the available literature on Lacan and science, and as a springboard for the deployment of new perspectives on the place of science within Lacanian theory. In this way I hope that this essay does not merely serve exegetical purposes, but may be useful as a scholarly study in its own right. I should also mention that the reader who wishes to use my contribution as a guide to Lacan's "Science and truth" will discover immediately that I have failed to explain some ostensibly crucial aspects of the text, such as the passage in which Lacan proclaimed that the object *a* is the object of psychoanalysis (Lacan, 1989[1965]:12). These omissions do not stem from imposed restrictions of space, a standard yet invalid excuse for not broaching particular issues in a text, but from my belief that the aspects left out are not central to Lacan's argument.

In embarking on the task of reconstruction and clarification, I evidently imply that this is what Lacan's text requires, its structure being neither accessible nor transparent, and its contents being neither clear nor comprehensible in themselves. I do not agree with Milner (1995:7) that Lacan, according to his own diagnosis, is a crystalline author whose mystifications evaporate if only his works are approached with sufficient care and attention. This may be a valid outlook for all those who, like Milner himself, have had the privilege of accompanying Lacan on his intellectual itinerary, but it does not apply to the majority of contemporary readers, no matter how sophisticated their reading procedures are. Apart from the difficulty of Lacan's grammar, his texts are littered with implicit borrowings from a pleiad of sources, punctuated with often cynical allusions to sociohistorical circumstances and crammed with ingenious word-plays on names and titles. When Lacan told his audience in 1965 that "La chose, ce mot n'est pas joli, m'a-t-on dit textuellement, est-ce qu'il ne nous la gâche pas tout simplement, cette aventure des fins du fin de l'unité de la psychologie ..." (Lacan, 1966d[1965]:867), he cunningly conjured up the image of his former companion Daniel Lagache ("la gâche") and his book *L'unité de la Psychologie* (Lagache, 1949).[1] Those present at the time may have been capable of fathoming these references instantly, but the non-Lacanian, non-French and non-intellectual party is hardly in

the position to grasp them. Lacan equally assumed that his audience was immersed in the same readings as he himself was, which relieved him from the task of having to give chapter and verse, but which simultaneously increases the esoteric character of his works. In addition, he frequently spoke through the mouth of others, integrating into his discourse terms and concepts completely alien to it, which makes it extremely difficult to decide whether a proposition ought to be taken at face value. These problems are only exacerbated by Lacan's constant recourse to irony and other rhetorical and stylistic figures.

To the degree that Lacan's text may be all Greek to many a reader, my "translation" in the following pages should not be regarded as the revelation of its true meaning. In no way do I want to claim that my reconstruction and clarification represent the truth about "Science and truth". On the contrary, should truth be regarded as a shared set of ideas within an established research community, my rendering of certain passages in "Science and truth" is everything but true, since it differs significantly from the consensus within the Lacanian psychoanalytic arena. Also, I do not wish to pretend that I understand every twist and turn of Lacan's text, and that all references and allusions are clear to me. Many truths in "Science and truth" escape my knowledge but, as will hopefully become clear from my essay, according to Lacan it could not have been otherwise.

"Science and truth" constitutes the transcript of the opening session of Lacan's seminar *The Object of Psychoanalysis* (Lacan, 1965–66). The text was originally published in the first issue of the journal "Cahiers pour l'analyse" (Lacan, 1966c[1965]), a new initiative of a group of young enthusiastic students who called themselves "Le cercle d'épistémologie" (the epistemological circle) at the *École Normale Supérieure* where Lacan was lecturing. When Lacan's *Écrits* were published in the Autumn of 1966 "Science and truth" was included as its tailpiece (Lacan, 1966d[1965]).

Many themes and ideas in "Science and truth", including the vexed issue of the scientificity of psychoanalysis, emanate directly from the contents of Lacan's 1964 seminar *The Four Fundamental Concepts of Psychoanalysis* (Lacan, 1977a[1964]), subsequently summarized in the paper "Position of the unconscious" (Lacan,

1995[1964]), in which he had examined how his thesis that the unconscious is structured like a language could form the basis for the promotion of psychoanalysis as a scientific discipline. "Science and truth" also builds on the results of an inquiry concerning the status of the subject in psychoanalysis which Lacan had already been conducting for a number of years, and it paves the way for epistemological reflections on the origin of psychoanalytic knowledge and the nature of the psychoanalytic act. Indeed, since January 1964 Lacan had treated his audience at the *École Normale Supérieure* to a progressive delineation of the psychoanalytic subject, and he now felt confident enough to use this work as a theoretical cornerstone for further elaborations. In light of these antecedents, and despite the title of the seminar for which "Science and truth" set the tone (*The Object of Psychoanalysis*), it is thus not surprising that Lacan commenced his lecture with a discussion of the *subject* of psychoanalysis.

How does this subject appear within psychoanalysis? The psychoanalytic subject is characterized by a "state of splitting or *Spaltung*" (Lacan, 1989[1965]:4), which means that it does not amount to an integrated, unitary, transparent and self-conscious being.[2] The latter descriptions may be representative of how the subject is defined as an individual, a literally undivided character, within psychology (Lacan, 1977b[1960]:293–294), but psychoanalysts, by virtue of their "recognition of the unconscious" (Lacan, 1989[1965]:4), must concede that human beings are inhabited and controlled by thoughts of which they are unaware. Psychoanalysts observe the effects of this split between conscious and unconscious representations on a daily basis in their clinical work whenever they are faced with neurotic symptoms, dreams, bungled actions, strangely recurring patterns of behaviour, etc. All of these so-called "formations of the unconscious" are seen as evidence of Freud's thesis that human beings are preoccupied by "thoughts without knowing anything about them" (Freud, 1909d:164).

However, Lacan was adamant that the empirical observation of the split subject does not suffice as a criterion for defining the status of psychoanalysis as a "praxis". In order to complete this task "a certain reduction is necessary ... which is always decisive in the birth of a science ... [and which] truly constitutes its object" (Lacan, 1989[1965]:4). In this statement, as indeed throughout his text,

Lacan employed the terms "praxis" and "reduction" in reference to Lévi-Strauss's terminology in, for example, *The Savage Mind* (1966[1962]). "Praxis" denotes the conceptual foundations, the invariable constitutive units on whose basis practices can unfold. Characterized by an endless empirical diversity, practices must be subjected to systematic reduction if the structural invariants are to be discovered (Lévi-Strauss, 1966[1962]:130–131, 247).[3] Hence, only after the multifarious manifestations of the split subject have been shown to derive from a series of "elementary structures" (Lévi-Strauss, 1969[1949]) will it be possible to institute psychoanalysis as a distinguished praxis, on the basis of these structural units. To justify and sustain their praxis, psychoanalysts ought to reduce the empirical chaos of the formations of the unconscious to an intelligible order, and this reduction should be their prime object, the latter term to be understood here as "objective, goal, aim" rather than "topic of research".

Although defining the invariants that govern empirical diversity, with a view of validating a praxis as a scientific enterprise, seems to be a pre-set task for epistemology (and Lacan was notably addressing himself *inter alia* to the "Cercle d'épistémologie"), epistemological projects were in Lacan's opinion unlikely to bring much enlightenment because they had the propensity to focus on research methods and objects to the detriment of the subjects involved (Lacan, 1977b[1960]:293, 1989[1965]:4).[4] To substantiate his point, he claimed that epistemological investigations had insufficiently appreciated the crucial change in the subject position underpinning the decisive mutation from an ancient-intuitive to a modern-rational science during the 17th century. In this matter, Lacan acknowledged his debt to Alexandre Koyré, who had argued that "The birth of modern science is concomitant with a transformation—mutation—of the philosophical attitude, with a reversal of the value attributed to intellectual knowledge [*connaissance*] compared to sensible experience, with the discovery of the positive character of the notion of infinity" (Koyré, 1971[1955]:261–262, my translation).

Lacan equally supported Koyré's conviction that "it was Descartes (and not Bruno or Galilei) who formulated clearly and distinctively the principles of the new science" (Koyré, 1962[1957]:127), attributing the "transformation of the philosophical

attitude" to the Cartesian *cogito* because it epitomized the first radical affirmation of human rationality, an uncompromising belief in the powers of the human mind, the certainty of a thought experience in confrontation with the doubtful value of accumulated knowledge. "For science," Lacan stated, "the *cogito* marks ... the break with every assurance conditioned by intuition" (Lacan, 1995[1964]:261).[5] And since modern science relies crucially on the assumption that human beings are endowed with the capacity of reasoning, the *cogito* can be dubbed the "subject of science".

The expression "subject of science" around which the entire argument of "Science and truth" hinges, is of course extremely ambiguous, as it may simultaneously refer to the scientist, the topics of study within scientific practice, science itself, the subjective element within science, and the objects subjugated to scientific investigation. Yet to me it seems that Lacan's juxtaposition of the *cogito* and the subject of science indicates that the latter notion is a synonym for human rationality, mental power, and the certainty of a continuous experience of thought. This explains why Lacan noted that modern science is concerned with the modification of our subject position in two ways (*au double sens*): this modification is an inaugural moment for modern science, and modern science invigorates this modification ever more (ibid.:5).[6] Lacan's idea is nicely illustrated by a contemporary hard-nosed scientist, who emphasizes that "[r]eal science is a regal application of the full power of human intellect" (Atkins, 1995:100) and that "[f]oremost among these achievements [of science] is the continually renewed reinforcement of the view that the human brain is such a powerful instrument that it can illuminate whatever it selects as its object of study, including itself" (ibid.:97).

Save its vigorous promotion of human rationality and its key function for the precipitation of modern science, the Cartesian *cogito* also epitomized a peculiar relationship between knowledge and truth. In the fourth section of his *Discourse on Method* Descartes contended:

> I observed that there is nothing at all in the proposition 'I am thinking, therefore I exist' to assure me that I am speaking the truth, except that *I see very clearly* that in order to think it is necessary to exist. So I decided that I could take it as a general rule that the things we conceive very clearly and very distinctly are all true; only there is some difficulty in recognizing which are the things that we distinctly conceive. [Descartes, 1985[1636]:127, emphasis added]

In Descartes' philosophy, clear and distinct observations are the prerequisite for the construction of truthful knowledge about the world. What guarantees the essential clarity of our perceptions and what prevents us from dwindling into error is the infinite goodwill of God: "There is ... no doubt that God could have given me a nature such that I was never mistaken, again, there is no doubt that he always wills what is best. Is it then better that I should make mistakes than that I should not do so?" (Descartes, 1984[1638–1640]:38). For Descartes, knowledge is not inherently true, but by virtue of God's benevolence our observations are authenticated and the truth of our knowledge is relatively secure. In the *cogito*, and by extension within Cartesian philosophy in general, knowledge and truth are therefore separate dimensions which are being joined together through God. Of course, the thinking subject can only assume that God is effectively good-natured and non-deceitful. God is the guarantee of truth, but apart from their faith in God individuals have no guarantee that this is a truthful representation of God.

As I have pointed out above, Lacan averred that epistemologists had largely neglected the importance of the modification in our subject position, as inaugurated by Descartes' *cogito*, for the ascent of modern science. But if epistemologists have minimized the impact of the *cogito*—in favour of Galilei's experiments for instance—they are also likely to disregard the constitutive axis of psychoanalysis, because according to Lacan this axis is synonymous with the *cogito*, i.e. with the subject of science. Bluntly and unequivocally, Lacan proclaimed that "but one subject is accepted as such in psychoanalysis, the one that can make it scientific" (Lacan, 1989[1965]:8). Presumably aware of the extraordinary tenor of this proposed congruence between the psychoanalytic subject and the *cogito*, he at once conceded: "To say that the subject upon which we operate in psychoanalysis can only be the subject of science may seem paradoxical" (ibid.:7). Why paradoxical? For the simple reason that psychoanalysis is traditionally described as a discipline which concentrates on people's irrational motives, on their fantasies, intuitions and emotions, to the detriment of rational beliefs and cognitions. The term "psychoanalysis" literally refers to

a "liberation of the soul", so that the designation of its central stake as the rational powers of the mind (the subject of science) effectively elicits a sense of paradox.

Lacan steered away from the alignment of psychoanalysis with depth psychology (Lacan, 1977g[1958]:240, 1977b[1960]:294, 1989[1965]:7, 1991[1969–70]:61), and he also refused to promote it as a treatment which derives its power from the illogical, irrational and ineffable aspects of the mind (Lacan, 1977b[1960]:295). Although rooted in the pervasive influence of the unconscious on the human condition, Lacanian psychoanalysis does not define the unconscious as an amalgamation of irrational forces in the depth of the mind which disturbs the conscious order of mental things. In Lacan's theory the distinction between rationality and irrationality does not coincide with that between consciousness and the unconscious. The Lacanian unconscious has the structure of a language, and therefore it can be described and explored as a logical system of combinations between discrete elements (Lacan, 1977a[1964]:203).[7] The Lacanian unconscious is a symbolic chain of elementary linguistic components (signifiers) whose insistence can be compared to that of a memory function in a cybernetic network (Lacan, 1988b[1954–55]:88). Rather than a reservoir of free-floating libido, the Lacanian unconscious emblematizes an inaccessible, yet compelling archive of knowledge, a discourse that continues to express itself in the absence of a conscious speaker.

From this vantage point Lacan underscored that "every attempt, or even temptation, in which current theory does not stop relapsing, to incarnate the subject earlier, is tantamount to errancy—always fruitful in error, and as such mistaken" (Lacan, 1989[1965]:8, translation modified). Detailing the subject on which psychoanalysis operates as a setback from the subject of science, that is to say as a being whose thought-processes are distorted or whose mind is fixated at an infantile stage of psychosexual development, inevitably gives rise to what Lévi-Strauss called the "archaic illusion" (Lévi-Strauss, 1969[1949]:84–97). The subjects psychoanalysts are working with are not people whose mental powers are underdeveloped, primitive, infantile, or pathologically disturbed. Endorsing Lévi-Strauss' argument, and implicitly criticizing Freud's model in *Totem and Taboo* (Freud, 1912–13a) of the phylogenetic evolution of the human mind from magic and

animism to science and rationality, Lacan argued that there is no such thing as a non-scientific human mind, whether the latter is situated within a pre-modern or modern society, whether that of a child or an adult, whether suffering from psychic problems or not. Against the prevailing developmental theories of Lévy-Bruhl and Piaget, Lévi-Strauss had posited that the postulation of a "primitive mentality" in children and so-called "savages" neglects the uniqueness of "a universal substratum the crystallizations of which have not yet occurred, and in which communication is still possible between incompletely solidified forms" (Lévi-Strauss, 1969[1949]:93). Fully consistent with this outlook, Lacan contended that the developmental approach "falsifies the whole primary process" and "masks the truth about what happens during childhood that is original" (Lacan, 1989[1965]:8).

Yet beyond the specific realms of depth and developmental psychology, psychoanalysis cannot affiliate itself with the human sciences in general, to the extent that the latter tend to depict human beings as objectifiable, not inherently knowledgeable creatures. Human scientists are inclined to treat the participants in their research projects as less scientifically inclined, diligent and obedient respondents, through which they also fall into the trap of the "archaic illusion". A concrete example may clarify this. Assume that a human scientist wants to investigate whether the truthfulness of the stories people tell can be inferred from involuntary non-verbal cues such as blushing, blinking, frowning, etc. Since the discovery of reliable facial indicators for lying would have an enormous impact on police interrogations and court-testimonies, a project of this kind requires little justification and is likely to be funded by research councils. In choosing an appropriate design for his research the human scientist might decide to set up a simple experiment in which participants are being asked to tell two stories (a true and a false one) in front of a camera recording all their bodily movements. After the data have been collected, the researcher can try to identify within the series of recorded bogus stories recurring patterns that are significantly different from observable expressions in the recorded true stories. What is the catch? This experiment is very straigthforward, but it can only be implemented on the condition that the participants are willing to subject themselves without resistance to the scientist's instructions. It has to proceed from the

fundamental assumption that, whilst attributing all knowledge to the scientist, participants will put themselves into the position of passive, ignorant and re-active subjects. In other words, the human scientist has to exclude the possibility of his participants recounting true stories whenever he asks them to produce false ones, and vice versa, or of his participants deceiving themselves in thinking that something actually happened whereas it did not. To the degree that human scientists view their participants merely as responsive objects, they reduce the human being to a pre-logical entity, which evidently undermines the validity of their conclusions. Lacan inferred from this spurious line of reasoning that the human sciences' plan to develop knowledge about the human being is doomed to fail, because "science's [hu]man does not exist, only its subject does" (ibid.:8).

So, if the status of the subject in psychoanalysis precludes its affiliation with the human sciences, are there any disciplines or paradigms which may still have value as models for its praxis? Doesn't modern science, as the direct outcome of the *cogito* and the most solid precipitation of the human intellect, provide psychoanalysis with a set of stringent methodological parameters? Once again, Lacan's answer was a categorical "no". Although the psychoanalytic subject equals the subject of science, this by no means implies that psychoanalysis is or should be a modern science. Despite the fact that Freud could not have cleared the path of psychoanalysis without his allegiance to scientism, despite the fact that psychoanalysis bears the essential mark of Freud's scientific ideals (Lacan, 1989[1965]:6), modern scientific practices do not reflect the ambitions of psychoanalysis.[8] The reason is that modern science, for all its debts to the *cogito*, continuously tries to "suture" (sew up) the subject of science (ibid.:10). Whereas the Cartesian subject is fundamentally divided between a certainty of thinking (knowledge) and an uncertainty of truth which can only be lifted through the introduction of a non-deceitful God, modern science has endeavoured to solve the issue of truth by advancing it as the inherent quality of proper scientific knowledge. Whilst in Descartes' philosophy truth always escapes rationality, in modern science truth has become the hallmark of a properly conducted rational process and its outcomes. As Atkins put it: '[S]cience is the best procedure yet discovered for exposing fundamental truths about the world ... Truth invariably prevails in science even though the road to it is not always straight" (Atkins, 1995:97). Unlike those disciplines which implicitly entertain the archaic illusion by operating on a pre-logical, primitive, or irrational mentality, modern science eulogizes the powers and achievements of human rationality whilst simultaneously pursuing unquestionably true products of knowledge, thus suturing the Cartesian rift between knowledge and truth. Lacan concluded that "science, if one looks at it closely, has no memory. Once constituted, it forgets the circuitous path by which it came into being; otherwise stated, it forgets the dimension of truth that psychoanalysis seriously puts to work" (Lacan, 1989[1965]:18).

It should be noted here that Lacan's definition of truth differs substantially from the traditional ones. Throughout his works, he criticized the time-honoured "correspondence criterion" of truth, according to which truth is synonymous with a perfect overlap (correspondence) between reason and reality, between the thing and the outside world (*adaequatio rei et intellectus*) (Lacan, 1977d[1955]:131, 1990[1973]:20). In this context, Lacan was eager to point out at the beginning of "Science and truth" that Freud's reality principle does not entail a disjunction between an objective, true reality that imposes itself onto the subject's senses (the system of perception-consciousness) and a less objective "psychic reality" (Lacan, 1989[1965]:5). When a child acknowledges that its mother does not have a penis, this perception is not more true owing to its correspondence with a factual reality than the realization that its mother and father are equally equipped, because both observations are part and parcel of a single "strain of experience sanctioned by the subject of science" (ibid.:6). Consequently, psychoanalysts should not take factual realities into account when judging the truth of an analysand's thoughts, and every attempt to bring an analysand's experience in line with the facts is doomed to fail.[9]

In Lacan's theory truth always refers to a human being's incapacity to master all knowledge owing to the absence of a knowing agency on the level of the unconscious. Truth is synonymous with the inexorable insistence of a non-subjectified, unconscious knowledge. When Lacan argued during the mid 1960s and early 1970s that analytic interpretations are only correct if they have an effect of truth (Lacan, 1966–67:session of 14 December 1966, 1970–71:session of 13 January 1971), he therefore meant that analytic

fundamental assumption that, whilst attributing all knowledge to the scientist, participants will put themselves into the position of passive, ignorant and re-active subjects. In other words, the human scientist has to exclude the possibility of his participants recounting true stories whenever he asks them to produce false ones, and vice versa, or of his participants deceiving themselves in thinking that something actually happened whereas it did not. To the degree that human scientists view their participants merely as responsive objects, they reduce the human being to a pre-logical entity, which evidently undermines the validity of their conclusions. Lacan inferred from this spurious line of reasoning that the human sciences' plan to develop knowledge about the human being is doomed to fail, because "science's [hu]man does not exist, only its subject does" (ibid.:8).

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interpretations must always be geared towards the emergence of the absent subject of the unconscious and not, for example, towards an enlargement of consciousness, an expansion of self-knowledge, or a reorientation of the psyche (Lacan, 1968a[1967]:52–53).

The aforementioned effort to suture the Cartesian subject of science within modern scientific practices can now also be understood as a sustained endeavour to control and evaluate all knowledge, proceeding from the conviction that the rational processes which organize all things worldly will ultimately reveal themselves to the conscious human mind. Analysands engage in a comparable enterprise whenever they fall prey to what Lacan dubbed "the supposed subject of knowing" (*le sujet supposé savoir*) in the transference, for the function of the supposed subject of knowing signals the analysand's belief in the possibility of achieving complete self-control and full self-realization. Because the supposed subject of knowing also functions as a mental reassurance that the process of gathering knowledge about the world and oneself is not in vain, Lacan identified it in *Seminar XI* with the God of Descartes (Lacan, 1977a[1964]:224–225), and later on with the God of the philosophers in general (Lacan, 1968b[1967]:39, 1968–69:session of 30 April 1969). Both the supposed subject of knowing and Descartes's God are assumptions destined to annihilate the constitutive gap between knowledge and truth, and thus also to abolish the unconscious (Lacan, 1968c[1967]: 46). The suturing of this gap within modern science is of a similar nature, with the proviso that modern scientists do not have recourse to a belief in a transcendental function or agency in order to reach their goals. They are firmly convinced that knowledge and truth can be matched through the intervention of reason alone, because they do not accept the existence of a gulf separating knowledge (rationality) and truth in the first place.

The only frameworks which Lacan considered sufficiently attuned to the subject of science and its inherent division between knowledge and truth, therefore qualifying as suitable partners for psychoanalysis, are those of structural anthropology, linguistics and game theory. Strictly avoiding an evolutionistic, genetic approach to their topic of study, these frameworks are all concerned with the rigorous analysis and systematic classification of the modes of thought which people may use to organize their relationship with the

environment. First and foremost amongst these supportive skeletons for psychoanalysis is the discipline of structural anthropology as inaugurated by Lévi-Strauss, on whose oeuvre Lacan had drawn since the early 1950s and with whom he maintained professional and personal relationships.[10] In the first chapter of *The Savage Mind* (1966[1962]:1–33) Lévi-Strauss had given numerous examples of how allegedly primitive people construct highly sophisticated classifications of fauna and flora, which demonstrates how these people rely on thought processes that are not qualitatively different from those activated by so-called scientific minds. Moreover, the so-called primitive classifications "may anticipate not only science itself but even methods or results which scientific procedure does not incorporate until an advanced stage of its development" (ibid.:11). Borrowing an example from Deacon (1927), Lévi-Strauss also emphasized, both in his seminal treatise *The Elementary Structures of Kinship* (1969[1949]:125–126) and in *The Savage Mind* (1966[1962]:251), that an informant may be as capable as the scientifically trained anthropologist of drawing the complicated diagrams of the kinship patterns underpinning their communities.

Of course, it is not because the anthropologist's informants are able to reproduce the elementary structures of their community that they are continuously aware of them, even less that they play an active part in generating them. In Lévi-Straussian anthropology, elementary structures outline a subject's position *vis-à-vis* the other members in the community, and subjects possess a knowledge of these structures without taking them consciously into account all the time, and without contributing wittingly and willingly to their development. Extrapolating these principles to the study of myths in *The Raw and the Cooked*, a book published shortly before Lacan's presentation of "Science and truth", Lévi-Strauss explained his approach as follows:

> [S]ince, my ambition being to discover the conditions in which systems of truth become mutually convertible and therefore simultaneously acceptable to several different subjects, the pattern of those conditions takes on the character of an autonomous object, independent of any subject. I believe that mythology, more than anything else, makes it possible to illustrate such objectified thought and to provide empirical proof of its reality. Although the possibility cannot be excluded that the speakers who create and

> transmit myths may become aware of their structure and mode of operation, this cannot occur as a normal thing, but only partially and intermittently. It is the same with myths as with language: the individual who conscientiously applied phonological and grammatical laws in his speech, supposing he possessed the necessary knowledge and virtuosity to do so, would nevertheless lose the thread of his ideas almost immediately ... Mythological analysis has not, and cannot have, as its aim to show how men think ... I therefore claim to show, not how men think in myths, but how myths operate in men's minds without their being aware of the fact. And, as I have already suggested, it would perhaps be better to go still further and, disregarding the thinking subject completely, proceed as if the thinking process were taking place in the myths, in their reflection upon themselves and their interrelation. [Lévi-Strauss, 1983[1964]:11–12]

As Lacan stated in "Science and truth", Lévi-Strauss "does not presume to deliver up to us the nature of the myth-maker" (Lacan, 1989[1965]:11). Although a particular individual may venture a logical analysis of his community's myths akin to that undertaken by Lévi-Strauss himself in *The Raw and the Cooked*, this individual neither creates nor modifies, neither demurs nor assents to the various patterns those myths adopt. If anything, there is "simultaneous production of myths themselves, by the mind that generates them and, by the myths, of an image of the world which is already inherent in the structure of the mind" (Lévi-Strauss, 1983[1964]:341).

The grammar of kinship and myths constitutes the very fabric of the human mind, without this mind being fully aware of its exact remit and its precise ramifications. It provides the rational building blocks of human experience, pervading the subject's knowledge and actions, and situating him or her in relation to others. Instead of being located and deployed by the subject, the elementary structures delineate the subject's position and regulate his or her relationships with themselves and others. Lacan concluded approvingly that the "object of mythogeny [the study of the genesis of myths] is thus linked to no development whatsoever, nor to an arrest, of the responsible subject. It is not to that subject that this object is related, but to the subject of science" (ibid.:11, translation modified), that is to say to a genuine experience of thought which transcends the boundaries of consciousness and whose truth should

not be judged by an evaluation of its proximity to an objective reality. Indeed, as can be inferred from the above citation, Lévi-Strauss circumscribed myths as systems of truth, despite their having no apparent basis in a set of observable facts, and despite the simultaneous presence of ostensibly incommensurable accounts.

Lacan embraced Lévi-Strauss's structuralist viewpoint wholeheartedly, integrating its main principles into his own psychoanalytic theory of the status of the subject. Structured like a language, the modus operandi of the unconscious in the human mind is equivalent to that of myths and patterns of kinship: rather than an object manufactured by a subject, the unconscious structure of language (the chain of signifiers, the Other) manufactures the subject, and Lacan even went so far as to say that the subject is *caused* by the signifier (Lacan, 1995[1964]:265). In a text contemporary with "Science and truth", he put is as follows:

> The unconscious does not exist because there would be an unconscious desire—obtuse, heavy, caliban, even animal, an unconscious desire awoken from the depths that would be primitive and that would have to elevate itself to the superior level of the conscious. On the contrary, there is a desire because there is unconscious, that is to say language which escapes the subject in its structure and effects, and because there is always on the level of language something beyond consciousness, which is where the function of desire can be situated. [Lacan, 1967[1966]:45]

A more radical description of the relationship between the unconscious structure and the subject appeared in "Position of the unconscious": "The effect of language is to introduce the cause into the subject. Through this effect, he [the subject] is not the cause of himself; he bears within himself the worm of the cause that splits him" (Lacan, 1995[1964]:265). And again in the same text: "The fact that the Other is, for the subject, the locus of his signifying cause merely explains why no subject can be his own cause. This is clear not only from the fact that he is not God, but from the fact that God Himself cannot be His own cause if we think of Him as a subject ..." (ibid.:269). Lacan maintained that language is the necessary and sufficient precondition for the unconscious, and that the unconscious, which is itself structured like a language, predestines a human being to a state of subjective splitting to the extent that the active knowledge

residing in the unconscious evades the radius of the conscious subject. Because of Lacan's extension of the sphere of language to the unconscious, rationality is not restricted to conscious processes of thought, and it does not stand in opposition to the splitting of the subject. On the contrary, the symbolic system of the unconscious occasions the distinction between a mental place where "one" is and another mental place where "one" is not, which is tantamount to saying that it gives rise to the experience that "one" is not one.

Lacan's conviction that the subject is never the cause of itself (*causa sui*), but is always being caused by the Other, allowed him to criticize the conclusion Descartes drew from his *cogito*, "I am thinking, therefore I exist" (*cogito ergo sum*) (Descartes, 1985[1636]: 127), as well as Freud's clinical imperative "Where Id was, there Ego shall be" (*Wo Es was soll Ich werden*). As far as Descartes' formula is concerned, Lacan argued that it erroneously proposes a causal relationship between a subjective reasoning (*cogito*) and a subjective existence (*sum*) transcending the thought process, whereas Descartes *ergo sum* is as much tributary to speech and language as his *cogito*. In *Seminar XI* Lacan had already explained this point in relation to the first part of Descartes' formula:

> Descartes tells us—*By virtue of the fact that I doubt, I am sure of thinking* [*de penser*], and—I would say, to stick to a formula that is no more prudent than his, but which will save us from getting caught up in the *cogito*, the *I think—by virtue of thinking, I am*. Note in passing that in avoiding the *I think*, I avoid the discussion that results from the fact that this *I think*, for us, certainly cannot be detached from the fact that he can formulate it only by *saying* it to us, implicitly—a fact that he forgets. [Lacan, 1977a[1964]:36, translation modified][11]

Likewise, Descartes can only conclude to his own existence "by saying it to us", and without even realizing that this is what he actually did. Therefore, Lacan rewrote Descartes' adage as "I am thinking: 'therefore I exist' " (Lacan, 1989[1965]:13), through which the *sum* in the statement accedes to the level of thought, the *ergo* looses its function as a logical implication, and the issue of existence is relegated to a dimension beyond the statement. Lacan's alternative formula also indicates that Descartes's own conscious reasoning (the reflection upon his own thought) did not elicit his meta-rational existence, but that the entire linguistic operation, of

whose impact the philosopher himself was not fully aware, induced his split subjectivity.

Lacan detected a similar "paradox ... that presses me to assume my own causality" (ibid.:13) in Freud's well-known motto *Wo Es war soll Ich werden*, which he translated as "*là où c'était, là comme sujet dois-je advenir*, "there where it was, there must I, as subject, come to happen" (ibid.:12, translation modified).[12] Urging his audience to read Freud's formula backwards (*à revers*) (Lacan, 1989[1965]:12), that is to say to "invert its direction" (*d'en renverser le sens*) (ibid.:13, translation modified), Lacan contended that the ensuing *Ich soll werden wo Es war* indicated sufficiently how the subject's mandatory happening does not tap from any other force than that which inhabits the subject itself.[13] Here too the subject appears as *causa sui*.

As I stated at the beginning of my essay, Lacan's cardinal aim in "Science and truth" was to reduce the multifarious formations of the unconscious to their structural invariants, in order to lay the foundations for psychoanalysis as a clinical praxis. The first half of Lacan's text yields at least three such elementary components: (i) the subject on which psychoanalysis operates is invariably the subject of science (an experience of thought); (ii) the subject of science is divided between knowledge and truth; and (iii) the unconscious, as conditioned by and structured like a language, encapsulates an independent thinking process devoid of a thinking agency, which pervades conscious reasoning.

However necessary these three invariants may seem as cornerstones for a solidly constructed psychoanalytic praxis, in Lacan's mind they insufficiently conveyed the specificity of psychoanalysis. In-so-far as psychoanalysis operates on the subject of science, "I do not believe", Lacan divulged, "that, in this respect, psychoanalysis lays claim to any special privileges" (ibid.:8). Cartesian philosophy also operates on the subject of science, as do the displines of structural anthropology, linguistics and game theory. The constitutive division between knowledge and truth emanates from Descartes' struggle to find a reliable criterion for the clarity of his perceptions, and it is also entertained within structural anthropology. The linguistic structure of the unconscious and its pervasive influence on the human condition had equally already been accounted for by Lévi-Strauss.

As a result Lacan looked for another, more distinguishing invariant, which he found in the function psychoanalysis accords to the truth as cause. This specific function of the truth as cause in psychoanalysis also emboldened him to widen the gap between psychoanalysis and modern science, and to take issue with reigning conceptions of psychoanalytic practice as a Western version of shamanism or an alternative religion. The former analogy had been adduced by Lévi-Strauss in "The effectiveness of symbols" (Lévi-Strauss, 1968a[1949]:198–204) and it had prompted Lacan to admit in his "Rome Discourse" that the psychoanalyst "is not far from regarding [the status of his action] as magical" (Lacan, 1977e[1953]:33). The second parallel had less noble origins and more widespread ramifications amongst the numerous detractors of psychoanalysis. Indeed, the idea that psychoanalysis is but a secular belief and that its "rites of initiation" are not dissimilar to those preserved by religious cults continues to underpin many a Freud-basher's exposure of the psychoanalytic fallacies.

In order to define the additional invariant of psychoanalytic praxis, simultaneously separating psychoanalysis from modern science, magic and religion, Lacan took inspiration from Aristotle's classic tabulation of the four causes in the second book of his *Physics* (Aristotle, 1996:38–42): the efficient cause, the final cause, the formal cause and the material cause. The difference between these four causes is traditionally explained with the example of the construction of a house. The efficient cause refers to the time and effort invested in the construction process; it is synonymous with the general expenditure of energy required to build the house. The final cause concerns the aims and objectives of all those people involved in the construction; if nobody had the intention to build, the first stone of the house would not even be laid. The formal cause is related to the construction plan, the outline of work procedures, and the general application of certain mathematical laws. Every act of construction corresponds to a systematic arrangement within a preconceived plan, without which the house would never subsist as a solid piece of work. The material cause reflects all the equipment and natural resources necessary for giving shape to our intentions, efforts and plans. No matter how great one's enthusiasm, detailed one's plans, and clear one's intentions, the house cannot exist without stones or wood.

Lacan argued that the function of truth as cause within magic, religion, modern science and psychoanalysis always follows one of the four causes within Aristotle's theory of causality. "Magic involves the truth as cause in its guise as efficient cause" (Lacan, 1989[1965]:19). In religion "truth appears only as a final cause" (ibid.:20). And whereas "the truth as cause in science must ... be recognized in its guise as formal cause", psychoanalysis envisages the truth as a material cause (ibid.:22). How are we to read each of these connections? What does it mean for the truth to function as an efficient cause in magic, for instance? From the vantage point of our common sense understanding of causality, whereby a cause is simply everything responsible for the production of an effect, it is difficult to see what Lacan was trying to convey. Yet he mentioned explicitly that his programme did not entail "the cause as logical category, but as causing the whole effect" (ibid.:17), and we also ought to bear in mind that some of Aristotle's causes are completely alien to our contemporary definition of a causal factor.[14] Nowadays few if any people would presumably agree that a pile of bricks is the cause of a house. The causes in Lacan's schema should therefore not be understood in logico-mathematical terms, and not be diverted from their meaning in Aristotle's physics.

The function of truth as an efficient cause in magic indicates that the truth of a magical phenomenon, whether a shamanistic healing practice or the cursing of natural forces, is always attributed to power, energy or (super)natural abilities. Even when a shaman knows that he is merely practising the art of deception, as in the famous case of Quesalid reported by Boas and immortalized by Lévi-Strauss (1968b[1949]:175–178), his confrontation with the fact that his own deceptive practice seems to be more effective than that of others may instil the seed of doubt into his mind, and trigger explanations of the truth of the patient's cure in terms of his own divine powers. By contrast, in religion the truth of a phenomenon does not lie within the efforts required to produce it, but mirrors the unfathomable intention of God. Here, the final cause is being invoked as *primus inter pares* amongst the causes: the will of the Creator controls the expenditure of energy, the planning, as well as the available materials. In "Science and truth" Lacan formulated this dynamics as follows: "Let us say that a religious person leaves responsibility for the cause to God, but thereby bars his own access

to truth. Thus he is led to place the cause of his desire in God's hands, and that is the true object of the sacrifice" (Lacan, 1989[1965]:20). The truth of the endless spiral of nature, including the individual's private psychic dwellings, are firmly in the hands of God, who pursues a superior goal. In modern science truth appears as a formal cause, which means that modern scientists are only willing to admit that they have discovered the true nature of a phenomenon if they have succeeded in formulating the laws governing its manifestations. Whereas a religious person is likely to explain biological diversity with God's plan of Creation, the scientist will engage in a series of carefully controlled studies and, armed with Darwin's theory of evolution, contribute to the development of natural laws emblematizing truthful scientific knowledge. Furthermore, the truth value of a scientific formula will be judged on the basis of the amount of phenomena it is capable of explaining. Rules to which there are many exceptions are less true than rules applicable to anything in each and every context.

The central message of Lacan's distribution of the Aristotelian causes over magic, religion and modern science was that in their reliance on the efficient, final and formal causes respectively none of these three realms of action really acknowledges the truth as cause. This is why he contended that in magic, religion and modern science the truth as cause "appears as", or must be recognized "in its guise" as an efficient, final and formal cause. To Lacan, the key feature of the truth as cause, which is only taken into account in psychoanalysis, is that it functions as a material cause. For a psychoanalyst, the truth of a phenomenon, action or process lies neither in the effort invested in it, nor in its goals or its logical plan, but only in its building-blocks, which are made up of speech and language. Putting the truth to work as a material cause thus implies that the symbolic make-up (the signifying dimension) of an event is being taken seriously.[15]

More concretely, Lacan's gloss on the truth as material cause in psychoanalysis emphasized that all formations of the unconscious derive their existence from the material of language, and that a psychoanalytic praxis cannot be deployed without these symbolic elements (signifiers). In light of the above considerations on the unconscious as a symbolic system without a knowing agency, it should also be noted that the formations of the unconscious stem

from the synergetic, albeit thoroughly conflictual action of the subject's conscious speech and his or her unconscious "being spoken". Although the truth of a symptom, its emergence and disappearance, lies in the signifier, this truth has to be situated primarily on the level of the unconscious, that is to say within a discourse from which the conscious subject is barred. The absent subject of the unconscious does not prevent the unconscious from expressing itself. On the contrary, as Lacan had daringly demonstrated with a lengthy rhetorical figure, the truth (the fact that there is no subject in the unconscious) speaks vigorously and eloquently.[16]

In bringing this essay to a close, I would like to point out that Lacan's arguments in "Science and truth" may instil some bewilderment in the reader as to his exact position concerning the scientific status of psychoanalysis. Whereas in *Seminar XI* Lacan had drawn attention to the "ambiguity that persists in the question as to what in psychoanalysis is or is not reducible to science" (Lacan, 1977a[1964]:265), in "Science and truth" some ambiguity persists as to whether Lacan is keen to reduce psychoanalysis to a science or not. On the one hand, he was adamant that psychoanalysis operates on the subject of science, that this is the only subject that should be tolerated within psychoanalysis, and that this is the subject which can make a psychoanalytic praxis scientific. On the other hand, he criticized contemporary scientific practice for its inherent closure of the gap between knowledge and truth, and its spurious reliance on the truth as a formal cause.

On the basis of "Science and truth", Milner (1991, 1995) has argued that Lacan finally relieved psychoanalysis from the burden of the ideal of science, adding provocatively that scientists could definitely benefit from the ideal of psychoanalysis. Whilst I remain unsure about the ideal character of (Lacanian) psychoanalysis, I tend to agree with Milner's first proposition if only the term science is restricted to those modern disciplines which favour the quantitative experimental method and the hypothetico-deductive approach. For nowhere in "Science and truth" did Lacan intimate that a psychoanalytic praxis does not deserve to be qualified as scientific, if only the term "scientific" is expanded in a Lévi-Straussian way so that it encompasses all activities involving the

systematic classification, detailed description and rational explanation of empirical data, regardless of whether this knowledge is absolutely true, and taking account of the symbolic universe in which the subject is situated.

Lacan was happy for psychoanalysis to flourish amongst linguistics, game theory, and structural anthropology—disciplines whose main representatives have championed the scientific value of their observations. Hence, it would be unfair to say that during the early 1960s Lacan refused to adorn psychoanalysis with the label of science. His entire trajectory in "Science and truth" reflects an ardent desire to situate psychoanalysis within the Cartesian tradition of rationality which had given birth to modern science, a tradition which modern science itself paradoxically exchanged for the seductions of objectivity and true knowledge. My alternative to Milner's aforementioned statement therefore reads that Lacan refused to expose psychoanalysis to the ideal of modern science, not because modern science is too empiricist, rational and detached, but because modern science is no longer scientific, or not scientific enough.

Notes

1. In the otherwise commendable English translation of "La science et la vérité", the implicit reference to Lagache is completely lost because Lacan's "est-ce qu'il ne nous la gâche" has been rendered as "doesn't it simply ruin our quest". A similar reference to Lagache may be found in "Position de l'inconscient", the written summary of remarks made by Lacan at a conference on the unconscious in 1960, in which he criticized Lagache's decision to stay away from the meeting with the words "Nous ne déplorerons pas plus l'occasion là gâchée..." (Lacan, 1966b[1964]:833).
2. *Spaltung* is a Freudian term designating the mental process through which a oneness becomes twofold. The term can already be found in "The neuro-psychoses of defence" (Freud, 1894a) and the *Studies on Hysteria* (Freud and Breuer, 1895d:11–12). In these early texts, Freud maintained that a "splitting of consciousness" (*Spaltung des Bewußtseins*) constitutes the basic, albeit non-primary phenomenon in many cases of hysteria, in-so-far as they bear witness to "dream-like states" in which ideas are cut off from the regular content of consciousness, akin to what can occur under the influence of hypnosis. Subsequently, Freud introduced the term *Spaltung* again in his 1927 article "Fetishism" (Freud, 1927e), but this time to explain the mental condition of the fetishist, whose ego is supposed to incorporate and sustain two contradictory reactions to the problem of castration. Freud claimed that the fetishist, when confronted with the mother's lack of a penis, erects an object that he both worships and despises, due to the fact that it at once symbolizes his victory over castration and continuously reminds him of it. *Spaltung* resurfaced with the same meaning in the posthumous texts *An Outline of Psycho-Analysis* (Freud, 1940a[1938]: 202–204) and "Splitting of the ego in the process of defence" (Freud, 1940e[1938]), although Freud now generalized the process to the broad field of neurosis. Apart from these widely quoted sources for Freud's notion of *Spaltung*, the term also appeared with a different meaning in Lecture 31 of the *New Introductory Lectures on Psycho-Analysis* (Freud, 1933a[1932]:58). Here, Freud insisted upon the temporary splitting of a unitary ego into an object and a subject part, whereby the latter takes the former as an object of study. Hence, the splitting represents the division of a subject and an object within the ego, the ego-object becoming relatively independent from the ego-subject as a source of knowledge about the ego itself.
3. See also the first sentence of Lacan's "The subversion of the subject": "The praxis that we call psychoanalysis is constituted by a structure" (Lacan, 1977b[1960]:292).
4. Lacan's idea that the reduction of empirical diversity to intelligible conceptual structures is a sufficient condition for qualifying an approach as scientific echoes Lévi-Strauss's argument in the first chapter of *The Savage Mind* (The Science of the Concrete), in which he demonstrated that there is no difference between the neolithic classifications of nature and the contemporary ones as far as mental operations are concerned. From the latter perspective both attitudes deserve to be called scientific. See Lévi-Strauss (1966[1962]:1–33).
5. Coined by Gaston Bachelard, the concept "epistemological break" became a staple of French philosophical discourse during the 1960s, figuring prominently in the works of Althusser and Foucault, amongst others.
6. Lacan's original sentence reads: "A tout cela nous paraît être radicale une modification dans notre position de sujet, au double sens: qu'elle y est inaugurale et que la science la renforce toujours plus" (Lacan, 1966d[1965]:856). The English translation of this phrase—"In this situation what seems radical to me is the modification in our subject position, in both senses of the term, for that position is inaugural therein, and science continues to strengthen it ever further" (Lacan,

1989[1965]:5)—does not really make sense because it is unclear what the two senses of the term "subject position" would be. Here, as further in the text when Lacan discusses Freud's adage "*Wo Es war, soll Ich werden*", the word *sens* means "direction" instead of "meaning".

7. Lacan's definition of the unconscious does not differ substantially here from that adduced by Lévi-Strauss in his 1949 paper "The effectiveness of symbols":

> [T]he unconscious merely imposes structural laws upon inarticulated elements which originate elsewhere ... We might say, therefore, that the preconscious is the individual lexicon where each of us accumulates the vocabulary of his personal history, but that this vocabulary becomes significant, for us and for others, only to the extent that the unconscious structures it according to its laws and thus transforms it into language. [Lévi-Strauss, 1968a[1949]:203]

8. "Scientism" is often used as a term of abuse to denigrate the practice of those who are convinced that the research methods of the natural sciences (physics, chemistry, biology) ought to inform all types of scientific investigation because the only forces purportedly at work within human and non-human organisms are physico–chemical ones. The notion "scientism" is generally traced back to an oath pledged between Ernst Brücke and Emil Du Bois-Reymond in 1842, yet they themselves never used the term. In "Science and truth" Lacan does not seem to employ "scientism" in a derogatory fashion, as an attitude which represents the nemesis of psychoanalysis, but as the central stake of Freud's entire itinerary. For a recent critical reading of Freud's position *vis-à-vis* "scientism", see Leader (2000:11–48).
9. Lacan demonstrated the deleterious effects of (pseudo-)analytic attempts at correcting the analysand's thoughts towards their correspondence with an objective reality in his famous discussions of a case-study by Ernst Kris (1951). When Kris's patient complained about the fact that he was plagiarizing all the time, Kris verified his patient's claim and concluded that it had no basis in reality. He subsequently informed his patient that his fears were completely unjustified, upon which the patient decided to eat fresh brains. Lacan argued that the patient's act of eating fresh brains should be interpreted as a move through which he tried to safeguard his desire (his psychic reality) against the analyst's demand to relinquish it. See Lacan (1977e[1953]:83, 1988a[1953–54]:59, 1993[1955–56]:79–81, 1966a[1954]:393–399, 1977c[1958]:238–240, 1958–59:session of 1 July 1959, 1966–67:session of 8 March 1967).
10. Because of Lacan's emphasis on the achievements of structural anthropology in "Science and truth", I will not engage in lengthy discussions of his references to game theory and linguistics. Suffice it to say that Lacan's exposition of game theory followed the works of Williams (1954) and von Neumann and Morgenstern (1944), and that the latter study had already been embraced by Lévi-Strauss in 1952 (Lévi-Strauss, 1968c[1952]) owing to the strong similarities between the formal models of economic analysis advocated by von Neumann and Morgenstern, and the structural approach within anthropology. When Lacan asserted in "Science and truth" that "game theory ... takes advantage of the thoroughly calculable character of a subject strictly reduced to the formula for a matrix of signifying combinations" (1989[1965]:9), it should thus be understood that he merely reiterated the essentials of game theory: a person is defined as a distinct set of interests, the description of a conflict situation depends on a calculation of the number of persons involved, and the available strategies can be graphically represented in the form of a matrix. As far as linguistics is concerned, Lacan noted that its case is more subtle, since it must take account of the difference between rational, symbolic systems of language and thought (the subject of science, the produced statements), and the subject who speaks as such (the aspect of enunciation). Nonetheless, he also pointed out that linguistics turned decisively towards the formal study of the language system (rather than speech, for instance) and that the theoretical divergence amongst contemporary linguists was not rooted in an incompatibility between their objects of study, but rather in their alternative formalizations of the symbolic system (the battery of signifiers): whereas syntax is the core organizational principle of language for Chomsky (1957), other aspects are examined by Hjelmslev (1961[1943]) and Jakobson (1963).
11. I have changed Sheridan's translation of the first sentence in italics, because Lacan expressly avoided the "I think", by using "*de penser*" instead of "*que je pense*", which Sheridan reintroduced by rendering "*de penser*" as "that I think", obviously generating confusion as to why Lacan would subsequently say that he prefers a formula "which will save us from getting caught up in the *cogito*, the *I think*".
12. Throughout his career, the peculiar grammatical form of Freud's *Wo Es war soll Ich werden* exercised a strange fascination on Lacan. In his 1955 text "The Freudian thing", he undertook a meticulous dissection of its structure, surmising that Freud would not have omitted the definite article *das*, as it had appeared previously in the title of his book *Das Ich und das Es*, without good reason (Lacan, 1977d[1955]: 128). In this paper Lacan also proposed to translate Freud's formula as

"Là où c'était, c'est mon devoir que je vienne à être", "There where it was, it is my duty that I should come to being" (ibid.:129). Some two years later, in "The agency of the letter", he suggested the alternative *"Là où fut ça, il me faut advenir"*, "There where that was, it is necessary for me to happen" (Lacan, 1977f[1957]:171, translation modified), eventually settling on *"Là où c'était, là comme sujet dois-je advenir"* during the early 1960s.

13. It should be noted that the English translation of Lacan's text is lacking here, inasmuch as *d'en renverser le sens* has been rendered as "in reversing its meaning". Lacan's argument is not about changing the meaning of Freud's motto, and it is unclear how that would be possible in the first place, but only about changing the direction in which it should be read.
14. When saying that the cause should be considered as causing the whole effect, Lacan echoed Heidegger's stance on causality in "The question concerning technology", in which he had insisted that the effect always comprises both the end of a process and the means to achieve it (Heidegger, 1977[1953]:6).
15. Lacan further complicated his account by arguing that magic, religion and modern science do not disregard the truth as cause in the same way (Lacan, 1989[1965]:22). In its promotion of the efficient cause, magic displays a repression (*Verdrängung*) of the truth as cause: it is as if the magician says "My words and actions are part of the ritual, yet they have nothing to do with the effect, since my power is the only thing that counts". Religion, by contrast, maintains a denegation (*Verneinung*) of the truth as cause: "You may think that these words and actions are mine, but they only belong to God". Foreclosure (*Verwerfung*) of the truth as cause is the province of modern science: "My words and actions do not exist at all within the equation; the truth exceeds my existence, yet my knowledge can capture it in such a way that it is unaffected by my words and actions".
16. Between the first part of "Science and truth" (on the subject of science in psychoanalysis) and the second part of the text (on the truth as material cause), Lacan brought to mind his provocative attempt in "The Freudian thing" to conjure up the truth by means of identifying with it ("I, truth, will speak"), a so-called prosopopea which convinced neither his Viennese audience the first time he did it, nor the more familiar group of attendants at his own seminar some six weeks later (Lacan, 1993[1955–56]:83–84). The text "The Freudian thing" in Lacan's *Écrits* (Lacan, 1977d[1955]) emanated from his second presentation at his seminar in Paris, the first presentation being no more than a free improvization based on a set of notes (Lacan, 1987–88[1955]).

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CHAPTER FOUR

Causality in science and psychoanalysis

Paul Verhaeghe

> "Il n'y a pas de science de l'homme, parce que l'homme de la science n'existe pas, mais seulement son sujet"
>
> Lacan, 1966:859

Introduction: The cleft between two sciences

Every academic is familiar with the cleft that runs through the university campus: on the one hand we have the "true" science; on the other hand we have the social science, its little brother. This cleft goes back to the birth of the human quest for knowledge, and has been the subject of discussion ever since. The contemporary form of this discussion entails a number of oppositions: objectivity, predictability, laws, explanation go for "hard" science; subjectivity, absence of prediction and laws, and description are supposed to be the epithets of "soft" social sciences. No wonder that the latter strive to prove their genuine scientific character by modelling themselves as much as possible on their bigger brother. Freud was not immune to this impulse, and even Lacan for a certain period hoped to join the real thing. Freud ended

up with an impossible profession, and Lacan took his psychoanalytic bearings from science.

In this chapter I aim to show that the subject of science is the same subject entering analysis, that is: a subject who apparently wants to know, but whose hidden aim is to bridge its inner gap, to delete the / which bars its supposedly inner self. In Lacanian terms, their common goal is the "*suturage du sujet*". Both hard and soft sciences share the same deadlock: the impossibility of handling the lack, and the consequent appeal to an external guarantee in which one has to believe. The goal of an analysis, on the contrary, is the creation of a neo-subject through an identification with the real of the symptom and a separation from the Other. The cleft that is supposed to run between two sciences concerns first of all the cleft in the same subject.

In order to demonstrate this, I will present the reader firstly with the problem science has with causality; secondly, with Lacan's answer to this problem; and thirdly, with the implications this has for our conceptualization of the subject.

Causality as the nightmare of science

In contemporary science, the question of causality has almost disappeared. Instead of causality, the prudent scientist talks about correlation: "There is indeed a high correlation between smoking and lung cancer". As we will see, there is a precise reason for this disappearance. The question as such is age-old, and one of the eldest theories addressing this question to be found in Aristotle's work. He discusses four different causes: material, formal, efficient, and final causality. The last two will be the most important ones for this chapter.

It can be said that until the beginning of the 20th century, i.e. the time of Freud, science focused almost exclusively on the efficient cause. The goal of science in this respect was the discovery of the operational, serial cause of things. This search delivered a restrictive and massive determinism into the field of scientific research. This orientation can be found within neurobiology, for example, where attention is focused on the cell membrane as causal factor within the system of neurotransmission (i.e. restricted field of research).

This tallies perfectly with the so-called *automaton*-model: science wants to discover the deterministic laws at work in its object of study, in order to predict and to control its object. Scientists become technicians oriented by the question "How?"—how does it work, and how can we intervene, control, manipulate? Within this mechanical–deterministic paradigm, the question of chance, *tuché*, does not fit. Either it is regarded as something that happens by pure coincidence, independently of the systematically determined sequence, and thus it is reduced to something unimportant. Or it is regarded as something that did not happen by coincidence, something that has to be taken seriously, literally and etymologically *series-ly*, in order to absorb it into the already discovered chain of systematic determination. The all-embracing scientific dream is the discovery of the Complete Causal System, in which everything can be accounted for, i.e. everything has a causally justified place.[1]

This dream, however, turns into a nightmare once one asks the question concerning the cause of the cause. From this perspective, *tuché*, chance, functions as the trauma underlying this nightmare.

Indeed, the question about the cause of the cause has become insoluble for contemporary science. This was not the case for Aristotle with his theory of the final cause, the ultimate cause of everything. Yet, within the boundaries of contemporary *automaton*-science, there is virtually no place for this idea. According to Aristotle, nature—*physis*—is goal-directed and contains right from the start an end goal that causes and directs each particular change. This is the final cause: everything carries an ultimate goal within itself, and everything that happens, has to be considered as mere steps toward this goal. He interprets this as the *entelechie*: the aim of each change is the realization of being. A seed, for example, contains certain characteristics causing a number of things to happen, with a particular tree as final goal, the tree being the *entelechie* of the seed. Thus considered, the final cause answers the question of the "why?" or "what for?" Within the "hard" *automaton*-science, such teleological reasoning and questioning is out of bounds, for causality is there restricted to a step by step determinism, avoiding as much as possible both the first and the last step.

At first sight, the major difference between contemporary *automaton*-science and Aristotle's more global theory is that his idea of final cause avoids the necessity of an external cause.

Aristotle's final causality can be interpreted as an *internal* one, located within the object itself. Indeed, this avoids a major problem, namely, the division, relied upon by *automaton*-science, between an "animated" object and an "animator". The traditional example of this comes from Descartes, for his *res extensa* and *res cogitans* effectively entrenches the body–soul problematic. It seems, therefore, that such a division is superfluous with Aristotle. Alas, this difference does not hold: closer scrutiny reveals that he needs an external starting-point too. In his theory, nature is continuously moving, and different causes explain the different movements. However, the thing that ultimately starts the first movement, cannot be moved in itself. In the cosmic theory of Aristotle, this is the "unmovable primal mover". Needless to say that it didn't take the medieval catholic interpreters long to recognize God in this primal cause. In the wake of that interpretation, a number of philosophical systems will assume a sort of mysterious primal source of power at the base of everything. And the latest form embodying this primary force within contemporary science is of course the Big Bang.

At the turn of the 19th century, this problem was not so obvious, and thus the dream of science at that time remained an all-embracing determinism. Today, at the next turn, this dream has faded away, mainly because it contains a number of important implications demonstrating its fundamental incompleteness and/or impossibility.

First, this line of thought implies a necessary division between on the one hand Science, with capital "S" and, on the other hand, ethics. This was already clear with Descartes, and has become all the more so ever since. Science amounts to *automaton*, predictability, technique, objectivity and is nomothetic; whereas ethics is linked to *tuché*, arbitrariness, morals, subjectivity and is ideographic. This division is of course in itself very arbitrary and a direct consequence of its starting point. Already in 1970, J. Monod demonstrated that such a division is impossible and that it goes back to a preceding arbitrary and thus ethical stance.[2] Indeed, modern science starts with a decision to *reject* the subject: the subject does not enter the scene of the scientific procedures as such. That is why Lacan considers the end point of science as a successful paranoia.[3]

This entails a second implication: the *automaton*-science goes back to the illusion of objectivity. Such a science appears to

describe, predict, even understand nature in an objective way, i.e. independently of the subject. Heidegger was the one who exposed this as an illusion: "Modern physics is not experimental physics because it uses experimental devices in its questioning of nature. Rather the reverse is true. Because physics, already as pure theory, requests nature to manifest itself in terms of predictable forces, it sets up experiments precisely for the sole purpose of asking whether and how nature follows the scheme preconceived by science."[4] And Heidegger illustrates his point with his famous example of the hydraulic plant on the Rhine. It is this example that Lacan uses in his fourth seminar. For him, so-called objective science starts always with the desire, even the passion, of the researcher who imposes his desire on nature and tests if nature is prepared to follow this desire. Later, Lacan will apply this idea even to (the dogs of) Pavlov, through the application of the concept of transference.[5] Just as analysis operates only through the desire of the analyst, objective science yields results through the desire of the scientist. At the end of the day, science is nothing but the questioning of one's own desire, albeit in a non-recognized way. Hegel had already said as much: Science is the humanization of the world (Hegel, 1970:29–34).

Third, each "*automaton*-science" must necessarily find its starting-point in unexplained facts which function either as axioms or as so-called "constants". This can already be seen with Newton, the founder of this form of science. Indeed, as a starting-point, he had to assume a point of rest, in order to be able to develop his cosmic system. *Mutatis mutandis*, the same thing can be found with Einstein, who took the speed of light to be a constant. Less obviously but equally axiomatic as the previous examples is the assumption in biological psychiatry that every behaviour is biochemically determined and can thus be changed, at will, in the same biochemical way.

Fourth, an *automaton*-science must necessarily install an Other—a point of certainty outside itself as a guarantee for the truth of the system. Even Prigogine (1985:7) in his *Order Out of Chaos* produces this as a critical comment: "An *automaton* needs an external God", which evokes Einstein's famous answer when he was confronted with the unpredictability of certain systems (Heisenberg's uncertainty principle): "God does not play with dice". This brings us back

to Descartes, whose subject required an external God to guarantee the Truth. Ultimately, then, we return to Artistotle's Primal Unmovable Mover. And the same kind of reasoning can very well be demonstrated at the level of the individual: if one considers a human being as an *automaton*, we end up with the deadlock of the homunculus-theory. In his "La causalité psychique", Lacan sneers at this idea, remarking that if a man has a headache, this must be caused by the little man in his head who has a headache, which is caused by an even smaller man in the head of the latter little man, which, in its turn ...[6]

This fourth consequence leaves us with two alternatives: either one ends at the hysterical point where different theories, religions and ideologies meet and fight each other, in order to promote *their* big Other, its contemporary symptom being the omnipresent cleft in science between "Believers" and "Disbelievers". Or one ends up with a caricature of religion, i.e. obsessional neurosis with endless repetitions of the Other in the mirror.

Thus considered, the whole question of causality becomes a deadlock. The final cause paradigm presupposes a complete determinism, based on an inevitable teleology and introduces theology in one way or another. The efficient cause paradigm presupposes a complete determinism as well, refusing at the same time the teleological implication but re-introducing it by the backdoor. For both, chance does not exist and man is confronted with a complete determinism in which there is no place for choice, freedom or responsibility. Moreover, this determinism is determined by a mysterious something, even someone outside ourselves. Specifically in our domain of human science and clinical practice, we have to face a generalized idea of fate neurosis (*Schicksalsneurose*): the fate of an individual is determined, the only thing we are not sure about is how it functions.

Determinism everywhere, that's the 19th century message. Nevertheless, the already mentioned consequences and implications of such an all embracing determinism were not without effect. It turned the scientific fairy tale and wish fulfilment dream into the nightmare of a necessary return to pre-scientific times. The final blow came from the philosophical–mathematical department. C. S. Peirce, founding father of pragmatism, demonstrated that universal determinism is logically impossible, because it would make change

and diversity impossible. With this, he rewords the classical critique of Democritus by Epicurus. The former based his theory on the idea that atoms moved in a linear way at constant speed, and that every object came into being through the collisions of these atoms. Epicurus demonstrated that there must be what he called a "clinamen", sudden atomic swervings, which were not causally determined in themselves, thus generating the phenomenological diversity. Both Peirce and Epicurus are endorsed by the famous Gödel theorem: a complete theory cannot be consistent, a consistent theory cannot be complete. We can summarize these three theses with one central statement: *there has to be a lack in the determinism.* Somewhere, there must be an undetermined cause, a closed system of causality is in itself impossible.

It is no wonder that this mechanical–deterministic world-view broke down in the 20th century, mainly under the influence of quantum mechanics and thermodynamics. It is interesting to note the fact that the latter found its starting-point in things that were considered by the *automaton*-science as belonging to the realm of *tuché*, e.g. the meaningless, "accidental" loss of energy through the moving and rubbing together of mechanical parts. The analogy with Freud is striking, for as a starting-point, he also took meaningless, accidental psychological trivia: parapraxes, dreams, jokes ... And in the second part of the previous century, the cutting edge of scientific development focuses again on chance events, and again, we are confronted with the same opposition between *tuché* and *automaton*, albeit in different guises: "nécessité–hasard" (necessity, chance: J. Monod), "ordre–bruit" (order, noise; H. Atlan), chaos–chance (Prigogine). As a side-effect, we meet with an interesting return to a combination of science and philosophy, at least in the top zone. Descartes inaugurated a gap between science and philosophy, but the science of the 21st century will probably erase the frontiers between these two and operate a return to the classical Greek combination of science and philosophy.

To conclude: science cannot stand the idea of a lack. Its aim is a complete body of knowledge. Such an aim makes it necessary to have an external guarantee and, as we will see, Lacan's theoretical development leads him away from this scientific ideal. For in the background lurks an inevitable cleft (body–soul, objective–subjective, internal–external).

Lacan and causality

The original French edition of the *Écrits* concludes with a paper entitled "La science et la vérité" (1966), which can be read as the inverse answer to the opening paper: "Le séminaire sur la lettre volée" (1957). Each paper holds a completely different viewpoint on causality and science and the place of psychoanalysis in relation to them.

The key to understanding this reversal lies in Seminar XI. Readers of Seminar XI will probably remember the two concepts that Lacan borrows from Aristotle: *tuché* and *automaton*. At first sight, their relevance is not that clear, and the link with previous and subsequent seminars is obscure. The concept of *automaton* will not be mentioned any more, and *tuché* will be related to the theory on trauma.

However, a closer reading demonstrates that these concepts have everything to do with the core of science, i.e. determinism and causality. A classic critique of psychoanalysis concerns its supposed idea of determinism: everything is determined from before one is 5 years old, the human being is driven by dark forces arising from an almighty unconscious, there is no such a thing as chance, everything is written beforehand in an unknown handwriting. The early Lacan will elaborate this determinism in a scientific way, by interpreting this dark unconscious as a linguistic system, governed by laws and thus predictable. The later Lacan concentrates on the drive and the real, thus making room for unpredictability and causality as such.

Seminar XI is difficult to study in this respect, because it contains both. On the one hand, Lacan elaborates the determinism he finds in the human psyche, which leads to a deterministic psychoanalytic practice as well; on the other hand, he confronts us with causality beyond determinism, entailing a less optimistic appraisal of psychoanalytic practice.

Automaton stands for the deterministic part, whilst *tuché* resides beyond the *automaton* and is the name for the ever-missed meeting with the real.[7] The *automaton* concerns the network, the chain, the procession of signifiers. Both in these denominations and in Lacan's elaboration, the accent is on this aspect of "chain", which means that the linear ordering shapes the idea of network. This chain contains two kinds of laws. The first kind comes down to the

linguistic mechanisms of metaphor and metonymy, whose elaboration goes back to an older paper, "L'instance de la lettre". The second kind has everything to do with mathematical laws. Their elaboration took place in Seminar II and the accompanying paper, "La lettre volée" (especially its addendum). As mentioned above, Lacan's decision to put this paper at the beginning of his *Écrits* (and thus breaking the otherwise chronological order) says a lot about the importance he attributed to it at that time. More specifically, it expresses his hope with respect to these lawful determinations and psychoanalytical practice. It is the period when Lacan believes in the possibility of both a complete analysis (finding, constructing the last signifier) and a predictable subject (computation).

If we study these mathematical laws, there is one thing that stands out right from the start: they concern solely the *formal* aspect of the signifier, independently of the signified. Hence the fact that Lacan could replace the chain of signifiers by a series of pluses and minuses obtained by pure chance (coin flipping). He designates this formal aspect as the *materiality* of the signifier, the *letter*—which explains the titles of the two papers already referred to. This material chain of signifiers, obtained by a chance sequence of pluses and minuses, is governed by laws which determine the possibilities of circulation and production of these signifiers. In the addendum, he demonstrates that a chance series of pluses and minuses contains predictable sequences, on condition that one groups them by three. Again, this concerns a purely formal elaboration. In the actual paper "La lettre volée" itself, Lacan presents us with a meaningful elaboration focusing on Poe's story of *The Purloined Letter*. A signifier, "letter", deviates in a certain way from its path and determines thereby a number of effects on those who hold it. The meaningful content of the letter is supposed but never exposed, thus reducing this letter to its material character.

The background of these ideas is probably to be found in Shannon's theory, although Lacan does not refer to it. In collaboration with Weaver, Shannon elaborated in 1949 a mathematical theory in the field of informatics.[8] Their theory presents a formula expressing the probability of the appearance of a certain sign at a certain place in the message, and this without taking into account the content or meaning of the message. This probability is then used in a second formula which calculates how much

information the said sign contains. The greater the probability of appearance of that sign in a particular place, the smaller its information value, and *vice versa*: the smaller its probability of appearance at a particular place, the greater its information value. This theory had an enormous impact not only in the field of informatics but also in the wider field of communication and discourse theory.

Thus, mathematical laws present us with a deterministic effect in which the original chance event (coin flipping) is surpassed: the chain produces "spontaneously" its own determination, and that is the *automaton*, literally, something that moves by itself. Of course this idea tallies perfectly with the process of free association, which is here exposed as an *automatic* association. Such an inherent determinism of the chain of signifiers does not only open the possibility of interpretation, it makes this interpretation "automatic" as well. At a certain point, Lacan will even introduce the idea of the computation of the interpretation.[9]

This mathematical determination, however, must be linked to the linguistic mechanisms. Their combination presents us with the divided subject as a determined effect of the chain of signifiers. It is this combination that explains the well-known sayings: "The unconscious is structured like a language" and "The signifier represents the subject for another signifier". Lacanian reinterpretations of a number of Freudian analyses in this respect are very instructive. In the case of the Rat man, for example, the chain of signifiers produces the signifier "rat" in a very determined way: *Rat, heiraten, Hofrat, Rate* ... With the Wolf man, the same goes for "Wolf" and for the letter "V". Probably the most instructive case is to be found with Anna O who, under hypnosis, had to reproduce the entire chain of signifiers between symptom and cause, in order to make this symptom disappear. The determinism inherent in this chain is so obvious for Freud, that he keeps referring to it in his last chapter of the *Studies on Hysteria*.[10]

Hence the *automaton* contains no chance event. On the contrary, it displays a systematic, lawful determination. Even if one starts with groupings of two elements, something in the chain functions as a memory, remembering which grouping can follow another grouping and which can't. In his talk at the occasion of his "Doctorate Honoris Causa", J.-A. Miller compared this to cybernetics, which equip washing machines with a "program" operating with a "memory".[11]

It is obvious that this theory entails a complete determinism and opens up the possibility of a complete analysis, meaning that the last signifier that represents the subject can either be found or constructed. If this is the case, psychoanalysis would join the hard sciences. And for a certain period, Lacan had high hopes in this direction. For had he not discovered a scientific determinism underlying Freud's "free" association? At least one of his pupils, S. Leclaire, managed to produce a case-study in which the final signifier, summarizing the core of that particular analysand's determination, could be constructed.[12] This hope can be found in the very same seminar where Lacan felt compelled to abandon it, i.e. Seminar XI, which does not make it any easier to read ...

This brings us to the second concept. The automatically functioning chain of signifiers does not only determine the sequence of these signifiers. From time to time it meets with an impossibility, with something that canNOT appear in the chain and lies beyond it. In Lacan's first theory, this idea of a lack was already present, but at that time the impression was that this lack was nothing but a lacking signifier, i.e. something that could be found or constructed through the very process of analysis itself. This changes when Lacan recoins this lack as *tuché*.

This idea of *tuché* is one of the cornerstones on which Seminar XI is built. As a matter of fact, it goes back to Freud's starting point as well, i.e. the real of the trauma. Already for Freud, the trauma came down to something where normal representation failed: the traumatic experience could never find an appropriate expression. Proper signifiers were lacking, and Freud would discover an analogous process at the base of "normal" neurosis. He describes this as primal repression, meaning that something remains fixated at a non-verbal level, making it forever impossible to turn it into words, and thus constituting the kernel of the unconscious. Lacan will describe this as an ever-missed encounter with the real and link it to the drive. The so-called secondary repression (usually named "repression") concerns the psychological representations and determines a lack that can be filled in during the analytic treatment. Freud had put all the accent on this secondary repression, whilst the theory of primal repression remained rather vague.

Again in the first chapter of Seminar XI, Lacan elaborates the difference between law and cause. In itself, this implies the shift from the early Lacan to the later Lacan. With the first one, everything was understood in terms of the systematic determination coming from the symbolic (cf. the juridical meaning of the word: "to signify"). The notion of "cause" introduces something completely different. Ultimately, this cause has to be looked for in something *un*-determined, something that is not lawfully, systematically determined: "In short, there is cause only in something that doesn't work" (Lacan, 1979:22).

In all this, the body occupies a completely new place. As cause it calls for "an appointment with a real that eludes us",[13] a real that lies beyond the *automaton* and that comes down to what cannot be assimilated, in the sense of not mediated, not represented.[14] Hence, the idea of cause implies the idea of failure, a failure of the symbolic to cover something of the real: something does not happen, thus causing something else to fill the scene.

The implication of this is that the body, through the drive, has a central causal impact on the unconscious as such: "For what the unconscious does, is to show us the gap through which neurosis associates with a real—a real that may well not be determined".[15] This in itself non-determined real is the drive in its status of non-representability. Hence the association with trauma.[16] Its aspect of failure appears in the negative denominations used by Lacan: "the not-realized", "the un-born", thus permitting him to make explicit a direct connection with the "un" of the un-conscious.[17] The very same negative idea is to be found in the becoming of the subject as well, which is always a failed process. This leaves us with the idea of a structural homology in which a gap, a primal lack, causes a never ending process that tries to cope with it, but that for one reason or another, never succeeds.

This theory on causality implies nothing less than an expansion of the previous determination with its exact reversal.[18] Previously, Lacan thought in terms of "law" and the omnipresent determination by the symbolic.[19] Now, a different causality enters the game, arising from the real of the body. From this point onwards, it is the interaction between these two orders that has to be studied. *Tuché* puts the accent on the unconscious as a cause, *automaton* on the productions and the effects of the unconscious which are

determined in a systematic way. Moreover, both of them are intrinsically interwoven and determine each other in a mutual causality, which is circular but not complementary (cf. *infra*).

As stated above, Lacan's theory about the *automaton* in Seminar XI is not new. In his second seminar, he had already demonstrated that the appearance of any arbitrary signifier is determined by law, i.e. there is a system determining which signifier can appear at a given point in the chain of signifiers and which cannot. This is important, because it provides us with the scientific base of Freud's free association. During the analytic treatment, free association is governed by an underlying determination, resulting in a kind of automatic memory. A number of lost signifiers can be retrieved and worked through during the treatment. Clinical practice demonstrates that this process of rememoration succeeds only up to a point, after which the chain stalls and stops.

It is there where the second line starts: this "full stop" of the symbolic, the point of causality "where it doesn't work" concerns the not-realized, the un-born in the chain of signifiers, the non-verbal rest that remains, even when desire has been expressed in the words of a demand. At that point, Freud had already met repetition compulsion rather than rememoration, and this repetition has everything to do with the real. The point where the chain stalls, is the very point where the real makes its appearance. The "meeting" with the real is an ever missed meeting, because there is no appropriate signifier. Lacan formulates this idea by paraphrasing Spinoza: "*cogitatio adaequata semper vitat eamdem rem*": an adequate thought avoids always the same thing.[20]

As a consequence, there is no final analysis possible, nor a definite computation of the subject. Repressed signifiers are determined, and can be found up to a certain point. Beyond that, we meet with something different, where the signifier is lacking and the real insists, acting as a primal cause for the chain of signifiers. Psychoanalysis as a practice has to redefine its goal. It will take Lacan another 10 years to come up with a new answer: identification with the *sinthôme*.

In the later parts of Seminar XI, the whole question of *tuché* and *automaton* is treated again, although this time with the accent on their inner relationship. The concepts as such are not used any more. Instead, Lacan studies what he coins as a structural homology. It is my thesis that this particular homology provides

us with Lacan's answer to the problem of causality and determinism and that this thesis permits us to delimit science from psychoanalysis. This particular relationship can be understood as follows: it amounts to an attempt at answering a lack or loss coming from a previous level by installing something that concerns the lack or loss of the next level, as a result of which the original loss or lack is endorsed, giving rise thereby to a never-ending flywheel movement.

In this view, there are two different levels, each operating through what Lacan designates as a border structure. Both levels can be characterized by lack or loss. However, while the primary one concerns causality, the second implies determinism. While the primary level, being the first, is a mythical one, the second level must be understood in the plural, meaning that its development is a never satisfactory answer to the first one. Both science and psychoanalysis, being symbolic systems, can thus be understood as different answers to a primary mythical loss.

This primary level is described by Lacan in Seminar XI, thus bringing a radical innovation to his theory, and providing his previous elaborations with an underlying rationale. The lack in the chain of signifiers, i.e. the unknown desire of the (m)Other, was already well-known to his public, together with all the hysterical peripatetics it gave rise to. At this point, Lacan introduces us to another lack, another loss which is anterior to the lack of the signifying chain between mother and child.[21] This lack has to do with the real of the body and will operate as cause.

The real of the organism functions as cause, in the sense that it contains a primordial loss, which precedes the loss in the chain of signifiers. Which loss? The loss of eternal life, which paradoxically enough is lost at the moment of birth, i.e. birth as a being with a gender.[22] In order to explain this, Lacan constructs the myth of the "lamella", which is nothing but object (a) in its pure form, the life instinct, the primordial form of the libido.[23] As an idea, it goes back to a biological fact: non-sexual reproduction implies in principle the possibility of eternal life (cf. single-celled organisms and clones), sexual reproduction implies in principle the death of the individual. In the latter case, each organism tries to undo this loss, tries to return to the former state of being. This was already with Freud the basic characteristic of the drive, here to be read as the life and death drive. With Lacan, the aspect of death in this death drive is easier to

grasp: indeed, the return to eternal life implies inevitably the death of the sexed individual. It is important to remark that at this stage, we are talking about THE drive, which precedes any form of "sexuation", and the accompanying reversal into PARTIAL drives, meaning phallic drives.

Thus considered, the first level concerns the mythical and real appearance of individual life, "the advent of the living", and the loss of eternal life. This is the opening and closing of life at birth. The advent of the sexually differentiated forms of life takes place through the loss of eternal life as such; the attempt to return takes place through sexual reproduction, which means that as a return, it has to be a failure.[24] This kind of non-reciprocal although circular relationship will continue on different levels, each time with the same effect: the process doesn't succeed in reaching its final destination.[25] This is the structural homology between drive, unconscious and subject.[26]

This primal loss inaugurates a never-ending attempt at remediation, albeit each time on another, incommensurable level. Even more: every answer endorses the primal lack. This is the fundamental meaning of Lacan's "*Il n'y a pas de rapport*", there is no relationship. The best example is the subject that tries to answer the desire, i.e. the lack of the Other, by producing signifiers. Instead of producing a satisfactory answer, these signifiers will endorse the loss of the real and will necessarily be beside the point. That's why the only answer to this lack is the subject itself, meaning that it presents itself as an answer and disappears.[27] Ultimately, the same relationship can be found between man and woman: in relation to the female lack, the masculine phallic-symbolic approach is beside the point, as the former is grounded in the real.

All human efforts are caused by this primal loss. The basic teleology aims at an—always impossible—return to the previous state of being, i.e. before this loss. This state of being is one of undividedness, of wholeness, which is described already by Plato with his myth of the originally complete, double-sexed human being in his *Symposium*. This annulment of the lack would delete the bar on the subject and put an end to all inner doubts. Lacan coined this with a beautiful equivocation: "*m'être à moi-même*", to belong to myself, meaning also: "*maître à moi-même*", master of myself.[28] This is the basic drive/motivation of all symbolic productions and

activities of the subject, including science and psychoanalysis: *la suture du sujet*, stitching up the inner cleft.[29]

This leaves us with a very important conclusion. The core of the subject is symbolically undetermined, and consists of a lack from which it flees. The very way in which it tries to close this gap, endorses it. In his "La science et la vérité", Lacan will think of four different ways of coping with this unbearable lightness of being, of which science and psychoanalysis are two; the other two being religion and magic. The goals of the first two are, respectively: "suturage" of the subject (science), and the creation of a neo-subject (psychoanalysis).

Conclusion: the suture of the subject versus subjectivation of the lack

The meeting ground between psychoanalysis and science is both the problem of causality and the position of the subject. Lacan's theory has the advantage of demonstrating the inner relationship between these two. Science and psychoanalysis do concern the very same subject, i.e. the subject of the unconscious. They concern the same problem as well: the division of the subject and the attempt to cope with the underlying lack. As we have seen, this leads to what Lacan designates as a structural homology between the unconscious and the subject.[30] The difference resides in the way they try to cope with this problem.

The actual usage of the term "subject" is rather loose. More often than not, it could be replaced by "ego" or "patient". This is all the more strange, because it is a typically Lacanian concept, developed against post-Freudian ego-psychology.[31] So the accent has to be put on the division: the subject is divided by and over the signifiers, which results in a never ending process of alienation. The normal, i.e. neurotic, aim of this divided subject is to answer the desire of the Other, but this can never be done, due to the structural lack between the signifiers. The ultimate answer to the lack of the Other would be to offer oneself, meaning that one disappears (see the already mentioned "*Veut-il me perdre?*" in note 27). That is why the subject sticks to the signifier and alienates itself in an endless chain of them: in order to avoid the primary lack. Hence the never-ending aspect of

this process: "*Ce qui ne cesse pas de ne pas s'écrire*" (What never stops not being written).[32] This dynamic is precisely what lies at the core of both psychoanalysis and science.

In order to understand this, we have to make the link between signifiers and knowledge. Signifiers determine the symbolic reality in which we live. They do not only contain the knowledge about our world, they *are* our world. The symbolic apparatus—be it a private phantasm or a scientific theory—is our royal road to the real. Taking its distance from the primary lack and the accompanying anxiety, the subject acquires more and more signifiers, i.e. more and more knowledge. The symbolic wrappings around the real are ever-defensive ones and permit the subject to cope with it. Clinically, this can be studied in its ontogenetic form, in M. Klein's case-study of little Dick and Lacan's commentaries thereon. Confronted with a child who has no signifiers at his disposal, Klein introduces him to the basic anxiety and obliges him to take the defensive road of the signifier. The result is that the child starts to develop a never-ending series of signifiers, thus coping with his anxiety. The very same process implies the development of his intelligence and a reality through which he becomes a subject.[33]

The subject's need, even greed, for this symbolic wrapping, leaves us with a faulty impression: it seems as if the subject wants to gather knowledge. This is the meeting ground between the subject of science and the subject entering analysis: both want to know.[34] This is fairly typical with the subject entering analysis: he or she is in search of a lost knowledge and that is why he or she comes to the analyst. The Dora case study is a standard illustration and demonstrates immediately the particular character of this knowledge. Through her dreams and symptoms, she continually asks what it means to be a woman and a daughter in relation to the desire of a man. It is the same field of interest that haunts the child, more particularly on three specific points: what is the difference between boys and girls, where do babies (I) come from, what is it that connects my father to my mother? The child, says Freud, proceeds like a scientist and will forge genuinely explanatory theories. That is why he calls them infantile sexual *researches* and infantile sexual *theories*.[35] As a matter of fact, Freud himself is a perfect example of a subject that wants to know, leading to the invention of psychoanalysis. Indeed, the first version of his

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invention can be clearly linked to the problem of knowledge: people become neurotic because they have repressed a number of things, so that they don't know them any more. The psychoanalytic treatment enables them to undo these repressions and to retrieve this lost knowledge. Unfortunately, Freud discovered that there is a resistance to this knowledge as well and that even where he succeeded in lifting these resistances, he met with a more fundamental obstacle, something that could not be put into words, something beyond representation. Moreover, this whole search for knowledge took place within a transferential relationship, meaning that the analyst was placed in the position of the Other who is supposed to know.

Lacan will return to these ideas from a structural point of view. The subject wants to know, but at the same time, this wanting to know covers "*la passion de l'ignorance*", the passion of not wanting to know. There are a number of things each subject flees from, because he or she is not prepared to face them. This is only one part of the truth. Psychoanalytic treatment may succeed in confronting the subject with his or her "personal" truth. Personal is put between quotes, because this kind of truth comes always from the Other, owing to the fundamental process of alienation in becoming a subject. Psychoanalytic treatment may succeed in this, but it will necessarily fail in confronting the subject with the real part of the truth, the part beyond the signifier and thus beyond knowledge. The recoverable parts belong to the signifying chain, the non-recoverable part to the real. At this point, the Freudian analytic process becomes interminable—it has to go on producing signifiers. And this is precisely where Lacan looked for another solution.

The analysand addresses the analyst as the Other, the one-who-is-supposed-to-know (but is always suspected of not knowing enough). The scientist looks for knowledge as well, that's why he or she addresses nature: in order to filch its knowledge. Even minimal clinical practice demonstrates that this wanting-to-know of the analysand is very ambiguous: he or she wants to know something in order not to know. One would expect a different attitude from the subject of science, i.e. an undivided quest for knowledge. According to Lacan, however, this is not the case. Descartes' approach demonstrates the basic goal of modern science: Descartes is willing to sacrifice knowledge, on condition that he gains certainty. With

his famous "*Cogito, ergo sum*", he meets with this certainty only in the real of being.[36] The dimension of truth remains outside the system. Descartes has to rely on God for that. This need for the Other of the Other as the ultimate guarantee, will remain the hallmark of science, from Newton to Einstein ("God does not play with dice").

Hence, even for science, knowledge as such is secondary, as long as the Cartesian scientist procures certainty. The ultimate goal of the scientist is not to construct an objective knowledge of reality; it is to produce signifiers in such a way that they will bridge the inner division of the subject. The so-called objectivity or desubjectivation is not a means, but an aim in itself, obliterating the truth of the division of the subject. That is why science does not want to compromise itself with truth and causality.

The goal of science is described by Lacan in his "La science et la vérité" as "la suture du sujet", the suturing or stitching of the subject. This is the goal that drives every subject right from the start: "*m'être à moi-même/maître-à-moi-même*": to belong to myself, to be master of myself, to be myself. It is nothing but the desire for a complete Other, a finally closed symbolic system which has retrieved the lost *objet a* and solved—"sutured"—the division of the subject. This process is endless, interminable as Freud said, because every new signifier endorses the original loss. That's why the subject in analysis has to keep producing new signifiers, that's why the subject of science has to keep secreting new knowledge—this is the very same process, coming down to "*Ce qui ne cesse pas de ne pas s'écrire*": What does not stop not being written. The subject of science believes that nature will reveal to him the final meaning. In this respect, he is the same subject as the analysand believing that psychoanalysis will present him with the final meaning of his symptom. He or she desires that the analyst, as a subject-who-is-supposed-to-know, will produce the master signifier that will bridge his or her inner division. The discourse of the hysteric demands a master discourse that produces the ultimate S2. If analysis operates in the same way as science, this implies that the analyst has to take the position of the Cartesian God, functioning as guarantee.

For Lacan, every subject lies divided between knowledge and truth.[37] This very same division can be traced back to Freud's

double theory of the ego. On the one hand, Freud describes the ego as the "system Pcpt.-Consciousness", with reality testing as its main function—this is the level of knowledge; on the other hand, he describes the ego as the censor, with negation as its main function—this is the level of truth.[38] The truth concerns the primary lack, foreshadowing the disappearance of the subject.

Science and psychoanalysis meet only in the first part of analysis, where the chain of signifiers is determined by the Other. Beyond this, there is the confrontation with the real of the drive and the lack in the core of the subject. The homologous structure is caused by a loss and determines its own continuity by determining the reproduction of its very cause. The last instantiation of it is the divided subject. Science, headed by Descartes, evacuates the subject and leaves its truth to God, finding security and certainty in a mechanical, desubjectivised world. Psychoanalysis has the ambition of confronting this division in its very causality, thus betting on the subjectivation of an originally alienating process. This "subjectivation" was repeatedly described and elaborated by Lacan, thus demonstrating its particularly difficult nature: symbolic castration, separation, traversal of the fantasy, "*la passe*" and identification with the "*sinthôme*"

In the end, both are an impossible attempt to cope with "*la condition humaine*".

Notes

1. This idea has not disappeared today. Quite the contrary. It constitutes, for example, the baseline of E. O. Wilson's book, *Consilience. The Unity of Knowledge* (1998).
2. See Monod, 1970:188.
3. See Lacan, 1966:874.
4. See Heidegger, 1977:20.
5. Lacan, 1979:228, and Lacan's Seminar X (unpublished).
6. Lacan, Propos sur la causalité psychique, in Lacan, 1966:160 ff.
7. Lacan,1979:53–54.
8. Shannon & Weaver, 1949.
9. Lacan, 1979:20–21.
10. "All these consequences of the pressure give one a deceptive impression that there is a superior intelligence outside the patient's

consciousness which keeps a large amount of psychical material arranged for particular purposes and has fixed a planned order for its return to consciousness." S.E. II:272; see also S.E. II:275–76, 286–87.
11. See Miller, 1986:23–42.
12. See Leclaire, 1968:97–117.
13. Lacan, 1979:53.
14. Ibid. 53–55.
15. Lacan, 1979:22 my translation. In the offical translation, the French "la béance par où la névrose *se raccorde* à un réel" is translated by "the gap through which neurosis *recreates a harmony* with the real". The whole point of Seminar XI comes down to the demonstration that any harmony with the real is lost forever, so the official translation is wrong.

    With this idea, Lacan associates himself with an almost forgotten part of Freudian theory, i.e. the fixation of the drive, implying the body in a decision-making instance. See Verhaeghe, 2001:65–97.
16. Lacan, 1979:60.

    Again, this part of Lacanian theory can very well be understood from a Freudian point of view. In Freud's theory, the pleasure principle functions also "within the signifier", i.e. with representations (*Vorstellungen*) to which a "bound" energy is associated within the so-called secondary process. What lies beyond the pleasure principle cannot be expressed by representations and functions with a "free" energy within the primary process. The latter has a traumatic impact on the ego (*S.E., 18,* 67ff). The Lacanian real is Freud's nucleus of the unconscious, the primally repressed which stays behind because of a kind of fixation; "staying behind" means: not transferred into signifiers, into language (Freud, letters to Fliess, dated May 30, 1896 and November 2, 1896).
17. Lacan, 1979: 22–23, 26, 32.
18. If one studies Lacan's work in this respect, it becomes obvious that he struggles with this new idea of causality, and that he has great difficulties in abandoning the previous unidimensional determination by the symbolic. This struggle can very well be illustrated with one lesson of Seminar X (9 January 63). He starts with repeating the reason why the subject is first of all and originally unconscious: "*qu'il nous faut d'abord tenir pour antérieure à cette constitution [du sujet] une certaine incidence qui est celle du signifiant*" (my translation: "that we need first of all to consider a certain incidence, the one of the signifier, as anterior to this constitution [of the subject]"). Based on this, one could infer that the signifier can be interpreted as primordial. The next sentence offers a different story: "*Le problème est de l'entrée du signifiant dans le réel et de voir comment de ceci naît le sujet.*" (my translation: "The problem concerns the entry of the signifier into the real and *the way in which the*

subject is born from this"). In this, the real acquires greater eloquence and the relation with the body is clear from the very beginning. Indeed, the signifiers do not appear out of thin air, on the contrary: "*Ce qui permet justement à ce signifiant de s'incarner, c'est bien entendu ce que nous avons là pour nous présentifier les uns aux autres notre corps.*" (my translation: "What precisely permits this signifier to incarnate itself, is of course that what we have to present one to another, that is, our body"). This was already acknowledged in Seminar II: "*Les premiers symboles, les symboles naturels, sont issus d'un certain nombre d'images prévalentes—l'image du corps humain, l'image d'un certain nombre d'objets évidents comme le soleil, la lune et quelques autres.*" (Lacan, 1978:352; my translation: "The first symbols, the natural symbols have come forward from a certain number of prevalent images—the image of the human body, the image of a certain number of evident objects, such as the sun, the moon and some other").

This introduces us to a second theme, in itself also an expression of Lacan's difficulties with this second form of determination, i.e. causality arising from the real of the body. As long as he hadn't recognized this causality, he could avoid the underlying difficulty with expressions such as "signifiers furnished by nature". This is a very strange expression indeed in light of his theory concerning the supremacy of the symbolic. There are a number of analogous expressions, which prepare the field for his later theory on the body and the real as cause. I have quoted a few of them below:

—"*Le Es dont il s'agit dans l'analyse, c'est du signifiant qui est là déjà dans le réel, du signifiant incompris.*" (Lacan, 1994:49; my translation: "The Id which is what analysis is about, concerns the signifier, the incomprehensible signifier which is already there in the real");
—"*Quand nous abordons le sujet, nous savons qu'il y a déjà dans la nature quelque chose qui est son Es, et qui est structuré selon le mode d'une articulation signifiante marquant tout de ce qui s'exerce chez ce sujet de ses empreintes, de ses contradictions, de sa profonde différence d'avec les coaptations naturelles*" (Lacan, 1994:50; my translation: "When we start with the subject, we know that there is already in nature something which is his Id, and which is structured following the way of a signifying articulation that marks everything of this subject by its imprints, by its contradictions, by its profound difference with natural cooptation").

On the next page, Lacan states that the signifier borrows—in matters of signified—a lot of the human body, with the erected phallus as most prominent feature (Lacan, 1994:51, 189). I remember having read the

expression "*le phallus, un signifiant donné par la nature*", but didn't manage to find it again. In Seminar VII we find the analogous expression for the female genital (Lacan, 1986:199).

A more extensive elaboration can be found in the opening chapter of Seminar XI: "Nature provides signifiers, and these signifiers organize inaugurally human relations in a creative way, providing them with structures and shaping them" (Lacan, 1979:20). In this quote, the signifiers precede the subject, but nature furnishes them. A few months later, this "primary classificatory function" will be associated with the biological difference between male and female around which the "combinatory" comes into being and is developed. The conclusion of this reasoning is: "What would make it legitimate to maintain that it is through sexual reality that the signifier came into the world" (Lacan, 1979:151). In the next paragraph, Lacan combines this "combinatory" with the one at work in genetics, including the loss in the process of meiosis. Eventually in Seminar XI, it becomes clear that, according to Lacan, nature saddles us with an essential loss, that of eternal life in itself, and subjectivity is an effect of this loss.

19. "Thus the symbol manifests itself first of all as the murder of the thing, (...)", (Lacan, 1977:109). This determination by the symbolic gave rise to one of the central ideas in the wake of the Bonneval Colloquium (Lacan, 1966:829ff.): that the interpretation can be calculated. Lacan will stick to this idea for a number of years, and Seminar XI contains several references to it, amongst others his reference to Leclaire's case study on "poordjeli". From a conceptual point of view, this implies that, at the time of Seminar XI, Lacan still believed in the possibility of ending an analysis with the final word, the ultimate signifier, though adding even then that this signifier must be an "irreducible" one, and that interpretation ultimately focuses on the "non-sense" (Lacan, 1979:248–49). After Seminar XI, he will understand object a as the not-understandable, the un-representable. His optimism concerning the range of interpretation disappears at the same time, forcing him to reconsider the end of an analysis. The question then is how to operate on the real if one has to start from the imaginary of the body image and the symbolic of the subject: "*Comment, à partir de là, nous nous imaginons toucher à un réel qui soit un troisième cercle* (...)" (Lacan, 1976b:54–55). Still later he will talk of the "real kernel" of the symptom, which is "le noeud de l'ininterpretable", the knot of uninterpretability ("La méprise du sujet supposé savoir", Lacan, 1968:40). Finally, Lacan will elaborate this idea of an identification with the real of the symptom—*le sinthôme*—as the goal of psychoanalysis.
20. Lacan, 1979:48–51.

21. It is not by accident that this crucial innovation is introduced in the lesson on alienation (Lacan, 1979:204–205). The doubling of the lack implies that all previous concepts have to be doubled as well, each time in a logical first and second one. As an innovation, it has been prepared a long time before, the last one being the previous seminar, in which the same doubling can be recognized in the differentiation between privation (real) and castration (symbolic), even though both of them are preoccupied with the phallus (X, lesson of 30 January 1963). In Seminar XI, the doubling introduces an object beyond and logically preceding the phallus: *objet a*, lamella, libido. It is very interesting to note the analogy with Freud's theory. At a certain point of his evolution, Freud also needed to double all his previous concepts (repression and primal repression, fantasy and primal fantasy, father and primal father), but he missed the final point: from castration to "primal castration" which is not a castration any more, but something different. (For a more elaborate version of this, see Verhaeghe, *Does the Woman exist?* (1999). In this respect, again, Lacan presents us not with a mere "return" to Freud, but with something new.
22. J. Lacan, 1979:205.
23. "Imagine that each time when at birth the membranes are broken, something—the lamella—flies away and is lost forever. This loss is nothing less than the loss of pure life in itself, of immortality." (Lacan, 1979:103–104, 197–98).
24. "It is the speaking body in-so-far as it can only manage to reproduce thanks to a misunderstanding regarding its *jouissance*." (Lacan, 1975:109).
25. Lacan, 1979:207. The next level ushers in the I ("l'avènement du Je"), i.e. the opening and closing of the body. This is the primary alienation of the mirror stage. The organism acquires a first mastery, a first identity through the externally imposed unified image of the body. This unified body will be translated in the master signifier I, to be understood as "*m'être à moi-même*"/"*maître à moi-même*" (to be myself, to belong to myself, to be master of myself), the "I" which *has* a body and has lost its *being*). The next level ushers in the subject ("l'avènement du sujet"), i.e. the opening and closing of the signifiers. The ever divided subject appears and disappears under the signifiers of the Other, aiming at answering the desire of that Other. From a structural point of view, this has to end in failure, because the answer will be given in terms of signifiers, whilst *objet a* belongs to a different order and is precisely lacking due to the introduction of the signifier. See Verhaeghe, 2001:99–132.
26. Lacan, 1979:181.

27. This concerns the fantasy of one's own death in relation to the Other: "*Veut-il me perdre?*". See J. Lacan, 1979:214–215.
28. See Lacan, 1991:178.
29. Lacan mentions this as the goal of science in his "La science et la vérité" paper (1966:861). See also Seminar XII, lesson of 16 Dec. 1964 and Seminar XXIII, lesson of 13 Jan. 1976. (Lacan, 1976).
30. His theory on causality permits Lacan to elaborate a status of the unconscious, a *status which is homologous to what takes place at the level of the subject*: "on the level of the unconscious, there is something that is homologous on all points to what happens at the level of the subject" (X,27 my translation; original: "(. . .) qu'au niveau de l'inconscient, il y a quelque chose en tous points homologue à ce qui se passe au niveau du sujet (. . .); see Lacan, 1979:20–23, 181). This homology has everything to do with what he calls the pulsating movement of the unconscious, the opening and closing of the gap in which something fails to realize. A typical example is a slip of the tongue, but this can very well be applied to transference as well (Lacan, 1979:130–131); ultimately, this goes for every production of the unconscious, the subject as such included. This movement is exactly the same as the one concerning the chain of signifiers, in which the automatically produced series determines in a systematic way (Law) their own failure, i.e. the gap, which in its turn causes the necessary progress of the chain.
31. See Verhaeghe, 1998:164–189.
32. See Lacan, 1975:17.
33. See Klein (1930) and Lacan (1988:63–73).
34. Lacan, 1966:863.
35. Freud, 1905:194–197.
36. Lacan, 1979:36–37. As a matter of fact, Lacan fights Descartes throughout his work, and can be considered a constant theme. His disagreement with Descartes can be summarized by opposing the "*Cogito, ergo sum*" with the Freudian "*Wo es war, soll ich werden*". Whereas Descartes endorses unknowingly the division of the subject in his attempt to join his "true being", Freud and Lacan acknowledge this division and try to proceed in such a way that the subject can handle it on different level than the usual one, which is the level of "méconnaissance".
37. Lacan, 1966:856.
38. The idea of the ego as "system Pcpt.-Consciousness" is a constant in Freud's work, from the *Project for a scientific psychology* (1978) to *The Ego and the Id* (1923). The other idea concerning the function of denegation is a constant as well and becomes more pronounced towards the end of his work: Loss of Reality in Neurosis and Psychosis (1924), Fetishism (1927), Splitting of the Ego in the Process of Defense (1940).

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CHAPTER FIVE

Elements of epistemology

Jacques-Alain Miller

This is the last of three lectures which I have been invited to deliver.

In my first lecture here I introduced the work and style of Jacques Lacan, and although time constraints did not allow me to go beyond half of what I had planned to tell you, I think I was able to give an idea of the theoretical principles whose uninterrupted development started more than 30 years ago.

In my second lecture I attempted to use the example of the *piropo* (flirtatious message), which I improvised, as a paradigm, in order to transmit some truths which are fundamental and yet unrecognized about language; in particular, about the function of language in sexual separation, the fading of the reference, the equivocation of language (*langue*), the misunderstanding of communication.

I am going to dedicate this third lecture to the question of science, and more precisely to respond, as far as I am able, to Professor Cadenas, to whose invitation I owe my presence here (I have already thanked him, and I now thank him again), and whose reaction, after my last exposition, was to say that, in the way in which I presented it, the Lacanian theory appeared to conclude in the impossibility of knowledge. Fair enough. After all, the

impossibility of knowledge does not scare me, since knowledge is not science. The difference between knowledge and science appears to me to be fundamental in Lacan's epistemology, and acceptable well beyond the strict field of psychoanalysis.

For greater convenience, I shall divide this lecture into ten points which I shall cover successively. This means that this lecture will have a style and a tone different to the previous one.

I. One can postulate that throughout the history of thought the theory of knowledge has always upheld the ideal, which has been formulated in various ways, of the union of subject and object. More precisely, the classical theory of knowledge assumes a co-naturality of subject and object, a pre-established harmony between the subject who knows and the object known. The theory of knowledge has always commented on the miracle of the adequation of knowledge, reserving a place for the thing-in-itself which, in Kant's terms, would be unknowable.

From its beginnings, science has been distinguished from knowledge, if only because the former constructs its object. This principle, let it be understood, is not specifically Lacanian. It is also the principle of Bachelard, for example, for whom the object and the scientific instrument are an incarnated theory—that is his expression. I point out, in passing, that the same thing happens with the Freudian unconscious: in so far as this is apprehended in the novel device of Freud's practice, it also realizes a theory. Which theory? This is the whole question. This is a first and brief point which is open to discussion, and I should say that it is not specifically Lacanian.

II. The second point is more precise. It is pertinent to notice that all knowledge is fundamentally illusory and mythical, in so far as what it does is to comment on the "sexual proportion", a term with which David Mauri has very appropriately translated the French expression *"rapport sexuel"* used by Lacan. All theory of knowledge has sexual connotations. You can take as an example Aristotle's complementarity between form and matter. You can also think of that very elaborate form of knowledge, ancient Chinese astrology,

which is a whole discourse about the male and the female and which organizes not only the gods but also the entire society. These are examples that Lacan considers in his seminar *The Four Fundamental Concepts of Psycho-analysis*. Similarly, one can recall the theory of phlogiston, so compelling and present during the 17th and 18th centuries, before the emergence of scientific chemistry. I would say, since I cannot expose all the historical examples, that knowledge, in so far as it is distinguished from science, sings indefinitely the imaginary wedding of the male and the female principles. I believe it would not be an abusive generalization to state that all the "primitive forms" of knowledge are erotic. In the last analysis, they even get mixed up with the sexual techniques. That is why Lacan's thesis that *The* woman does not exist—which, in the way I presented it, appeared to be somehow abrupt, astonishing—is certainly a fundamental thesis for epistemology as well. Since after all the object, which in the theory of knowledge is meant to be complementary to the subject, represents also a way of taming the woman. Science—and by science I mean what was born as mathematical physics in the 17th century, and also mathematics proper, born well before that time, the gap between the birth of mathematics and the birth of mathematical physics being a big problem of the history of sciences—science, then, in this strict sense, assumes on the contrary that there is no co-naturality between subject and object, that there is no aesthesia of the opposite sex, that there is no natural sexual tropism. This is, furthermore, demonstrated by that structure which is fundamental to psychoanalysis and which introduced Freud to his practice, that is to say, hysteria. It is certainly one of the most surprising theses of Lacan's epistemology—which I may not have enough time to develop here—that the structure of scientific discourse is not without relation with the structure of the discourse of hysteria. In this respect, Lacan's proposition that there is no sexual rapport (or ratio) may be considered as a sort of secret condition for the emergence of the discourse of science. In a certain way, the men who developed the discourse of science in the 17th century must have posed the proposition that there is no sexual rapport. Those who are familiar with the texts from the Renaissance, for example, and the texts which have been preserved from the 17th and 18th centuries produced by astrologists and philosophers, know about that

evident and sudden break in style and in the very approach to problems. One could say, in this sense, that the scientific approach assumes a desexualization of the view of the world, and to use a philosophical expression, a desexualization of being in the world. Psychoanalysis is not at all a pan-sexualism. Pan-sexualism is, for example, the theory of Schopenhauer, which places life at its start; or, more precisely, which places at its start the sexual instinct, which would animate the entire nature as well as all human creations. Freud, awkwardly perhaps, but in a very significant manner, introduced the paradoxical term of death instinct, and he discovered, through the angle of hysteria, that the other sex is the Other sex, written with the big O of exteriority. I restrict myself to mere allusions to the works of epistemologists. Those who know such works will be able to judge the pertinence of this summary.

III. One can ask what it is that generates the pan-sexualist illusion. It seems to me that this illusion, which falls precisely with the emergence of the discourse of science, but not before, is, in this connection, something recent. What gives birth to the pan-sexualist illusion is that all signification, being imaginary, is fundamentally sexual. All which is said and which makes sense always reveals that, in the end, it aims at a unique signification that occupies the place of reference—reference which does not exist in natural language, in the maternal tongue, in vulgar language; and this signification, which occupies the place of the reference which is lacking, is fundamentally phallic. This is what confers interest and value on that very ancient exercise of discourse called comedy, which has always consisted in making one laugh while revealing the imaginary object which all discourses surround and at which they aim, namely, the phallus. There is a paper by Lacan in this respect which he delivered in Germany in the 1950s, entitled "*Die Bedeutung des Phallus*" ("The signification of the phallus"). Indeed, it is necessary to understand that the phallus is the fundamental *Bedeutung* or signification. This idea may appear to be somewhat excessive; but not if one considers that someone like Frege, who is at the origins of mathematical logic, has proposed the theory that all that is said can be distributed into two classes: the class of the expressions which have the true as reference and the class of the

expressions which have the false as reference. He imagined that language has everyday objects as reference. Now then, the simplification of the formulation provided by Lacan states that the sole reference is the signification of the phallus. And there is a discourse for this malediction, which could well be called a benediction. In any case, there is a law of diction, according to which the phallus is always there; it always reveals itself in a pertinent way in the lapsus or in the joke. One could say: "Look for the phallus, it is never very distant". There is, however, a discourse which escapes this law of diction, and that is the discourse of science. But this is precisely, and I stress this point, because this discourse constitutes itself only from the moment of the extinction of signification, from the construction of systematic networks of elements which are in themselves without signification but which are coherent among themselves. This is a thesis which can be discussed, and which does not require a detailed knowledge of the Lacanian phraseology: science supposes the extinction of signification. It is a mistake to believe that measurement is constitutive of science. Mathematization does not mean measurement. Evidence of this is to be found, among other examples, in topology. Topology is a geometry without measurement, where there is no question of distances, where only the schematic network of the signifier supports the objects. These objects do not have any consistency; they do not possess any substance other than the network of signifiers itself. Evidently, at the beginnings of topology objects were represented; for example, that singular object called the Möbius strip was represented. It is possible to construct this object before one's eyes: one takes a ribbon, and instead of joining its ends to form a cylinder, one joints its ends after making a twist through 180 degrees. This object is obviously curious: if one slides a finger on its edge, the finger appears on the other side of the ribbon, without having passed through any frontier. In the case of a cylinder, the finger remains always on the same side; there are two sides: a back and a front. With the Möbius strip one can, without interruption, move from the back to the front. It is a very singular object which had to wait until 1860 to be discovered by the mathematician Möbius. This is rather extraordinary, one wonders why this simple, small operation could not be performed before that date. This is the first topological object which, among others, Lacan has utilized to

explain that one should not be contented with the thought that things always have a front and a back, that the unconscious is at the bottom and language is at the surface. There is, on the contrary, a relation of Möbius strip which makes it possible that correlation and continuity between the right side out and the reverse become conceivable in a scientific manner. In this respect, Lacan has taken advantage of these topological objects derived from scientific discourse in order to structure the analytic experience. One should not believe that, because in the analytic experience one is faced with phenomena which appear to be paradoxical from the point of view of common sense, it is impossible to analyze them scientifically. That what is in the exterior is at the same time in the interior is not simply a witticism. For example, there is an object called a Klein bottle, which was invented by the mathematician Felix Klein soon after the invention of Möbius' strip. The Klein bottle materializes, mathematically, a relationship between inside and outside which places the outside, if I may use the expression, inside the outside. I would need more time to give you a summary of the works by Lacan which located the main terms of the analytic discourse in topological figures. I should say that this is only the ABC of topology, since these objects can be designed. You can have a Möbius strip in front of your eyes. You can have a Klein bottle in front of your eyes, in three dimensions, only in an approximate form; but it can still be drawn. Then, with algebraic topology, the objects can no longer be drawn: what is called an object is a pure creation of mathematical discourse.

Therefore, we should not take as a criterion of science what experimental science has believed it can define as scientific in its own case. I must tell you that all that we accept as scientific disciplines in the schools of humanities (*Facultés de Lettres*)—sociology, psychology, medicine—is very often a joke in the eyes of a mathematician or a physicist. I say this only to make it clear that the concept of science is more complex than simply trying to be objective. As Hamlet has it:

> There are more things in heaven and earth, Horatio,
> Than are dreamt of in your philosophy.

The fate of science is tied to formalization, not to measurement. It is tied to the number in so far as the number represents in an

enigmatic way the presence of the signifier in the real. I shall return to this point later. Lacan represents an attempt to formalize the structure which supports the phenomenology of the analytic experience. It is evident that this is a complex structure, since the phenomena which occur in the analytic experience induce, in a first approach, the feeling that they cannot be structured. Yet metaphor can be structured; metonymy can be structured; equivocation can be structured; the function of the Other in the determination of sense can be structured. This is, in a sense, an amazing feat. The feat consists in grasping, with the discourse of science, a field that science was prepared to leave to obscurantism, that is to say, to leave as the refuge of fantasies of sexual knowledge.

This is why I was able to say, in my first lecture, that Lacan's teaching was a critical and epistemological teaching, opposed to all obscurantist discourses which have found refuge, in the era of science, in the psychotherapeutic game.

IV. Once again, I am going to formulate a thesis which in my opinion has consistency outside the Lacanian phraseology, and which I submit for the consideration of teachers and students who are not specialists in Lacan.

Science assumes the disjunction of the symbolic and the imaginary, of the signifier and the image. Lacan has often commented on the works of Alexandre Koyré, one of the greatest French epistemologists, on Galileo, Kepler and Newton. Professor Cadenas told me that science is something which gives birth, for instance, to the equation of gravitation. This is also the example that Lacan uses as a model. But the emergence of the key equations of gravitation theory required—Lacan, on the basis of Koyré's studies, points this out—the disappearance of all the imaginary values attributed to the movements of the stars. It required, according to Lacan's expression, the extermination of all imaginary symbolism from heaven. What was, at bottom, the "epistemological obstacle"—to use Bachelard's now famous expression—which opposed a barrier to the formulation of the equations of Newton's theory? Let us consider Kepler's example. Kepler could still think that, given the eminent dignity of the stars and their superior value, the orbits of planets should have a perfect form. Given that requirement of

perfection, the movement of planets could not possibly be elliptical, but circular. This imaginary theory assumed that the circle is more perfect than the ellipse; hence the requirement, I would say, of an aesthetic and imaginary character, that the movement of the planets be circular. Newton's equation could only be formulated from the moment when there was a renunciation of the attribution of any imaginary signification to heaven; from the moment when thinking of the dignity of the planets ceased; when there was a renunciation of the requirement of perfection and one could be contented with those small symbols which can be written on a sheet of paper and which are valid for the entire creation.

In this sense, scientific theory has demanded an adherence to the signifier in so far as this is separated from all imaginary signification. It is amusing that this did not prevent Newton from scrutinizing the *Book of Daniel* and the *Apocalypse* of John, in an attempt to decipher in the sacred text the future of creation and God's plan. As with many other attempts at that moment of birth of scientific discourse, Newton could on the one hand exterminate the celestial signification, and on the other he looked for it, as a cabalist, by scrutinizing the biblical text. This is something which is not very well known. It is not to be found in Koyré, but in Lacan, who read Newton's text on the *Book of Daniel*. Lacan has a copy of the edition of that time. It happened, then, as if signification, which had been excluded from heaven, found refuge in the sacred text. Newton is not, in this connection, the man one usually thinks he is. Someone wrote a beautiful article on Newton. He was a rather extraordinary scholar, and not simply an economist: Lord Keynes, John Maynard Keynes, who was very interested in Newton. Soon after the war he wrote an article in which he called Newton the last of the astrologists. That was the paradox which existed at the origins of the discourse of science: simultaneously with his construction of mathematical physics, Newton was passionately fond of astrology. A recent thesis, published by MIT in 1975 or 1976 has revealed a number of papers by Newton concerning his research on physics. This presents to us Newton the individual as crossed by the epistemological cut. This is a remark aimed at avoiding any confusion between the individual and the subject of science, in so far as the latter is tied up with the discourse of science.

V. You must know Pascal's sentence, which irritated Paul Valéry so much: "The eternal silence of these infinite spaces frightens me". Paul Valéry was bothered by this sentence; he considered it to be a beautiful verse, but he thought it was rather melodramatic. Pascal was also one of those traversed by the epistemological cut. I would say something different to what Paul Valéry said. Pascal's sentence on the silence of the infinite spaces reveals a very modern affect, since heavens, the creation, were not at all mute before the advent of science. On the contrary, the spaces, heavens, the creation, the earth sung the glory of God and the grandeur of His plan. It is precisely the discourse of science, since the emergence of mathematical physics, that makes the world become silent. Lacan sums up this proposition, which I believe is unquestionable, by saying that science assumes that there exists in the world the signifier which means nothing—and for nobody. That the signifier can be found in the world, a signifier which is organized and which responds to laws, but which is not linked with a subject who would express himself through it—this is an entirely modern and scientific idea. The signifier may exist independently of a subject who expresses himself through its mediation. This is a signifier separated from its signification; a signifier without intention. The mathematization of physics answers to this requirement. But the Freudian invention of the unconscious also responds to it: the signifier exists independently of the consciousness that the subject might have of it or its expression. It is rather the subject who is the effect of the functioning of signifying laws. This is why Lacan says, and history seems to confirm it, that psychoanalysis was not possible before the advent of the discourse of science.

The scientific context where the Freudian discovery was born was very significant. Freud was the disciple of Brücke and Helmholtz, German scientists who did not want to know anything but the discourse of science. Freud himself remained faithful to that inspiration for the rest of his days. In this sense, psychoanalysis can be considered as the manifestation of the positive spirit of science in a domain which has been specially resistant to the conceptual grasp of science. In a way, this has always been known. One cannot confuse Freud and Jung. If Jung broke with Freud—and, incidentally, it cost him 3 years of serious depression, apart from all the vicissitudes of history—it was because he returned,

with his book, *The Transformation of Libido*, to what in ancient times was called the soul of the world. This is an old theory which has continued to be present in the history of thought, and which treats nature in its entirety as a being. It is a fundamental intuition which German romanticism, for example, developed fully: it found a new youth with the *Naturphilosophie*, and even in our days something of the same order has made Teilhard de Chardin fashionable. There have always been, and specially in the era of science, people who search for what they call a complement of soul in these forms of knowledge (*savoirs*) which are not scientific and yet are knowledge, that is to say, are organized. The soul of the world: this is precisely what the discourse of science has put aside; this is a movement which in history is incarnated by Descartes. Through this movement the scientific spirit separated from the spirit, which should be called obscurantist, of the Renaissance. The omega of Father Teilhard de Chardin was the grand signified which was supposed to arrange the whole of human history. Furthermore, you must know as I do the part of the theology which still remains in Marxism–Leninism. The separation between Bossuet and Marx has not been completely achieved.

VI. With the discourse of science, God ceases to speak. He is silent, even hidden, as Goldmann said when discussing Racine's tragedies in *The Hidden God*. He is silent and hidden and he calculates, as somebody who is also at the emergence of the discourse of science, Leibniz, puts it. Koyré and Kojève have analyzed the relation between science and Judaeo–Christian monotheism. Their thesis is that the discourse of science was only possible in a religious context, where something totally new and singular was postulated: the creation of the world *ex nihilo* by a divine grand Other. The creation *ex nihilo* constructed by the discourse of religion permitted to trust the natural experience, since through the natural experience one can find the traces of a logical creation. This is why science is not, perhaps, as atheist as is generally believed. On the one hand, in the discourse of science, the signifier means nothing within nature; on the other hand, the signifier is there, in nature, in order to organize according to laws. This is why science is always linked with the idea that there is already knowledge (*un savoir*) in the real: an articulated

network of signifiers which function in the real independently of the knowledge that we may have of it. Once again, the history of science teaches us something, this time in connection with Newton. Cartesians were scandalized by Newton. They considered that Newton represented a return to obscurantism, since—and this is something that Lacan as epistemologist has underlined—they wondered how was it possible that the planets knew Newton's laws of gravitation. How could the planets obey those laws? This constituted a return to the hidden qualities which Descartes has dismissed. In this respect, Newton says that he did not forge hypotheses that would have only fictional existence. With his small signifying articulation, he verifies that they function in the real. Many things are verified like that, which after all there is no need to comprehend, and which evidently place God in the horizon of science. One can verify, for example, that certain plants arrange their leaves according to the series of Fibonacci, which is a regular order of numbers in a series discovered in the 13th century. Do plants know mathematics? All that mathematical physics teaches us is the verification that there is a knowledge (*savoir*) which functions in the real. In this sense, science assumes God in two forms. In the first place, it assumes God as Descartes recognized him, as the guarantor of truth, that is to say, as an element which does not deceive. There is a very precise demonstration by Descartes in this respect. As God is perfect, it would constitute an infraction to his perfection that he lied; therefore, and although this is a limit to his power, God cannot lie. Not being able to lie does not constitute an impotence, but, on the contrary, an excellence of power. This conviction about an element which does not deceive is completely decisive in science. Avicenna said something similar: "God is shrewd, but He is honest."

The idea of God's honesty is not simply a joke of Avicenna's, and although it is believed that one does not believe in God, perhaps the belief in God nevertheless persists. This is, besides, what Lacan said one day in his seminar, where there were approximately four times the number of people present here: that he was certain that there was not one person in the audience who, in fact, did not believe in God: in God as the element which does not deceive. In the beginning, that had the appearance of an act of faith, and the philosophical elaboration of divine perfection was an

essential component of the discourse of science. One should not think that philosophy consists simply of stories floating in the air. Philosophy has had a decisive importance in the clarification of the discourse of science. This concerns the first aspect of God which I have evoked: God as the guarantor of truth; God who does not deceive.

There is a second aspect, which refers to God as the supposed subject of knowing. This is something against which there is no possible defence. When there is a signifying intention which assumes a concrete form and develops, one cannot defend oneself against the idea that that signifying intention has always been there. This is why we frequently have difficulties in apprehending past epochs or different principles of thought, since the categories within which we are captured often appear to us to be so valid that we believe that they have always existed. But, for example, there is nothing to prove that Plato had at all the sense of I (*le sentiment du moi*) that we have since the emergence of the discourse of science. There is nothing to confirm the view that the idea that we may have of sexual enjoyment (*jouissance*) is the same that the Epicureans and the Stoics had. The same thing happens with scientific inventions. I shall consider an example which is more simple: that of Cantor, who invented the uncountable infinite. He developed this invention in mathematics, not through experimentation or measurement. He invented it, undoubtedly, in a subjective experience for which he paid, one could say, with his reason. It is known that Cantor had a number of admissions to psychiatric clinics. What was the source of Cantor's references when he invented the uncountable infinite? This is not to be found in a manual of mathematics, but it is mentioned in the works of Bourbaki on the history of mathematics. Those references are contained in the works and letters of Cantor. Cantor looked for references in theology. There is, as well as his mathematics, a theology of Cantor. For him, the uncountable infinite and set theory were means of approaching God. He thought that at the moment of his invention of the uncountable infinite he was God's administrative employee.

Cantor's abuses are of little interest to us. There is, however, a natural movement which consists in projecting a signifying invention onto a supposed subject of knowing. It has obviously become more and more true, and a real thing for us. Cantor's uncountable infinite is more true now than at the moment when Cantor invented it. Now it has been grasped, absorbed and developed by the discourse of mathematics. Developments like this have always required, obviously, the consensus of the community of mathematicians. It is apparent that in their case the function of transmission is essential. It is regrettable that instead of conceiving of itself according to the model of the community of scientists, the community of psychoanalysts conceives of itself as an ecclesiastical community. This has been to a great extent responsible for the delay in the diffusion of the positive spirit of science in psychoanalysis, such as Lacan has developed it after Freud.

It is worthwhile considering Cantor's scientific invention again. You may know the way in which Cantor demonstrates the existence of the uncountable infinite. He starts off by building a chart which, by hypothesis, would comprise all numbers between O and 1. Then, following what is known as Cantor's diagonal method, he changes the symbol which appears in the place corresponding to each number of the diagonal in his chart. He reverses each of the symbols of the diagonal chain. He thus demonstrates that, each of the lines being infinite, the diagonal number cannot appear in the list, and that, in the mathematical sense, there exists an infinite as uncountable, as not being in the list of numbers. This is the paradigm of the mathematical real: the real constructed on the basis of a purely signifying experience. It is a real which emerges from the impossible, determined by a network of signifiers; it arises as a form of impasse in formalization; it is a sort of residue of the signifying operation. I hope that through this example, which obviously assumes some knowledge of mathematics, you grasp the sense of Lacan's apparently paradoxical proposition: "The real is the impossible".

When I say that this example requires some knowledge of mathematics, I mean that in fact it can be explained on the blackboard in half an hour, even to people who know nothing of mathematics. I have not talked about this example to make you think that it is something very complex: it is, indeed, the ABC of the signifier.

VII. Descartes developed what one could call the subject of science. We know that the emergence of the Cartesian subject, the subject

who says "I think, I am", constitutes a cut in the history of ideas. This cut has been identified as such, at any rate, in the history of philosophy. It is an error to think that the Cartesian *cogito* establishes the identity I=I. The Cartesian *cogito* is something different to the ego as function of synthesis which psychologists test. It is an abuse to extend the specific identity of the Cartesian *cogito* to the whole psychical sphere—psychical acts, movements and representations. The Cartesian *cogito* is, at the time of its emergence, correlative of a very distinct moment. Lacan, following the Cartesian text very closely, and in a way which is not contradictory with the most rigorous reading of the *Meditations* so far, that of the philosopher Martial Guéroult, deciphered the first *Meditation* in this direction. You may know, even if it is only from having heard its being mentioned, about the function of the hyperbolic doubt in Descartes. This function is nothing else than the emptying of the universe of representations, of everything which is imaginary. The *cogito* in its identity only emerges as the ineradicable residue of this operation of emptying. If we follow Lacan's witticism in this connection, the evidence (*évidence*) is of an emptied subject (*sujet évidé*) who does not exist at all as a sphere which would contain lots of representations, qualities and a diversity of properties, but as a simple, vanishing dot. Descartes says: "I am, I think"—but for how long? I am only during the instant when I think.

This is a subject who at the moment of his emergence is not a substance at all; on the contrary, he is an entirely desubstantialized subject, who is not a soul in any way, who is not in relation with any nature; a subject for whom all natural adherences have been undone. This subject who has broken with all those adherences and with all signification apart from that punctual and vanishing residue where thought and being become one, is structurally the agent of the discourse of science. This is the subject who then makes the signifier work in its relation with the other signifiers. It is on the basis of this subject that one can simply trust the small letters of algebra. These small letters are not words; they are not captured by metaphor and metonymy; they are separate from signification. This is also the subject who is correlative to Cartesian extension, that extension which is so singular that is entirely external to itself (as Merleau-Ponty used to say, "without shadow and without hiding-

place"), that extension which is entirely manipulable and which is effectively the foundation of the discourse of science. I must point out that Descartes does not remain in this point of the subject, because he immediately discovers that the subject is correlative of the divine big Other, supposed subject of knowing, who guarantees the automatic manipulation of those small letters.

VIII. Lacan postulates, and this may appear to be paradoxical, that the subject of the Freudian unconscious, that subject which is ostensibly very different from a *cogito*, is the subject of science, Descartes' punctual and vanishing subject. Two things should be distinguished in this respect. In the first place, this subject of science which emerges with Descartes is, at the same time that it emerges, rejected by the discourse of science. He is simultaneously one of its conditions; but is a foreclosed condition, rejected to the exterior, which means that science presents itself as a discourse without subject, as an impersonal discourse, as the discourse of the supposed subject of knowing in person.

The academics, and I am one of them, always introduce themselves as the representatives of the supposed subject of knowing. This is particularly evident in the universities, in Caracas or in Brussels: the academics pretend to articulate statements (*énoncés*) as if these were without enunciation (*énonciation*). We know that when one says "I" too frequently and when one puts oneself on the scale, there appears to be a transgression against the discourse of science and its impersonality. In the case of psychoanalysis, the teaching does not take place in the same way as in the other disciplines. In fact, it is in the discourse of science that one can truly find the subject of Chomsky, about whom I spoke in my previous lecture: the ideal speaker–hearer who knows perfectly well the detours of his language and who transmits (that is the hope) without equivocations. Chomsky's formulation is the ideal of scientific language, not the language that we speak and the language that speaks to us. Indeed, in the history of science itself one can perceive what could be called returns of the subject. This is observable precisely when one believes in the possibility of identifying oneself with the supposed subject of knowing. We may think of Frege, who believed that he could mathematize

classical logic completely, through the achievement of a perfect, unequivocal and total written language. What happened to Frege is one of the great dramas of the history of science. At the time when the second volume of his work was about to be published, he received a letter from Bertrand Russell in which Russell told him that there was a small paradox in his first volume which spoilt the whole work. It is a very short paradox of only one paragraph, it fits within a sheet of paper, and Frege spent the last 20 years of his life ruminating over that significant fact. There are those lapses within the discourse of science which put all certainties in question. There is still another example taken from the history of mathematical logic which is, *par excellence*, where the perfect certainty of the discourse of science should be established. I am referring to the famous proof of Gödel. When Gödel postulated his theorem, the guarantee provided by the Other for the manipulation of the small letters, which had commenced with Descartes, appeared to suddenly collapse. I quote these examples simply to evoke the discourse of science in so far as this rejects the subject; and in turn, the subject also fractures the consistency of that discourse.

In the second place, the subject of the unconscious, in Lacan's sense, is nothing else but the subject of the signifier, that is to say, the subject of science, but regained in a scientific field as the subject who speaks. He is a subject who serves in an integral form as the vehicle of the signifier. Psychoanalysis is different from all forms of initiation and contemplative asceticism known in Antiquity. It is also different from all the vague bodily manipulations which are again fashionable today—those exercises through which an attempt is made to help the subject to get rid of his pain, to encourage him, to influence him by suggestion and to stimulate him. The psychoanalytic exercise is different from all initiation precisely because, if psychoanalysis is to work, the subject is not to have any form of mental preparation, contemplation or asceticism. On the contrary, the subject of psychoanalysis must arrive without preparation and must offer himself for the exercise without any previous purification. He must attend his sessions regularly, in a manner that can be called bureaucratic and tell everything that goes through his head. He must not prepare fine speeches. It is not a question of purification through language, but on the contrary of releasing the material in disorder. And which is the operation peculiar to the psychoanalyst? To guarantee that all this material released in disorder has a cause. In this respect the fundamental postulate of psychoanalysis is determinist. Everything has a cause. This is one of the two formulations of the principle of sufficient reason, which emerged only with Leibniz. Once again, this is a principle linked to the discourse of science and which, incidentally, Heidegger commented in his work *The Essence of Reasons*. This is why in the psychoanalytic operation the psychoanalyst plays the part of the supposed subject of knowing. The psychoanalyst occupies this place in order to render the analytic operation possible. It is a very dangerous place, because this can easily lead the psychoanalyst to identify himself with the good God. This is, in fact, what we can verify in the history of psychoanalysis. The psychoanalysts have gladly identified with the divinity. They even experience a very special infatuation: given that as a consequence of their function they are supposed to know, they do not feel obliged to know anything. I mean that they can well be swimming in ignorance, but this does not prevent that, as their position is that of the Other in the experience, they consider themselves to be perfect. Sometimes they regard themselves as the model for their patients, as their ideal; sometimes they confuse the psychoanalytic treatment with a form of education which would simply aim at leading the subject to identifying with the psychoanalyst. They believe themselves to be the sovereign good. Lacan has made remarks like these, and naturally he did not make many friends among the psychoanalysts through them. If he is occasionally critical of the practitioners of other disciplines, certainly he is less critical of them than of his colleagues.

Lacan has also stated that the analytic experience does not consist in the identification of the patient with the psychoanalyst, but on the contrary in the evacuation of the supposed subject of knowing. There is only one practice that could truly be called atheist, and that is psychoanalysis. One can also observe the opposite trend. One can see psychoanalysts, even of Lacan's school, like Françoise Dolto, telling the masses that the first psychotherapist was Jesus Christ, which pleases neither the psychoanalysts nor the Church. This is what after 30 years of Lacan's discourse one can again hear in Paris. We must be sceptical about the effects that can be achieved through the production of theory.

It is already time to finish. I still have to discuss two points, which I shall only do briefly.

IX. This point was originally aimed at showing how Lacan has, in the analytic experience itself, structured those paradoxes of communication which I presented in my second lecture and which prompted Professor Cadenas to say that they rendered knowledge impossible. I would have liked to demonstrate how Lacan, in a domain which is undoubtedly very difficult, attempts to structure those paradoxes. It is true that generalized equivocation is a motive to lose one's mind; and yet this generalized equivocation has a structure.

X. I would have liked to acquaint you with that formula of Lacan's which I presented rather abruptly: "*The* woman does not exist". It is a very good example precisely because Lacan attempts to write this paradox in a logical form; by this I mean he borrows the tools of mathematical logic. One should not believe that logic is simply what is taught at the first classes of the University about the principle of contradiction, and that where the principle of contradiction is not valid, there is no logic. This is an error. On the contrary. There exists something like Russell's paradox which requires elaboration. There are inconsistent mathematical logics, founded on the negation of the principle of contradiction. It is possible to make a mathematical logic work while negating the principle of contradiction. If there are logicians present here, I think they will not disqualify what I am saying, given the existence of inconsistent mathematical logics. Lacan's logic of the signifier, that logic which suits the unconscious and which does not know of contradiction, as Freud said, is an inconsistent logic. The whole algebra of Lacanian terms is organized around inconsistency.

I hope that logicians from Venezuela, if they are present here, will not contradict me, since the development of inconsistent mathematical logics has taken place particularly in Latin America. The Brazilian, Argentinian and Chilean schools of mathematical logic, whose recent symposium has been published 2 years ago by the North Holland Collection of works on logic, have shown all the

resources that from the mathematical point of view can be found in the inconsistent logics. This demonstrates that there are more things in science that one imagines.

Lacan developed an inconsistent logic of the phallus. He thought, very faithful in this respect to his teacher, Little Hans, that the phallus could be considered as a predicate. Lacan was able to arrange the Freudian paradoxes of castration on the basis of an inconsistent logic of the predicate phallus.

Translated by Leonardo S. Rodríguez

CHAPTER SIX

Knowledge and science: fantasies of the whole

Bruce Fink

Over the course of at least 20 years, Lacan repeatedly takes up the topic of what might be called a "prescientific" type of knowledge and attempts to distinguish it from knowledge in a modern scientific context. That prescientific type of knowledge is associated by Lacan with Aristotelian science, a type of science that precedes the shifts often referred to as the Copernican revolution, though they were not made by Copernicus himself.

Why does Lacan focus on that, and come back to it again and again in an almost obsessive sort of way? Isn't it a moot point, of interest only to the history of science? Is Lacan a closet historian in his non-analytic moments?

I think Lacan's motive here is that psychoanalysis has had a difficult time detaching itself from both philosophy and psychology, both in the public mind and in the minds of analysts, and keeps slipping into all kinds of prescientific constructs, all kinds of simplistic forms of pseudo-science and age-old philosophical notions. If psychoanalysis is to be something more credible than modern psychology—which leads to a proliferation of nosological categories as glorious as imagined ugliness disorder (officially known as "body dismorphic disorder" in the DSM IV)—then it has

to examine what science is all about, not simply what people think it is all about.

Modern science, for example, is ostensibly about measurements and the production of "hard facts." And thus virtually the entire American psychological establishment has enlisted in the production of measures and statistics of all kinds.

But is that the kind of scientificity psychoanalysis can hope to achieve or even wish to achieve? *The APA Monitor*, the main organ of the American Psychological Association in the United States, lists, at least once a year, what aspects of Freud's theories have been borne out by empirical research; but when you look at what they have reduced Freud's theories to in order to be able to test them, and then look at the research design they've come up with to test such watered-down theories, you wonder whether the supposed confirmations are of any more value than the alleged refutations!

According to Lacan, that is not at all the kind of scientificity psychoanalysis must aim at: to his mind, psychoanalysis is not currently a science and it is not by going in that direction that it will become one. "It is not what is measured in science that is important, contrary to what people think" (Lacan, 1998:128). I'll mention what he thinks *is* important in science in a moment.

But, first, let me turn to Lacan's comments about Antiquity's view of knowledge. I do not profess in any sense to be an expert on Antiquity or the history of science. I simply want to summarize what I think Lacan's main points are and why they are pertinent to psychoanalysis.

Antiquity's view of the world is based on a fantasy, Lacan suggests—the fantasy of a pre-existing harmony between *nous* and the world (p. 128), between what man thinks and the world he thinks about, between the relations between the words with which he talks about the world and the relations existing in the world itself.

Modern science has rather decisively broken with this notion, presuming, if anything, the inadequacy of our pre-existing language to deal with nature and the need for new concepts, new words, new formulations. And yet, curiously enough, in the psychoanalytic journals, you find articles by someone like Jules H. Massermann (1944), who discovers—I'm quoting Lacan here—"with an unequaled

naiveté, the verbatim correspondence of the grammatical categories of his childhood with relations found in reality" (Lacan, 1953). In other words, in the middle of the 20th century one finds an unquestioning approach to language and the categories and relations it provides in studies produced by psychoanalysts. This most prescientific of presumptions is still found in much of 20th-century psychology.[1]

Now the fantasy that characterized Antiquity's view of the world goes quite far, according to Lacan: it is—and I don't think he was the first to say so—all about copulation (Lacan, 1998:82), all an elaborate metaphor for relations between the sexes. Form penetrates or inseminates matter; form is active and matter passive; there *is* a relationship, a fundamental relationship, between form and matter, active and passive, the male principle and the female principle. All knowledge at that time participated, in Lacan's words, "in the fantasy of an inscription of the sexual link" (p. 82), in the fantasy that there is such a thing as a sexual relationship and that this link or relationship is verified all around us. The relation between knowledge and the world was conceptualized on the basis of a fantasy of copulation.

It seems inconceivable that such a fantasy could be found in psychoanalysis today, but the fact of the matter is that, if there is *one* major fantasy at work therein, it is clearly that a harmonious relationship between the sexes *must be* possible! This view is based on what is thought to be a teleological perspective in Freud's work, a teleology that supposedly grows out of the "progression" of libidinal stages known as the oral, anal, and genital stages. Whereas in the oral and anal stages, the child relates to partial objects, not to another person as a whole, in the genital stage, certain post-Freudian analysts have claimed that the child relates to another person as a whole person, not as a collection of partial objects.

I doubt one could find any such claim in Freud's work, but two thick volumes were devoted to such notions in France in the mid-1950s, entitled *La psychanalyse d'aujourd'hui* (PUF), in which a whole generation of analysts put forward the idea that when one successfully reaches the genital stage, a perfectly harmonious state is reached in which one takes one's sexual partner as a subject, not an object, as a Kantian end-in-himself or herself, not as a means to

an end. And the crowning achievement of this stage is that one becomes what they call "oblative" (*oblatif*), truly altruistic—that is, one becomes capable of doing things for another person without any thought of the advantages it may bring to oneself.

Had that generation of analysts ever seen anything of the sort? It would be hard to believe. Nevertheless, those analysts did not hesitate to postulate such a perfect state of harmony between the sexes (and of the total elimination of narcissism and selfishness), or to push genital relations as selfless, and oral and anal relations as selfish in their work with their analysands. Even though no one had ever seen such a thing, *it had to exist*.

In other words it was yet another fantasy, distorting psychoanalytic theory and practice. A similar fantasy is, of course, at work in contemporary psychology, at least in its most popular form: the by now absolute best-selling pop-psychology book of all times, *Men Are from Mars, Women Are from Venus*. The title itself seems promising, suggesting that there is nothing that predestines men and women for complementary relations since they are essentially different species. But everything in the book after the first two chapters is designed to help the reader overcome difference and establish *the One that has to be*, the One that the age-old fantasy requires.

Lacan's goal is to eliminate all such fantasies from psychoanalytic theory and practice. That is, of course, easier said than done. But when one doesn't know history, one is fated to repeat it. And that is precisely why the study of the history of science takes on such great importance in any field that would like to become scientific at some point in the future, purging itself of unscientific elements.

The fantasy of harmony between the sexes has a long and distinguished lineage; we can trace it back to at least Plato's *Symposium*, where we see Aristophanes put forward the view that once we were all spherical beings lacking in nothing, but Zeus split us in two, and now we are all in search of our other half. We divided beings yearn to be grafted back together, failing which we at least find relief in each other's arms (thanks to Zeus having taken pity on us by turning our private parts around to the inside). As Plato has Aristophanes say in that text, "Love thus seeks to refind our early estate, endeavoring to combine two into one and

heal the human sore." Love is what can make good the primordial split, and harmony can be achieved thereby.

A belief in a possible harmony—not only at some primordially lost moment in human history (garden of Eden; phylogenesis) or individual time (mother–child relationship; ontogenesis), but *now*—can, it seems to me, be found in contemporary Jungian psychology in the West, and in certain Chinese religions in the East (consider, for example, the notion of Yin and Yang).

Aristophanes' image of humans as originally spherical beings also points to the sphere as the shape that was considered most perfect, most harmonious, lacking in nothing. A great deal of ancient cosmology and astronomy up until Kepler's time was based on the fantasy of the perfection of the sphere, and much "scientific" work was devoted to *saving the truth* (*salva veritate*) by showing how the noncircular phenomena could be explained on the basis of movement in accordance with that shape of shapes, the circle. Epicycles were employed even by Copernicus, and thus the Copernican revolution was not as Copernican as all that. All Copernicus said was that, if we put the sun at the centre of the world, we can simplify the calculations—which in that case meant something like reducing the number of epicycles from 60 to 30.

According to Lacan, it is not such a move, which keeps entirely intact the notions of centre and periphery, that can constitute a revolution: things keep revolving just as before. It is Kepler's introduction of a not-so-perfect shape, the ellipse, that shakes things up a bit, problematizing the notion of the centre. The still more important move after that, as Lacan sees it, is the idea that if a planet moves toward a point in space (known as a "focus") that is empty, it is not so easy to describe its motion as "turning" or "circling," as it had been called in the past: maybe it's something more like falling. That is where Newton comes in. Instead of saying what everyone else had been saying for millennia—"it turns"—Newton says, "it falls."

Despite this Newtonian revolution—about which I'll have more to say in a moment—Lacan claims that for most of us, our "world view . . . remains perfectly spherical" (Lacan, 1998:42). Despite the Freudian revolution that removes consciousness from the centre of our view of ourselves, it ineluctably slips back to the centre, or a centre is ineluctably reestablished somewhere. The "decentreing"

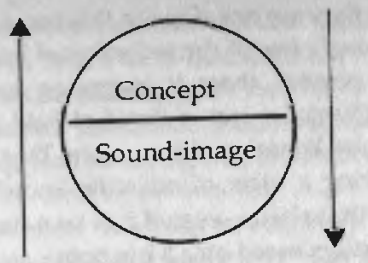
psychoanalysis requires is difficult to sustain, Lacan says (p. 42), and analysts keep slipping back into the old centre/periphery way of thinking. Hence the need for another "subversion," the Lacanian subversion.

One of the main points of "Subversion of the subject" (Lacan, 1960) is that the subject is *not* someone who knows, but rather someone who does not know. Despite Freud's emphasis on the unconscious, on a knowledge known unbeknown to the conscious, thinking subject, despite Freud's emphasis on a knowledge that is inscribed, registered, or recorded somewhere, but that is not, strictly speaking, known by anyone, psychoanalysts have reverted to the idea of a conscious self: an ego endowed with synthetic functions, an ego that plays an active role in "integrating reality" and mediating between the tempestuous drives of the id and the severe moral strictures of the super-ego—in a word, an agent imbued with intentionality and efficacy.

The radical nature of Freud's initial move has been covered over and it is difficult to keep such fantasies from sneaking in the back door. Lacan suggests that the importance of the unknowing subject is found at virtually every step of the way in Freud's work: why, Lacan asks, of all the ancient myths in which a man kills his father and sleeps with his mother known at Freud's time—and there were apparently quite a number of them—did Freud chose Oedipus? His answer: because *Oedipus did not know he had done those things* (Lacan, 1991:122). Oedipus was thus a perfect model for the unknowing subject, for a subject who acts without knowing why, in any conscious sense of the word "knowing." From the vantage point of psychoanalysis, "There's no such thing as a knowing subject" (Lacan, 1998:126), says Lacan.

Knowledge and the whole

There seems to be something about the visual realm and the images we encounter in that realm that are incredibly compelling to us: the image of the circle returns to haunt us even in Saussure's model of the sign, to turn for a moment to other discourses than that of psychoanalysis.



According to Saussure, the signifier and the signified, the sound-image and the concept, are indissolubly tied together. As Saussure says, "the two elements [concept (signified) and sound-image (signifier)] are *intimately united*" (Saussure, 1959:66–67); they seem, in the image he provides for the sign, to form a whole. This is an encapsulated sign, a sign in which the signifier and signified do not diverge dangerously or uncontrollably, forming instead a Yin–Yang like configuration. I am leaving out here the complexities that stem from the multiple relations among different signs, in order to focus on this way of conceptualizing, visualizing, or representing the sign itself.

Lacan begins his forays into linguistics by subverting the Saussurian sign: there is no harmonious, totalizing relationship between signifier and signified, says Lacan. The signifier dominates the signified and there is a genuine barrier between the two that abolishes the reciprocal arrows Saussure provides, those arrows suggesting that each order affects the other to the same degree. Lacan subverts this aspect of the sign already in the mid-1950s (Lacan, 1957), and takes his subversion further still in Seminar XX, repeatedly emphasizing the barrier or bar between the two realms, and the fact that the signifier creates the signified, brings the signified into being (Lacan, 1998:41).

Looking beyond linguistics to other fields, it is clear that when Lacan takes up the theme of history he objects to Hegel's attempt to find some sort of totalizing meaning there—a teleology. Indeed, Lacan is generally suspicious of the whole and is ever pointing to the hole in every whole, to the gap in every psychoanalytic theory that attempts to account for everything, whether to explain the whole of the analysand's world or to reduce all of psychoanalytic experience to, say, a relationship between "two-bodies" (in a "two-body psychology") or to a "communication situation."

Psychoanalysts seem to have a fatal attraction to such totalizing

explanations, but they are not alone in this regard. Even in a field as abstract and seemingly free of the seduction of images and the imaginary as modern physics, there is increasing interest, it seems, in "theories of everything," a sort of "unified field theory" that would account for all forces known and knowable. That strikes me as quite fanciful, as involving a view of scientific knowledge based on an image like that of the sphere—even if it is an *n*-dimensional sphere—as opposed to an image based on a Klein bottle, say, or a Möbius strip.

Which, in fact, is at least one of the reasons Lacan introduces such images in his work in the early 1960s: to encourage his audience to stop thinking in terms of circles and spheres, and to think instead in terms of surfaces that are less easily graspable in terms of categories like inside and outside, front-side and back-side, body and orifice. The notion of the world as constituting a whole, Lacan says, is based on "a view, a gaze, or an imaginary hold" (p. 43), a view of a sphere from the outside, as it were—as if the world were over there, and we were here looking at it from *some privileged outside point*. But are we on the inside or the outside of a Möbius strip? It is more difficult to situate oneself in terms of some sort of exteriority when such surfaces are taken as models. Yet even those surfaces can be pictured and thus keep psychoanalysis rooted in the imaginary. Even the knots Lacan introduces in Seminar XX, some 12 years later, partake of the visual, though they are perhaps still harder to picture in one's mind.

In his ongoing attempt to get us to leave behind the visual, Lacan is led to the letter. If Kepler shook us out of our old Copernican ways of thinking by introducing the ellipse, Newton took us further still by introducing a kind of writing:

$$F = g\frac{mm'}{d^2}.$$

This, according to Lacan, "is what rips us away from the imaginary function" (p. 43).

Formalization without mathematization

One way beyond fantasy is the reduction to letters. Indeed, in Seminar XX Lacan says, "nothing seems to better constitute the

horizon of analytic discourse than the use made of the letter by mathematics" (p. 44); note that in mathematics, many of the letters do not have the kinds of meanings they have even in physics where, for example, *m* stands for mass. Mathematicians like Bertrand Russell have been quoted as saying that the letters they use have no meaning, and to be devoid of meaning is to be devoid of the imaginary; as Lacan says, "meaning is imaginary" (Lacan, 1993:65).

While Lacan ultimately concludes that "The analytic thing will not be mathematical" (Lacan, 1998:117), he nevertheless spends many years attempting to provide symbols—which he refers to as mathemes—with which to summarize and formalize psychoanalytic theory: $\$, a, i(a), A, (\$ \Diamond a), (\$ \Diamond D), S(\not A), -\varphi, \Phi$, and so on. It is in part an attempt to formulate certain structures in as rigorous a manner as analysis is currently able to. The symbols he introduces have nothing to do with measurement, and thus cannot be replaced by numbers as in Newton's formula for force and gravitation. And yet, when one is familiar with their multiple meanings, they seem to summarize a good deal of theorization in a very condensed form. Lacan's goal here does not seem to be to provide a mathematization of psychoanalysis, but rather a formalization. Formalization seems, at least at this stage of Lacan's work, to be a possible way of moving toward scientificity, and is what Lacan finds most important about science—far more important than measurement.

In physics, formalization allowed theorists an independent field of speculation: one could play with the formulas themselves and work out all of their interrelations, without having the slightest idea what the new configurations meant or implied. One could make certain assumptions, not because they made any sort of intuitive sense, but simply because they simplified equations; those assumptions could then be tested through experimentation. But the formalization itself allowed for new breakthroughs, gave physicists *a basis for a non-intuitive, non-image based, non-imaginary approach to their field*.

Indeed, modern physics became so far removed from any intuitive understanding of the phenomena supposedly under investigation that, rather than new theoretical advances being designed to explain or account for the phenomena, often it took time to think of what never before noticed phenomena might in fact validate the theories. To give an example from my limited knowledge

of the development of physics, no one had ever noticed that the sun bends the light that comes to us from Venus until modern physics posited the matter-like nature of photons and the sun's gravitational pull on them. If I am not mistaken, there are still aspects of Einstein's theories that have yet to be tested.

Obviously there is no such formalization of psychoanalysis in the offing that would allow for such an independent basis of theorization. But Lacan situates it at the horizon of a form of psychoanalysis that would like to become scientific. How such a formalization could function independently if it did not simultaneously involve mathematization is hard to say, but Lacan seems to think that set theory provides a model for *formalization without mathematization*, set theory being a kind of logic that can be used to generate many different areas of mathematics.

One of the paradoxes of the kind of field psychoanalysis is, is that—unlike a field like physics in which physicists need never read the original texts written by Newton, Maxwell, Lorenz, or Einstein, learning all they need to know in order to "do" or "practice" physics by reading ordinary textbooks or simply going to classes—in psychoanalysis, Freud's texts remain unsurpassed, indispensable reading (at least they should be!). It is not as if later work in the field could somehow subsume all of Freud's contributions, and pass them on in the form of a series of formulas that anyone could learn and use.

In Lacan's work we see a two-pronged approach: we see Lacan attempt to reduce his own work and Freud's to mathemes—indeed, he ironically claims at one point to have reduced all of psychoanalysis to set theory—and yet we see a kind of "fetishization" of the text, so to speak. On the one hand, Lacan adopts an incredibly meticulous approach to reading Freud's texts and other texts literally (for example, Poe's "The Purloined Letter") that has spurred great interest in the humanities and in literary criticism in particular, and, on the other hand, he develops a style of writing that seeks to have effects on the reader that imply anything but the direct transmission of formulas and mathematically precise equations.

In Lacan's own writing, we see an explosion of polysemia, double entendres, triple entendres, equivocations, evocations, enigmas, and puns. His texts and lectures seem designed to introduce us to the very kind of work analysis itself requires: sifting through layers of

meaning and deciphering texts as if they were long series of slips of the tongue. He says at one point that his writing style is deliberately designed to contribute to the training of analysts—"All of my rhetoric aims to contribute to the effect of training" (Lacan, 1966: 722)—but it no doubt goes further than that. His writing affects us and, in certain cases, even upsets us. It "itches until we scratch" (Lacan, 1998:135). It gets under our skin and goads us on, ever making us realize just how very far we are from understanding, not the whole of psychoanalysis, but even the whole of any one page in any one book by Lacan.

Speaking once again of the whole, E. O. Wilson, the well-known Harvard professor of biology, recently published a book entitled *Consilience: The Unity of Knowledge*, and in it he apparently suggests that, using methods developed in the natural sciences, science will eventually be able to explain everything: psychology, literature, the arts, history, sociology, religion—the whole kit and caboodle. Have scientists left behind the fantasy of the whole? Not by a long shot!

Notes

1. According to Lacan, it is also found in Jean Piaget's work on children; see, for example, his claim in "Science and truth": "as concerns the logic [the child] displays in his responses to statements whose series constitutes the test he undergoes, Piaget comes up with nothing other than the very same logic that governs the enunciation of these statements in fulfillment of the goals of the test" (Lacan, 1965).

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CHAPTER SEVEN

From mathematics to psychology: Lacan's missed encounters

David Corfield

Throughout the entire length of Jacques Lacan's corpus there runs an ongoing enquiry into the relationship between psychoanalysis and science. This enquiry addresses two interconnected issues:

(a) The sense in which psychoanalysis may be considered a science;
(b) The nature of science in the light of psychoanalysis.

There is a potentially problematic circularity involved here concerning the legitimacy of making pronouncements about science from the perspective of a discipline that wonders whether or not it itself should be considered a science. Of course not all circles are vicious—some of them turn out to be virtuous. In this essay we shall be examining the nature of this circle for Lacan.

Members of the Vienna Circle had encountered a similar circularity: If the only sentences that are meaningful are either particular observation statements (e.g., "I perceive at this particular time that particular shade of blue in this particular part of my visual field") or general scientific laws that are reducible to a set of such particulars, the rest being contentless analytic truths or meaningless metaphysical chatter, under which category were their own

writings to be classified? Either their brand of philosophy was to be counted as part of the empirical sciences, or it was merely the logical consequences of tautologies and definitions, or else it was to be dismissed as meaningless. The grounding that scientific knowledge enjoyed did not seem to be available to the study of that grounding. One of the most influential American philosophers, Willard Quine, extracted himself from this bind by arguing that philosophy ought to become *naturalised*, i.e., to become an integral part of science itself. But in so doing he denied that science was founded on a base of certain empirical knowledge, but rather that it took the form of a web of beliefs on which the world could impinge only indirectly. This, together with Thomas Kuhn's portrayal of the history of science as the rise and fall of a sequence of incommensurable world views, encouraged a relativism towards science which forms the battleline for much of Anglo-Saxon philosophy of science today.

The Logical Positivism of the Vienna Circle did not prevail in France, where a vision of science held sway which was informed by the likes of Alexandre Koyré, the historian/philosopher of science Lacan most closely followed. For Koyré the defining aspect of the revolutionary rise of European science during the 17th century was the injection of mathematics into the natural sciences, inspired by a radical change in the philosophical climate towards a Platonist rationalism after centuries of Aristotelianism. Koyré was notable for his forthright rejection of empiricism ("c'est la théorie qui constitue la science"), arguing, for example, that Galileo's "experiments" were most likely never carried out and in all probability would not have worked. Historical analysis and contemporary reruns of these experiments have revealed this view to be wrong, but without lending support to the extreme empiricism of the Vienna Circle and the Anglo-Saxon philosophers they inspired. Again, Koyré's representation of 17th century science as arising out of a radical philosophical break with Scholasticism has been challenged by historians who have found clear evidence of continuity with the past in the writings of Galileo, Descartes and Newton. These findings (see Redondi, 1987) should prompt us to question those aspects of Lacan's philosophy of science he held in common with Koyré.

Lacan's enthusiasm for mathematics will be the subject of the first part of this essay, where I shall discuss his claim that science aims at the *real* by means of mathematization, along with the further

claim that psychoanalysis can do likewise. In the process I shall adopt a critical position towards Lacan's attempts to introduce various formalisms into his psychoanalytic theory. One might respond to this by granting the justice of such criticism while making little of it by taking the mathematics to be a side-show, a minor distraction from a wealth of rich clinical intuitions and important theoretical insights. However, the ingrained nature of this mathematizing tendency suggests that, at the very least, were one to ignore it, the task of extracting a systematic theoretical position from Lacan's work rather than a fragmented collection of ideas will be made all the harder.

It is no easy task to attain a clear overview of Lacan's philosophy of science. One approach would be to trace Lacan's intellectual debts in order to fit him into a sustained line of argument. However, for whatever reason, his intellectual ancestry has yet to receive the requisite scholarly treatment. Having said this, though, along with Koyré one should certainly also mention Émile Meyerson. For Meyerson scientific theorizing achieves some kind of destruction of reality. Put more prosaically, science flourishes without there being an awareness that what is essentially real about the world is that which evades scientific explanation.[1] Read liberally, we might take Lacan to be arguing along similar lines with his idea that science involves a form of denial, a *not-wanting-to-know*, which he likens to the psychotic's *foreclosure*. Lacan suggests that a condition of the success of the natural sciences is this not knowing. But what then of a scientific psychology? Having the *psyche* as its object, mustn't it take into account the conditions under which it produces itself as knowledge, and yet as a part of science not care to know them? For Lacan psychoanalysis succeeds where psychology fails as only psychoanalysis reintroduces the *Name-of-the-Father* into scientific consideration. In the second part of the essay I shall explore this cluster of themes.

Lacan's attempt to mathematize psychoanalysis

It is clear from reading his papers of the 1950s that Lacan intended his version of Freudianism to be a science, one which took its lead from a vision of science as mathematized rather than as experimental. From these papers, "The Rome Discourse" in

particular, you can sense his excitement that at last it was the turn of the human sciences to allow for formalization. Lacan retained the widely held distinction between the human and natural sciences, preferring the epithet "conjectural" to that of "human",[2] but in so doing he was not to follow the tradition, which has led from Dilthey to Habermas, where the human sciences are seen to produce explanatory and descriptive narratives, in contrast to the formal models for control and prediction created by the natural sciences. Instead, we find calls to mathematize psychoanalysis, as indicated by the following claim:

> ... the mathematical formalization that inspired Boolean logic, to say nothing of set theory, can bring to the science of human action the structure of intersubjective time that is needed by psychoanalytic conjecture if it is to ensure its own rigour. [1966–70:75]

Psychoanalysis, at this point in the early 1950s, was to be the science of intersubjective time,[3] serviced by the new mathematical branches of stochastics and game theory. And when "intersubjectivity" departs from the scene during the late 1950s with the introduction of the *objet a*, the drive to mathematize remains and if anything strengthens through the rest of Lacan's career. This persistent belief in the relevance of mathematics to the human sciences has not been widely shared.

An enormous amount has been written on the status of the sciences, so that one can only touch on a few aspects of the debate. In the Anglophone world, most philosophers of science have held up physics as the quintessential science, the core of what they hope will turn out to be a unified science. Physics at its best is seen as achieving radical reconceptualizations of its domain, after which a common outlook is brought about by weight of evidence. In this regard, disciplines such as sociology, characterized by major disagreements over fundamental concepts, do not fit the bill at the present time. This lack of consensus makes the human sciences problematic even for a thinker like Thomas Kuhn who, at his most radical, notoriously challenged the view that theory selection in natural science is a rational affair. At best, then, the human sciences are taken as sciences-to-be.

Continental philosophers, on the other hand, have not taken physics as the paradigm for all valid forms of knowledge, but have

maintained a sharp distinction between what is to be hoped for from the natural and human sciences. Prior to the outbreak of postmodernism their strategy had often been to leave the methodology of the natural sciences to one side as unproblematic, while seeing it as having limited scope and as being unsuited to the study of human concerns. Foucault distinguished the human sciences from mathematics, cosmology, and physics, which he describes as "noble sciences" where, in contrast to economics or philology,

> one can observe in their history the almost uninterrupted emergence of truth and pure reason. [1970:ix]

Habermas (1970) distinguishes between a "causality of nature" and a "causality of fate", reserving the latter term for the type of causal connection to be found in the human sciences, of which psychoanalysis is a key example. While natural scientists can employ the causal links they have discovered and knowledge of the causing event to control material bodies or predict physical phenomena, to operate in the realm of the human sciences is to provide an understanding of the relevant determining mechanisms with a view to bringing about an emancipation from them. Rather than act on the cause of suffering, psychoanalyst and patient strive to dissolve by interpretation the causal links themselves which have produced the latter's symptoms.

There thus emerged a curious consensus among a majority of Anglo-Saxon and Continental philosophers as to the largely unproblematic nature of the acquisition of knowledge in the physical sciences, while disagreeing about the epistemological status of the human sciences. However, important work in the social history of science since then has prompted various philosophers to play down the sharpness of the dichotomy. From this recent perspective, explanatory narratives occur in the natural sciences and confirmable predictions may occur in the human sciences. Mary Hesse, for example, argues that each side has exaggerated the differences and favours a continuum (Hesse, 1980, Ch. 7). This suggestion becomes plausible when one considers the more descriptive natural sciences such as palaeontology, and the more predictive human sciences such as economics. The human sciences, archaeology especially, also rely on many techniques borrowed from the natural sciences.

Even if physicists are not straightforwardly uncovering the truth,

the use they make of mathematics in their field is unparalleled. Indeed, a large amount of the mathematics we have today was and continues to be motivated by problems arising in physics. Applications of mathematics come with a kind of ranking, where the use of statistics is counted as low level, qualitative modelling via a system of differential equations (as, for example, in animal population studies and in economics) belongs to an intermediate level, and the highest level is reserved for, say, the use of algebraic geometry in code-making or of differential topology in theoretical physics. Other uses of high-level mathematics occur in engineering disciplines and theoretical computer science. While there is a general desire that branches of science will climb this ladder, hopes for the mathematization of, for instance, biology, have only partially been realized. For sociology and psychology, little seems to have been achieved beyond the statistical stage and even this achievement is questioned by those who see artificial quantification occurring. What then, we may wonder, gave Lacan the right to imagine that he could "jump the queue", as it were, and model the dimensions of our being as the components of a Borromean link?[4]

The desirability of mathematizing psychoanalysis followed, for Lacan, from his idea that, because mathematical discourse was void of meaning, only in this way could psychoanalytic theory become wholly transmissible.[5] Mathematics, etymologically linked to the verb "to learn", was to provide the means for an uncorrupted transmission of the radical elements of Freud's discovery of the unconscious, which had gone unrecognized or been distorted by successive psychoanalysts.

It is true that mathematics is indispensable to physics and that no deep understanding of physics is possible without a solid grasp of the relevant mathematics. But where any proposed mathematical modelling of a portion of physical reality must submit itself to a very demanding examination, no indication was given by Lacan as to when the introduction of particular pieces of mathematics into psychoanalytic theory might be counted as warranted. Lacan's topologized psychoanalysis may be thought of as "bold", but this is certainly not in Karl Popper's sense of the word. Popper's advice to scientists was to produce bold, precisely formulated conjectures, i.e., ones which could be subjected to severe testing. While Popperian falsificationism has few adherents today, philosophers of science

have not strayed so far away that, if they came to look at Lacanian theory, they would not concern themselves with what to count as evidence for the idea that the dimensions of our being are tied in Borromean fashion.

It is possible that the conjectural scientists' attempts to schematize mathematically their domain should be judged differently from those of the natural scientists. But if so, then how? The problem here is that, leaving aside the infelicitous use of mathematical language drawn to our notice by Sokal and Bricmont (1997), with no clear-cut successes to ponder, no criteria to decide what constitutes a successful formalization have been established. Contrary to Koyré's position, the natural sciences are characterized by an interlocking multiplicity of established methodological styles, mathematization counting merely as one. These styles of research have been made to work to date in situations where aspects of the piece of reality being investigated display sufficient stability and are not overly affected by the actions of the investigator.[6] Transporting these styles to new domains of enquiry requires either an argument as to why a straightforward transferral might be expected to be successful or an explanation and justification of any modifications introduced. Certainly much of academic psychology may be faulted for an over-enthusiastic use of laboratory-based methodologies which fail to pay due attention to the effects on experimental subjects of their interpretations of the situations in which they are placed, but so may a human science which provides no rationale for its importation of mathematics.

Can one say there has been any success for Lacan's mathematics: the topological spaces of signifiers and *jouissance*; the golden ratio as demonstrating the incommensurability of the *objet a* and the unary trait; or, the projective plane as the union of the moebius strip and disc, modelling the relation between subject and object in the fantasy? The only prospects of support for a mathematized psychoanalysis lie in shared confirmational clinical experience or in the provision of some kind of theoretical coherence. Both of these are attended by unresolved difficulties: The language in which one might hope to express shared clinical experience seems far removed from that of abstract theory, and the self-confirmatory nature of theoretical coherence has often blinded a theory's proponents to a lack of external support.

The physical sciences are in much better shape. In the 1970s, knot theory, the branch of mathematics inhabited by the Borromean link, had no applications of any note in the natural sciences. Yet only 3 years after Lacan's death a significant discovery by a mathematician named Vaughan Jones connected knot theory to statistical mechanics, sparking great and continued interest in some quarters of the theoretical physics community. Today there are chemists synthesizing knotted molecules, physicists investigating polymer formation, and molecular biologists interpreting braided strands of DNA in knot theoretic terms. Chemists "see" the knots through electron microscopes. Physicists explicate measurable properties of polymers in terms of knotted random walks. While, in the case of the biologists, if knot theory does not help them understand how replicated DNA chains are unlinked by the cutting and splicing actions of enzymes, with the promise of a possible mechanism for blocking cancerous growth, their interest will soon diminish.

It is plainly the case that none of Lacan's mathematical gambits has succeeded in the ways they have for natural scientists. A paradigmatic example of the predictive success of mathematical natural science relates to the discovery of the planet Neptune in 1846. Uranus, then thought to be the outermost planet of our solar system, was behaving badly from the point of view of Newtonian mechanics. This deviation from prediction allowed two options. One was to modify the basic laws of the theory. However, by the 19th century Newtonian mechanics had been so well confirmed that it was not to be given up so lightly. The second option was to alter the auxiliary hypotheses, that is, everything that needed to be assumed before Newton's gravitational theory could be made to work. One of these suppositions was that there were just seven planets revolving about the sun. Hence two astronomers, Adams and Leverrier, speculated that Uranus' trajectory was being influenced by the attractive gravitational force produced by the presence of an unknown planet. Calculations were made as to the likely whereabouts of this new celestial body and astronomical observations quickly confirmed its existence less than one degree way from the expected spot.

In more radical cases not just new instances of a known type of entity are discovered but new types themselves. A classic example of this arose from Paul Dirac's construction of a field equation for

the electron in around 1930. When "negative energy" solutions to this equation were found, Dirac postulated the existence of companion particles to the electron, bearing an opposite charge. The tracks of these *positrons*, recognized by their being the mirror image of those produced by electrons, were duly produced in bubble chambers by experimentalists. What we find here is the mathematical modelling of an area followed by the opportunity to lean on the mathematics to produce consequences whose interpretation is not known prior to the modelling.

There is a lesson to be learnt from an earlier attempt to model the soul using knot theory. In the 1870s the mathematical physicists Peter Tait and William Thomson (later Lord Kelvin) propounded their idea that atoms were knotted vortex tubes of ether. Both had hopes that the success of their atomic theory would provide ammunition against the encroaching atheistic materialism of that era. For his part Thomson argued that it would require an all-powerful, intelligent Being to set the vortices spinning in the perfect fluid, while Tait prepared a cosmology complete with stratified universe and Holy Spirit organizing the life present in each layer. Entities in each layer were composed of vortex tubes of the fluid present in the next higher layer. As he describes in *The Unseen Universe*, souls dwell in layers higher than the one we perceive as reality.

Several prominent clergymen were taken with Tait's vision, but, alas, knot theory could secure no grip on atomic reality. In physics models can survive only so long without success, especially at a time when experimental data was flowing quite so freely as it was in atomic physics in the late 19th century. Without that margin of support provided by a plausible physics, the Biblical support for the cosmology was too tenuous to prevent interest in *The Unseen Universe* waning. A fellow physicist James Maxwell gently teased his friend Tait by composing an ode in the manner of Shelley:

> My soul's an amphicheiral knot
> Upon a liquid vortex wrought
> By intellect in the unseen residing,
> ...[7]

Sadly there was no associate of Lacan's in Paris in the 1970s with sufficient wit to have composed a similar poem in the manner of Aragon, a favourite poet of his.

We can approach the same issue by turning now from psychoanalysis seen as a science to science as seen by psychoanalysis. For Lacan, physics and mathematics with their "little letters" aim at the real, the dimension beyond reality, which for him was to be seen as a blend of the imaginary and the symbolic orders.[8] The early discussions of this concept stressed the real as the ungraspable beyond to symbolization, i.e., that which resisted symbolization. The real was described as *immonde* (not-of-the-world), and also as the "impossible". Lacan must here have been drawing to some extent on the idea of Koyré that physics is dealing with the impossible, in the sense that the conditions outlined in the antecedents of scientific laws are never completely satisfied.[9] For example, Newton's laws may talk about bodies continuing their motion in a straight line at a constant speed if they are not acted on by a net force. However, bodies are never subject to a precisely constant zero net force.

Lacan later refined this notion by differentiating between a pre- and a post-symbolic real. Not only is there that which resists symbolization, there is also a real at the other side of the symbolic, produced by the advent of the symbolic order. This idea Lacan illustrated in the field of mathematics by his reading of the incompleteness results of Gödel, where the introduction of a formal language for arithmetic produces the impossibility of a demonstration of its consistency, and in psychoanalysis by the idea of the redistribution of libido brought about by the assumption of the signifier in the body. Enjoyment is drained from the body, while at the same time regions of surplus are produced. This latter notion allowed him to propose that psychoanalysis too aims at the real.

Lacan claimed that mathematicians symbolize the imaginary of the real.[10] This, however, is only the first half of the story. The key issue here is that the process of theory development can be seen to include the completion of a cycle. No doubt the point may be made without recourse to the Lacanian apparatus of the three dimensions of experience, but we could say that what follows on from symbolization may be phrased as the regaining of the imaginary of the real caused by this symbolic. As with Dirac and his positrons, in mathematics and physics there are times when all you have to rely on are the possibilities and impossibilities introduced by your formalism, when the intuitions that guided you to this formalism

can no longer assist you. Ideally, a new imaginary grasp will emerge through a developing familiarity with the symbolism.[11] Unlike in mathematics and physics, however, this capacity to rely on the symbolism has not yet become possible with the kinds of reduction of psychoanalytic theory to little letters we have seen to date. Lacan never reached the point where his symbolization could support itself in the absence of an imaginary grasp. It could never provide sufficient guidance to further theory construction. The symbolization never put up any resistance to its author's intentions, and so his theory has not been able to achieve the kind of liberation from authorship we see in the mathematical sciences. Of course this is not to say that it is necessarily the case that nothing will come out of his *mathemes*, but people should realize that their chances of going beyond the "useful prop for the imagination" stage are slim.[12]

A branch of mathematics which some psychologists suggest offers an opportunity to model aspects of the mind is dynamical systems theory.[13] This field has also been on the receiving end of several questionable gestures made by philosophers keen to stress the limitations of modernist science's supposed reliance on linear differential equations. In the field which concerns us, Slavoj Žižek, who has done so much to make intelligible the Lacanian corpus, borrows from the language of non-linear dynamics to describe the *objet a* as a strange attractor (1991:38). In so doing, however, one should of course not rely merely on the semantic resonances of such a term, which was devised for reasons bearing little relation to the reasons why *objet a* may be thought of as strange or as an attractor. Any proper use should identify a potentially relevant *phase space* and the dynamic equations governing the trajectory of a point in this space. The fact that Žižek then proceeds in a book published the following year (Žižek, 1992) to liken the *objet a* to a photon of light, an impediment, the materialization of the curved structure of the space of desire and a reflectionless vampire, gives the impression that we can expect nothing sufficiently precise from this mathematical allusion.

If, as I am suggesting, Lacan placed too much faith in his little letters, he is not alone. There are countless cases of people being seduced by mathematical symbolism from Cabbalism and numerology to the group theory that never took Lévi-Strauss far in his analysis of kinship structures. A strong case can also be made that

Anglo-Saxon analytic philosophy has been similarly seduced, this time by mathematical logic, when, for example, it chooses to pursue its examination of metaphysics through the lens of modal logic. Mathematicians are highly suspicious of such activities as they like to think they know what constitutes a good use of a formal language. One, Gian-Carlo Rota, while "doing a Sokal" on analytic philosophy, likens the situation to watching someone pay for their groceries with monopoly money (Rota, 1991).

Psychoanalysis has featured frequently as the target of attempts to demarcate science from pseudo-science. Indeed, it became the subject of a dispute between two prominent philosophers, Karl Popper and Adolf Grünbaum, as to the correctness of each other's demarcation principles. Each accused the other's principles of being so weak that they allowed even psychoanalysis to be called a science, when their own of course did not. After such assaults on the standing of their theories from philosophers of science, analysts have been keen to improve the credentials of their discipline. Flirtations with mathematics have been uncommon. Instead, such negative attitudes have prompted many attempts to bolster confidence in psychoanalytic theories by forging links with one or other approach to psychology, deemed to possess some extra degree of scientific credibility. The Lacanians have opted out of this game, maintaining the purity of their master's message. Let us now consider whether they are preventing the development of useful interdisciplinary research by doing so.

Psychoanalysis, psychology and the Name-of-the-Father

> ... la psychanalyse est essentiellement ce qui réintroduit dans la considération scientifique le Nom-du-Père ... [Lacan, 1966:874–5]

During the 1950s, Lacan frequently engaged in his weekly seminars with the writings of other psychoanalysts, whom he continually criticized for their lapses into psychologism. As a psychoanalytic theorist of that time he alone took seriously the idea of Freud's, outlined in *Totem and Taboo*, that there had occurred a momentous event in mankind's past. Freud's recapitulationist beliefs have him putting into correspondence the point early in our species' history when young males joined forces to overthrow

the father of the primal horde, thereby inducing the establishment of law and culture, with the point in the life of the child when the Oedipus complex declines. Naturally, Lacan ignored the phylogenetic aspect of Freud's fantasies, but he did take up the connection between the Oedipus complex, the advent of language and the establishment of the Law and encapsulated it in his theory of the Name-of-the-Father, where, after the establishment of the paternal metaphor, nothing is the same for the child.[14] This led him to take the stance that all the analyst has when dealing with a patient is her speech—there is no other access to any pre-verbal phase of development.

Lacanianism was thus distinguished from many currents in Anglophone psychoanalysis. Then, and even more so today, American and English schools have turned their attention to investigating pre-verbal flaws in the construction of the self. Links have been made to the work of developmental psychologists and in particular their observational studies of mother-infant interaction (cf. Stern, 1985). It is claimed, for example, that misattuned responses on the part of the mother to the infant's gaze-soliciting overtures will lead to structural deficits in the self, long before language comes into play. Some of the more phenomenological approaches to this theoretical embracing of pre-verbal subjective positions, such as those of Thomas Ogden and James Grotstein, are accompanied by a rich structuring of the child's coming-into-language and thus, at first glance, may appear to be not totally incompatible with Lacanianism. However, the advice from Ogden to analysts to attend closely during sessions to "bodily sensations that seemingly have nothing to do with the analysand" (Ogden, 1994:94) will sound alarm bells for the Lacanian with its suggestion of a reliance on a kind of non-verbal communication.

Stern's attempt to connect psychoanalysis to a branch of academic psychology is not an isolated one. Various analysts have attempted to align their theories with those of, among others, cognitive psychology, evolutionary psychology and neuropsychology.[15] What then of the Lacanians' decision to stand out against this trend?[16] Could there not be some gain for them in accommodating alternative strands of research, perhaps even those emerging from developmental neuroscience? After all, there is evidence that the pattern of maturation in the cortical hemispheres introduces temporary instabilities and correlates with the changing structure of childhood thinking, and

that such changes may be profound. Who can doubt that were Freud alive today he would link the discovery of the relatively late myelination of portions of the left prefrontal cortex during the child's 6th year to the onset of the latency period?

The gulf between neuroscience and Lacan's phenomenology may appear too wide to bridge, and yet an unexpected neurological confirmation has recently occurred of a thesis of Martin Heidegger. Heidegger asserted that prior to any propositional knowledge of an object, such as a tool, it is *ready-at-hand* and that it will only emerge as *present-at-hand*, that is, as a "thing" with properties, when there is a disruption to the act of using it. Compare this idea to the theory of Melvyn Goodale (1995) which distinguishes two streams of visual processing, a ventral stream concerned with visually guided motor behaviour, and a dorsal stream for "identifying objects in the visual world and attaching meaning and significance to them" (p. 176). Subjects with a lesion interrupting the dorsal stream cannot recognize even the most familiar of objects, yet are able "to grasp that object under visual control as accurately and as proficiently as people with normal vision" (p. 169). For instance, one victim of anoxia could not recognize a pencil when she saw one, yet could still pick it up and draw with it. For her, it did not exist as an identifiable object, yet it was ready-at-hand.[17]

What we find here is empirical support for an idea of someone considered laughable by the Vienna Circle. Indeed, Rudolf Carnap took Heidegger to be one of the worst perpetrators of the crime of writing meaningless metaphysics, mocking such statements as "The Nothing itself nothings".

From those opposed to any alliance with empirical psychology one often hears a line of argument that portrays psychoanalysis in an almost Kantian light, in that they claim that the Lacanian theory of the signifier reveals the conditions under which any form of knowledge is possible. Even were this the case, however, this would not constitute a reason why some of the findings of psychologists could not be profitably accommodated into psychoanalytic theory. Lacan himself in the 1940s, before developing an obsessive interest in a thinned version of Saussurean/Jakobsonian linguistics, relied on a fair dose of ethology, made the occasional gesture towards Gestalt psychology, and even made reference to the cortex as the "mirror of the mind". If Lacanianism was to appeal to the outside so

many decades later, we may wonder which vision of science would underlie the psychology to be taken on board.

Early in the study of animal behaviour a division arose between the Behaviourists, who wished to control for all the environmental variables determining the performance of an animal on a laboratory task, and the ethologists, who urged the importance of studying animals in their natural habitat. A similar debate has occurred in psychology between advocates of the laboratory experiment, accused by their critics of forcing the intention of the experimenter to frame the actions of the subject, and advocates of a more naturalistic approach, for instance, the phenomenological psychologist's in-depth interview, accused in turn of being too subjective. An example of the former kind of criticism, one of artificiality, has been levelled at the use of the *Strange Situation* test by attachment theorists, where an infant is studied as to how it will react to its mother's comings and goings in an unfamiliar place. Well-adjusted children are supposed to recover quickly on their mother's return and get on with the job of playing. While we can agree that there are problems with this test, any attempt to declare as void the use of an "unnatural" situation will have to be resisted by the Lacanian. After all, what stranger a situation than to find yourself lying on a couch in the presence of someone you know little about, who, although sitting out of sight of you, you imagine to be listening to your outpourings, when suddenly you say something and are shown the door?

So while at first glance one might imagine that the Lacanian would incline herself to thinking in more naturalistic terms, the consulting room might be considered closer to the sensory deprivation chamber than to the living room. It is worth considering this point in greater detail. One of the biggest shifts in recent Anglophone philosophy of science has seen a move away from a total immersion in issues of theoretical representation and confirmation to a consideration of the importance of experimental intervention, instrumentation and laboratory practice. An example of this pragmatic slant is given by Martin Krieger (1992) where he employs metaphors of the factory and the theatre to portray what experimental physicists do. In a sense natural scientists had a lucky break in that they were presented with a non-trivial, yet tractable, problem on which to get started, namely, the motions of the planets. The element of good fortune is that here is a situation in which the

motion of a system is largely caused by a single force, the inter-planetary attractions producing only very minor perturbations in planetary orbits. Thus at first we did not have to "stage" the phenomena, by screening out unwanted effects. As science has progressed, however, this situation has dramatically altered as, for example, when particle physicists stage collisions in the accelerators at CERN. One could argue that, as far as psychoanalysis is concerned, the equivalent tractable phenomena in the human sciences are not the ordinary speech and actions of the millions, but the dialogues staged in the consulting room and also the dramas staged in the theatre and cinema, purified realms of human desire, where a clearer presentation of the human condition is available to researchers. This would provide a rationale for the work of Leader (1997) and Žižek (1992).

Among naturalistic approaches, one could imagine an alliance of Lacanianism with Vygotskian psychology. After all, both share the idea that language massively restructures the child's world. On the other hand, Vygotsky was rather too up-beat about the benefits of this restructuring brought about by the "loan of consciousness" of the parent or teacher, to mesh with Lacan's more negative outlook. Perhaps more promisingly, over the past 20 or so years a new approach to social psychology has been vigorously developed. Eschewing the laboratory and the carefully controlled experiment, discursive psychologists have gone forth, tape recorder in hand, to collect people's talk—their everyday conversation, their court-room defences and their marriage counselling sessions. Defendants, journalists, politicians and the man-on-the-street all find their every statement, trope, correction, and hesitation picked apart for subtle intent. This new style of psychology is presented as a break with the past for its understanding of language not as a tool to represent but as one to excuse, to justify, to cajole, to blame. What more natural a human activity than engaging in argument? Reality is not being accurately depicted by words. Rather, versions of reality are being constructed which need to be sufficiently robust since they are sure to be contested.[18]

This *discursive psychology* claims as one of its sources the *conversation analysis* of the sociologist Harvey Sacks. His invention of conversation analysis owed much to the idea he had that the social sphere was "holographic"—contained within the briefest social exchange could be found traces of many of the forces which

make society tick. It could be argued that Sacks' examination of the way identity is "done" in speech situations is reminiscent of Lacan's discussion of the identificatory effect of declaring "You are my wife". Further indication of a possible connection comes from the fact that both Billig (1987) and Lacan in the *Rome Discourse* discuss the work of rhetoricians such as Quintilian and Cicero. Then again there is the common assumption that our discourse is comprised of snatches of already enunciated discourse. While perhaps the psychoanalyst may find more time for familial discourse and the discursive psychologist that of the cultural milieu, both might be thought to be calling attention to its coming from the outside, from the Other.

On the face of it, then, one might take this as a sign that psychology, or at least social psychology, is moving towards Lacan's outlook. Indeed, now we even have the recent advocacy of a constructive dialogue between discursive psychology and psychoanalysis by Ian Parker (1997) and Michael Billig (1997).[19] Parker is especially concerned with the unsatisfactory notions of subjecthood prevailing in his field, an area where psychoanalysis might be of assistance. If the Lacanians were to agree to this partnership, however, they would require the focus to be placed on particular types of discourse. Until now, if discursive psychologists have studied the transcripts of psychotherapy sessions they have tended to opt for what could be included under the banner of "counselling", covering practices which the Lacanian would not want to bracket as her own. A key difference between the Lacanian analyst and the counsellor is that the former is attempting, often by silence, to disrupt the "empty speech" of their interlocutor. Taking this point together with the suggestion of Lacan (1966–70:169) that the tropes and styles of rhetoric correspond to the ego defences, one could argue that what these psychologists have been studying is precisely the ego's talk.

Reading his papers of the late 1940s and early 1950s one can easily get the impression that Lacan gave up on a fascinating research programme when he turned to his theory of the signifier. Integrating the process of the construction of the self with the subtle linguistic theory of the rhetoricians would surely have been a task worth pursuing. One might argue in Lacan's defence that he had realized that this was not the central domain of psychoanalysis in that the point was to understand the structure of the unconscious, not that of the agency of misrecognition. Even were this the case, it

is hard to believe that the analyst should not be greatly interested in the composition of the ego. Even if the ego is such an agency, it is surely important to understand its ways thoroughly.

What then of Lacan's "full speech"? What would a discursive psychologist make of the transcript of sessions with a Lacanian analyst? How would the failures of the turn-taking of an ordinary conversation, the subtle mechanisms of which have been revealed by conversation analysts, explain the shape and rhythm of the analytic conversation? It seems that a function of language central to Lacan's outlook has been ignored. Curiously enough, this function is nowhere better displayed than in one of the experiments that psychologists of a discursive stripe consider with dismay. This takes us back to the laboratory.

When you read accounts of the traditional social psychologist's experiments, you can only wonder at what people will do in the name of science. Volunteers are asked to do the most unlikely things, a surprising number of which involve the use of electricity. Perhaps we may relate this to the fact that the heartland of social psychology is America, home of Franklin's conducting kite string, Edison's light bulb and the electric chair. Indeed, electricity plays the starring role in what must be the best known of all social psychological experiments. In the early 1960s, Stanley Milgram (1965) induced over a thousand volunteers, or "subjects" as they are known, to deliver what they thought to be potentially lethal doses of electric current to supposed fellow subjects, in the guise of a learning experiment. Unknown to them it was all a con. Lots had been rigged so that a subject thought he had been chosen by chance to be a teacher, while a confederate of Milgram was chosen to be the learner. Teachers were then given a shock of 45 volts to give them an idea of what they would be inflicting on the learners and were warned of the dangers of high voltage shocks. They knew that one of 450 volts might kill.

As is well known, a majority of subjects were prepared to deliver the maximum shock, even while they could hear the (fake) screams of the learner in the next room and even after they had heard him lapse into silence, presumably unconscious. A large number were still prepared to do likewise when they were required to force the learner's hand onto a plate to apply the shock. And so a disturbingly widespread trait of excessive obedience had been uncovered

in the Land of the Free. However, as always happens in social psychology, experiments were soon devised to cast doubt on any generalization arising from this piece of research. When, for instance, the experiment was taken to Australia in the 1970s, "only" 17% complied fully. So cultural variation had been found, and time was then spent rectifying the model of obedience to account for this. But this, I believe, is to ignore the central lesson of the Milgram experiment, which stands out as a particular moment, not as part of a general law.

To help us understand this experiment, we should turn to a rather odd detail in the paper in which Milgram wrote up the experiment. There in the first paragraph we find a reference to the Danish theologian, Søren Kierkegaard, who, wishing to demonstrate the centrality of obedience to the human condition, took the example of Abraham's willingness to go through with the sacrifice of Isaac at God's command. On the face of it, the parallel is straightforward. The experimenter (God) is requiring of the subject (Abraham) that he perform an inhuman act towards the learner (Isaac). And just as God has no intention that Isaac be hurt, so Milgram knows his confederates will be unharmed. God deceives Abraham and Milgram deceives his subjects.

But there is another way of reading the situation which we can arrive at by considering what Kierkegaard was trying to convey with this biblical example. Milgram does not expand on this allusion to the Danish theologian, but what was at stake for Kierkegaard was his idea that the passage to the religious stage requires the suspension of the ethical. "By virtue of the absurd", Abraham elects to depart from the domain of moral decency governed by universal laws to become an exception. Kierkegaard presents this movement from the ethical to the religious as corresponding to the emergence of a Christian obedience from a Jewish one. While in the Jewish tradition God may be required to participate in an argument, as we see in the Talmud when God is made to argue his case before Moses and when He confesses that "My children have over-ruled me",[20] in the Christian tradition the maker of the Law is exempt from such scrutiny. The Christian is not one to question the sayings of Jesus. She may debate what interpretation to put on them, but Jesus is not to be invited as a debating partner and then judged by the quality of his arguments.

Returning to the experiment, precisely at the point where the subject is resolving to disobey—"I cannot go on with this. I don't want to be responsible. We must stop the experiment. There is no money in the world that will make me hurt another individual."—the reply from the experimenter is not "I must ask you to do so", but rather "The experiment requires you to continue".[21] Now, devotees of Freud's case studies will surely be reminded of the moment in the Ratman case when the patient is pleading to his analyst that he be excused from describing the horrific rat torture. In reply Freud does not say "I know it's painful, but I'd like you to tell me all the same". Instead, he tells us,

> I assured him that I myself had no taste whatever for cruelty, and certainly had no desire to torment him, but that naturally I could not grant him something which was beyond my power. He might just as well ask me give him the moon. The overcoming of resistances was a law of the treatment, and on no consideration could it be dispensed with. [1909:166]

Despite this denial of responsibility, the Ratman addresses Freud as Captain, confusing him with the officer who had told the Ratman of the torture. In other words, Freud is identified by the Ratman as the one who is inflicting cruelty. So analogously we should see Milgram as the Abraham figure. He is the one required to inflict senseless pain, in this case not on his own son but on 1000 men from Bridgeport and New Haven. That they might have been damaged he is all too aware, and that he sought reassurance that the risk was worthwhile is demonstrated by the appearance of a curious footnote to the effect that the vast majority of his subjects claimed to have been glad to have been involved, and to have found it "enriching", despite the fact that one experimental run had to be stopped for fear of the after-effects of the subject's seizure (Milgram, 1965:244). Milgram's readiness to accept his subjects' gratitude had even blinded him to what should have been the obvious explanation of this response for any social psychologist. Only a few years earlier Festinger had proposed the theory of *cognitive dissonance*, a theory whose popularity has not diminished. This would have predicted that out of the subjects' awareness would run the thought: "I've been through hell and I've only been paid $4.50, so it must have been a good thing", and hence the favourable response.

So, if Milgram is Abraham and the subject is Isaac, then what plays the role of God? The only answer to this question is *science* itself. Obedience to God's command outweighs such aesthetic considerations as the pleasure gained from his child and such ethical considerations as that of putting his son's life before his own, so obedience to the scientific imperative overrides the discomfort of a "painful alteration" made in Milgram's thinking from experiencing how

> [w]ith *numbing* regularity, good people were seen to knuckle under the demands of authority and perform actions that were callous and severe, [Milgram, 1965:261, my emphasis]

and the breach of humanity involved in inflicting such torment on his fellow man. What then of the parallel in the deception, what now corresponds to Milgram's deception of the subject? Well, Abraham does deceive Isaac by replying to his question as to what they were to sacrifice, "My son, God will provide himself a lamb for a burnt offering". The subjects resist, just as you might imagine poor Isaac might have while being tied down to the slab. It is Milgram who does not question the authority of the experiment and it is science which, unlike the God of Abraham, does not stop his hand before the act. While we see exposed the subjects' encounter with the command, what passes unspoken is Milgram's relation to the scientific imperative. At the point where, one might say, science approaches closest the super-egoical effects of the installation of the paternal metaphor, there is still something of a "wanting to know nothing about it" (*elle n'en voudrait-rien-savoir*) on its part.[22]

Rabbinical commentaries on this episode suggest that the lesson of the sacrifice story was to bring about the end for the Jewish people of the practice of human sacrifice. Similarly the Milgram experiment, along with the later Zimbardo experiment,[23] brought about the end of the suffering of victims of such stressful social psychological experiments. Greater controls were introduced regarding what subjects might be exposed to. Social psychology thus was returned to an ethical stage of development.[24]

What I want to claim here is that this experiment shows something about speech that discursive psychology has largely ignored. It lends support to Lacan's claim that what language is first and foremost about is the command. The analyst's role, he

maintained, was to adopt a position the inverse of that of the master: by refusing to take up the master's powers, the analyst reveals the senseless (the "by virtue of the absurd") aspect of the process by which the patient became a subject. In a sense, where an object relations analyst such as Cashdan (1988) can suggest to the analyst that she watch her counter-transferential response to discover the position the patient is driving her into so as to determine the nature of the patient's principal projective identifications, the Lacanian analyst need not bother as she knows that she is dealing quite simply with power. If the Milgram experiment reveals something of the super-egoical consequences of the establishment of the paternal metaphor in a clear, albeit brutal, fashion, psychoanalysis according to Lacan is the careful exploration of the aftermath of the subject's encounter with the Name-of-the-Father. While the consulting room is often a painful place in which to be, it is at least sometimes a humorous place as well. Laughter too could be heard in Milgram's laboratory. Indeed, 71 out of a batch of 160 subjects showed signs of nervous laughter, he tells us (Milgram, 1965:25). Of these 15 suffered "full blown, uncontrollable seizures" and one a "seizure so violently convulsive that it was necessary to call a halt to the experiment." There are ways and means to cause the division of the subject.

Conclusion

The achievement of the physical sciences is not merely to have learned enough about the world to be able to explain, predict and manipulate parts of the physical world. It is also to have learned how to learn. In the process a powerful collection of methodological practices has emerged, each of which continues to be refined semi-autonomously by the various communities of theorists, experimentalists and instrumentalists. While these communities have distinct identities, they are able to achieve forms of satisfactory partial communication in what the historian of science Peter Galison (1997) calls "trading zones". By comparison, in the social sciences we find little evidence of effective stratification of the research enterprise, but more often fundamental disagreements about the way to proceed. Interaction between research communities is more likely to work through colonization than through mutually agreed exchange.

It is worth contemplating the possibility that this is due to the fact that social and psychological phenomena do not lend themselves to being understood in the same way as physical phenomena. Electromagnetism is just much simpler to study than obedience.

Lacan's methodological approach presents a stark contrast to that of the traditional academic psychologist. The latter derives from a desire to become one of the mature natural sciences, yet proceeds from a distorted empiricist picture of how they operate. But even the accurate imitation across disciplines of a successful methodology has no guarantee of success, and this is as true for rationalist methodologies as it is for empiricist ones. At present there is little prospect of the human sciences, and psychoanalysis in particular, being able to emulate those portions of the natural sciences which have benefited from mathematical modelling. Nor has any clear idea emerged as to what novel forms of successful mathematization might occur there. That strand of Lacan's philosophy of science which saw the use of mathematical discourse as the only way to allow for the integral transmission of knowledge may well have acted as a hindrance to the furthering of his ideas. His mathematization of psychoanalysis has acted more as a form of mystification than as a way of freeing a theory from remaining too closely tied to its author. On the other hand, non-mathematical sciences, have managed to accumulate a body of consensual knowledge compatible with their neighbouring fields. Palaeontologists, for instance, work on the basis of extensive shared background knowledge and expect their theories to gel with geology and evolutionary theory.[25]

Where Lacan's philosophy of science may cast more light on the production of scientific knowledge is the issue of the place of the scientist in relation to that knowledge. Subjecthood enters into Anglo-Saxon philosophy of science's treatment of the production of knowledge in a somewhat naïve way. For example, a popular way of encapsulating the subject's relation to scientific knowledge involves the idea of quantifying an agent's degree of belief in a scientific statement in terms of the betting odds at which one is willing to enter into a wager on its truth.[26] A revival of the more sophisticated treatments of the epistemic subject made by the philosophers of science who inspired Lacan is now overdue,[27] and Lacan's own views on the formation of scientific knowledge may prove important in this respect. If anywhere, Lacanian theory should

help illuminate what is at stake in experimental psychological studies where subjects respond to their introduction into the framework of the psychologist's desire. One need only read the following lines—

> Psychology as the behaviorist views it is a purely objective experimental branch of natural science. Its theoretical goal is the prediction and control of behavior. [Watson, 1913:158]

—and hear of his experiments in inducing phobias in infants to question the desire of a psychologist such as J. B. Watson.

Lacan's form of mathematical rationalism owed much to Koyré, who tied it in with a rejection of any significant element of empiricism. Such a rejection finds its echo in Lacan's writings, where, after the early years, few appeals are made to supporting evidence beyond that arising from a shared clinical experience. Whether the recent use of Lacanian theory to understand the worlds of politics, the novel and the cinema by his interpreters comes to be considered as a sufficiently robust and unproblematic form of support remains to be seen. Whatever the case, the more substantial the range of connections that can be made with bodies of knowledge gained by independent methodologies the better. In view of the extreme complexity of the human mind, to withhold from making contact with other forms of psychological enquiry would appear to be a self-defeating strategy. This is not a period for isolationism. However, one should never underestimate the difficulties in establishing "trading zones" between such disparate disciplines as neuroscience and psychoanalysis.

Notes

1. See Meyerson (1932). The two Anglophone philosophers of science most sympathetic to Meyerson are perhaps Thomas Kuhn and Elie Zahar. Kuhn (1977:11) recommends that one read Meyerson for his historical material but not for his philosophy, while Zahar (1980) reconstructs this philosophy in a more empiricist light, allowing a much stronger link between theory and physical reality. Even so, one would have to place Zahar at the rationalist end of the spectrum of Anglophone philosophy.
2. According to Karl Popper, one of psychoanalysis' many critics, all of *natural* science is conjectural, i.e., one never has certain knowledge. See Popper (1963).

3. The idea that intersubjective time as distinct from ordinary clock time is the one appropriate to the unconscious was behind Lacan's decision to introduce variable length sessions.
4. For Lacan the Borromean link, three circles linked together in such a way that no two alone are linked, represents the relationship between the three dimensions of experience: the Real, Symbolic and Imaginary.
5. "... nous l'apprécions [mathematical discourse] au plus haut degré de ce qu'il ne signifie rien." (1966:892), (we admire mathematical discourse to the utmost degree in that it does not mean anything.) and "La formalization mathématique est notre but, notre idéal. Pourquoi?—parce que seule elle est mathème, c'est-à-dire capable de se transmettre intégralement" (Lacan, 1975:108) ("Mathematical formalization is our goal, our ideal. Why? Because it alone is matheme, that is, able to transmit itself wholly".)
6. Quantum mechanics does not present itself as a counter-example to this claim as the interaction between a quantum system and a macroscopic device has been well-modelled theoretically and is controllable, as so many of our technological devices demonstrate.
7. A knot is *amphicheiral* if it is continuously deformable into its mirror image. Hence, the figure-eight knot is amphicheiral, while the trefoil knot is not.
8. See Evans (1996) for a discussion of these and other aspects of Lacan's terminology.
9. Cf. Koyré, 1957.
10. This claim may be found in the unpublished seminar XIX ... *ou pire*.
11. This point implicitly underlies a paper of mine concerning the limitations of Imre Lakatos's philosophy of mathematics (Corfield, 1997).
12. The efforts of analysts such as Bernard Burgoyne (see his chapter in this volume) to do so are still much to be preferred to the unconstrained reproduction and recombination of symbols (J, A, a, $, Φ, etc.) and arrows which others engage in.
13. See Port and van Gelder (1995).
14. See Evans (1996).
15. A good indication of the range of this work may be found in Barron et al. (1992).
16. One can find very occasional exceptions to this rule.
17. Cf. Heidegger in *Being and Time*: "The less we just stare at the hammer-thing, and the more we seize hold of it and use it, the more primordial does our relationship to it become, and the more unveiledly is it encountered as that which it is—as equipment" (1962:98).
18. For how a psychology would run along discursive lines, see, for instance, Edwards (1997).

19. Billig, however, is not at all favourably disposed towards Lacanianism.
20. See Billig (1987:60).
21. It is a pity that Milgram does not provide more of the subjects' speech.
22. Cf. Lacan (1966:874) for this science-psychosis link. It should be recalled that Lacan treated the sacrifice story in the first and only session of his intended 1963 seminar series *Le Nom du Père*. Note also that Chap. 3 of Žižek (1992) discusses at length issues arising from Kierkegaard's treatment of Abraham. Žižek (1992:101–2) presents Marx, Freud and Lacan as thinkers you follow through a transference developed towards them rather than because of their arguments. This relates to the issue we considered earlier of the possibility of building on other theorists' work and the independence of scientific ideas from their authors. I think that perhaps it is less fair to include Freud here than Lacan. For Freud (1910:165) there was a renunciation of pleasure involved in science, but the benefits of his "strictly scientific treatment" of love, which would allow for communal theory construction, were to outweigh the reduction in the yield of pleasure compared to that provided by artists' idiosyncratic treatments of love.
23. This was where the subjects in a group were randomly assigned to act either as guards or prisoners. Due to the brutality of the guards' treatment of the prisoners the experiment had to be stopped.
24. Lacan's sense of the ethical is closer to Kierkegaard's notion of the religious.
25. Although, see Bak (1997) (in particular Chap. 8) for an indication of how mathematical modelling might work in palaeontology.
26. Cf. Howson and Urbach, 1993.
27. Despite Kuhn's doubts about the value of Meyerson's philosophy of science mentioned in footnote 1 above, he also remarks that "... the early models of the sort of history that has so influenced me and my *historical* colleagues is the product of a post-Kantian European tradition which I and my *philosophical* colleagues continue to find opaque. In my own case, for example, even the term "hermeneutic," to which I resorted briefly above, was no part of my vocabulary as recently as five years ago. Increasingly, I suspect that anyone who believes that history may have deep philosophical import will have to learn to bridge the long-standing divide between Continental and English-language philosophical traditions" (Kuhn, 1977:xv).

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CHAPTER EIGHT

Postures and impostures: on Lacan's style and use of mathematical science

Jason Glynos and Yannis Stavrakakis[1]

Introduction

Lacan makes difficult reading. No doubt about it. This, at least, is common ground to sympathizers and detractors of Lacan alike. Clearly, it is an understatement to say that when mathematical science is added to the equation, things do not become any easier. Most of us already feel insecure with the simplest of mathematical statements, let alone references to esoteric-sounding subdisciplines like general topology or knot theory.

When we inquire into the make-up of the universe, all the way from distant galaxies and supernovae to cells, synapses, and quarks, we are not surprised when confronted with a discourse that sounds foreign to us. Scientific discourse is, by and large, opaque and filled with impenetrable jargon that takes considerable time and will to master. People do not expect to understand quantum mechanics and are happy to concede ignorance. On the other hand, when we inquire into human nature, psychic processes, identities and

[1] For helpful comments on an earlier draft of this essay, we thank Jes Fernie and Lorraine Fernie.

emotions, and the workings of the mind, we expect the corresponding models and discourse to be easily understood. This is because they are supposed to be telling us something about ourselves—something, in other words, over which we each can claim some authority and knowledge. It is a natural expectation that is deeply ingrained. So much so that scientists themselves express frustration at the mind's reluctance to yield its secrets. So when Lacanian psychoanalysis—which purports to be such a discourse about ourselves—appears to make every effort to thwart straightforward understanding, when Lacan hesitates not a jot in enlisting mathematical science to his cause, this cannot but appear as adding insult to injury.

No one likes to feel stupid. A very rare person indeed is she who, having struggled to make sense of Lacan's *Écrits* has not entertained such thoughts of vulnerability. This vulnerability is only exacerbated if a Lacanian seminar or essay has been recommended as reading material by a friend or professor whom we respect. It is a vulnerability that can very quickly turn to frustration, intimidation, and even anger.

Just imagine, then, what would happen if someone came along and declared Lacan to be an impostor. Let us assume, futher, that this "someone" is a well-respected scientist, no less. Current affairs commentaries, press releases, editorials, and radio programmes suddenly become flooded with the common knowledge that "the emperor has no clothes"; that Lacan's difficult, even tortuous, discourse is nothing more than an exercise in obscurantism of Joycean proportions; that Lacan's mathematical forays bear absolutely no relation to psychoanalysis. Just imagine the relief and satisfaction! In a society governed by the "sound-bite" imperative, we can now with clear consciences set aside that weighty volume.

This story is not *just* a story. It is a story that goes some way toward explaining the popularity of a bestseller by Alan Sokal and Jean Bricmont (hereinafter S&B), entitled *Intellectual Impostures* (S&B, 1998). It is a book in which the authors, both scientists, take issue with the way mathematical science is invoked in the works of a multitude of French intellectuals: Kristeva, Irigaray, Latour, Baudrillard, Deleuze & Guattari, Virilio, and Lacan.

Alan Sokal, professor of physics at NYU, in particular, has taken upon himself the task of defending an orthodox conception of

scientific discourse against an apparent assault originating in the Parisian intellectual scene—an assault that has acquired hegemonic status in certain circles of Western academia. He inititiated his counter-assault by writing a consciously "bogus" piece on the hermeneutics of quantum gravity and submitting it for publication. After the article was accepted and published in the journal *Social Text* (Sokal, 1996a) he promptly revealed it as a hoax—the so-called "Sokal hoax" (Sokal, 1996b)—thus sparking an interesting and fruitful international debate on the intellectual standards of postmodern academia.[1] *Intellectual Impostures*, however, seeks to raise the stakes even further, thus constituting a kind of culmination of Sokal's initial project.

In direct contrast with the work of Jacques Lacan *Intellectual Impostures* makes easy, even entertaining, reading. The chapters, each devoted to a different French intellectual, comprise a string of excerpts joined together with short commentaries, often in the form of ironic interjections.

In this essay we focus mainly on their chapter on Lacan. We shall put into question the main thrust of S&B's critical remarks aimed at undermining the legitimacy of Lacan's style and his use of mathematical science. But our aim is carefully delimited. We do *not* argue that Lacan is easy or fun to read. We do *not* offer detailed explanations of Lacanian concepts. We do *not* show what new insights and ways of thinking he brings to bear on questions of mental processes (except indirectly). *Nor* do we offer reasons why Lacan is worth trying hard to understand. Our argument is largely restricted to showing why S&B fail to make a case against Lacan not only on the basis of generally accepted standards of intellectual integrity but also on the basis of standards of their own choosing.

Setting the stage

In the preface to the English edition of their *Intellectual Impostures*, Alan Sokal and Jean Bricmont set aim at two distinct targets:

1) Intellectuals who, they allege, *abuse* scientific and mathematical concepts. Their recourse to the term "abuse", no doubt, signals the seriousness of the charge they are making; and they claim

that this abuse takes at least two—not necessarily unrelated—forms. Either such concepts are invoked "without the slightest justification" (ix) as to the matter under discussion, or else they are thrown about in order to lend authority to their statements (*vis-à-vis* their predominantly non-scientific audience) without "any regard for its relevance or even its meaning." (ix–x)

2) The epistemic relativism of "postmodern science", the idea that "modern science is nothing more than a "myth", a "narration" or a "social construction" among many others." (x)

Of course, both targets are not always to be found in the work of each author they canvass. The second target, for instance, is not to be found in the work of Lacan. We can thus begin by establishing a point of convergence between S&B's view on the status of science and Lacan's view on science. Slavoj Žižek addresses exactly this point in the following passage:

> What ... is the nature of the difference between the narrativist postmodernism and Lacan? Perhaps the best way to approach it is via the gap which separates the modern universe of science from traditional knowledge: for Lacan, modern science is *not* just another local narrative grounded in its specific pragmatic conditions, since it does relate to the (mathematical) Real beneath the symbolic universe. [Žižek, 1997:159]

While Lacan might thus be construed as sympathetic to S&B's attack on epistemic relativism,[2] we already have, in this very same passage, the thin edge of a more explicit divergence of opinion, namely, the appeal to a mathematical real. After all, Lacan is quite explicit in claiming, on behalf of psychoanalysis, that "[m]athematical formalization is our goal, our ideal" (Lacan, 1998:119)—which, it is perhaps worth pointing out, is not at all the same thing as saying that it is psychoanalysis' only, or even primary, ideal. In any case, this evidences the centrality Lacan gives to mathematical formalization in his attempt to establish the way in which psychoanalysis may be considered scientific.[3] As S&B also note, "Lacan's predilection for mathematics is by no means marginal in his work." (p. 23)

But no sooner have we exempted Lacan from S&B's second class of targets than we have already hinted at why he figures as their

ultimate *bête noire*. For it is this very appeal to mathematics, or rather the *manner* of his appeal, that, according to *Intellectual Impostures*, brings Lacan squarely under the first class of targets they take aim at: Lacan's abuse of scientific and mathematical concepts.

But in what way, exactly, does Lacan abuse mathematical ideas? In order to determine of what kind of abuse Lacan is apparently most to blame, S&B very helpfully list four senses of the term "abuse" in the introduction to *Intellectual Impostures*:

1. Holding forth at length on scientific theories about which one has, at best, an exceedingly hazy idea. The most common tactic is to use scientific (or pseudo-scientific) terminology without bothering much about what the words actually *mean*.
2. Importing concepts from the natural sciences into the humanities or social sciences without giving the *slightest* conceptual or empirical justification. If a biologist wanted to apply, in her research, elementary notions of mathematical topology, set theory or differential geometry, she would be asked to give some explanation. A vague analogy would not be taken very seriously by her colleagues. Here, by contrast, we learn from Lacan that the structure of the neurotic subject is exactly the torus (it is no less than reality itself ...) ...
3. Displaying a superficial erudition by shamelessly throwing around technical terms in a context where they are completely irrelevant. The goal is, no doubt, to impress and, above all, to intimidate the non-scientist reader ...
4. Manipulating phrases and sentences that are, in fact, meaningless. Some of these authors exhibit a veritable intoxication with words, combined with a superb indifference to their meaning. [S&B, 1998:4]

Finally, at the beginning of the chapter devoted to Lacan, S&B claim that he "illustrates perfectly, in different parts of his oeuvre, the abuses listed ..." (p. 17). And at the conclusion of the same chapter, S&B state that Lacan "excels ... at the second type of abuse listed [above]" (p. 34).

The aim of our short commentary will be to raise doubts concerning S&B's critique of Lacan, demonstrating the way it misses its target; and this largely on account of S&B's (acknowledged) ignorance of psychoanalytic knowledge. We organize our comments around questions of style and questions of substance.

Questions of style

One of the most common criticisms directed at Lacan, long before S&B's emergence on the "science wars" scene, has centred on his style (see, for example, Roustang, 1982, 1990). S&B take up this line of criticism and present a particular version of it. At one point, for example, S&B claim that Lacan's account is not "pedagogical from a mathematical point of view" (p. 29). Though this comment was made with reference to "Of structure as an inmixing of an otherness prerequisite to any subject whatever" (Lacan, 1970), S&B suggest that it is a claim that is applicable to his style of delivery generally. This becomes clear when S&B ask, for instance, how the non-scientist (or non-mathematician) is to judge whether Lacan's account and use of mathematics is clear or even correct (p. 11); or when S&B suggest that intellectuals in general "should explain the requisite technical notions, as clearly as possible, in terms that will be understandable to the intended reader (who is presumably a non-scientist)" (p. 8); or when S&B say that "[i]t is not from him that a student will learn what a natural number or a compact set is" (p. 34); or even when S&B wonder whether Lacan is "trying to impress his audience with a superficial erudition" (p. 29).

As we have already stated, many people, indeed many Lacanians, would be very keen to agree that much of what Lacan said and wrote, is very difficult to follow. This is true not only of his views on and use of scientific and mathematical ideas, but also of his analyses of literature in other fields (psychoanalysis, the humanities, social science, etc.). One might conclude, then, that S&B have scored an easy point here: Lacan was a bad pedagogue!

But is this really the case? Would it make any difference to S&B's accusation if Lacan never claimed to possess pedagogical aims? Probably not. Though sometimes he would oblige in this regard,[4] he clearly implied that his audience (drawn from a wide range of disciplinary backgrounds) ought to take the initiative and investigate his recommended directions of research if they felt so inclined.

Would it make any difference if Lacan took a *principled* position against pedagogically-styled discourse? Would it *then* be legitimate to accuse Lacan of not being pedagogical enough? If it appears that Lacan is taking a deliberate stand on this issue, then S&B would at the very least be expected to provide *reasons* as to why pedagogy

should be an ideal worth aspiring to in a given case rather than taking these reasons for granted.

Infact, it turns out that Lacan took an extremely critical view of pedagogically-styled discourse,[5] always cautioning his audience to resist understanding too quickly. This does not mean that Lacan believed the obviously absurd view that pedagogy has no place in our society; only that he deliberately declined to adopt it himself in the delivery of his seminars and writings. Consider, for example, the following quote: "I am not surprised that my discourse can cause a certain margin of misunderstanding", but this is done "with an express intention, absolutely deliberate, that I pursue this discourse in a way that offers you the occasion of not completely understanding it" (As cited in Samuels, 1993:16). Or elsewhere: "you are not obliged to understand my writings. If you don't understand them so much the better—that will give you the opportunity to explain them" (Lacan, 1998:34).

The strategy deployed by S&B relies on the audience's gut-reaction to quotations such as these, often taken out of context. These statements come across as obviously absurd only if one forgets how Lacan's style is very much linked to his theoretical and clinical concerns. This is always worth keeping in mind. In a society structured by tight time constraints and imperatives of efficiency it is natural to demand explanations that are quickly and easily digestible. It has become second nature to expect clear instructions or guidelines on how to accomplish tasks or live a happier life. But Lacan is concerned first and foremost with what happens in the clinic, and his seminars and writings are addressed primarily to analysts. It is from these concerns that his statements on misunderstanding directly spring.

Why should he go out of his way to caution his audience to resist understanding too quickly? Precisely because he is concerned that analysts are tempted to understand their patients too quickly. And what does "understand" mean? To understand something means to translate a term into other terms we are already familiar with. This means, for Lacan, that in understanding the patient's discourse analysts understand only what they are *already* familiar with. Instead of accessing the patient in his or her uniqueness, instead of being open to something new and different, analysts effectively reinforce their own *self*-understanding.

No doubt it is unsettling when we are confronted with something we cannot immediately understand. No doubt it is comforting to believe that we understand each other and that we all share certain aspirations and standards of morality. But, Lacan wants to claim, this comes at a price. The price we pay for an undue reliance on immediate understanding is an unthinking acceptance of premises we have come to rely on and that cease to elicit the need for justification. Think, for instance, of the ideal of pedagogy. This is often taken as an unquestioned ideal that requires no justification.

Ultimately, Lacan's point is an ethical one, finding application not just in the clinic, but in theoretical work and quotidian life as well. It has to do with taking responsibility for one's understanding, rather than relying on a consensus of understanding. And the strategy *he* chose to adopt in this regard involved systematically creating a margin of non-understanding. He recognized in this strategy its potential productiveness—productive in terms of generating a desire for *responsible* understanding and in terms of generating research. In short, Lacan is not celebrating misunderstanding. Rather, he is making an argument in favour of *responsible* understanding. As Fink notes, Lacan

> is seeking to have certain effects on the reader other than meaning effects: he is seeking to evoke, to provoke, to unsettle us—not to lull us but to jolt us out of our conceptual ruts. Related to this is his aim to put us to work, to remind us that in fact we do not understand what we think we understand (whether it is Freud's writings that are deceptively easy to follow, or our analysand's discourses), and that we may have to make numerous attempts to express or conceptualize something, and then our interpretation will still only be approximate: it will still miss the mark. [Fink, 1997:220]

But even if we ignore the absence of any attempt whatsoever to counter Lacan's principled opposition to pedagogically-styled discourse, S&B's case against him is not made any easier. Let us assume for argument's sake that S&B make a case against Lacan on the grounds of his difficult, non-pedagogical style. To accuse Lacan of this, implying *thereby* that he has nothing of value to say about mathematics in relation to psychoanalysis, would then be to make a category mistake. It would be like ridiculing the work of an eminent physicist at the cutting edge of his or her discipline because he or she was either not willing or not capable of pedagogical delivery. S&B would effectively be collapsing an issue of style onto an issue of substance.

We all agree that one can better follow an advanced physics seminar by becoming familiar with relevant prerequisite courses. Would it be so astonishing to learn that one can better come to terms with Lacan's writings and seminars of the 1970s by becoming familiar with his seminars of the 1950s and 1960s? From this perspective, each of his 25 seminars can be viewed as building upon (even if sometimes in the sense of reacting against) material produced in earlier seminars, not to mention the literature (whether contemporaneous or not) Lacan constantly engaged with. Indeed, as is well-known, his early papers on family complexes and criminology, or his early seminars, are very accessible, almost Anglo-Saxon in style (see, for example, Lacan, 1996). In this view, it is perfectly understandable—though not inevitable—that, as the years progressed, Lacan's style, by virtue of the preceding body of knowledge he would more-or-less take for granted, would appear to become progressively more obscure. Just as an advanced quantum mechanics or economics seminar or textbook may appear to be either intimidatingly impressive or superficial gibberish to the person first encountering the subject, so too will many of Lacan's later seminars and texts on psychoanalysis. Though Lacan was often explicit in his references to past seminars, these references were also often implicit, obvious only to those who were familiar with his previous teachings. It is no surprise, then, to find Lacanian schools of psychoanalysis devoting, as a matter of course, an entire year's seminar to the paragraph-by-paragraph discussion of even a short 20 page text by Lacan. In this connection, it might be relevant to quote Anthony Wilden's intervention in the exchange following Lacan's 1966 "Of structure as an inmixing ...". Referring to the difficulty in grasping his presentation, he addresses Lacan by claiming that "you have started at the top (at the most difficult point of your work), and it is very difficult for us to recognize the beginnings of this thought ... In my opinion ... it is absolutely necessary for us to read your works before talking a lot of nonsense ..." (Lacan, 1970:196)

This process of reading Lacan is conducted with the utmost attention to detail, both because his seminars are a product of an

editing exercise (established from a collection of transcripts); and (from a non-French perspective) because of the many problems that arise on account of the translation process. The scholar or trainee, in other words, develops a critical understanding and opinion of the text after a difficult and protracted period of study. It by no means guarantees an understanding that will satisfy or convince—indeed, one may "drop" psychoanalysis altogether after several years of an apparently fruitless struggle. But then again, many may also drop mathematical physics after an equally arduous several-year struggle with that subject.

We conclude that Lacan's style is absolutely consistent with his stated aims and concerns. There is no doubt that one can dispute Lacan's reasons for adopting this particular style, but as these emerge directly out of theoretical, clinical, and ethical concerns, S&B would first have to do a little work. They erect as the sole and unquestioned criterion of assessment a traditionally conceived pedagogical style, often using its absence as evidence that Lacan abused well-established substantive knowledge. The price they pay is heavy. For they do not know who Lacan is beyond the straw man they very entertainingly project. They illustrate perfectly the Lacanian idea that "to understand someone too quickly is to misunderstand her". What they leave unexplained is how Lacan has managed, without lowering the standard of his delivery, not only to be, as S&B put it, extraordinarily influential (p. 194), at least in the Franco–Hispanic world; but also, and more importantly, to initiate an array of productive research programmes, whether in the realm of child analysis, in Lacanian topology, on the end of analysis, and so on—something that even the IPA, which "excommunicated" Lacan in 1963, is forced to admit more openly today.[6]

Questions of substance

Though severely under-researched and deeply unself-reflexive, S&B's objections to Lacan's style do give voice to an apparently legitimate fear. Lacan is explicit in giving us the opportunity not to understand him completely so that we may then take on full responsibility in trying to explain him. What is there then to stop him from deploying obscure references to the mathematical sciences

in order to prop himself up as Master? What's stopping Lacan from using his style as a convenient alibi for the spurious use of mathematics, thus feeling not the slightest obligation to justify its connection to psychoanalysis? Should we not, as mathematical scientists, disabuse those poor souls who insist on taking Lacan seriously? So S&B implicitly reason. We thereby move from questions of style to objections more firmly grounded on issues of substance, by which is meant Lacan's knowledge and use of mathematical science on the one hand, and the alleged irrelevance of Lacan's mathematics to psychoanalysis on the other.

In their introduction, S&B make the general claim that "in cases of legitimate use, the author needs to have a good understanding of the mathematics he/she is purporting to apply—in particular, there should be no gross mistakes ..." (p. 8). Of course, S&B imply that Lacan does not suffer so much from this type of abuse. This becomes clear when their analysis of Lacan is contrasted with their analysis of, say, Kristeva.[7] In their analysis of the former, unlike the latter (p. 39), there is a very clear reluctance to accuse Lacan of outright or persistent mistakes or errors. It is more the case, as S&B put it, that Lacan's mathematics appear "bizarre" (p. 34), no doubt due to his admittedly difficult accompanying exegesis. In this regard, "his statements, when they are understandable, are not always false" (p. 34)—indeed, Lacan's statements are sometimes grudgingly declared "not too bad" (p. 26). Problems arise when the link between his mathematical statements and psychoanalytic theory is unclear.

Even so, there is no doubt that Lacan sometimes confused terms in his discourse, thereby incorrectly relaying the details of mathematical definitions and/or theorems.[8] In the context of a seminar-style delivery perhaps this is to be expected. Given that his recourse to mathematics over 25 years was in no way marginal, it is quite remarkable that, given a supposedly "hazy" (p. 4) or "vague" (p. 13, 34) idea of mathematics and science, it could have led to so few readily identifiable mistakes. Either way, however, it is not claimed here that Lacan's knowledge of mathematics was faultless. In any case, S&B's main charge is that Lacan's *use* of mathematics was misguided and irrelevant to psychoanalysis.

In this regard, it is interesting to note how in the introduction S&B preemptively address themselves to the accusation that they

might be examining Lacan's mathematical statements out of context. One reason S&B provide for exempting themselves from this accusation is that mathematical concepts have very precise meanings. We have already seen that Lacan suffers from the supposed drawback of not being pedagogical enough. He does not, in other words, explain clearly and separately mathematical concepts on their own terms, at least not at any great length in the texts S&B refer to in *Intellectual Impostures*. Instead, Lacan jumps straight into the *interpretation* of mathematical symbols *from a psychoanalytic point of view*. This makes it very hard to judge Lacan's knowledge of mathematics or what he is aiming to do with this knowledge. From this point of view it becomes very easy, if one is not familiar with the psychoanalytic context in which Lacan's mathematical statements appear, to leap to the conclusion that "Lacan does violence to mathematics" (p. 25), or that he tries to impress his audience by throwing at them sophisticated terminology like "union (in mathematical logic)" (p. 33), or that his appeal to dynamics in mathematical science (Stoke's theorem) is "particularly shameless" (p. 33), or to confront a statement like gravitation as the "unconscious of the particle" with wordless astonishment (by way of an exclamation mark) (p. 33).[9]

No doubt S&B's hostility to Lacan's use of mathematics is also compounded by their particular understanding of the nature of mathematics. S&B take for granted, for example, that mathematical statements have unique meanings. But this view stems from only one possible perspective on the nature of mathematics. Admittedly, it is intuitively appealing, and is able to tap into commonsense ways about how we think of mathematics. But it is based on an underdeveloped analogy with an equally underdeveloped idea of linguistic meaning. It is worth noting, in this respect, that Lacan spent considerable time and effort articulating concepts such as analogy and meaning in relation to much literature on the philosophy of science and mathematics. According to Lacan, mathematics finds itself occupying a privileged locus at the limits of language. In this view, mathematics is essentially meaningless: "The mathematical formalization of signifierness runs counter to meaning ... In our times, philosophers of mathematics say "it means nothing" concerning mathematics, even when they are mathematicians themselves, like Russell" (Lacan, 1998:93).[10] This,

after all, is why identical squiggles on a piece of paper may acquire vastly different meanings depending on the domain of its application (and therefore interpretation). The fact that the physicist Richard Feynman emphasized that quantum mechanics *cannot* be understood is also relevant in this regard—it simply "works" (Feynman, 1995:117).

An appeal to mathematics and physics might indeed have the effect of uncritical acceptance among those not versed in mathematical science (by, for example, attributing to his statements the authority of science in the manner of "name-dropping" (p. 13)). This, however, will undoubtedly be the case among those who are unwilling or unable to follow relevant introductory texts. It is not worth denying that a lot of this is going on in academic seminars on Lacan where the study of linguistics and mathematics is not necessarily encouraged or even suggested.

This acknowledgment, however, does not dent the integrity of *Lacan's* invocation of mathematics. In their preface S&B express the following wish (no doubt with tongue firmly lodged in cheek): "Wouldn't it be nice (for us mathematicians and physicists, that is) ... if topology had something to do with the human psyche?" (p. x) Irony, however, does not even begin to explain the simple fact that *professional* mathematicians *are* drawn to the study of Lacanian psychoanalysis; or to explain the many full-text elaborations of relevant mathematical ideas such as Lacanian topology. Indeed, S&B do make reference to "Lacan's disciples [who] have given full accounts of his *topologie psychanalytique*" (p. 23). What is curiously missing—curious precisely by virtue of its resounding absence—is any commentary as to whether their exegetic remarks were at all illuminating in making more explicit Lacan's mathematical intuitions in relation to psychoanalysis. This would constitute at least one ideal test-case scenario in determining whether Lacan's mathematical forays can so quickly be dismissed as an unfortunate, even sad, quixotic dream.

Related to the above discussion are the following two claims. First is S&B's claim that Lacan's mathematical "account is [not] original ... *from a mathematical point of view* ..." (p. 29; emphasis added). Second is their claim that Lacan's mathematics "cannot play a fruitful role in any serious psychological analysis" (p. 34). *Prima facie*, of course, these claims carry the risk of dumbfounding the

reader. For, she no doubt will ask, is the originality of importing mathematical ideas into psychoanalysis supposed to be judged by the practising psychoanalytic community or the mathematical community? The obvious answer to this question seems to render the original claims somewhat mute. But perhaps this move is too quick. Accordingly, in the following couple of paragraphs we shall focus in more detail on the second claim, before turning to a closer examination of the first.

In relation to the second claim, it is interesting to note how S&B again anticipate, and attempt to dismiss, an objection they feel will immediately occur to the reader. Their attempt to deal with this objection is worth pausing to consider in greater detail because of its apparent straightforwardness. S&B admit quite openly, for instance, that "[i]t goes without saying that we are not competent to judge the non-scientific aspects of these authors' work" (p. 6). But it is precisely because this admission strikes the reader as "obvious" and unproblematic that we ought to apply some pressure at this exact point. For, surely, such disarming admissions cannot justify substituting dismissal for hard work. Indeed, it is the disarming nature of the claim that should raise alarm bells. For at a purely conceptual level, this claim clearly relies upon an unargued for thesis, namely, that it is possible to judge the scientificity of a discipline without reference to the kind of concrete issues thrown up by that particular discipline. In other words, S&B suggest it is possible to judge the scientificity of psychoanalysis without being familiar with issues and knowledge generated by the psychoanalytic experience.

But would this not be like judging the scientificity of physics without being familiar with the issues and knowledge specific to the discipline of physics? How, for instance, can one judge the pertinence of mathematical ideas (such as group theory or topology) for a particular area of physics (such as elementary particle physics) or psychoanalysis (such as the process of sexuation) if one is not familiar with the issues and debates animating this area, not to mention the development and meaning of relevant physical or psychoanalytic knowledge. In order to judge whether a physicist is properly interpreting a domain of mathematics one cannot abstain from the experience and knowledge of that field. Why should a psychoanalyst not be accorded a similar status? How is it possible to judge the pertinence of certain mathematical ideas in an author's

work when one can at the same time openly admit that one does not understand the rest of the author's work (p. 8)? Surely, such a clear-cut separation between Lacan's mathematics on the one hand, and its productive impact upon psychoanalysis on the other hand, is too simplistic.[11]

However, perhaps we can suggest a possible way in which to make sense of S&B's first claim that it is possible to judge the originality of psychoanalysis' use of mathematics "from a mathematical point of view." And this we can do by again drawing a structural homology with the domain of physics. After all, it is well known that some of the most original mathematics have been invented and perfected as a result of developments in the domain of physics. And there is a reason for this, namely, that physicists are driven to address specific issues that arise in their particular area of study: the physicist's use of mathematics is guided by his or her intuition, an intuition based on his or her familiarity with the particular issues and evidence at stake.

This brings into relief the old dispute between pure and applied mathematicians, allowing us thereby to cast new light on Lacan's use of mathematics. For it is common knowledge that, from the perspective of the "pure" mathematician, the physicist's use of mathematics is often considered "sloppy", to the point of risking its condemnation as outright error. It is often left to the "purists" to sort out the mathematical details. In a homologous way, it is Lacan's intuition (based on extensive psychoanalytic experience and familiarity with the relevant literature) that prompts specific uses of mathematics—something that may result in the invention of a new mathematics that will be suitable to the psychoanalytic domain. The point is that Lacan's *forte* should be located not so much in the minutia of mathematical detail but in his powerful intuitive grasp of mathematics and mathematical science generally, thereby offering up fruitful directions for further research in the field of psychoanalysis. And while it is true that Lacan cannot be said to have invented a fully-fledged, clearly delimited branch of Lacanian mathematics, this is currently the focus of research by mathematicians in Lacanian circles.[12] It would be something that could very well justify the title Lacanian topology, for example, in-so-far as the topology the psychoanalyst relies on involves a domain-specific set of axioms.

At this point, let us discard the critique we have presented thus far against S&B's characterization of Lacan's knowledge and use of scientific and mathematical ideas. Let us assume for the moment, again for argument's sake, that in order to criticize the use of mathematics in a particular discipline, it is not necessary to possess an overly detailed familiarity with that discipline's problems and body of knowledge. This then brings us to what S&B claim to be their strongest objection to Lacan's use of mathematics (p. 34). In this view, all that is required to judge the pertinence of an author's recourse to mathematics is to identify a conscious and explicit conceptual or empirical link to that discipline (in this case psychoanalysis) without having to understand its intricate details. *Some* argument must be evident that justifies such relevance. As S&B emphasize, their objection to Lacan's use of mathematics "does *not* deal primarily with errors, but with the manifest *irrelevance* of the scientific terminology of the subject supposedly under investigation" (p. 11). More specifically, Lacan's "analogies between psychoanalysis and mathematics are *the most arbitrary imaginable*, and he gives *absolutely no empirical or conceptual justification* for them (*neither here nor elsewhere in his work*)" (p. 34; emphasis added).

One of S&B's discussions takes place in the context of Lacan's claim that "[i]f one can symbolize the subject by [a] fundamental cut, in the same way one can show that a cut on a torus corresponds to the neurotic subject, and on a cross-cut surface to another sort of mental disease" (1970:193). S&B wonder what these topological objects have to do with the structure of mental disease (p. 18). In view of the sweeping statements quoted in the previous paragraph, it will no doubt come as a surprise to find that Lacan spent many seminars on the relation between topology (including the torus) and neurosis (see especially, Lacan, 1961–2).

But what, the reader may insist, can things like mathematical logic's "union" or Stokes Theorem possibly have to do with psychoanalysis? What on earth can justify the link between gravitation and the unconscious of a particle or between the square root of –1 and the penis? Even if we accept that S&B have naively attempted to judge Lacan's mathematics independently of the psychoanalytic context he was speaking in, how can one not affirm as plainly obvious that these mathematical concepts are introduced in "the most arbitrary imaginable" (p. 34) way possible? Why does

the link between Lacan's mathematics and psychoanalysis appear so elusive, even non-existent, to S&B? *This* is what cries out for an explanation.

Lacanians would want to insist that only something as simple as a basic ignorance of Lacan's work can serve to explain the appearance of these mathematical concepts as enigmatic. Let us refer again to S&B's discussion of Lacan's topology, and its associated concepts of space, boundedness, closure, cut, etc. S&B's central objection is that "Lacan never explains the relevance of these mathematical concepts for psychoanalysis" (p. 19). And yet, upon further investigation they are forced to admit in a footnote that "the relationship between topology and structure is easy to understand" (p. 20). But, of course, as they also point out, the final connection to psychoanalysis depends upon what one means by "structure".

Only ignorance of the most basic ideas of Lacan's work can make such a question possible. Once one recalls how Lacan's "the unconscious is structured like a language" summarizes a huge swath of his teaching, not only is a conceptual link to topology established, its link to psychoanalysis is also readily identifiable. In other words, the study of structure—especially in the context of linguistics—is indispensable, according to Lacan, in any attempt to grasp the workings of the unconscious, and therefore to comprehend the discipline of psychoanalysis. So, without denying the difficulty of following Lacan's commentary, without going beyond a familiarity with the most elementary of Lacan's ideas, the accusation that Lacan's mathematics are irrelevant or arbitrary with respect to psychoanalysis cannot but ring hollow. On their own terms, a conceptual link is readily identifiable, without having to go too deeply into the details of his teaching.

The problem on the question of substance is that S&B would like to oblige Lacan to address them in *their* own terms, terms whose universality they take for granted. From a Lacanian point of view, S&B assume the position of the big Other, the Subject-Supposed-to-Know of Science. Adopting the position of official spokespersons of Science, they—quite understandably, though inexcusably—take it upon themselves to police the boundaries of their particular (and unargued for) conception of mathematical science, declaring also that the domain-specific knowledge of the appropriating discipline cannot be of any relevance to their accusations of misguidedness.

Conclusion

Our verdict is that S&B are guilty of gross intellectual negligence in-so-far as they systematically misunderstand and distort the research programme of Jacques Lacan and its relation to mathematical science. No serious effort is made to give Lacan the benefit of doubt or to engage in scholarly fashion with the literature on this topic, openly admitting that they know next to nothing about psychoanalysis. Had it not been for S&B's link to the scientific establishment—an institution whose authority one tends to accept without question—*Intellectual Impostures* would not have seen the light of day.[13]

Admittedly, this is quite a stark position—a position not without its own difficulties. For if we are convinced that S&B—however serious and well-intentioned their motivations—have so seriously misconstrued Lacan, one is left with the following quandary. Should one dignify this debate by issuing a response, a kind of "setting the record straight"? Why not react, as Jacques Derrida did, with his sardonic quip "*Le pauvre* Sokal" (Derrida, 1997), and leave it at that?

No doubt such a Derridean response will have its effects. Our opinion, however, is that a different sort of intervention here was also important. It is important not because it promises to be intellectually rewarding in a substantive sense. We do not in this chapter make any contributions to the understanding of psychoanalysis or philosophy of science. Such an intervention is important because the debate taps into a widespread sentiment characteristic of the current zeitgeist, entailing a kind of reactionary backlash against psychoanalysis and poststructuralism in general.

This backlash is epitomized by a kind of pathological reaction against the likes of Lacan. By pathological here we mean simply symptomatic from the perspective of a polity that imagines it is governed by principles of reasonableness and pluralism. That is to say, by pathology we mean only what you get when dismissive opinions about a person's work are taken seriously even if expressed by those *who admit to their ignorance* regarding that persons' discipline, substituting sensationalized irony for intellectual rigour, and relying—through mere association—on the crutch of the scientific establishment's institutional authority. The poor

citizen who inhabits such a "polity of reasonableness" cannot but be horrified, struggling to offer what can only appear as an impotent response: "It is one thing for someone to disagree with Lacan, or to conclude that Lacan is too difficult to be worth the trouble, or to decide that Lacan is not one's "cup of tea"; it is quite another to go out of one's way to invoke institutional faith to endorse and encourage cheap entertainment at the expense of authors whose work is not examined in any detail."

It is clear that S&B's *Intellectual Impostures* owes its popularity not to any kind of sound scholarship, intellectual integrity, or literary erudition. How then to explain all the fuss surrounding it? Deconstructive commonsense suggests that its popularity comes not so much from the content between its covers as it does from the cultural and academic context in which it appears. We close with a Lacanian hypothesis, suggesting that its success is buoyed up by a satisfaction or enjoyment (*jouissance*) that has at least two sources:

1) the fun poked at French intellectuals who are difficult to understand; and
2) the fun poked at those who poke fun at French intellectuals.

It is not so easy to steer clear of these two sources of satisfaction.

Notes

1. See, in this respect, Aronowitz (1997), Robbins (1996), and, more comprehensively, Lingua Franca (2000).
2. Of course, we do not want to suggest the existence of a shared set of *reasons* leading to this shared (op)position.
3. But as Lacan insists, the claim that psychoanalysis is (or aims to be) *scientific* should *not* be conflated with a similar, yet distinct, claim, namely that psychoanalysis *is* a science, at least in the way modern physics is traditionally considered to be a science. See, for example, Lacan (1989).
4. On surface topology, see, for example, generally Lacan (1961–2). For a discussion of complex numbers, see his seminar of January 10, 1962.
5. On this, see Lacan (1969–70).
6. An index of such a dialogic opening is to be found in the recent exchange bewteen J.-A. Miller and R. H. Etchegoyen in Miller and Etchegoyen (1996).
7. We do not claim to be sufficiently familiar with Kristeva's work to pass

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CHAPTER NINE

What causes structure to find a place in love?

Bernard Burgoyne

One of the last projects proposed by Freud was that of an enquiry into the processes of premise, postulate, and proof. He was particularly concerned with the way in which such procedures of science relate to the protocol that determines the analytical relation. In the various sections of Freud's *Moses and Monotheism*—written in the 4 years leading up to 1938—he tried to produce an account of the psychic prerequisites for the advance of science,[1] making a series of hypotheses about what it is in human life that is strong enough to have an overwhelming effect on the power of logic. Since none of the hypotheses that Freud produced in this work lie at all close to the recommendations of common sense, they call into question the nature and results of the psychoanalytical method. The project that Freud was engaged in was accordingly the sketching of an outline of the structures involved in psychoanalytical technique, and an investigation of the relation of these structures to science.

Freud produced the draft of such an account in his last exposition of the nature of psychoanalytic work, written in England in 1938. In this work[2] he described some of the basic phenomena of post-hypnotic states—states of mind where it becomes apparent

that there exist perceptions and knowledge that have no access to consciousness. In this text, one of the last of his writings, he refers back to some of his first:[3] it seems as if Freud—late in his life—was trying to reconstruct the philosophical and scientific problems that had engaged him at the start of his psychoanalytical work. The post-hypnotic states whose structure had impressed him in the 1880s had led him—in the following decade—to investigate the falsifying effects of the activity of the ego. To accommodate this, he had arranged for the setting of the analytical relationship to be that of a Socratic encounter, the aim of which was to dispel the false opinion compulsively fabricated by the ego.[4] The structure of the analytical relationship at this point came to parallel that of the organization of the sciences. A Socratic dialectic in both fields ensures that the structure of one is refound in the structure of the other. This parallelism was accentuated by Freud, "start off from what the [subject] knows—or thinks he knows—and regards as self-evident, without in the first instance contradicting him" (Freud, 1940b:281). This is a recommendation for technique in psychoanalysis, as well as in any Socratic structuring of the sciences. "Beginning from ... [facts previously] neglected or insufficiently appreciated ... one can introduce further facts to him of which he has *no* knowledge, and so prepare him for the necessity of going beyond his earlier judgements ... and of taking new hypotheses into consideration. In this way one can get him to take part in building up a new theory about the subject ... during the actual course of the joint work." Freud presented the analysis of the soul as structured in the same way as the analyses of the sciences. '[Our] scientific work ... consists of translating unconscious processes into conscious ones, and thus filling in the gaps in conscious perception" (Freud, 1940b:286).

An earlier text, a more extensive development of the same theme, was written—also in England—in the summer of the same year (Freud, 1940a). In it Freud described two "basic suppositions" that he claimed characterized his research programme. The first is that events in the human soul occur in a "space", and that the investigation of the fabric of this space—and particularly of its connectedness—is a central concern of psychoanalytic technique. The second basic postulate is that the psychoanalytical concept of the unconscious is so determined that it can reconnect the gaps that

are found in the "broken sequences" of conscious perception and thought (Freud, 1940b:particularly Part I, chapters I and IV, and Part III, chapter VIII). Together, claims Freud, these two postulates enable psychoanalysis to take up its proper place—as a science.[5] Even when the underlying connectivity has been found, thus approaching more closely "the real state of affairs" in the human soul, these results need translating, says Freud, into the "language" used in our grasp of the perceptual world. The nature of what is real will never fully be grasped by any science, though such a real may be better approached by means of the new connectivities and dependencies discovered by analytical work. To this extent, says Freud, the structures discovered in the analytical situation—even though they may in some ways be incompatible with "the critical restrictions" of logic—offer to the person in analysis an approach to the real that was previously blocked off by mechanisms of defence. The methods of the sciences are thus not only used, but also extended by the results of clinical work.

Freud had earlier been concerned with the methodology of the sciences. In the years before the First World War, Freud had responded to letters from the American psychoanalyst and psychiatrist James Putnam, starting a debate that ranged widely over the foundations of psychoanalysis and its relation to science.[6] Putnam had written to him asking for advice: the development of psychoanalysis among New England practitioners was going well, he said, but faced a central problem. They had little difficulty in settling into the practice of psychoanalysis in the beginning and middle phases of the work, but had little idea how to direct the end.

Shouldn't it be the case, suggested Putnam, that the aim at the end of the work should be to secure the good of the patient? If this were the case, the clinical orientation in psychoanalysis would be determined by moral philosophy; and Putnam had one in mind. An idealist social philosophy—drawing in part on a received version of Hegel—was fairly widespread in the University circles that Putnam moved in.[7] He suggested utilizing this philosophy in such a way that it gave an orientation to psychoanalysis. But Freud was totally opposed to this idea, and replied tersely that psychoanalysis already had its own orientation, and was not waiting to be given one by a philosophical world-view of any kind. The reason Freud gives for this is interesting. Psychoanalysis already has an orientation, he

says, given to it by the methods of the sciences.

This question is fundamental with regard to the relation between psychoanalysis and science; Freud came to call it "the question of a *Weltanschauung*".[8] Throughout his life he maintained that the consequentiality of the analytical relation was that of the sciences. But what are these methods of science? The methods of the sciences and the methods of philosophy overlap to a large degree. Freud found the main difference between the two in that science typically tolerates incompleteness, whereas philosophy tends to gloss over any incompleteness in its results. It does this by means of the over-encompassing aspects of its world-view, and in this way philosophy moves towards building into its functioning illusions in the form of Ideals.

There is a quarrel here about method: Freud wants "the method of the sciences" to organize clinical work, whereas Putnam wants the methods of philosophy. Which of these orientations draws more readily on mathematics? Surprisingly, Freud was slow to move in this direction, whereas Putnam moved there readily. Nothing could be further apart, it seems, than a version of Hegel's logic and moral philososphy, and a mathematization of the world. Putnam looked for support from his colleagues in Harvard,[9] for the philosophy of mathematics[10] was at this time more overtly present in common culture in New England than in Vienna.[11] Freud's encounter with these questions of science was not the result of a haphazard stumbling into philosophical terrain, but determined rather by—longstanding—clinical concerns, and by the question of how, if at all, psychoanalysis can formulate itself as a science.

While Freud was writing this, Hilbert was teaching Alexandre Koyré in Göttingen.[12] Hilbert had already developed part of his programme for establishing (within mathematics) a *Weltanschauung* that was intended to give security to the methods of mathematics. Koyré followed Hilbert's classes from 1908 onwards, and from this early date it seems that he had decided that the methods of mathematics play a central role in determining the methods of science.[13] That a general theory of space depends on a mathematical structuring—a structuring that raises questions about the foundations of mathematics—was something that was worked on throughout the first three decades of the last century. It was not a research programme that was easily available to Freud in his search

for a theory of psychic space—but to Lacan, through Koyré, this orientation was accessible.[14] Lacan had been familiar with Koyré's work from its early stages. When discussing the Copernican revolution in 1970, he commented "I received my education in the pages of Koyré's writings" (Lacan, 1970:429).

"The framework of any representation of being . . . [presumed] in any enterprise of thinking, can only be a framework of axioms".[15] This characterizes the orientation given to the analytical relation by Lacan. Clinical work, postulates, mathematics, and the question of being are all interlinked in Lacan's formulations of psychoanalysis. The investigation of foundational issues in mathematics and the sciences was well under way in the first decade of the last century. It needed only some mediation by which to enter into the clinical world. It took two currents to bring these themes into the mainstream of psychoanalysis: Lacan's work in France, and Imre Hermann's investigations in Budapest. And in each case, two staging posts served as further intermediaries: the phenomenological psychiatry and psychoanalysis of Eugène Minkowski and Ludwig Binswanger. Lacan refers to Minkowski in his Doctoral Thesis of 1932 (Lacan, 1932), and was familiar with his work as a psychiatric colleague—particularly within the group *Évolution Psychiatrique*.[16] Minkowski refers recurrently to Binswanger, and Hermann refers to both Minkowski and Binswanger—but where Binswanger had excerpted the mathematics, Hermann put it back in.

Minkowski had dedicated a whole chapter of his 1933 text on phenomenology and psychopathology to the study of space.[17] His space however owed little to mathematics, having been stripped of all geometric or other mathematical structure.[18] He tried therefore to bring into being a phenomenology of the-space-of-the-environment while distancing himself completely from anything mathematical.[19] In this way, Minkowski is led to give many rich and incisive descriptions of the spaces of the human soul, without realizing that he is describing mathematical properties of psychic life.[20] He speaks of localization and containing regions, of interior, exterior, and separation, and he distinguishes at least two kinds of space—a dark space and a clear space. The two differentiated spaces he investigates by describing their spatiality, the "stuff" which determines their spatial properties. All of this can be described by mathematics and was given its mathematical form later by Lacan.[21]

The theme of the spatiality of the mind was also taken forward in the 1930s by Ludwig Binswanger. His psychiatric work in Switzerland aimed to develop the study of psychic structuring in what he called a "scientifically exact way". To this end, he both critically advanced the work of Minkowski, and investigated the experience of—and introjection of—wide classes of psychic structure, while seeking for a research framework which he could accept as scientific (Binswanger, 1933, 1946). The framework that he was looking for he found in the work of Heidegger, whom he saw as "having given to the scientific study of human nature and to its particular modes of being a new horizon" (Binswanger, 1946:193). So although there is here an impulse towards science, it is one which sees science—including any psychoanalytical or psychiatric science—as being determined not by frameworks of mathematics, but by philosophy—and by a philosophy particularly hostile to formalization.[22] Although Binswanger was well aware that he was dealing with concepts such as "connection", "continuity", and "order", he thought that the framework for such terms should be directed and oriented by philosophy. So, like Koyré before him, he found that he was confronted with fundamental questions of mathematics; and like Putnam before him—and *contra* Freud—he chose a philosophical world view as directive both of psychoanalysis and of science.

Imre Hermann, in a series of publications that stretched from the end of the Second World War to the mid-1960s, proposed that everyday problems of conflict in love—ranging from the normal to the "morbid"—are organized around structural problems whose analysis had already been undertaken within mathematics.[23] He explicitly introduced foundational problems of mathematics into the orientation of his work,[24] taking as point of departure a subtle investigation of the creative work of Georg Cantor.[25] The field of love and the field of mathematics are usually taken to be separate domains,[26] but Herman claimed that the structure in each parallels that of the other. Compared to the orientations proposed by ego-psychology and developmentalism in psychoanalysis, strict parallels introduced between these two domains constitute one of the most surprising new developments in the field of contemporary psychoanalysis.

The mathematician Georg Cantor had suffered psychotic

episodes and had been hospitalized many times during the construction of his revolutionary theories, now usually referred to as (cantorian) set theory (Charraud, 1994; Hermann, 1980). Hermann had the idea of seeking to find themes that were common to the mathematics and to the psychotic structure. At the start of his study, he set out from the phenomenon of the flight of ideas (Hermann, 1980:228–229).

> My parents, grandparents, great-grandparents, my brothers and sisters, and all my family, and those close to me, people who are my friends, those intimately near to me, as well as my comrades and my acquaintances, together with all those more distant people who, during these last years, have been around me, that is to say, army people, employees, my financial and worldly relations, have most often lied, deceived, insulted, scorned, railed, mocked, mumbled, dishonoured, brutalised, thrashed me ...

Hermann suspected that these chains of phrases were produced by a patient who—unbeknown to himself—was working within the structures of set theory as developed in Cantor's work.[27] He sought—in what are closely related topological structures—to find the underpinnings of the structure of a manic-depressive psychosis, and to apply these findings to an understanding of Cantor's work in mathematics.

This parallel works both ways. Psychical structure has its parallel in the domain of mathematics, and mathematical results have structures parallel to them in the domain of the psychopathology of love. The strongest version of Hermann's thesis is the following. All structures in the domain of sexual love have translations in the domain of mathematics and, equally, all mathematical structures correspond ("homologously") to some structural domain within the field of love[28] (Figure 1).

He considered depression and love, super-ego structure and the theory of Ideals, to fall on one side of the homology, and on the other, order relations, the well ordering principle and the axiom of choice, intuitionism and finitism in proof theory, and general problems in the theory of sets of points. Hermann's conversations with the Hungarian mathematicians Laszlo Kalmar and Rosza Peter helped him formulate these ideas. The question is where do they lead? What kind of parallelism is at work here? What structures are

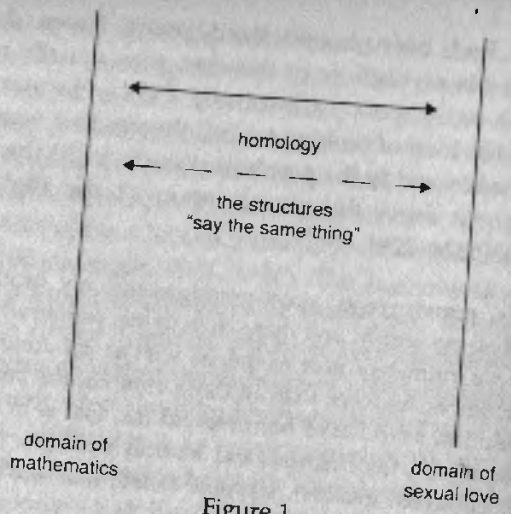

Figure 1.

being supposed on each side? What common terrain exists between unconscious structure and the structure of mathematics? And how do these results bear on the problem of the methods of psychoanalysis and science?

On 11 April 1930, Freud replied to a letter from Juliette Favez-Boutonier. Although the text of her initial letter does not survive, she had asked him about the relationship between psychoanalysis and philosophy, probably about the relationship between psychoanalysis and science, and seemingly about the parallelism proposed by Spinoza between body and mind. The text of Freud's reply describes the relation between what he calls the "physical world" and the "psychical". He proposes in this letter that he can envisage these two worlds as collateral or parallel to each other, provided that the second is construed as a "constituent domain" (*Teilgebiet*[29]) of the first. The sense he gives to this is that the physical world is known through the structuring of psychical representations. But beyond the domain of the psychical, he says, beyond the life of the soul, there is this other world whose existence we are compelled to admit. The assertion of the unconscious, he says at the end of his letter, has overturned all previous formulations of these questions.

Freud maintains a parallel here, but a very particular one. Lacan replied to Favez-Boutonier's presentation of Freud's letter[30] by placing a dialectic of knowledge and ignorance[31] at the centre of

both psychoanalytic theory and the question of the clinical training of the psychoanalyst.[32] In answer to the question "Is Freud a philosopher?" Lacan replied with a "yes, but"; that is, *yes*, provided that this is taken to indicate that Freud had participated in a Copernican revolution (Pasch et al., 1985:224). Lacan paralleled "psychoanalytical method" with "Freud's science". Each of these fields, he claimed, puts into question the status of the ego (Pasch et al., 1985:224). Each necessitates that the psychoanalyst gains access to the structures that lie beneath the misrecognitions of the ego, and it is the analysis of the structure of language in each of these parallel domains that is able to undercut the false connections that have fabricated aberrations of science.

Lacan's growing interest in mathematical structure in the late 1940s and early 1950s was supported by several mathematicians, and by his working relation with Claude Levi-Strauss (Leader, 2000b). Over the following decades—and particularly after 1960—he would come to prioritize spatial, over other mathematical, structures. His often repeated claim as regards spatial structure (or topology), that it is the structure of human subjectivity, played an increasingly important role in his analysis of clinical issues. Topology, he claimed, is "not at all metaphorical", it is not made "in order to guide us" around the clinical structure; topology rather is the structure itself (Lacan, 1972–3). In Seminar XX he claimed "the strict equivalence of topology and structure,"[33] and in his Seminar XIII—in the session of Wednesday 8 June 1966—he asked his audience whether they thought it was necessary to become a topologist in order to be a psychoanalyst. He had already raised with them the question of the differences between the position of the psychoanalyst and that of the mathematician. Topology, he said, is not something extra that the psychoanalyst has to learn. Whether he knows it or not, topology is the material within which the analyst intervenes.[34]

The parallelism proposed by Hermann was made explicit by Lacan in his analysis of the sexuality of Don Juan, which he took to be exemplary of the nature of the impasses in human sexual life.[35] He proposed the parallelism to exist between the topological notion of compactness[36] on the one side, and sexual *jouissance* on the other. The introduction of the spatial structure of compactness—at times Lacan calls this particular structure a logical one—determines that

in the field of sexual encounters men and women find themselves limited by textures produced by such space. In the ensuing masquerade women take up a position in the predicament of Don Juan's love affairs; and the key to Don Juan's love conquests, says Lacan, is that they are "taken one-by-one". Philosophies of love are here replaced by Lacan by giving to a love affair the structure of a compact space. In this way, the orientation of Lacan's programme—particularly in his later work—moved away from philosophical commentary, and towards the mathematical grounding of psychoanalysis as a science.[37]

In 1977 Lacan declared that '[t]his question of knowing whether psychoanalysis is a science remains still today dependent on the reading of Freud" (Lacan, 1977a:9). Much that was implicit in Freud—in terms of philosophy, mathematics, and science in their relation to clinical work—was rendered explicit by Lacan, and this elucidation, claims Lacan, can be obtained by a return to Freud's texts. Such a reading of Freud has effects—not only clinical effects, but also considerable effects on neighbouring fields: "there follow from this incalculable consequences ranging from the fields of ethics to politics, from the theory of science to the logic on which it is based" (Lacan, 1977a:10). These research programmes assembled and articulated by Hermann and Lacan (and Bion) demand that two factors are in place: the reading of Freud and the mathematization of psychoanalysis. And in order to assess the interaction of these proposals with Freud's own research programme, we need to go back to Freud's work.

By the early 1890s, Freud was attempting to resolve a range of clinical problems, a process which was to generate the central concepts of psychoanalytical theory. In establishing psychoanalysis in such a way, Freud was drawing on two sources: his attempts to give a formulation to problems of clinical work, and a backcloth of philosophical theories, themselves answers to previous problems. It is this matrix which is in need of closer investigation and analysis. Only by giving some clarity to the implicit conceptual orientation that Freud used to construct his initial programme can an adequate formulation be given to the problem of the particularity of the position of psychoanalysis within the sciences.

Freud proposed an unusual elementary structure for the human mind in the booklet that he published on disorders of language in

1891 (Freud, 1891). Its structure was complex, and even the presentation of it demanded that Freud investigate the structure of words and their associations. "The word then", he explained, "is a complex representation (*Vorstellung*) built up from various images (or impressions, *Bildern*)". These impressions enter into a structure of association amongst themselves, and this structure is, as Freud points out, an "open" complex, in the sense that new impressions can always be added to it. The corresponding structure of the word complex is however not open in this sense; Freud describes it as "closed, though capable of extension". In these pages, Freud repeats his claim about the relative openness and closedness of these two complexes, suggesting it is not a minor aspect of his argument. And—as if these two notions were not already sufficiently difficult—Freud puts forward the further claim that the complex of object associations and the word complex are themselves tied together by a third element, a kind of ligature, which connects the word complex with the various images which constitute the nodal points of the network of object associations.

There are many philosophical problems involved in these ideas, and Freud seems well aware of this situation. He in fact gives a reference to a philosopher from whom he says he is taking these notions. The philosopher is John Stuart Mill, and the texts that Freud refers to are Mill's book on logic, and Mill's critical account of the Edinburgh philosopher, Sir William Hamilton.[38] Specifically Freud makes this reference to Mill where he is attempting to demonstrate the result that the word complex is closed, whereas the object complex is open (Figure 2).

There is no reference here however, to the claims put forward by Freud as regards the relative openness and closure of the object complex and the word complex. But this argument is clearly important, and if one perseveres, one can find the passages that Freud is drawing on elsewhere in the text of Mill's *A System of Logic* (1843).

The sources that Freud is drawing on can be found in Book IV of Mill's text. Here are two chapters where he investigates the properties that a language must have if it is to be suitable for the "investigation ... of general truths." A general name, he says, has a connotation, and this is made up of the attributes which the term expresses. In ordinary circumstances, it is never clear exactly what

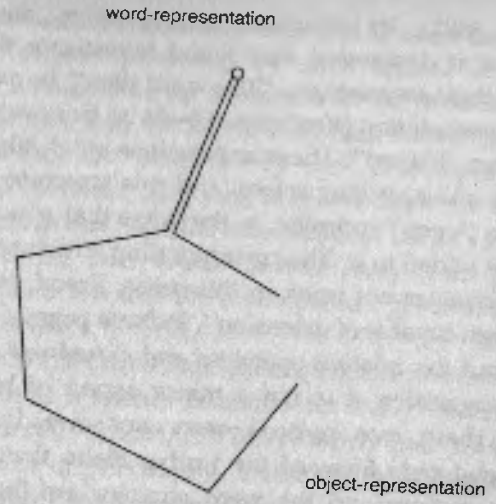

Figure 2.

the connotation of a term is, and therefore this connotation becomes an "unknown quantity, to be sought." Fixing the connotation of a term is in effect giving that term a precise definition, and this is a process often not feasible until the late stages of a scientific enquiry. Mill makes the comment that even if it were possible at an early stage to give a precise connotation to a term, then, even in these conditions, "it is occasionally not desirable." A variety of conditions give rise to this state of affairs. '[S]ometimes", he says, a word has several distinct senses, sometimes a word is to be defined in a sense radically different from its common usage, and sometimes the connotation of a word is *"extended* ... until it reaches things which have little, or even no, resemblance to those which were first designated by it".[39]

This last process Mill takes to be sufficiently important for him to spend the greatest part of these two chapters describing its operation and consequence. However, Mill takes no credit for having discovered and investigated this particular functioning of language. Rather, he credits the Scottish philosopher Dugald Stewart with having produced a series of results concerning the property of language which allows words to acquire this "extension." Stewart's argument, which takes the form of an almost geometric demonstration, is quoted at length by Mill. Suppose:

> that the letters A, B, C, D, E, denote a series of objects; that A possesses some one quality in common with B; B a quality in common with C; C a quality in common with D; D a quality in common with E ... Is it not conceivable that the affinity between A and B may produce a transference of the name of the first to the second, and that in consequence of the other affinities which connect the remaining objects together, the same name may pass in succession from B to C, from C to D, and from D to E?" [Stewart, 1810]

The process now has a name: transference (Figure 3). Its structure is that of giving to the connotation of a term some content that originally belonged elsewhere. Its subject is that of shift of meaning.

In the way that Stewart describes his example, the name A acquires some of the connotation of E. But he could equally well have described the last name as acquiring some of the connotation of the first. Each step of the transference from A to E Stewart describes as a transition, and such transitions of meaning Stewart is claiming are natural to the functioning of language. Stewart is in fact taking up the terminology of Hume—natural transitions determine associative shifts of meaning, where "natural and habitual" transitions in Stewart's account operate through the linguistic functioning of connotation and its shift. What Stewart is doing with Hume's theory of transitions is to make the linguistic functioning in it explicit. He does this by conceiving his apparatus of words or phrases as attached to their respective connotations, the apparatus that Freud had taken up as the stock element of the mind in his book on aphasia.

In the theory of transference, the central problem is Hume's, but it had cascaded down the traditions of Scottish philosophy in its transmission to the series of problems worked on by Stewart.

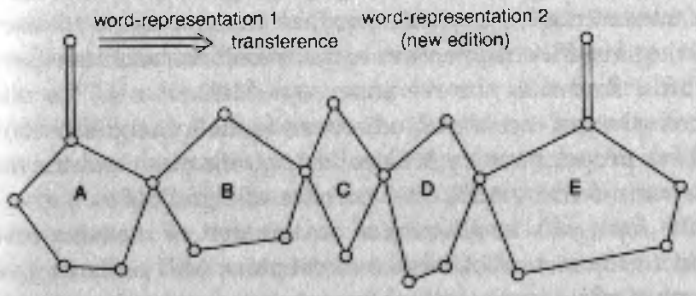

Figure 3.

Stewart had taken the term "transitive use of language" from Payne Knight's book on the analysis of taste,[40] and Mill cites Knight, but not his book. There are other influences on Stewart's work, which we will not look at here.[41] The summary results that are needed for our present purpose include the idea that transference is a link brought about by a mechanism of language, and that the analysis of a transference is done by establishing the transitions that build up the intermediate links in the chain. The object complex is therefore open, because the complex is available for additions and subtractions to be made to its content as the connotation is subjected to transferential shifts.

Mill draws several conclusions from Stewart's thesis. The first is that the mechanism of transition can explain the process of generalization. Mill in fact claims that Stewart has discovered the "law" of generalization. The new meanings acquired by transition "coalesce" into each other, so as to produce a "comprehensive generalization" of the initial term. Mill's second conclusion is that there are often many different generalizations produced by transition: '... a beautiful face, a beautiful action ... a beautiful solution of a mathematical problem." Stewart had also, in his text, addressed the transitions of this term "beauty" as representing one of the focuses of his interest. It is a mistake, Mill says, to try to give such a term a "fixed" connotation. Thirdly, as certain properties become more accentuated in a given age, historical transitions underlying language shift result in some "traditional knowledge" being lost. When the meaning of propositions and terms is lost in this way, it "may be historically traced" by establishing the past transitions that have produced the current usage. Mill formulates this as an ethical position: "we have no right to prevent ourselves from transmitting" a lost meaning that we have failed to discover by giving insufficient attention to the transitions and transferences of words. And it is not everyone, says Mill, who is "the sort of persons who are capable of rediscovering the lost signification".

These propositions by Mill on lost signification, and the theses of Stewart, cited by Mill, on "varieties of signification", give this text the form of a small treatise on the shift of meaning and its effects. In the second of these two chapters, Mill seeks to give an account of processes by which meaning is restricted or extended. He specifies their two elementary components—generalization, by

which connotation is lost, and the range of objects referred to increased; and specialization, which is a gain in connotation, and a restriction in the employment of a term. Finally, he seeks to relate the transitive functioning of language to the experience of pleasure and pain to see how agreeableness or painfulness relates to the shiftings of sense. The focus of his considerations thus becomes "what people do not like to have brought to their attention".

The censorship of content is the support of the process of generalization, which he now formulates as "keeping some aspects of things out of sight". The analysis of such shifts he places within the domain of logic: "the logician, not being able to prevent such transformations, should submit to them with a good grace." Just as Stewart made explicit the role of language in the phenomena of transition, it is Mill who stressed that these phenomena of transference and transition have consequences for the operations of logic. It is the logician, according to Mill, who is to investigate the meaning of terms and its variation. Logicians can "ascertain clearly, what it is which, working obscurely" has led people to partially grasp allusions of which they are not explicitly aware. When the logician has found such a meaning, he can ensure that "mankind shall see the meaning which before they only felt, and shall not suffer it to be afterwards forgotten". The precondition for such an analysis of language, is to take a position which is opposite to "the chimerical one of domineering over language".

Freud's attention to language continued after the aphasia book; it was present in a wide range of themes at the turn of the century, and was to remain thereafter a central orientation of his clinical work. He described the productions of transference in the Dora Case as "re-editions" (*Neuauflagen*) of an old text:[42] sometimes re-impressions—or reprints (*einfache Neudrucke, unveränderte Neuauflagen*)—sometimes "no longer new impressions, but revised editions" (also *Neubearbeitungen, nicht mehr Neudrucke*). The emphasis that Freud places here on the function of language in transference raises the question of whether the theory that he is drawing on is that of Dugald Stewart. Stewart's theory of transference had also placed at its centre the functioning of language, and the "augmentation of connotation" which is the kernel of Stewart's theory is precisely what Freud is describing in his reflections on his work with Dora. Stewart's work, however, did not remain within a

philosophical tradition; it had an impact elsewhere.

Stewart's work was taken up by a mathematician—an important mathematician—in Dublin. William Rowan Hamilton was one of the most creative mathematicians to work on the foundations of mathematics in the 19th century; and the dependency of some aspects of his foundational work on the results produced by Stewart is something that is rarely commented on. One of the main commentaries produced by Hamilton on the foundations of mathematical structure is to be found in a series of letters that he sent to his student Lord Adare in 1835.[43] In a series of seven letters, he attempted to explain the foundations of arithmetic and algebra, particularly algebra. In the first letter,[44] he described algebra as "the science of progression". Both arithmetic and algebra have as their foundation, according to Hamilton, progressions or "steps" of the kind that Stewart had described as the elements of a transition or a transference.

The reason that Hamilton wants such transferences (or ordered pairs) as the foundation for this branch of mathematics is that mathematical concepts are all subject to linguistic transference, or shift of meaning. Foundational concepts must therefore be privileged in this respect; they must bring with them the apparatus to analyse the shift of meaning to which all terms in the field are subject. This should be true also for other branches of mathematics and Hamilton founded the only other remaining mathematical domain that he considered—geometry—on the theory of transference as well.

In his sixth letter to Adare,[45] Hamilton describes as a primary process of the mind an "unconscious working" that takes as its structuring apparatus the ordinal relations that constitute steps of transference. Later, in his articles on the foundations of geometry,[46] he constructed geometrical space on the basis of what he called "the ordinal relation of points". In all of this, he founds his analysis on the relation of transference (a "new edition" of a previous point), so as to help mathematics avoid losing track of altered connotations, or even being overwhelmed by entirely unpredictable shifts of meaning.

As Hamilton developed these themes, the analysis of succession took the form of the analysis of transference. As he further developed this notion, he produced a theory of transference which he proposed as "fundamental" to algebra, and his analysis of transference paralleled exactly the corresponding theory of Stewart.

The detail of Hamilton's argument was built into a paper he published later in the same year, a paper on "algebraic steps,"[47] which was prefaced by a long essay on the structures necessary to the production of any algebra.

The main aim of Hamilton's text is professedly to remove "obscurities or errors of reasoning", particularly from the "doctrine of negatives and imaginaries" which has justly "elicited scepticism" amongst its students, but also from the foundations of algebra in general. As regards the existing theories of imaginary numbers, "it must be hard to found a Science on grounds such as these", he says. Hamilton hopes to rescue this situation in the following way: first he will show that "the notion of time is connected with existing algebra"; then he will proceed to demonstrate that any algebra "in as far as it is a science" will have the same dependency. The notion of time, he says, can best be analysed through the "closely connected (and in some sort coincident) notion of *Continuous Progression*".

The notion that he italicizes here he had found in Lagrange,[48] whose greatest contribution to algebra, according to Hamilton, had been to treat as variable "quantities which had before been viewed as *fixed* or constant". Lagrange had thereby constructed, says Hamilton, a "*Law connecting Change with Change*". This construction of a law governing the change of elements that had previously been considered fixed was precisely what Stewart had achieved with respect to meanings. Hamilton had been working on the content of his own theory, he says, "many years ago", and it may be that he was constructing its themes as he was reading Stewart in 1827. Hamilton had not published his work, he says, because he was aware of its "departing so far from views now commonly received". It remains to be seen whether or not in the construction of his theory he made use of Stewart's theory of transference.

There is something "definite and clear", he says, in the notion of order derived from the progressions present in the idea of time—and it is on this notion that he wishes to ground all possible algebras, a notion which he considers "more deep-seated" in the human mind than the notion of order in space. He thus sets up equations between moments of time A = B. From here he proceeds to equations between differences between moments of time B–A = D–C; and from there to equations between points on chains of points A, A′, A″ …; B, B′, B″ … From such series, he says, both

ordinal and cardinal arithmetic can be derived, although he will not give the details in his present paper. What he has produced are chains, where a transition from one point to the next can be made at any point. Hamilton reflects on the processes that he has introduced into the foundations of algebra: "This conception involves and depends on the conception of the repeated transference ... or the continued application of one common mental step". The terms that he uses here are identical to those used by Stewart. He continues "for this, and for other reasons, it is desirable to study, generally, the properties and laws of the transference". As part of his argument, Hamilton is proposing that moments of transference are fundamental to all algebras, as well as to arithmetic.

He forms the notion of the "step" which links the first moment to the second ("*a certain mental step* or *act of transition*"), and which allows him to utilize the theory of transference as a general foundation for all mathematics. The relation between the logically possible algebras that result from the manipulation of steps or transition—with uniqueness for multiplication and division as a demand of the system—generates, according to Hamilton, the "interpretation, or inner meaning" for what are otherwise merely formal and uninterpreted mathematical operations. Hamilton therefore claims for his theory that it brings to light otherwise "hidden meanings" and that this is done by rendering explicit the functioning of transference. This calculus of the transference, he says, proves that "expressions which seem according to common views to be merely symbolical, and quite incapable of being interpreted, may pass into the world of thoughts and acquire reality ...".

Hamilton returned to these arguments in his most famous text, his main publication in the theory of quaternions.[49] In the first chapter, he proposes the *first* meanings to be given to "=", "–", ">", "<"—first, that is, before any subsequent tranferences extend such meanings. With respect to this method he agrees that "some degree of obscurity still hangs over its logical and metaphysical principles." He therefore wishes to start from "frontal thoughts". The new sense that he is giving to these four signifying terms can be based on the sense of "–", which is generated by "the analysis of steps in a progression". He says "I regard primarily the sign "–" as the mark or characteristic of an analysis of a progression when ... compared with another state of that progression". The resulting theory, he

says, has both a "metaphysical" and a "mathematical" form: "space" is now the "field of ... [such] progressions", whatever the points that were originally given. Algebra within this field is done through analysis and synthesis defined in terms of transference, and "difference in space" now becomes equivalent to an investigation of the connection between two points in a generalized series.

Here, Hamilton gives a few names. The second point in an analysis he calls the analysand, the first the analyser. Further points between the analyser and the analysand connect the subsequent points of the analysis with the initial points given before the analysis started. He says that the analysis will tell us "how to set out", and "in what direction" to proceed. The field of his new problem is then that of attaching "new sense to an old sign", and that act is again covered by his theory of transference. The key logical point here is Hamilton's strategy of using his "basic" theory of transference as an apparatus to keep track of shifts of meaning operative both within his system and within previous formulations of mathematics.

Order, according to Hamilton, and not magnitude, is the primary orienting principle in mathematics, because transference demands it. By extending his analysis—which initially is in a space of two dimensions—to three dimensions he is able to obtain his quaternion analysis of space-time. In the development of his theory, a number-couple is the most "basic" element. It allows him to take account of all processes of transference involved in extending the old mathematical meanings in his new interpretation of the operations of algebra.

Many problems are raised here. Some concern the subsequent development of algebras in the history of mathematics,[50] but all concern the philosophy of mathematics and problems of direction within the history of mathematics. Hamilton had recognized that he was confronted by a forced move. Once one accepts the proposition put forward by Stewart as regards the nature of shift of meaning, then a theory of transference of the kind that Hamilton puts forward is necessary in the "foundations" of any subject, and particularly in mathematics. We shall now see in what way it could have been incorporated into psychoanalysis.

In his Doctoral Thesis of 1949, and in a series of texts published over the following 15 years, Abraham Robinson proposed a way of

generating a series of results through "transferences" between logic and mathematics. It should be emphasized that in doing this, Robinson saw himself as aiming to make more precise the functioning of an already established usage of "transference" terminology and "transference" results in mathematics.[51] The topologist Felix Hausdorff, for instance, used this notion as follows: "Now we transfer two of the central concepts of elementary analysis into the theory of point-sets the concepts of limit and convergence". Later—in studying Euclidean spaces—he says that he will, for the time being, limit his investigations to the two dimensional plane, because of the difficulty of "transferring the results to three or higher dimensional spaces" (Hausdorff, 1914:232, 335). Each time he proceeds in this way, Hausdorff is producing a new edition of an old text. The transferred mathematical phrases in each case bring with them unaltered the concepts and results from the old domain—unaltered that is, until they are changed by analysis.

Robinson stressed that to set up transfer principles of this kind you need to work within formal logic (Robinson, 1955). In fact when he refers to "working within logic", he says within "formal logic—or within a comparable formalism". A transference result for Robinson is a "theorem which asserts that any statement of a specified type which is true for one particular structure or class, is true also for some other structure or class of structures" (Robinson, 1956:92). He expanded on this some years later, claiming that:

> the use of a formal language enables us to make certain statements about entire classes of theorems where "conventional" mathematics enables us to deal only with individual theorems. In particular, we may be able to show that any theorem of a certain class which is true for one type of mathematical structure is also true for another type of mathematical structure. A result of this kind will be called a *transfer principle*. [Robinson, 1963:35]

What relation then exists between Robinson's transference theorems, Hamilton's and Stewart's transference theorems, and the notion of parallelism or homology taken up in Hermann and Lacan? Let us first try to formulate a fairly strong version of the parallelism thesis, which appears in one of two forms: (I) for all structures in the domain of mathematics (where a structure is a number of sentences together with their consequences[52]) there exists a corresponding structure in the domain of sexual love; and (II) for all structures in the domain of sexual love, there exists a corresponding structure in the domain of mathematics. We know of a number of themes where such relations between psychoanalysis and mathematics exist[53] (Figure 4).

In any such case, the term as used on the right hand side of this diagram is a new edition of the term on the left hand side. The existence of a consequence relation on both sides ensures that the texture of the statements on each side is that of a space.

The theory of space—topology—is central to the conceptual armoury of a science. Lacan—until the end of his work—maintained the structural parallelism between the topological concerns of psychoanalytic theory and psychoanalytic technique.[54] In relation to the limitations of science, he invoked Gödel in questioning the weakness of the powers of mind.[55] Gödel himself, sympathetic to psychoanalysis towards the end of his life,[56] proposed giving priority to order and space relations in the construction of a science.[57]

One side of this parallelism diagram is supposed to contain "all" mathematical structures, the other side "all" structures in the psychopathology of love. What is the sense then that can be given here to "all"[58]? The answer is, whatever meaning that can be given to it using the encompassing mathematical relations that describe the structures on each side of the parallelism. And what are such relations? Hamilton's extension of Stewart's transference results

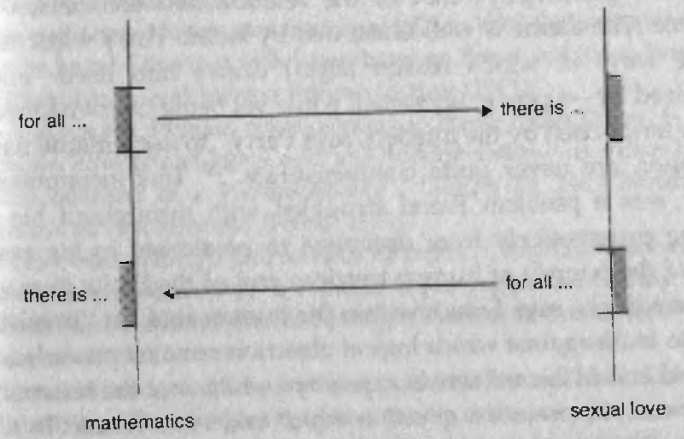

Figure 4.

the foundational role of Ideals. For details of this development, see Burgoyne (1995).

11. It would take the development of Hilbert's programme in Göttingen, and the responses of Gödel—and the wider Vienna Circle—to it in the 1930s to change this situation.
12. Koyré was a Russian emigré who studied in Paris and Göttingen before the First World War. He was 26 when he first made contact with Hilbert's work. The teaching programme he experienced in Göttingen led him to focus his work around questions of axioms, or postulates. Later this foundational attitude to mathematics would lead him to propose the mathematization of the concept of physical space as the hallmark of the scientific revolution of the 17th century.
13. The other strong influence on Koyré at this time was from the phenomenological school in Göttingen. He is almost unique at this early date in maintaining these two orientations, and not allowing his mathematical orientation to be subordinated by phenomenological themes. The development of a phenomenological direction within the field of the foundations of mathematics was later to characterize much of the creative work done on foundational questions of logic and mathematics in France.
14. Through other sources this orientation was also available to Imre Hermann—see below. Koyré worked on foundational issues of order, number, class, set, continuity and limit over the period from 1910 to immediately after the Second World War. In this work he was involved in critical discussions with Bertrand Russell, Abraham Fraenkel, and Yehoshua Bar-Hillel. See Jorland, 1981:35–42.
15. Jorland on Koyré—see Jorland, 1981:42.
16. Minkowski was a founder member of this group, set up in 1925 and Lacan was an active member.
17. "Vers une Psychopathologie de l'Espace Vécu" in Minkowski (1933).
18. "In this way we find ourselves confronted by the problem of lived space . . . or, if it is permitted to express ourselves in this way, of a space which is a-mathematical and a-geometric" (Minkowski, 1933).
19. Minkowski is simply mistaken in taking this step: he thinks that mathematical space is "uniform", whereas there is a need for many varieties of spatiality in the construction of the space of lived experience. Of course, mathematical spaces come in many and subtly different "varieties".
20. For a recent attempt to find such properties in the phenomena of childhood autism, see Burgoyne (2000b).
21. See those of Lacan's Seminars—starting in 1961 through to 1980—where mathematical formulations of clinical problems are made explicit. This work has been continued in the succeeding two decades and more by the Seminars of Jacques-Alain Miller, where mathematical and mathematico–logical formalization plays a fundamental and orientating role.
22. Binswanger was aware of the influence on Freud of Johann Friedrich Herbart, who had taught at Göttingen in the first half of the 19th century. Herbart had developed a mathematical theory of the spatial structure of the mind, and in doing so had influenced Riemann's development of new classes of mathematical space. Although we was aware of its importance, Binswanger declined to take up this perspective. For the influence of Herbart on Freud see Burgoyne and Leader (2000).
23. The following texts by Hermann are organized around the parallelism of structure between psychoanalysis and mathematics. "Janos Bolyai" (1945); "Psychological considerations on the mathematical theory of sets" (1949); and "The function of choice in thinking: its psychology and its psychopathology" (1965). A text preceding this series is Hermann's paper "Gustav Theodor Fechner" (1925). All these papers are available in Hermann (1980).
24. This brought the study of Hilbert and of Cantor—as was the case with Koyré—into a central place in his investigations of the structure of the mind.
25. Hermann also proposed parallelisms between mathematical and psychic structures in the work of Bertrand Russell and Egbertus Brouwer. The focus that he proposed may in some instances have been too hastily imposed, but the mathematical instincts with which he worked were accurate and, in important respects, richly productive.
26. It must be noted here that the Anglo-Saxon world is used to the introduction of formalized structures in the work of Wilfred Bion, and, to some extent, in the work of Matte-Blanco.
27. He cites Binswanger (1933), and the work of Schaffenburg, Liepmann, and Kraepelin in seeking out spatial and set-theoretic structures present in psychosis. Ibid., pp. 229–230.
28. In terms of heuristic slogans, Hermann has two: (1) You can do sex by doing mathematics; and (2) you can do mathematics by doing sex.
29. This phrase also has the sense of a separate theme, that is, of a partial, split, or divided subject.
30. The presentation of Freud's reply was made at the meeting of the *Société Française de Philosophie* on 25 January, 1955. Responses to Favez-Boutonier's paper were given by Gaston Bachelard, Gabriel Marcel, Eugène Minkowski, and Jacques Lacan.
31. This is a proposal that has its roots in Lacan's longstanding adoption of

the Socratic method. When Lacan writes a postulate or proposition—in either the conceptual or clinical domain of psychanalysis—he intends it to be taken as a supposition subject to Socratic technique: criticism, objection, contestation and refutation. Compare this to Freud's scientific methodology as referred to above in note 4.

32. That clinical reality is put into a direct relation with this question of the nature of a science is characteristic of both Freud and Lacan. See, in this respect, the themes of dialectic and rectification that Lacan introduces as solutions to the problem of the relation of interpretation and transference in Lacan (1958).
33. Lacan (1972): Seminar XX, 21 November 1972. Lacan claims to have demonstrated this claim in his parallel text Lacan (1973).
34. Since 1980 much work has been done on the relations between clinical work in psychoanalysis and mathematics. See, for example, Charraud, 1980, 1985, 1990, 1994, 1997; Soury, 1982; Granont-Lafont, 1985, 1990; Vappereau, 1988; Eidelsztein, 1992; Bertheux et al., 1998; and Lavendhomme, 2001.
35. Also in the session of 21 November in Lacan (1972–73).
36. In such a compact space any cover of the space by open sets—finite or not in number—is equivalent to a sub-cover which is finite, whose elements are "taken one-by-one".
37. "[This] breaks with everything setting itself up as philosophy": Ibid., p. 11. Lacan had perceived structuralism as opposed to many currents of philosophy for many years; in terms of Hermann's version of this, Lacan knew of Hermann's work, and seems to have met with him around 1971.
38. The footnote in Freud's text is "J. S. Mill, *Logic*, I, Chap. III, and "An Examination of Sir William Hamilton's Philosophy". Some of the following arguments can be found in Burgoyne (1981, 1995).
39. Book IV, Chapter IV: "On the requisites of a philosphical language; and the principles of definition"; and Book IV, Chapter V: "On the natural history of the variations in the meaning of terms".
40. See Knight (1806).
41. See du Marsais (1818[1729–30]).
42. Postscript to Freud (1905).
43. The recipient was Edwin Richard Windham Wyndham-Quin, later third Earl of Dunraven. Hamilton's text was later published by his biographer Graves as "Sir W Rowan Hamilton on the Elementary Conceptions of Mathematics" in *Hermathena*, Vol III, 1878; it is reprinted in Hamilton (2000).
44. Ibid.: the letter was written on 4 March, 1835.
45. Ibid.: 18 March, 1835.

46. Hamilton (1846–49) in Hamilton (2000).
47. Hamilton (1879[1835]).
48. Lagrange (1804).
49. Hamilton (1853).
50. A starting point for the study of such problems is provided by the excellent history of algebra produced by Hourya Sinaceur, in Sinaceur (1991).
51. In so doing he devised new parameters for the fields of logic, and raised new problems in the relation of logic to mathematics—as well as augmenting research within logic and producing new results in both of these fields. (See Robinson, 1955, 1956, 1963).
52. The consequence relation can be written in terms of a topological closure operation. This in itself renders the deductive closure of a sentence in either domain something that is made up of topological material.
53. Four instances are the concepts of connectivity, compactness, order relation, and separation. Connectivity is used by Freud as a determination of the structure of the unconscious; compactness has been used by Lacan to elucidate feminine sexuality; order relations are used by Hermann to explain pathologies of thinking; and separation has recently been used by me to explain some of the problems of childhood autism.
54. "Il y a une correspondance entre la topologie et la pratique": Seminar XXVI, 21 November, 1978.
55. In relation to Gödel's undecidability results in formalizations of sufficiently strong versions of arithmetic, Lacan raised the question of "la faiblesse du mental". See Seminar XXIV, L'Impossible à Saisir, 10 May 1977.
56. In his conversations with Hao Wang in the 1970s, Gödel suggested that psychoanalysis contains "the sketch of a developing theory". Specifically, he thought he could demonstrate that there was a means of formulating psychoanalysis in such a way that it would constitute a "theory" in the sense that he was used to giving to this term. See Wang (1996:132, 306).
57. "We have an intuition of ordering which is much clearer than our metric intuition ... our topological intuition goes beyond the metric intuition, statements about topological ordering are more stable and more often true" (Wang, 1996:265).
58. This notion of "all"—together with that of "exists"—raises a problem in the foundations of logic. The form of ancient Egyptian heiroglyphs representing "all" seems already to grasp some of the future problems: "all" in ancient Egyptian is made up of "everything that exists, and everything that does not exist". Problems with this term still persist today. After defining "existence" in terms of the negation of "all",

Sierpinski cites Hans Hahn, in pointing out some of the more modern difficulties:

> By existence in mathematics we understand something completely different from what it is taken to be in everyday life ... or in the natural sciences. If it's clear for us what the physical sciences understand by existence, it's not at all clear what mathematics understands by this word. Actually, there is no agreement about this term amongst specialists, be they either philosophers or mathematicians. Amongst them you find representives of innumerable points of view; you could say: *quot capita—quot sententiae*". [Sierpinski, 1951:31]

59. This indicates that a central role should be given in the foundations of mathematics to order relations, ordinal numbers (of an "appropriate" size), and a similarly "appropriately" constructed set theory. This would replace what is more usually done, that is the founding of mathematics on an axiomatized set theory using a number of (fairly arbitrary) cardinality postulates combined with a somewhat traditionally maintained choice of axioms for sets.
60. Its properties are that nothing is in a transference relation to itself, and that the transference relation is transitive: that is (1) not Taa, and (2) if Tab and Tbc then Tac. This is sufficient to axiomatize the transference relation—the relation that in mathematics is called the relation of (strict) partial order: the sign ">" can be used—wherever it seems appropriate—to replace this sign "T".
61. The basic parallelism statements are of the form: "for all t1 there is a t2", where t1 may be, for instance, "connected", where the themes t1 and t2 are in a transference relation to each other, and where t1 is on the left of the diagram, and t2 on the right. All such statements—together with their underlying logics—need to be formulated according to the recommendations of this "psychoanalytic parallelism", in a basic mathematics whose fundamental relations are those of order.
62. Freud (1939), Section III, Part I.C.
63. Freud (1939), Section III, Part I.C.
64. Parry (1989).
65. Freud (1939), Section III, Part I.D.

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CHAPTER TEN

A Lacanian approach to clinical diagnosis and addiction

Rik Loose

Towards the end of his *Civilization and its Discontents* Freud poses a question which he feels he cannot evade. After contemplating the similarities between the development of civilization and the individual he wonders whether it is possible to make the diagnosis that "under the influence of cultural urges, some civilizations, or some epochs of civilization—possibly the whole of mankind—have become neurotic?" (Freud, 1930:144). He immediately points out the danger implicit in making this kind of diagnosis by saying that "we are only dealing with analogies and that it is dangerous, not only with men but also with concepts, to tear them from the sphere in which they have originated and been evolved" (Freud, 1930:144). This is a very important remark.

The tearing apart of concepts and humans

Sometimes, in order to explore a new field or a particular phenomenon for which there are as yet no conceptual tools, the man of science has no choice but to tear concepts away from their original place and position. This must be done with great sensitivity

to both the area explored and the area from which the concepts have been borrowed. When concepts and theories are transported from one area of study to another, they sometimes undergo radical changes depending on the object of study and the context they have been taken from. This process can lead to confusion and the criticism that this new application is based on a misunderstanding of their original meaning and application. This form of criticism is grounded on a particular conception of science which suggests that concepts refer to a particular reality or to particular objects in a straightforward and unproblematic way: concepts belong specifically to the objects or reality studied and should not be detached from them and deployed elsewhere. The foundation for this conception of science is a belief that nature contains laws and an order which exist independently of the researcher. Lacan calls the laws and the "order of things" in nature, which *supposedly* exist independently of the human subject, a "knowledge in the real". This Lacanian conception of modern science is crucial. It evokes his remarks on the subject of science from "Science and truth". He indicated there that modern science, which was born in the 17th century, was the precondition for the discovery of the subject of psychoanalysis (Lacan, 1966:6–7). How are we to understand this? Knowledge which exists in nature presupposes a subject for whom this knowledge is meaningful. It also implies a subject who has a desire to know this knowledge. This subject is called the "subject of science" and it is the subject upon which psychoanalysis operates. Modern science made the decision to find certainty in the object and concentrated its efforts exclusively there. Freud discovered, underlying this search for certainty, a doubting subject and set himself the enormous task of studying the relationship between this subject and the object. In this task he stumbled upon the problem of meaning and language as the elements which connect the two, but which also obscure their relationship at the same time.

Towards the end of the 19th century Freud realized that language is an important part of the human psyche. He observed that the psyche is structured and that using language in certain ways can establish a change in people. Asking people to "free-associate" he found the focus and emphasis of their speech to be forever shifting. One thing would always lead to another, never settling onto something specific. Freud had discovered displacement

as one of the mechanisms of the psychic apparatus. But he had also discovered that this psychic apparatus was centred around a lack which people would avoid. Freud defined this lack as the object that is lost when we have to tear ourselves away from our place of origin; it represents an original satisfaction that is gone forever. It can be represented initially in hallucinations and only later in words. Freud had no conceptual tools at his disposal to ground these discoveries in a theory of language; a theory that could include the subject and this object. Not that this theory didn't exist in his life-time, he just did not know about it.[1] These conceptions of the object, the subject and language have far reaching consequences for our understanding of science and the question of diagnosis in clinical work.

The relationship between the subject of science and his or her object of study is of an impotent nature, because every progressive step in scientific research leads to the further retreat of its object. For instance, advances in neuroscience and neuropsychopharmacology only seem to lead to the discoveries of ever more neurotransmitters and newer forms of interactions between them, whilst none of these discoveries take us any further in our understanding and treatment of psychopathology.[2] But that is not all. The further the object of science retreats, the more the subject of science tends to step forward. This situation is absolutely antithetical to the ideal of scientific objectivity. A remark by John Hughes, Professor of Neuropharmacology at Cambridge University, might serve as an illustration of this point:[3]

> You know you have to be convinced, you really have got to be convinced in science that you are right. This business about the impartial scientist assembling facts in order to disprove a hypothesis is absolute balderdash. Karl Popper could never have been further from the truth. You have got to be convinced. Yes, and I think most scientists are deluded. [Healy, 1996:545][4]

We could conclude from this remark that, as a scientist, Hughes does not have much time for the painstaking and meticulous work of gathering data using the empirical method of objective scientific research, which according to Popper, should lead to progress in one's scientific work providing that this happens on the basis of continous falsification of hypotheses. The implications of Hughes'

remark are that scientists can be convinced about the truth before research is done and that science only has to prove that they were right in their conviction. *Objective science, in that case, is only a matter of what the subject of the scientist intuitively knows already.*

The history of psychiatry in the 19th and 20th centuries is the history of the continuous attempt and failure to isolate the functional area of the psyche which would give a conceptual unity and clarity to the differential clinic of psychopathological disorders.[5] This failure causes psychiatry to revert back to the relative security of nosological systems and classifications which are meant to grasp a clinical reality. The security provided by nosology and classification is the illusion of control and mastery over something which is unknown or not understood and it is indeed an illusion because nosological names never correspond to empirical reality; in fact they rather obscure that reality (Verhaeghe, 1994:62). The latest and perhaps best known of these classifications is the DSM system (I–IV), *The Diagnostic and Statistical Manual of Mental Disorders*. In relation to such diagnostic classification systems, Dany Nobus writes:

> The categories of mental disorders included in the diagnostic manuals function as prototypical examples of states of psychic illness that can be determined through observation and deduction. Nevertheless, the univocal empirical recognition and delineation of mental disorders remains a psychiatric sign, since a perfect objectivity and a fully adequate categorical system are impossible to realize. Current diagnostic systems for mental disorders have many epistemological shortcomings, which are often acknowledged by psychiatrists themselves, but they continue to be used, in many cases because professionals are convinced that there is nothing better available. Of course the question is what this better thing would be: a more guaranteed objectivity through a system with more or less differentiations, or a radically different approach? [Nobus, 1997:53]

It is very important to look at the possibility of developing a radically different approach to our understanding of psychopathology and especially to addiction (as one of the manifestations of psychopathology) which, of all the mental pathologies, is arguably the one that occurs most frequently. This radically different approach is a necessity, because the attempt to find certainty in the object (of clinical reality), through naming and categorization,

will only lead to a further retreat of this object and a further separation between subject and object. But there is the other danger of hoping that a similar epistemological shift will take place in psychiatry and psychopathology as took place in somatic medicine towards the end of the 18th century.

Positivist science, which depends on the observation, naming and classification of empirical reality, nevertheless assumes that in properly constituting itself as a science, it will make a similar transition as that which characterizes the emergence of modern clinical medicine. That means that it hopes to move from a classification of observations to the postulation of an underlying functional dynamic of which these observations are only the visible manifestations. What the history of psychopathology shows is an oscillation between elaborate classification systems, such as the DSM, and the attempt to isolate from this a differential clinic based on functional unities. Up to now, this attempt to establish a differential clinic based on functional unities has failed to sustain itself in the domain of psychopathology.

Paul Verhaeghe has divided approaches to psychopathology in the 18th and 19th century into two broad categories (Verhaeghe, 1994:74–97). I will outline some aspects of the two categories, because in some respects the ideas put forward in this important, but untranslated Dutch text, converge with the history we have just sketched and, more importantly, will lead to similar conclusions. Verhaeghe makes a distinction between what he calls the "wishful dream of positive-science" and the "moral treatment paradigm".

The first is the paradigm of reductionist materialism, and has roots that go back to Democritus who postulated that everything can be reduced to fundamental particles. The basic premise, propagated by Bayle, is that every psychopathology should have one specific organic cause (or be based on a disorder in one specific functional unity) and should therefore be organically treatable. The accidental discovery of neuraleptica in the early 1950s gave new impetus to the idea of organic causation. The logic was as follows: if chemical substances can have an effect on pathological behaviour, then the cause of this behaviour must surely be chemically based as well. One of the consequences of this scientific way of thinking is that the subject is excluded. The illness is defined as a nosological essence and the patient is only its vehicle. In fact, even as a vehicle, the patient is

an interference in the understanding of the nature of the disease. The subject is a passive victim of an organic agent and carries no responsibility whatsoever for his or her mental problem or disease.

The second paradigm, the moral paradigm, has roots in the fifth century before Christ when the sophist Protagoras postulated that all perceptions could be reduced to their subjective determination and can therefore only contain an individual truth (for instance, two people seeing the same thing does not mean that they experience it in the same way). Despite this position, Protagoras does accept that certain perceptions are better than others: the perceptions of healthy people are better than those of sick people. Better perceptions are those that have better *factual* consequences. This leads to a paradox involving the simultaneous claims that perceptions are always subjective, and that some perceptions have better "factual" (objective) consequences than others. The inevitable consequence of this paradox is that, despite the aspect of subjectivity, one depends on an authority, or a master who knows, for knowledge about the difference between good and bad perceptions. The relevant consequences of this concept were the special institutions created, such as psychiatric asylums and hospitals which were headed by a master or "chef de clinique" who would know what is good for the patient. Essentially, diagnosis and treatment within the moral paradigm come down to this: people become mentally ill as a result of sick-making perceptions or ideas, and treatment is done in a healthy environment with the help of a masterful figure. In other words, treatment takes place within a discourse in which *there is no place for the choices, desires and responsibilities of the subject*. This paradigm is strongly reflected in today's social/psychological approach.

It is striking that both paradigms rely on external factors. In the first paradigm the subject is the victim of an organic factor and in the second paradigm the environment is responsible for the problem of the subject. Consequently, this subject is an "accidental" component in the therapeutic mechanism and the treatment takes place *despite* his or her responsibility.

But psychopathology has not managed to reduce itself in any stable way to the functional systems of the brain and their disorders, nor has it managed to grasp clinical reality in a perfect and unequivocal language, reminiscent of the famous statement of the 18th century sensualist Condillac, who said: *Une science parfaite serait*

une langue bien faite (A perfect science requires a clear language). It is as if psychopathology refuses to separate itself from subjectivity, language and culture. What the history of psychopathology shows, above all, is the constant attempt to exclude the subject and subjectivity (of both clinician and patient) from its full investigation. Psychopathology tries to find certainty in an unstable object of study and in the process it manages to ignore the relationship between subject and object and between subject (of the clinician) and patient.

In terms of a scientific conception of psychopathology and treatment of psychopathology, the aforementioned paradigms—including classificatory medicine and functional (or somatic) medicine—have in common the fact that the subject (of both patient and clinician) stands excluded in relation to the cause as well as in relation to the treatment. That surely must lead to an impasse, because is it not the subject who is happy or unhappy, who has pleasure or pain, who suffers or manages to avoid it, who will have to die and accept this or not, who will be confronted with the otherness of—and within—the Other sex, and, who ultimately is the only one who knows—whether he or she is consciously aware of it or not—the true nature of their relationship to these sensations, feelings, thoughts, experiences and responsibilities? Can we believe that these thoughts, experiences and their causes exist independently of us? Or can we be told precisely how to go through—or live with—these experiences by persons who are subject to these experiences themselves? What is interesting about these questions is that they defy both an objective and a moral answer. Instead, they demand an ethical response. For instance, to die cannot be positively known nor is it good or bad. All we know is that we will have to come to terms with the fact that death will come and that that fact is beyond good or bad. The ethical response is to *allow* subjects to reconcile themselves with this fact, irrespective of the successful outcome of this process, because success implies having reached an external objective or ideal.

The Freudian Intervention

Freud shifted emphasis from the eye to the ear in his clinical practice. The difference between seeing and listening is quite

enormous. What you see is what you see, but when you listen you can hear things. Things that are hidden from the eye, things that have meaning or—when not understood—can cause distress. What Freud heard was that meaning is not always obvious, nor the language that produces it. Freud heard the existence of the unconscious. This discovery of the unconscious allowed him to generate a psychopathological clinic based on the dialectical interaction of subjectivity and clinical structure, thus undermining any attempt at strict differentiation and separation of subject and object in the psychoanalytic arena. This dialectical interaction transforms the classical psychiatric nosography and provides it with the possibility of a theoretical unity. This is however a form of unity that is not acceptable to the pretensions of objective and empirical science who prefer instead the unity of the observable object and the unity of word or concept and thing. The preference for this kind of unity in objective and empirical science, so prevalent also in the domain of psychiatry and psychopathology, has led to an impasse, especially in the area of clinical diagnosis.[6] The failure to create a diagnostic system that classifies symptoms and syndromes of mental disorders on the basis of a precisely locatable causation, a uniform etiology and an accurate prognosis for each disorder, i.e., the failure to create a diagnostic system that matches up perfectly with clinical reality, has become blatantly obvious in clinical practice. Moving away from diagnosis and treatment, psychiatry, to a large extent, has become a practice of patient management and patient care. And where this transformation has not taken place (yet), psychiatry and clinical diagnosis are largely a practice of intuition based on personal experience. Verhaeghe writes:

> Every clinician has experienced in his life a certain amount of anxiety, depression, relationship problems, problems in growing up, etc. As long as what he encounters in his client is situated within the limits of his own experience, he will consider this more than likely as "normal". However, if what he encounters in his client is situated outside his quantitative field of experiences, he will suddenly diagnose it as pathological and if it is situated outside his qualitative field of experiences, the diagnosis will become psychosis. [Verhaeghe, 1994:35]

There are simply no absolute criteria available that would neatly

indicate the quantitative and qualitative differences between the different categories of mental illness and pathology. The reason for failing to develop these criteria—and criteria are ultimately nothing else than points of reference which determine the difference between normality and abnormality—is based on the fact that there is nothing outside language that can guarantee the absolute validity and truthfulness of these criteria. Therefore the unity between clinical category (or concept) and clinical reality (or object) cannot be established. There is no *a priori* correspondence linking the two orders. In psychoanalysis there is really only one point of reference, or one criterion for truth, and that is that the constitution of the subject in language entails the confrontation of the subject with the trauma of a lack. All subjects, in their own way, try to come to terms with that fact. Everything the subject does, whether in language or outside language, is to be understood as the attempt to live with this trauma of the lack.

Considering the impasse in clinical psychiatry and psychopathology in terms of failing to develop a coherent clinic of diagnosis and treatment (in psychiatry treatment is to a large extent dependent on making the correct diagnosis), it might be worthwhile to look at the possibility of applying the theoretical unity of psychoanalysis to the clinical area of addiction. In no other clinical area is it more obvious that the relationship between subject and object can be very problematic and extremely disturbed. For this reason it makes sense to apply a theory that is based on the relationship between the subject and object and to apply a psychopathology that centres around the different structures, modalities and avatars that characterize this relationship. For instance, the attempt to establish a differential diagnosis of perversion based on the description and classification of sexual behaviours, their consequences and the contexts in which they occur, ultimately failed precisely because it ignored the clinical structure of the relationship between the subject and the (sexual) object (Nobus, 1994:132, 142; Temmerman, 1994:126, 127; Verhaeghe, 1994:242, 243). Another reason why it makes sense to consider the possible contribution psychoanalysis can make to the area of addiction is that the contributions made by objective and empirical science or psychiatry have so far only led to unsatisfactory results that show an alarming inconsistency. A coherent diagnosis of addiction—based on the

description of addictive/compulsive behaviours (drug taking, alcohol consumption), the addictive/toxic characteristics of drugs and alcohol (and their effects on the psyche, soma and social environment), and the course and development of the addictive disorder/disease—has not been succesfully realized. Nor has it been possible to establish a precise cause-and-effect relationship between addiction and specific psychological characteristics, social factors or medical/organic anomalies that can explain the phenomenon of addiction in a uniform way.[7]

It appears that something in relation to addiction is indeterminate. In other words, it is very difficult to positively define either addiction or drugs themselves (including alcohol). Perhaps the most commonsense definition of a drug is that it is a substance which when incorporated produces alterations of the mind and the body. This definition makes so much sense that it has no explanatory value. Coffee, tea, tobacco, sugar, water, food, prescription drugs, illegal drugs, can all be incorporated and may even act as drugs. A lot of people are addicted to alcohol, but can we say that it is a drug? Is it perhaps a poison, or a food? Particular drugs taken in certain doses can become poisons but in other doses function as remedies (Plato already hinted at this ambiguity of the *pharmakon*). Does a drug become a medicine when it is made available only by medical prescription (it seems that marijuana is now going to be used for the medical treatment of glaucoma, whilst amphetamines travelled the other direction by crossing over from being legal to being illegal) and what exactly is the difference between prozac and ecstacy besides the legal aspect? (Lenson, 1995:4). The history of legislation of drugs shows that, in terms of function and effects of drugs, the law is arbitrary. Despite these indeterminate and undefinable aspects of drugs and drug-taking we definitely know that addictions exist. The real problem is how to study them. Empirical science relies for its assertions on statistically significant data gathered from so-called representative samples. This approach is therefore never in a position to address the relationship between drug (object) and addict (subject). A consequence of the empirical method is the assumption that drugs cause uniform effects implying that the effects are only related to the drugs and indeed have nothing to do with the relationship between the object-drug and the subject-user of the drug. Empirical science is forced, by its

methodology, to avoid considering the possibility that toxicity and the effect of drugs are inherent to the subject. This conception fails because drugs are profoundly ambiguous in both their function and their effect. They can function as poisons or as remedies. Concerning their effect, it is a well-known fact that drugs and alcohol can affect people differently and can affect the same person differently at different times. In other words neither function nor effect is uniform.[8] Objective and empirical research fails in the area of addiction because the subject (yet again) throws a spanner in the works. Or perhaps it is better to say that the subject is not allowed to put in its spoke. Alain Delrieu, who published a very detailed study of more than 400 written texts on addiction published in the 19th and 20th century to which he gave the title *L'Inconsistance de la Toxicomanie* (*The Inconsistency of Addiction*), concluded: "Despite the multiplicity of scientific disciplines which are interested in this theme, it is actually impossible to respond in a straightforward way to two questions which obsess the adult world, 'why do so many young people take drugs?' and 'who are those who take drugs?' " (Delrieu, 1988:101, my translation). In other words, addiction exists, but there is no such person as *the* (typical) addict. This is precisely the point Markos Zafiropoulos refers to with his book title *The Addict does not Exist*.[9] Despite the uniform social, legal and medical manifestation of addiction, the relationship between addiction and the subject is neither uniform nor predictable in any way. Listening to the discourse of addiction is perhaps a way out of the impasse. That means listening to the speaking subject who is addicted and that implies a listening beyond a general symptomatology. But what can we say about some of what has been heard so far?

Civilization and its toxicomanias—rudiments for a differential diagnosis of addiction based on the concept of "administration"

In the very last pages of *Civilization and its Discontents* Freud diagnoses the disorder in human civilization in a way that would not be acceptable to psychiatry. In his observation of civilization he has come to the conclusion that it is an irrefutable fact that man wants happiness, but cannot have it. (Freud, 1930:145). In other words, man is destined to suffer. Earlier on in the article he wrote:

> But the most interesting methods of averting suffering are those which seek to influence our own organism. In the last analysis, all suffering is nothing else than sensation; it only exists in so far as we feel it, and we only feel it in consequence of certain ways in which our organism is regulated. The crudest, but also the most effective among these methods of influence is the chemical one—intoxication. [Freud, 1930:78]

The connection, established by Freud here, between suffering, the regulation of our bodies and intoxication is extremely interesting and demands further exploration. The immediate context from which this quote is taken is crucial for an understanding of the problem of addiction in the field of psychoanalysis. I will therefore explore this context in some detail here. Freud indicates that suffering threatens us from three directions: our bodies, the external world and our relations to others (Freud, 1930:77). This last source causes us most suffering. Isolating ourselves from others is thus one solution to our problems. Drugs and alcohol can provide us with pleasure, but they can also render us incapable of "receiving unpleasurable impulses". These two effects appear to be intimately connected with each other. Both the pleasure these "foreign substances" can generate and the halt they can call to unpleasurable impulses, whether they come from within or outside the organism, are independent of the Other. Freud writes: "The service rendered by intoxicating media in the struggle for happiness and in keeping misery at a distance is so highly prized as a benefit that individuals and peoples alike have given them an established place in the economies of their libido" (Freud, 1930:78). Implied in this statement and its wider context we already encounter the rudiments for a possible differential diagnosis of addiction which is not based on observation of empirical material, but is based on a certain economy and distribution of pleasure and *jouissance*. The economy and distribution of *jouissance* result from the constitution of the subject in language (or the field of the Other). In an article entitled "Libido and toxic substance", I have argued how the constitution of the subject in language is able to represent "certain ways in which our organism is regulated", how different forms of *jouissance* result from this process, and how certain distributions of these forms can lead to toxicity and indeed cause suffering, pain and anxiety (Loose, 1996:32–43). I will briefly outline that argument here.

In the latter part of his work Lacan became very interested in the body. In Seminar XX, he says that we enter reality with the apparatuses of *jouissance* and that there is no other apparatus than language (Lacan, 1998:55). Language is therefore a form of *jouissance*, a kind of enjoyment that is different from the *jouissance* of immediate experience and total vitality. The introduction of the signifier causes a differentiation of *jouissance*. But it causes more than that! It produces a subject, it allows this subject to speak and it turns the being of a real organism into a body which it can have. Freud's point of departure was that the constitution of the human subject is not a very successful process and Lacan made the point that this failure also applies to the body. Language, or the signifier, is structurally incomplete and because of that fact it constitutes an only partially symbolized body in language. These real (unsymbolized) parts of the body can become cause for suffering and in that sense they have a toxic effect.[10] The use of drugs and alcohol can serve as an attempt to regulate this toxicity of the body. It is important to note that the real toxicity is not situated in the alcohol or drugs but in the body.[11] The signifier also creates a lack in the subject by cutting him off from a primordial *jouissance* which characterizes the dual unity with the mother/universe (Freud's oceanic feeling). This is known as symbolic castration. Symbolic castration leaves the subject unsatisfied because it will desire something more than ordinary pleasure or *jouissance*. Yet when this desire threatens to be realized, the subject will panic as this heralds his annihilation. The realm beyond ordinary pleasure is the realm of the death-drive. Drugs and alcohol can function as attempts to break with ordinary (thus limited) pleasure (or phallic *jouissance*) and produce something more or indeed, occasionally, they can function as barriers against the lethal or toxic domain beyond ordinary pleasure which threatens to annihilate the subject. In the latter case, the toxicity is not situated in the chemicals, but in the subject. On top of this the introduction of the signifier leads to a speech which never reaches its full potential.[12] For all these reasons it is inevitable that the subject not only desires bigger and better things, but will also suffer and experience anxiety. This brief outline shows that in a Lacanian conception of the subject, drugs and alcohol can function differently for different people, in terms of their relationship to *jouissance*, pleasure, anxiety, pain and their body. It is

in ancient Greece) and it lies at the heart of (the human problem of) addiction. The term *administration* is used in three ways: (1) to *govern* or *regulate;* (2) to *manage as a substitute;* and (3) to *dispense* or *supply*.

Addiction can be related to the three clinical structures of psychosis, neurosis and perversion. But it can also be related to Freud's (often forgotten) clinical category of the actual neuroses, and that would make addiction a clinical entity which is separate from the clinical structures and their symptoms. This clinical category of the actual neuroses can also play an important role in the development of a differential diagnosis of addiction.[13] The chemical processing of actual neurosis is a fourth form of addiction and it is a form of addiction that has its own relationship modality *vis-à-vis* the Other. This relationship modality is characterized by the independent adminstration of *jouissance* which functions as the *governing* or *regulation* of an unbearable real; a real that threatens to annihilate the subject in actual neurosis.[14]

In psychosis, the foreclosure of language (or the rejection of symbolic castration) results in a position of the subject as an object or "Thing" for or in the Other. The lack, which is produced by the constitution of the subject in language, is not produced for the psychotic subject, precisely because he or she is foreclosed from language. This psychotic subject will be confronted with a massive presence of the real; an unbearable "too much" of something. The defensive reaction of the subject against this massive immediate presence of real *jouissance*, can take the form of a "suppletion symptom" or what Lacan calls a "*sinthôme*" in Seminar XXIII (Lacan, 1977:lecture of 18–11–1975). The other solution available to the psychotic subject is to develop a delusion against the massiveness of the real. A delusion is constructed on the basis of language; it is a signifying system. But language functions differently for the psychotic subject than for the neurotic (or perverse) subject. For the latter, language contains a structural lack which makes the signifiers continually shift as the subject tries to find certainty about a truth that always seems to escape. For the psychotic, language (which is the material for the delusional system) has to be complete in order to form a defense against the real. Language functions as a protective wall which is meant to be impenetrable. That is why psychotics "know for sure". It is a

protection that must provide absolute certainty for psychotics, but it is also something that can make them paranoid as there is no doubt about the fact (only neurotics doubt) that it can always be taken away by this Other. These forms of psychosis are delusional (megalomania) or paranoid. When there is no "*sinthôme*", paranoia or delusional system available, the psychotic subject and his or her body will be completely at the mercy of the real; they will be overwhelmed or invaded by *jouissance*. This is the schizophrenic (catatonic) form of psychosis. Here we find the connection between psychosis and addiction. In the event of the signifier being unable to function as a protection against the invasion of *jouissance*, the subject always has recourse to the route of the body via drugs and alcohol. Addiction here is a form of *management* (of *jouissance*) *by substitution* with drugs and alcohol as forms of self medication. Also here we encounter some of the chronic addictions.

In neurosis and perversion the mechanisms of repression and disavowal result in a fundamental dissatisfaction due to a failure of the pleasure principle. What lies beyond this pleasure principle is always "too much" and yet the absence of this beyond creates a "never enough", a *plus-de-jouir* (more-to-be-enjoyed). Here we can situate one of the few (maybe the only) reference(s) Lacan makes to addiction: "everything which permits the escape from this marriage (*to the phallus*) is clearly very welcome, that is the reason for the success of drugs, for instance; there is no other definition for drugs than this one: it is what permits to break the marriage to the little Willie" (Lacan, 1976:263–270, my translation). Lacan indicates here that addiction is an attempt to break away from phallic *jouissance* and an attempt to turn the pleasure principle into a successful operation through the refusal of symbolic castration. It takes the form of the subject *dispensing* with the failure of the pleasure principle by *supplying* himself with an additional *jouissance*. The drug or alcohol here functions as an "object-cause-of-*jouissance*" which allows the subject to avoid the always problematic encounter with the desire of the Other and sustains in him the illusion that he is able to attain the lost "object-cause-of-desire." This implies direct access to *jouissance* for the subject, enabling him to avoid the long detour via the Other because it can be administered at will. It is therefore essentially oral in nature and drowns the symbolically structured "formations of the unconscious" in a sea of toxicity.

Despite the attempt of neurotic (and perverse) addicts to break away from phallic *jouissance* in an act that takes place independently of the Other, it is undoubtedly the case that this act is, at the same time, an appeal to the Other as it was the encounter between the subject and the Other that produced the dissatisfaction of having to put up with limited pleasure and desire. In other words, the act of neurotic and perverse addicts is an appeal to the Other in the form of a complaint. The discourse or speech of addicts is full of complaints. A complaint is a question, a demand directed at an Other. It is a demand to be relieved of suffering; a demand for help, a demand for a solution to the problem of desire. The complaint as an expression of pain and suffering also contains an accusation or an attribution of the cause of this pain and suffering to an external source. This external source is the Other. The human dilemma is that the Other is indeed the cause of the subject's suffering, but the subject will always have to take responsibility for dealing and living with this fact. Addiction, based on neurotic or perverse structures, attempts to avoid this problematic and fundamental human dilemma, by repeating this dilemma at a different level and in a way which is utterly destructive. On the one hand addiction functions *independently* of the Other for the subject, whilst on the other hand the subject is *dependent* on the act of repetitive drug taking. In terms of treatment, this act should be interpreted as an appeal for help and as an analysable symptom. The problem is that the independent function (*vis-à-vis* the Other) of addiction creates complications for the transference. Addicted subjects will tend to escape the encounter with the desire of the Other (which the therapeutic or analytic relationship provokes), by taking drugs or alcohol in order to avoid the anxieties and uncertainties that are inherent to the therapeutic process.

It is without doubt the case that these different forms of addiction have implications for the direction of treatment. That is the reason why a diagnosis of addiction which includes the subject is of crucial importance for intervention in the field of addiction. It is essential to know what we are dealing with and to that effect we need theory to guide a clinic that includes addiction. This is a clinic which allows the subject to find or create a different orientation towards *jouissance* and the real via the object and signifier of the transference. The only problem is that the real of psychoanalysis

(the real on which it operates) is not the only real. It is not the real of modern science.

Conclusion: toxico-mania in modern culture and medicine

In their book *Intellectual Impostures*, Sokal and Bricmont accuse Lacan and his disciples of being theoretical and this at the expense of observations and experiments (Sokal & Bricmont, 1998:34). They insist on the absolute necessity of empirical evidence in order to be able to say something scientific about the natural and human world: "Throughout this book, we have defended the idea that there is such a thing as evidence and that facts matter" (p. 197). Let us look at some of the facts of human existence and nature that can be easily observed. At times people are at war and kill each other. There is no doubt about that and this is a fact that didn't escape Freud. Towards the very end of *Civilization and its Discontents* he writes:

> Men have gained control over the forces of nature to such an extent that with their help they would have no difficulty in exterminating one another to the last man. They know this, and hence comes a large part of their current unrest, their unhappiness and their mood of anxiety. [Freud, 1930:145]

We stated before that man wants to be happy but cannot be happy. This is a fact observed by Freud and something for which he had obviously ample evidence. But his explanation of this irrefutable fact is theoretical. The reason why Freud wants to explain this fact theoretically is that the existence of evidence is not sufficient to explain this fact. Freud's point of departure is that there is an irreducible real element in human nature or existence that causes pain and suffering. This real element is not the kind of real that is at stake in science. This real escapes the methodology of human science (statistics do not help here in order to explain the evidence by giving the observed data some validity), but it also differs from the real of modern science (in the form, for example, of technological products). The real in science is either related to a general kind of knowledge or else it is something that is produced as an object in the real. But neither scientific real can be equated to the real of the human subject which causes symptoms and discontent in

civilization. Lacan says: "It is clear that the knowledge imputed to something in the real, whether one calls that God or something else, has in no way anything to do with the knowledge which articulates itself especially from this, that there is a being who speaks" (Lacan, 1998:21, my translation). Knowledge imputed to the real in science is not the knowledge related to the real of the unconscious of the subject. The real of the unconscious has a relationship to meaning, because it wants to find an expression of an inexpressible *jouissance*. This distinction between the real of science and the real of psychoanalysis is essential and—paraphrasing Eric Laurent—it is extremely important to convince science of the fact that there is another form of real than the one of science (Laurent, 1998:42). This is the fact that man has to be torn from his place of origin which causes a differentiation in—and problematic distribution of—*jouissance* in the subject. Civilization is an attempt to regulate this distribution; it is in that sense "a mode of *jouissance*, and even a common mode of *jouissance*, a systematical distribution of the ways and means to *jouir*" (Miller, 1998:25). There is no doubt about the fact that the products and gadgets of modern science are very effective ways of producing, regulating and distributing *jouissance*.

Freud's theoretical explanation for man's incapacity to be happy is that man is caught between an egoistic urge for happiness and a cultural urge for unity in human kind. Man is unhappy because the latter urge has pushed the former into the background (Freud, 1930:142,143). These two opposing urges represent the individual and cultural super-ego (pp. 141,142). Freud's diagnosis that mankind has become neurotic was based (as we stated in the introduction to this chapter) on the influence of the cultural urges. In other words, man's neurosis and lack of happiness are based on the dominance of the cultural super-ego over the individual super-ego. Freud's cultural super-ego is one that forbids, restricts, sets ideals, provides rules and so on. It causes unhappiness because the demands of the cultural Other force the subject to renounce its claim for individual happiness.

This does not seem to tally with today's preoccupation with happiness, enjoyment, (extreme) pleasure, individual lifestyles and success. J.-A. Miller writes:

> Can we speak today of a major neurosis of our times? If one was able to do it, one could say that its principal determinant is the existence of the Other—in so far as it rivets the subject to the pursuit of surplus-*jouissance*. The Freudian super-ego produced things like prohibition, duty and indeed guilt—so many terms which make the Other exist. These are the *semblents* of the Other. They suppose the Other. [Miller, 1998:26]

Has the cultural super-ego (which Freud diagnosed as being the cause of our unhappiness) been replaced by another super-ego, one perhaps that puts more emphasis (or even pressure) on the individual super-ego thereby demanding more happiness in the process? This would be a super-ego closer to the spirit of our civilization. Miller argues that the Lacanian super-ego with its imperative to enjoy is the super-ego of our times. (Miller, 1998:26). If a change of super-ego has taken place, this change should also be reflected in the development of modern science. Subjects in modern times are more subjected than ever to gadgets and non-linguistic apparatus of enjoyment. An increasingly significant aspect of modern science has to do with the accumulation, control and distribution of material objects. These objects are objects in the real. Lacan says that we have access to an aspect of the real via gadgets and that we attribute these gadgets to the real because we do not construct them without the enormous scientific apparatus which in itself has nothing to do with these gadgets. (Lacan, 1998b:12). Once initiated by the subject, science can produce objects in the real in an automatic and sometimes accidental fashion, that is to say, in a way that is detached from the desire of the subject. This has an important consequence that was remarked on by Marc Strauss when he claimed that the foreclosure of the subject in science leads to the object running its own course, outside signification of desire, but not without *jouissance* value (Strauss, 1994:29).

In the 1950s such objects of *jouissance* value were produced more or less accidentally. These are the psychopharmaca and they are a scientific means to *jouissance* and the regulation of *jouissance*. The psychopharmaca are extremely effective and in that sense the use of psychopharmaca supports the subject in terms of his complaint about the Other which allows him to avoid exploring his own unconscious choices and responsiblities. They are a promise of happiness by the Other of civilization. The subject is not only ready to believe in the fulfilment of the promise of happiness, but in fact

feels that science owes him this happiness. The psychopharmacologist Peter Waldmeier put it as follows:

> So death or illness had another value for people a hundred years or more back from now and they accepted illness and they accepted death. Whereas when the treatments became available, some hopes were raised and people expected more and more from medicine and drugs. So in one way or another, people expected that whatever happens to them someone can help them and they can be terribly disappointed if they learn that in some cases this is not possible. I think this is something new. The roots are probably in the availability of treatments and the raising of hope. [Healy, 1996:578–579]

The distinction between the real of science and the real of psychoanalysis does not imply that one is without consequences for the other; it does not imply that there is no relationship between these two forms of real. The scientific production of objects of *jouissance* in the real can have a real effect on people. They can become overwhelmed by this *jouissance* and they might have to create different ways of responding to it. Esthela Solano made a very interesting remark in relation to this. She said that medical intervention is an intervention which forces the real of the symptom to respond differently and when one forces the real of the symptom to respond differently, that is never without consequences (Solano, 1998:51–52). In order to illustrate this point I would like to conclude with two more quotes from David Healy's book of interviews with famous and outstanding psychopharmacologists. These quotes sum up concisely the arguments I have put forward in this chapter.

> Pichot: Panic disorder was created in its present sense by Donald Klein on the basis of differential responses to drug therapy. He has written down in detail how he came to the idea that there were two distinct disorders in the anxiety neuroses, one of them, the acute episode he named panic, reacting to the antidepressant therapy, while the other component, basic permanent anxiety, did not. It is true that the importance of a new disorder was later increased by world-wide trials of drugs, the result of which tended to influence key people. At the beginning, many French psychiatrists considered it as an uncommon disorder. But of course one finds a condition if one searches for it. [Healy, 1996:12]

> Ban: I had been engaged in research in which we induced psychopathology with drugs, and later on in research in which we controlled psychopathology with drugs; and since it was possible to do it both ways, I felt that finally we could meaningfully talk about mental illness because what we were talking about was no longer just a matter of belief, but was accessible and demonstrable experimentally. [p. 591]

So how do we respond to the neurosis of our times? By giving voice, not fuel (psychopharmaca), to *jouissance*. If our "enjoyment-demanding" cultural super-ego has forced the real of our symptoms to respond differently, perhaps we can conclude that some of the symptoms of the neurosis of our times tend to move in the direction of addiction and toxicomania. That makes the ethical response of giving voice to *jouissance* even more pertinent today.

Notes

1. In 1916 Saussure's *Course in General Linguistics* was published. In this book he makes a distinction in language between a layer of signifiers and a layer of signifieds. Neither layer is static, and they flow in no particular direction. The implication is simple: the relationship between signifiers and signifieds, or words and their meaning, is arbitrary. No word or concept refers naturally to a particular object or meaning. Arbitrary means that the relationships between signifiers and signifieds have been agreed by convention. Saussure also said that what characterizes signifiers is their difference from one another and a meaning can only be generated contextually, that is, through the context of other signifiers on the basis of this difference. Language is a moving material and it is set in motion by a lack that is inherent in the functioning of language itself, i.e., the lack of ultimate meaning.
2. Pierre Pichot, a professor in psychiatry, founder member of the Association for European Psychiatry and a renowned researcher in psychopharmacology, said the following in an interview: "The work done by neuroscientists is extremely impressive. I don't dispute that, but until now very little comes out of it in psychiatry in terms of concrete clinical applications" (Healy, 1996:17).
3. Although we must acknowledge immediately that his intentions with this remark might have been entirely different from our intentions here.
4. Hughes also says that he recognizes that "there are those out there that

do pose the questions and go about it in a logical way." However, he does not consider himself to be one of those. He knows that delusions are dangerous, but a good scientist should be able to recognize that (Healy, 1996:545).

5. See Foucault (1973) *passim*.
6. The preference for this kind of unity in psychiatry (and psychopharmacology) was expressed very well by Tom Ban, Professor of Psychiatry at Vanderbilt University, when he said: "The only reason to have concepts is to be able to communicate, and if we have problems using a concept in communicating, we might just as well throw out such a concept. And if the dismissed concept leaves a void one should replace it with one which corresponds more with the real world (Healy, 1996:595).
7. As an illustration of the failure to establish a coherent diagnosis and a uniform explanation for addiction the reader is referred to an excellent and detailed summary of the psychiatric classifications of addiction by Mary McMurran (1994:19–21).
8. Freud was already aware of this lack of uniformity with the drug cocaine in 1887. In "Craving for and fear of cocaine" he connects the irregularity of the cocaine effect to individual variations (Byck, 1974: 175).
9. The original title in French is: *Le Toxicomane n'existe pas* (Zafiropoulos, 1988:1–106).
10. In Seminar XX, Lacan calls the *jouissance* related to this real aspect of the body, the *jouissance* of the body or the *jouissance* of the Other (Lacan, 1998a:4). He calls ordinary (sexual) pleasure or *jouissance*: phallic *jouissance* (Ibid. 8).
11. A psychoanalytic conception of toxicity does not necessarily consider toxicity to be inherent to drugs or alcohol, but can indicate anything that is detrimental to the subject. Toxicity, in this view, is therefore an inevitable aspect of human existence. It is nevertheless something from which the subject has to distance himself as much as possible. Toxicity in psychoanalysis includes the real (of the body), the realm of the death-drive beyond the pleasure-principle, but also, for instance, suggestive words spoken in a hypnotic relationship. See also in this respect Sylvie Le Poulichet's excellent book *Toxicomanies et Psychanalyse* (1987:7–171).
12. This full potential is the ideal of communication which is the ability to say it all so that nothing needs to be said anymore.
13. From 1892 onwards Freud begins to develop a structural psychopathology. On the one hand he establishes the psychoneuroses (initially he called these the neuropsychoses of defence) and on the other hand he develops the category of the actual neuroses. The actual neuroses are characterized by an anxiety against which the subject cannot defend

himself. The psychoneuroses display a whole array of (hysterical and obsessional) symptoms, all of which appear to form a relatively successful defence system against anxiety. This defence is indeed relative because psychoneurotics of course also experience anxiety. In fact, to be anxious is even their hallmark. There is however a difference in quality: psychoneurotic anxiety is more curtailed and less overwhelming. Psychoneurotic anxiety is contained on the basis of a psychic or symbolic processing of an original trauma that causes this anxiety. The cause of anxiety is the same for the actual neuroses, but the difference is that a symbolization or psychic processing of the original trauma never took place. Actual neurosis is the failure of a psychoneurotic development in the subject. The actual neuroses are an anxiety reaction to the direct confrontation with the real, because psychic processing is lacking in essential points. The psychoneuroses are a continous processing of this traumatic real with signifiers and symptoms (i.e., symbolically structured formations of the unconscious). The psychoneuroses are an attempt to cure the original real trauma. The actual neuroses lack this type of cure because there is no pacifying symptom. One way out of the actual neurotic impasse is by regulating the organism with drugs and alcohol. This solution of the toxic route via the body, which manages to avoid the encounter with the Other, is foolproof. Any solution that is able to avoid the detour of language is guaranteed fool-proof. The problem is that the subject will have to pay a heavy price. In order to maintain the solution the price will be addiction, because it is a solution without the possibility of a resolution: chemical intoxication is not a symptom that can be analysed and can therefore not be resolved. Some chronic addictions have their roots in actual neurosis. Addiction can be found in all three clinical structures and therefore addiction will acquire a function in relation to the Other in each of these structures.

14. The real toxicity in addiction, when considered as a separate clinical entity (by being related to actual neurosis), is not situated in the drug or alcohol itself, but concerns that *jouissance* of the body which threatens to devour the subject when the phallic or sexual *jouissance* of the signifier is unable to contain it. In "Libido and toxic substance" I argue that, in this case, addiction takes the form of a kind of "floodgate" which *governs* or *regulates*, in a homeostatic movement, the lethal attraction to the *jouissance* of the Other (Loose, 1996:40–42). Addiction, as a floodgate mechanism, replaces the function of the signifier here and forms a barrier against an anxiety which results from this other toxic *jouissance*, which overwhelms the subject when something of the body cannot be psychically processed or symbolized. This form of anxiety belongs to

actual neurosis. Addiction as a separate clinical entity is not a matter of "not-having-enough", but a matter of trying to get rid of a "too-much".

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CHAPTER ELEVEN

Lacan between cultural studies and cognitivism

Slavoj Žižek

I Cultural studies versus the "third culture"

The struggle for intellectual hegemony

We are witnessing today the struggle for intellectual hegemony (regarding who will occupy the universal place of the "public intellectual") between the post-modern-deconstructionist Cultural Studies and the cognitivist popularizers of "hard" science, i.e. the proponents of the so-called "Third Culture." This struggle, which caught the attention of the general public first through the so-called de Man affair (where opponents endeavoured to prove the proto-Fascist irrationalist tendencies of deconstruction), reached its peak in the Sokal–*Social Text* affair. In Cultural Studies, "Theory" usually refers to a mixture of literary/cinema criticism, mass culture, ideology, queer studies etc. It is worth quoting here the surprised reaction of Richard Dawkins:

> I noticed, the other day, an article by a literary critic called "Theory: What Is It?" Would you believe it? "Theory" turned out to mean "theory in literary criticism." /.../ The very word "theory" has been hijacked for some extremely narrow parochial literary

> purpose—as though Einstein didn't have theories; as though Darwin didn't have theories. [Brockman, 1996:23]

Dawkins is here at one with his great opponent Stephen Jay Gould who also complains that "there's something of a conspiracy among literary intellectuals to think they own the intellectual landscape and the reviewing sources, when in fact there are a group of nonfiction writers, largely from sciences, who have a whole host of fascinating ideas that people want to read about" (Brockman, 1996:21). These quotes clearly stake the terms of the debate as the fight for ideological hegemony in the precise sense this term acquires in Ernesto Laclau's writings: the fight over a particular content which always "hegemonizes" the apparently neutral universal term.

The Third Culture comprises the vast field which reaches from the evolutionary theory debate (Dawkins and Dennett versus Gould) through physicists dealing with quantum physics and cosmology (Hawking, Weinberg, Capra), cognitive scientists (Dennett again, Marvin Minsky), neurologists (Sacks), theorists of chaos (Mandelbrot, Stewart), authors dealing with the cognitive and general social impact of digitalization upon our daily lives, up to the theorists of auto-poetic systems which endeavour to develop a universal formal notion of self-organizing emergent systems which can be applied to "natural" living organisms and species, as well as social "organisms" (the behaviour of markets and other large groups of interacting social agents). Three things should be noted here: (1) as a rule, we are not dealing with scientists themselves but (although they are often the same individuals) with authors who address a large public, in a way whose success outdoes by far the public appeal of Cultural Studies (suffice it to recall the big bestsellers of Sacks, Hawking, Dawkins and Gould); (2) as in the case of Cultural Studies, we are not dealing with a homogenized field, but with a rhizomatic multitude connected through "family resemblances," within which authors are often engaged in violent polemics, but where also interdisciplinary connections flourish (between evolutionary biology and cognitive sciences, etc.); (3) as a rule, authors active in this domain are sustained by a kind of missionary zeal, by a shared awareness that they all participate in a unique shift of the global paradigm of knowledge.

As a kind of manifesto of this orientation, one could quote the

"Introduction" to *The Third Culture* reader, in which the editor (John Brockman) nicely presents the large narrative which sustains the collective identification of these authors[1]: back in the forties and fifties, the idea of a public intellectual was identified with an academic versed in "soft" human (or social) sciences who addressed issues of common interest, taking a stance towards the great issues of the day and thus triggering or participating in large and passionate public debates; what then occurred, with the onslaught of "French" postmodern deconstructionist theory, was the passing of the generation of public thinkers and their replacement by "bloodless academicians," i.e. by Cultural Scientists whose pseudo-radical stance against "power" or "hegemonic discourse" effectively involves the growing disappearance of direct and actual political engagements outside the narrow confines of the academia, as well as the growing self-enclosure in an elitist jargon which precludes the very possibility of functioning as an intellectual engaged in public debates. Happily, however, this retreat of the "public intellectual" was counteracted by the surge of the Third Culture, by the emergence of a new type of public intellectual, the Third Culture author, who, in the eyes of the large public, more and more stands for the one "supposed to know," trusted to reveal the keys to the great secrets which concern us all . . . The problem is here again the gap between effective "hard" sciences and their Third Culture ideological proponents who elevate scientists into a "subject supposed to know": not only for ordinary people who buy these volumes in masses, but also *for postmodern theorists themselves* who are intrigued by it, "in love with it," and suppose that they "really know something about the ultimate mystery of being." The encounter here is failed: no, popular third-culturalists do NOT possess the solution that would solve the crisis of cultural studies, they do not have what cultural studies is lacking. The love encounter is thus failed: the beloved does not stretch his hand back and return love.

"Third Culture" as ideology

It is thus crucial here to distinguish between science itself and its inherent ideologization, its sometimes subtle transformation into a new holistic etc. "paradigm" (new code name for "world view"): a

series of notions (complementarity, anthropic principle ...) are here doubly inscribed, functioning as scientific AND ideological terms. It is effectively difficult to estimate the extent to which the "Third Culture" is infested with ideology; among its obvious ideological appropriations (but are they merely secondary appropriations?), one should, again, note at least two obvious cases. (1) The often present New Age inscription in which the shift in paradigm is interpreted as the outgrowing of the Cartesian mechanic–materialist paradigm towards a new holistic approach bringing us back to the wisdom of the old Oriental thought (the Tao of physics, etc.); sometimes, this is even radicalized into the assertion that the scientific shift in the predominant paradigm is an epiphenomenon of the fact that humanity as a whole is on the verge of the biggest spiritual shift in its entire history, of entering a new epoch in which egotistic individualism will be replaced with a transindividual cosmic Awareness. (2) The "naturalization" of certain specific social phenomena clearly discernible in so-called cyberevolutionism which relies on the notion of cyberspace (or World Wide Web) as a self-evolving "natural" organism: the "naturalization of culture" (market, society etc. as living organisms) overlaps here with the "culturalization of nature" (life itself is conceived in terms of self-reproducing units of information—"genes are memes"). This new notion of Life is thus neutral with respect to the distinction of natural and cultural or "artificial" processes—the Earth (as Gaia) as well as the global market, both appear as gigantic self-regulated living systems whose basic structure is defined in terms of the process of coding and decoding, of transmitting information, etc. So, while cyberspace ideologists can dream about the next step of evolution in which we will no longer be mechanically interacting "Cartesian" individuals, in which each "person" will cut his substantial link to his individual body and conceive itself as part of the new holistic Mind which lives and acts through him or her, what is obfuscated in such direct "naturalization" of the World Wide Web or market is the set of power relations—of political decisions, of institutional conditions—within which "organisms" like the Internet (or market or capitalism ...) can only thrive. We are dealing here with an all too fast metaphoric transposition of certain biological–evolutionist concepts to the study of the history of human civilization, like the jump from "genes" to "memes," i.e. the

idea that not only do human beings use language to reproduce themselves, multiply their power and knowledge, etc., but also, at perhaps a more fundamental level, language itself uses human beings to replicate and expand itself, to gain new wealth of meanings, etc.

The standard counter-argument the Cultural Studies proponents address to the Third Culture criticism is that the loss of the public intellectual bemoaned in these complaints is effectively the loss of a certain traditional type of (usually white and male) modernist intellectual: in our postmodernist era, he is replaced by the proliferation of theoreticians who operate in a different mode (replacing concern with one Big Issue with a series of localized strategic interventions) and effectively do address issues which concern the larger public (racism and multiculturalism, sexism, how to overthrow the Eurocentrist curriculum, etc.) and thus trigger public debates (like the "political correctness" or sexual harassment controversies). Although this answer is all too easy, the fact remains that themes addressed by Cultural Studies do stand in the centre of the public ideologico–political debates (hybrid multiculturalism versus the need for a close community identification; abortion and queer rights versus the Moral Majority fundamentalism; etc.), while the first thing which strikes the eyes apropos of the Third Culture is how their proponents, busy as they are clarifying the ultimate enigmas ("reading the mind of God," as Hawking once put it), silently pass over the burning questions which effectively occupy the centre stage of the current politico–ideological debates.

Finally, one should note that, in spite of the necessary distinction between science and ideology, the obscurantist New Age ideology is *an immanent outgrowth of modern science itself*—from David Bohm to Fritjof Capra, examples abound of different versions of "dancing Wu Li masters," teaching us about the Tao of physics, the "end of the Cartesian paradigm", the significance of the anthropic principle and the holistic approach, etc.[2] To avoid a misunderstanding, as an old fashioned dialectical materialist, I am opposed as ferociously as possible to these obscurantist appropriations of quantum physics and astronomy; what I only claim is that these obscurantist sprouts are not simply imposed from outside, but function as what Louis Althusser would have called a "spontaneous ideology" of scientists themselves, as a kind of spiritualist supplement to the predominant reductionist–proceduralist attitude of "only what can be precisely

defined and measured counts." What is much more worrying than the Cultural Studies' "excesses" are the New Age obscurantist appropriations of today's "hard" sciences which, in order to legitimize their position, invoke the authority of science itself ("today's science has outgrown the mechanistic materialism and points towards a new spiritual holistic stance . . ."). Significantly, the defenders of scientific realism like Bricmont and Sokal only briefly refer to some "subjectivist" formulations of Heisenberg and Bohr which can give rise to relativist/historicist misappropriations, qualifying them as the expression of their author's philosophy, not part of the scientific edifice of quantum physics itself. Here, however, problems begin: Bohr's and Heisenberg's "subjectivist" formulations are not a marginal phenomenon, but were canonized as "Copenhagen orthodoxy," i.e. as the "official" interpretation of the ontological consequences of quantum physics. The fact is that, the moment one wants to provide an ontological account of quantum physics (what notion of reality fits its results), paradoxes emerge which undermine the standard commonsense scientistic objectivism—this fact is constantly emphasized by scientists themselves, who oscillate between the simple suspension of the ontological question (quantum physics functions, so do not try to understand it, just do the calculations . . .) and different ways out of the deadlock (Copenhagen orthodoxy, the Many Worlds Interpretation, some version of the "hidden variable" theory which would save the notion of a single and unique objective reality, like the one proposed by David Bohm, but which nonetheless involves the paradoxes of its own, like the notion of causality which runs backwards in time).

The more fundamental problem beneath these perplexions is: can we effectively simply renounce the ontological question and limit ourselves to the mere functioning of the scientific apparatus, its calculations and measurements? A further impasse concerns the necessity to relate somehow scientific discoveries to everyday language, to translate them into it: it can be argued that problems emerge only when we try to translate the results of quantum physics back into our commonsense notions of reality—but is it possible to resist this temptation? All these topics are widely discussed in the literature on quantum physics, so they have nothing to do with the Cultural Studies's (mis)appropriation of

sciences—it was Richard Feynman himself who, in his famous statement, claimed that "nobody really understands quantum physics," implying that one can no longer translate its mathematical–theoretical edifice into the terms of our everyday life-world notions of reality. The impact of modern physics WAS the shattering of the traditional naive–realist epistemological edifice: sciences themselves opened up a gap in which obscurantist sprouts were able to grow, so, instead of putting all the scorn on the poor Cultural Studies, it would be much more productive to approach anew the old topic of the precise epistemological and ontological implications of the shifts in "hard" sciences themselves.

The impasse of historicism

On the other hand, the problem with Cultural Studies is that, at least in their predominant form, they DO involve a kind of cognitive suspension (the abandonment of the consideration of the inherent truth-value of the theory under consideration) characteristic of historicist relativism: when a typical Cultural Theorist deals with a philosophical or psychoanalytical edifice, the analysis focuses exclusively on unearthing its hidden patriarchal, Eurocentrist, identitarian, etc. "bias," without even asking the naive, but nonetheless necessary question: OK, but what IS the structure of the universe? How IS the human psyche "really" working? Such questions are not even taken seriously in Cultural Studies, since they simply tend to reduce them to the historicist reflection upon the conditions in which certain notions emerged as the result of historically specific power relations. Furthermore, in a typical rhetorical move, Cultural Studies denounce the very attempt to draw a clear line of distinction between, say, true science and pre-scientific mythology, as part of the Eurocentrist procedure to impose its own hegemony by means of the exclusionary discursive strategy of devaluing the Other as not-yet-scientific . . . In this way, we end up arranging and analyzing science proper, premodern "wisdom," and other forms of knowledge as different discursive formations evaluated not with regard to their inherent truth-value, but with regard to their socio–political status and impact (a native "holistic" wisdom can be thus considered much more "progressive" than the "mechanistic" Western science responsible for the

forms of modern domination). The problem with such a procedure of historicist relativism is that it continues to rely on a set of silent (non-thematized) ontological and epistemological presuppositions on the nature of human knowledge and reality: usually a proto-Nietzschean notion that knowledge is not only embedded in, but also generated by a complex set of discursive strategies of power (re)production, etc. So it is crucial to emphasize that, at this point, Lacan parts with the Cultural Studies historicism: for him, modern science is resolutely NOT one of the "narratives" in principle comparable to other modes of "cognitive mapping"—modern science *touches the real* in a way totally absent in premodern discourses.

Cultural Studies have to be put here in their proper context: since the demise of the great philosophical schools in the late 1970s, European academic philosophy itself, with its basic hermeneutical–historical stance, paradoxically shares with Cultural Studies the stance of cognitive suspension: excellent studies are recently produced on great past authors, yet they focus on the correct reading of the author in question, while mostly ignoring the naive, but unavoidable question of truth-value—not only "Is this the right reading of Descartes's notion of body? Is this what Descartes's notion of body has to repress in order to retain its consistency?" etc., but also "Which, then, IS the true status of the body? How do WE stand towards Descartes's notion of body?". And it seems as if these prohibited "ontological" questions are returning with a vengeance in today's Third Culture: what does the recent rise of quantum physics and cosmology signal if not a violent and aggressive rehabilitation of the most fundamental metaphysical questions (what is the origin and the putative end of the universe? etc.) The explicit goal of people like Hawking is a version of TOE (Theory Of Everything) i.e. the endeavour to discover the basic formula of the structure of the universe that one could print and wear on a T-shirt (or, for a human being, the genome that identifies what I objectively am). So, in clear contrast to the Cultural Studies' strict prohibition of direct "ontological" questions, the proponents of Third Culture unabashedly approach the most fundamental pre-Kantian meta-physical issues (the ultimate constituents of reality; the origins and end of the universe; what is consciousness; how did life emerge; etc.)—as if the old dream, which died with the demise of

Hegelianism, of a large synthesis of metaphysics and science, the dream of a global theory of ALL grounded in exact scientific insights, is coming alive again ...

In contrast to these two versions of cognitive suspension, the cognitivist approach opts for a naive direct inquiry into "the nature of things" (What is perception? How did language emerge?); however, to use the worn-out phrase, by throwing out the dirty water, it loses also the baby, i.e. the dimension of the proper philosophico–transcendental reflection. That is to say, is historicist relativism (which ultimately leads to the untenable solipsist position) really the only alternative to a naive realism (according to which, in the sciences and in our knowledge in general, we are gradually approaching the proper image of the way things really are out there, independently of our consciousness of them)? From the standpoint of a proper philosophical reflection, it can easily be shown that both these positions miss the properly transcendental–hermeneutical level. In what does this level consist? Let us take the classical line of realist reasoning which claims that the passage from premodern mythical thought to the modern scientific approach to reality cannot simply be interpreted as the replacement of one with another predominant "narrative"—the modern scientific approach definitely brings us closer to what "reality" (the "hard" reality existing independently of the scientific researcher) effectively is. A hermeneutic philosopher's basic response to this stance would be to insist that, with the passage from a premodern mythic universe to the universe of modern science, *the very notion of what "reality" (or "effectively to exist") means, of what "counts" as reality, has also changed*, so that we cannot simply presuppose a neutral external measure which allows us to judge that, with the modern science, we came closer to the "same" reality as that with which premodern mythology was dealing—as Hegel would have put it, with the passage from a premodern mythical universe to the modern scientific universe, the measure, the standard which we implicitly use or apply in order to measure how "real" is what we are dealing with, has itself undergone a fundamental change. The modern scientific outlook involves a series of distinctions (between "objective" reality and "subjective" ideas-impressions of it in the subject; between hard neutral facts and "values" that we, the judging subjects, impose onto the facts) which are *stricto sensu*

meaningless in the premodern universe. Of course, a realist can retort to this that that is the whole point, i.e. that only with the passage to the modern scientific universe did we get an appropriate notion of what "objective reality" is, in contrast to the premodern outlook which confused "facts" and "values"; against this, the transcendental–hermeneutic philosopher would be fully justified to insist that, nonetheless, we cannot get out of the vicious circle of presupposing our result: the most fundamental way reality "appears" to us, the most fundamental way we experience what "really counts as effectively existing," is always-already presupposed in our judgements on what "really exists." This transcendental level was very nicely indicated by Kuhn himself when, in his *Structure of Scientific Revolutions*, he claimed that the shift in a scientific paradigm is MORE than a mere shift in our (external) perspective on / perception of reality, but nonetheless LESS than our effectively "creating" another new reality. For that reason, the standard distinction between social or psychological contingent conditions of a scientific invention and its objective truth-value is too quick here: the least one can say about it is that the very distinction between the (empirical, contingent socio–psychological) genesis of a certain scientific formation and its objective truth-value, independent of the conditions of this genesis, already presupposes a set of distinctions (between genesis and truth-value, etc.) which are by no means self-evident. So, again, one should insist here that the hermeneutic–transcendental questioning of the implicit presuppositions in no way endorses the historicist relativism typical of Cultural Studies.

Knowledge and truth

In what, then, consists the ultimate difference between cognitivism and Cultural Studies? On the one hand, there is neutral objective knowledge, i.e. the patient empirical examination of reality: cognitivists like to emphasize that, politically, they are not against the Left—their aim is precisely to liberate the Left from the irrationalist–relativist–elitist, etc. postmodern fake; nonetheless, they accept the distinction between the neutral theoretical (scientific) insight and the eventual ideologico–political bias of its author. In contrast to this, Cultural Studies involve the properly dialectical

paradox of a Truth that relies on an engaged subjective position. This distinction between Knowledge inherent to the academic institution, defined by the standards of "professionalism," and, on the other hand, the Truth of a (collective) subject engaged in a struggle (elaborated, among others, by philosophers from Theodor Adorno to Alain Badiou), enables us to explain how the difference between cognitivists and Cultural Studies functions as a shibboleth: it is properly visible only from the side of Cultural Studies. So, on the one hand, one should fully acknowledge the solid scholarly status of much of the cognitivist endeavour—often, it is academia at its best; on the other hand, there is a dimension that simply eludes its grasp. Let me elaborate this relationship between Truth and the accuracy of knowledge by means of a marvelous thought experiment evoked by Dennett in his *Darwin's Dangerous Idea*: You and your best friend are about to be captured by hostile forces, who know English but do not know much about your world. You both know Morse code, and hit upon the following impromptu encryption scheme: for a dash, speak a truth; for a dot, speak a falsehood. Your captors, of course, listen to you two speak: "Birds lay eggs, and toads fly. Chicago is a city, and my feet are not made of tin, and baseball is played in August," you say, answering "No" (dash-dot; dash-dash-dash) to whatever your friend has just asked. Even if your captors know Morse code, unless they can determine the truth and falsity of these sentences, they cannot detect the properties that stand for dot and dash (Dennett, 1995:421). Dennett himself uses this example to make the point that meaning cannot be accounted for in purely syntactic inherent terms: the only way ultimately to gain access to the meaning of a statement is to situate it in its life-world context, i.e. to take into account its semantic dimension, the objects and processes to which it refers. My point is rather different: as Dennett himself puts it, in this case, the two prisoners use the world itself as a "one-time pad"—although the truth-value of their statements is not indifferent but crucial, it is not this truth-value as such, in itself, that matters; what matters is the translation of truth-value into a differential series of plus and minuses (dashes and dots) that delivers the true message in the Morse code. And is not something similar going on in the psychoanalytic process? Although the truth-value of the patient's statements is not indifferent, what really matters is not this truth-

value as such, but the way the very alternation of truths and lies discloses the patient's desire—a patient also uses reality itself (the way he relates to it) as a "one-time pad" to encrypt his desire. And, in the same way, Theory uses the very truth-value (accuracy) of post-theoretical knowledge as a medium to articulate its own truth-message.

On the other hand, the Politically Correct Cultural Studies often pay for their arrogance and lack of serious approach by confusing Truth (the engaged subjective position) and Knowledge, i.e. by disavowing the gap that separates them, by directly subordinating Knowledge to Truth (say, a quick socio-critical dismissal of a specific science like quantum physics or biology without proper acquaintance with the inherent conceptual structure of this field of Knowledge). Effectively, the problem of Cultural Studies is often the lack of specific disciplinary skills: a literary theorist without proper knowledge of philosophy can write disparaging remarks on Hegel's phallogocentrism, on film, etc.—we are dealing with a kind of false universal critical capacity to pass judgements on everything, without proper knowledge. With all its criticism of traditional philosophical universalism, cultural studies effectively function as a kind of *ersatz*-philosophy. Notions are thus transformed into ideological universals: in postcolonial studies, the notion of "colonization" starts to function as a hegemonic notion, is elevated into a universal paradigm, so that, in relations between sexes, the male sex colonizes the female sex, upper classes colonize lower classes. Especially with some "progressive" interpreters of contemporary biology, it is popular to focus on the way the opposing positions are overdetermined by the politico-ideological stance of their authors: does Dawkins' "Chicago gangster theory of life," this reductionist determinist theory about "selfish genes" caught in the deadly struggle for survival, not express the stance of a bourgeois individualist competitive society? Is Gould's emphasis on sudden genetic change and ex-aptation not a sign of a more supple, dialectical and "revolutionary" Leftist stance of its author? Do not those (like Lynn Margulis) who emphasize spontaneous cooperation and emergent order, express the longing for a stable organic order, for the Society as a "corporate body"? Do we thus not have here the scientific expression of the basic triad of Right, Centre and Left: of the organicist conservative notion of society as a Whole, of

the bourgeois individualist notion of society as the space of the competition between individuals, and of the revolutionary theorist of sudden change? (Of course, the insistence on a holistic approach and an emergent order can be given a different accent: it can display the conservative longing for a stable order, or the progressive utopian belief in a new society of solidaristic cooperation in which order grows spontaneously from below and is not imposed from above.) The standard form of the opposition is the one between the "cold" mechanicist probing into causality, displaying the attitude of the scientific manipulator in the service of the exploitative domination over nature, and the new "holistic" approach focused on the spontaneously emergent order and cooperation, pointing towards what Andrew Ross called a "kindler, gentler science". The mistake here is the same as that of Stalinist Marxism which opposed "bourgeois" to "proletarian" science, or that of the pseudo-radical feminism which opposes "masculine" to "feminine" discourse as two self-enclosed Wholes engaged in warfare: we do not have TWO sciences, but ONE universal science split from within, i.e. caught in the battle for hegemony.[3]

Theoretical state apparatuses

The academically recognized "radical thought" in the liberal West does not operate in a void, but is a part of the social relations of power. Apropos of Critical Studies, one has to ask again the old Benjaminian question: not how do they explicitly *relate to* power, but how are they themselves *situated within* the predominant power relations. Do not Cultural Studies also function as a discourse which pretends to be critically self-reflective, rendering visible the predominant power relations, while it effectively obfuscates its own mode of participating in them? So it would be productive to apply to Cultural Studies themselves the Foucauldian notion of the productive "bio-power" as opposed to the "repressive"/prohibitory legal power: what if the field of Cultural Studies, far from effectively threatening today's global relations of domination, fits perfectly their framework, in the same way sexuality and the "repressive" discourse that regulates it are fully complementary? What if the criticism of patriarchal/identitarian ideology betrays an ambiguous fascination with it, rather than an effective will to

undermine it? There is a way to AVOID responsibility and/or guilt precisely by emphasizing in an exaggerated way one's responsibility or too readily assuming guilt, as in the case of the white male politically correct academic who emphasizes the guilt of racist phallogocentrism, and uses this admission of guilt as a stratagem NOT to confront the way he as a "radical" intellectual perfectly fits the existing power relations towards which he pretends to be thoroughly critical. Crucial here is the shift from English to American cultural studies: even if we find in the two the same themes, notions, etc., the socio–ideological functioning is thoroughly different, we shift from an engagement with effective working class culture to the academic radical chic.

However, in spite of these critical remarks, the very fact of *resistance* against Cultural Studies proves that they remain a foreign body unable to fit fully into the existing academia: cognitivism is ultimately the attempt of the standard functioning of academic knowledge—"professional," rational, empiricist, problem-solving ... theory—to reoccupy the terrain, to get rid of this intruder. The distinction between cognitivism and Cultural Studies is thus not simply the distinction between two doctrines or two theoretical approaches; it is ultimately a much more radical distinction between two totally different modalities or, rather, PRACTICES of knowledge, inclusive of two different institutional apparatuses of knowledge. This dimension of "theoretical state apparatuses," to use the Althusserian formulation, is crucial: if we do not take it into account, we simply miss the point of the antagonism between cognitivism and Cultural Studies. No wonder that cognitivists like to emphasize their opposition to psychoanalysis: two exemplary cases of such non-academic knowledge are, of course, Marxism and psychoanalysis. Psychoanalysis differs from cognitivist psychology and psychotherapy in at least three crucial respects: (1) since it does not present itself as empirically tested objective knowledge, there is the perennial problem (in the States in which psychiatric care is covered by medical insurance) of the extent to which the state or insurance will reimburse the patient; (2) for the same reason, psychoanalysis has inherent difficulties in integrating itself into the academic edifice of psychology or medical psychiatry departments, so it usually functions as a parasitic entity which errs around, attaching itself either to psychology departments or to Cultural

Studies or Complit departments; (3) as to their inherent organization, psychoanalytic communities do not function as "normal" academic societies (like sociological, mathematical societies etc.); they function in a way which, from the standpoint of "normal" academic societies, cannot but appear as a "dogmatic" discipline engaged in eternal factional struggles between sub-groups dominated by a strong authoritarian or charismatic leader—conflicts are not resolved through rational argumentation and empirical testing, resembling more sectarian religious struggles ... in short, the phenomenon of (personal) transference functions here in a wholly different way than in the "standard" academic community. (In a slightly different way, the same goes for Marxism.) In the same way that Marxism interprets the resistance against its insights as the "result of the class struggle in theory," as accounted for by its very object, psychoanalysis also interprets the resistance against itself as the result of the very unconscious processes that are its topic—in both cases, theory is caught in a self-referential loop, it is in a way *a theory about the resistance against itself*. Concerning this crucial point, the situation is today entirely different, almost the opposite, of that of the 1960s and early 1970s when "marginal" disciplines (like the Cultural Studies version of psychoanalysis) were perceived as "anarchic," as liberating us from the "repressive" authoritarian regime of the standard academic discipline: what cognitivist critics of Cultural Studies play upon is the common perception that, today, (what remains of) the Cultural Studies version of psychoanalysis is perceived as sectarian, "Stalinist," authoritarian, engaged in ridiculous pseudo-theological factional struggles in which the problems of the Party line prevail over open empirical research and rational argumentation, while they present themselves as the fresh air that does away with this closed and stuffy atmosphere—finally, one is free to formulate and test different hypotheses, no longer "terrorized" by some dogmatically imposed global Party line. We are thus far from the anti-academic-establishment logic of the 1960s: today, academia presents *itself* as the place of open free discussion, as liberating us from the stuffy constraints of "subversive" Critical Studies. And although, of course, the "regression" into authoritarian prophetic discourse is one of the dangers that threatens Cultural Studies, its inherent temptation, one should nonetheless focus attention on how the cognitivist stance succeeds

in unproblematically presenting the framework of the institutional academic university discourse as the very locus of intellectual freedom.

II Is freedom nothing but a conceived necessity?

You cannot, because you should not!

So how does Lacanian theory enable us to avoid the impasse of Cultural Studies and to confront the challenge of the cognitivist and/or evolutionary naturalization of the human subject? In Andrew Niccol's futuristic thriller *Gatacca* (1998), Ethan Hawke and Uma Thurman prove their love for each other by throwing away the hair offered by the partner to be analyzed in order to establish his/her genetic quality. In this futuristic society, authority (the privileged elite) is established "objectively," through genetic analysis of the newborn—we no longer have the symbolic authority proper, authority is directly grounded in the real of the genome. As such, *Gatacca* merely extrapolates the prospect, opened up today, of the direct legitimization of social authority and power in the real of the genetic code: "by eliminating artificial forms of inequality, founded on power and culture, [socially egalitarian programmes] could eventually highlight and crystallize natural forms of inequality far more dramatically than ever before, in a new hierarchical order founded on the genetic code" (Anderson, 1998:76). Against this prospect, it is not enough to insist that the democratic principle of what Etienne Balibar calls *egaliberte* has nothing to do with genetic–biological similarity of human individuals, but aims at the principal equality of subjects *qua* participants in the symbolic space. The dilemma *Gatacca* confronts us with is: is the only way to retain our dignity as a human person to accept some limitation, to stop short of full insight into our genome, short of our full naturalization—a gesture of "I do not want to know what you objectively-really are, I accept you for what you are . . ."?

Among the modern philosophers, it was Kant who most forcefully confronted this predicament, constraining our knowledge of the causal interconnection of objects to the domain of phenomena in order to make space for noumenal freedom, which is why the

hidden truth of Kant's *Du kannst, denn du sollst!* is its reversal *You cannot, because you should not!* The ethical problems of cloning seem to point in this direction: the argument of those who oppose cloning is that we *should not* pursue it, at least not on human beings, because it is *not possible* to reduce a human being to a positive entity whose innermost psychic properties can be manipulated—biogenetic manipulation *cannot* touch the core of human personality, so we should *prohibit* it. Is this not another variation on Wittgenstein's paradox of *prohibiting the impossible*—"Wovon man nicht sprechen *kann*, davon *muss* man schweigen"? The underlying fear that gains expression in this prohibition, of course, is that the order of reason is actually obverse, i.e. that the ontological impossibility is grounded in ethics: we should claim that we cannot do it, because otherwise *we may well do it*, with catastrophic ethical consequences. If the conservative Catholics effectively believe in the immortality of the human soul, in the uniqueness of human personality, in how I am not just the result of the interaction between my genetic code and my environs, then why do they oppose cloning and genetic manipulations? In other words, is it not that *these Christian opponents of cloning themselves secretly believe in the power of scientific manipulation, in its capacity to stir up the very core of our personality*? Of course, their answer would be that, by treating himself as just the result of the interaction between his genetic code and his environs, man freely renounces his dignity: the problem is not genetic manipulation as such but the fact that its acceptance signals how man conceives of himself as just another biological machine and thus robs himself of his unique spirituality. However, the answer to this is, again: but why should we not endorse genetic manipulation AND simultaneously insist that human persons are free responsible agents, since we accept the proviso that these manipulations do not really affect the core of our Soul? Why do Christians still talk about the "unfathomable mystery of the conception" man should not meddle with, as if, nonetheless, by pursuing our biogenetic explorations, we may touch some secret better left in the shadow—in short, as if, by cloning my body, *I at the same time also clone my immortal Soul* . . .?

So, again, are we back at the well-known conservative wisdom which claims that the only way to save human freedom and ethical dignity is to restrain our cognitive capacities and renounce probing

too deeply into the nature of things? Today's sciences themselves seem to point towards a way out of this predicament: is it not that contemporary cognitivism often produces formulations that sound uncannily familiar to those acquainted with different versions of ancient and modern philosophy, from the Buddhist notion of the Void and the German Idealist notion of reflexivity constitutive of the subject up to the Heideggerian notion of "being-in-the-world" or the deconstructionist notion of *différance*? The temptation arises here to fill in the gap by either reducing philosophy to science, claiming that modern naturalizing cognitivism "realizes" philosophical insights, translating them into acceptable scientific form, or, on the contrary, by claiming that, with these insights, postmodern science breaks out of the "Cartesian paradigm" and approaches the level of authentic philosophical thought. This short-circuit between science and philosophy appears today in a multitude of guises: Heideggerian cognitivism (Hubert Dreyfus), cognitivist Buddhism (Francisco Varela), the combination of Oriental thought with quantum physics (Capra's "Tao of physics"), up to deconstructionist evolutionism. Let's take a brief look at its two main versions.

1. DECONSTRUCTIONIST EVOLUTIONISM

There are obvious parallels between the recent popularized readings of Darwin (from Gould to Dawkins and Dennett) and Derridean deconstruction: does Darwinism not practice a kind of "deconstruction" not only of natural teleology, but also of the very idea of Nature as a well-ordered positive system of species? Does the strict Darwinian notion of "adaptation" not claim that, precisely, *organisms do not directly "adapt,"* that there is *stricto sensu* no "adaptation" in the teleological sense of the term: contingent genetic changes occur, and some of them enable some organisms to function better and survive in an environment which is itself fluctuating and articulated in a complex way (there is no linear adaptation to a stable environment: when something unexpectedly changes in the environment, a feature which hitherto prevented full "adaptation" can suddenly become crucial for the organism's survival). So Darwinism effectively prefigures a version of Derridean *différance* or of the Freudian *Nachtraeglichgkeit*: contingent and meaningless genetic changes are retroactively used (or "exapted," as Gould would have put it) for survival. In other

words, what Darwin provides is a model explanation of how a state of things which appears to involve a well-ordered teleological economy (animals doing things "in order to ..."), is effectively the outcome of a series of meaningless changes—the temporality is here that of *futur anterieur*, i.e. "adaptation" is something that always and by definition "will have been." And is this enigma of how (the semblance of) teleological and meaningful order can emerge from contingent and meaningless occurrences not also central to deconstruction?

One can thus effectively claim that Darwinism (of course, in its true radical dimension, not as a vulgarized evolutionism) "deconstructs" not only teleology or divine intervention in nature, but also the very notion of nature as a stable positive order—which makes all the more enigmatic the silence of deconstruction about Darwinism, the absence of deconstructionist attempts to "appropriate" it. In his *Consciousness Explained*, Dennett himself, the great proponent of cognitivist evolutionism, (ironically, no doubt, but nonetheless with an underlying serious intent) acknowledges the closeness of his "pandemonium" theory of human mind to Cultural Studies deconstructionism: "Imagine my mixed emotions when I discovered that before I could get my version of [the idea of the Self as the Center of Narrative Gravity] properly published in a book, it had already been satirized in a novel, David Lodge's *Nice World*. It is apparently a hot theme among the deconstructionists" (Dennett, 1991:410). Furthermore, a whole school of cyberspace-theorists (best known among them is Sherry Turkle) advocate the notion that cyberspace-phenomena render palpable in our everyday experience the deconstructionist "decentreed subject": one should endorse the "dissemination" of the unique Self into a multiplicity of competing agents, into a "collective mind", a plurality of self-images without a global coordinating centre, which is operative in cyberspace, and disconnect it from its pathological trauma—playing in virtual spaces enables me to discover new aspects of "me", a wealth of shifting identities, of masks without a "real" person behind, and thus to experience the ideological mechanism of the production of Self, the immanent violence and arbitrariness of this production/construction.

However, the temptation to be avoided here is precisely the hasty conclusion that Dennett is a kind of deconstructionist wolf in

the sheep's clothing of empirical science: there is a gap which forever separates Dennett's evolutionary naturalization of consciousness from the deconstructionist "meta-transcendental" probing into the conditions of (im)possibility of philosophical discourse. As Derrida (1971) develops exemplarily in his "White Mythology," it is not sufficient to claim that "all concepts are metaphors," that there is no pure epistemological cut, since the umbilical cord connecting abstract concepts with everyday metaphors is irreducible. First, the point is not simply that "all concepts are metaphors," but that the very difference between a concept and a metaphor is always minimally metaphorical, relying on some metaphor. Even more important is the opposite conclusion: the very reduction of a concept to a bundle of metaphors already has to rely on some implicit PHILOSOPHICAL, CONCEPTUAL determination of the difference between concept and metaphor, that is to say, on the very opposition it tries to undermine.[4] We are thus forever caught in a vicious circle: true, it is impossible to adopt a philosophical stance delivered from the constraints of everyday naive life-world attitudes and notions; however, although *impossible*, this philosophical stance is at the same time *unavoidable*. Derrida makes the same point apropos of the well-known historicist thesis that the entire Aristotelian ontology of the ten modes of being is an effect/expression of Greek grammar: the problem is that *this reduction of ontology (of ontological categories) to an effect of grammar presupposes a certain notion (categorical determination) of the relationship between grammar and ontological concepts which is itself already metaphysical-Greek.*[5]

We should always bear in mind this delicate Derridean stance on account of which he avoids the twin pitfalls of naive realism as well as of direct philosophical foundationalism: "philosophical foundation" of our experience is IMPOSSIBLE, and yet NECESSARY—although all we perceive, understand, articulate, is, of course, overdetermined by a horizon of pre-understanding, this horizon itself remains ultimately impenetrable. Derrida is thus a kind of meta-transcendentalist, in search of the conditions of possibility of philosophical discourse itself—if we miss this precise way of how Derrida undermines philosophical discourse FROM WITHIN, we reduce "deconstruction" to just another naive historicist relativism. Derrida's position is thus here the opposite of Foucault who, in

answer to a criticism that he speaks from a position whose possibility is not accounted for within the framework of his theory, cheerfully retorted: "These kinds of questions do not concern me: they belong to the police discourse with its files constructing the subject's identity!" In other words, the ultimate lesson of deconstruction seems to be that one cannot postpone *ad infinitum* the *ontological* question, and what is deeply symptomatic in Derrida is his oscillation between, on the one hand, a hyper-selfreflective approach which denounces in advance the question of "how things really are" and limits itself to third-level deconstructive comments on the inconsistencies of philosopher B's reading of philosopher A, and, on the other hand, direct "ontological" assertions about how *différance* and arche-trace designate the structure of all living things and are as such operative already in animal nature. One should not miss here the paradoxical interconnection of these two levels: the very feature which prevents us forever from grasping directly our intended object (the fact that our grasping is always refracted, "mediated", by a decentred otherness) is the feature which connects us with the basic proto-ontological structure of the universe.

Deconstructionism thus involves two prohibitions: it prohibits the "naive" empiricist approach ("let us examine carefully the material in question and then generalize hypotheses about it ..."), as well as global nonhistorical metaphysical theses about the origin and structure of the universe. This double prohibition that defines deconstructionism clearly and unambiguously bears witness to its Kantian transcendental philosophical origins: is not the same double prohibition characteristic of Kant's philosophical revolution? On the one hand, the notion of the transcendental constitution of reality involves the loss of a direct naive empiricist approach to reality; on the other hand, it involves the prohibition of metaphysics, i.e. of the all-encompassing world-view providing the noumenal structure of the Whole universe. In other words, one should always bear in mind that, far from simply expressing a belief in the constitutive power of the (transcendental) subject, Kant introduces the notion of the transcendental dimension in order to answer the fundamental and insurpassable *deadlock* of human existence: a human being compulsorily strives towards a global notion of truth, of a universal and necessary cognition, yet this cognition is simultaneously forever inaccessible to him.

2. COGNITIVIST BUDDHISM

Is the outcome any better in the emerging alliance between a cognitivist approach to mind and proponents of Buddhist thought, where the point is not to naturalize philosophy, but rather the opposite one, i.e. to use the results of cognitivism in order to (re)gain access to ancient wisdom? The contemporary cognitivist denial of the unitary, stable, self-identical Self, i.e. the notion of human mind as the pandemonic playground of multiple agencies, which some authors (like, exemplarily, Francisco Varela[6]) link to the Buddhist denial of the Self as the permanent substance underlying our mental acts-events, seems persuasive in its critical rejection of the substantial notion of Self. The paradox on which cognitivists and neo-Buddhists build is the gap between our common experience that automatically relies on and/or involves a reference to some notion of Self as the underlying substance which "has" feelings, volitions, etc., to which these mental states and acts "happen," and the fact, well known even in Europe at least from Hume onwards, that, no matter how deeply and in how much detail we search our self-experience, we encounter only passing, elusive mental events, never the Self as such, i.e. a substance to which these events could be attributed. The conclusion drawn by cognitivists as well as by Buddhists is, of course, that the notion of Self is the result of an epistemological (or, in the case of Buddhism, ethico–epistemological) mistake inherent to human nature as such: the thing to do is to get rid of this delusive notion and to fully assume that there is no Self, that "I" am nothing but the groundless bundle of elusive and heterogeneous (mental) events.

Is, however, this conclusion really unavoidable? Varela also rejects the Kantian solution of the Self, the subject of pure apperception, as the transcendental subject nowhere to be found in our empirical experience. Here, though, one should introduce the distinction between egoless/selfless mind events or aggregates and the subject as identical to this void, to this lack of substance, itself. What if the move from the fact that there is no representation or positive idea of Self to the notion that there is no Self is too quick? What if Self is precisely the "I of the storm," the void in the centre of the incessant vortex/whirlpool of elusive mental events: something like the "vacuola" in biology, the void around which mental events

circulate, the void which is nothing in itself, which has no substantial positive identity, but which nonetheless serves as the irrepresentable point of reference, as the "I" to which mental events are attributed. In Lacanian terms, one has to distinguish between "Self" as the pattern of behavioral and other imaginary and symbolic identifications, as the "self-image," as that which I perceive myself to be, and the empty point of pure negativity, the "barred" subject ($). Varela himself comes close to this when he distinguishes between (1) the Self *qua* the series of mental and bodily formations that has a certain degree of causal coherence and integrity through time; (2) the capitalized Self *qua* the hidden substantial kernel of the subject's identity (the "ego-self"); and, finally, (3) the desperate craving/grasping of the human mind for/to the Self, for/to some kind of firm bedrock—is, however, from the Lacanian perspective, this "endless craving" not *the subject itself*, the void that "is" subjectivity?

Neo-Buddhists are justified in criticizing cognitivist proponents of the "society of mind" notion for endorsing the irreducible split between our scientific cognition (which tells us that there is no Self or free will) and the everyday experience in which we simply cannot function without presupposing the consistent Self endowed with free will—cognitivists thus condemn themselves to a nihilistic stance of endorsing beliefs they know are wrong. The effort of neo-Buddhists is to bridge this gap by translating/transposing the very insight that there is no substantial Self into our daily human experience (this is what ultimately Buddhist meditative reflection is about). When Jackendoff, author of one of the ultimate cognitivist attempts to explain consciousness, suggests that our awareness–consciousness emerges from the fact that we are, precisely, NOT aware of the way awareness–consciousness itself is generated by worldly processes (there is consciousness only in-so-far as its biological–organic origins remain opaque)[7], he comes very close to the Kantian insight that there is self-consciousness, that I think, only in-so-far as *das "Ich oder Er oder Es (das Ding), welches denket"* remains impenetrable for me. Varela's counterargument that there is a confusion in Jackendoff's reasoning (these processes we are unaware of are just that—processes which are not part of our daily human experience but totally beyond it, hypostasized by the cognitivist scientific practice[8]) thus misses the point: this inaccessibility of the substantial–natural Self (or, rather, of its substantial-

natural base to my Self) IS part of our daily non-scientific experience, precisely in the guise of our ultimate failure to find a positive element in our experience that would directly "be" our Self (the experience, formulated already by Hume, of how no matter how deeply we analyse our mental processes, we never find anything that would be our Self). So what if one should here apply to Varela the joke about a madman who was looking for his lost key under a street light and not in the dark corner where he effectively lost it, because it is easier to search under the light? What if we are looking for the Self in the wrong place, in the false evidence of positive empirical facts?

The inaccessible phenomenon

Our conclusion is thus that there is effectively no way to overcome the abyss that separates the transcendental *a priori* horizon from the domain of positive scientific discoveries: on the one hand, the standard "philosophical reflection of science" (positive sciences "do not think," they are unable to reflect upon the horizon of their pre-understanding, accessible only to philosophy) more and more resembles an old automatic trick losing its efficiency; on the other hand, the idea that some "postmodern" science will attain the level of philosophical reflection (say, that quantum physics, by including the observer in the observed material objectivity, breaks out of the frame of scientific objectivism/naturalism and reaches the level of the transcendental constitution of reality) clearly misses the proper level of transcendental *a priori*.

It is true that modern philosophy is in a way "on the defensive" against the onslaught of science: Kant's transcendental turn is linked to the rise of modern science not only in the obvious way (providing the *a priori* of Newtonian physics), but in the more radical way of taking into account how, with the rise of modern empirical science, a direct metaphysical Theory of Everything is no longer viable, cannot be combined with science. So the only thing philosophy can do is to "phenomenalize" scientific knowledge and then to provide its *a priori* hermeneutic horizon—all this based on the ultimate inscrutability of the universe and man. It was already Adorno who emphasized the thorough ambiguity of Kant's notion of transcendental constitution: far from simply asserting the

subject's constitutive power, it can also be read as the resigned acceptance of the *a priori* LIMITATION of our approach to the real. And it is our contention that, if we think to the end the consequences of this notion of the transcendental subject, we can nonetheless avoid this debilitating deadlock and "save freedom"—how? By way of reading this deadlock as its own solution, i.e. by way of, yet again, displacing the epistemological obstacle into a positive ontological condition.

To avoid a misunderstanding: we are not aiming here at the illegitimate short-circuits in the style of "the ontological undecidability of the quantum fluctuation grounds human freedom," but with a much more radical pre-ontological openness/gap, a "bar" of impossibility, in the midst of "reality" itself. What if THERE IS NO "UNIVERSE" in the sense of an ontologically fully constituted cosmos? That is to say, the mistake of identifying (self)consciousness with misrecognition, with an epistemological obstacle, is that it stealthily (re)introduces the standard, premodern, "cosmological" notion of reality as a positive order of being: in such a fully constituted positive "chain of being," there is, of course, no place for the subject, so the dimension of subjectivity can only be conceived of as something which is strictly codependent with the epistemological misrecognition of the true positivity of Being. Consequently, the only way effectively to account for the status of (self)consciousness is to assert *the ontological incompleteness of "reality" itself*: there is "reality" only in-so-far as there is an ontological gap, a crack, in its very heart. It is only this gap which accounts for the mysterious "fact" of transcendental freedom, i.e. for a (self)consciousness which is effectively "spontaneous," whose spontaneity is not an effect of misrecognition of some "objective" causal process, no matter how complex and chaotic this process is. And where does *psychoanalysis* stand with regard to this deadlock? In a first approach, it may seem that psychoanalysis is the ultimate attempt to fill in the gap, to reestablish the complete causal chain that generated the "inexplicable" symptom. However, does Lacan's strict opposition between cause and the law (of causality) not point in a wholly different direction?

> Cause is to be distinguished from that which is determinate in a chain, in other words from the *law*. By way of example, think of

> what is pictured in the law of action and reaction. There is here, one might say, a single principle. One does not go without the other. / .../ There is no gap here /.../ Whenever we speak of cause, on the other hand, there is always something anti-conceptual, something indefinite. /.../ In short, there is a cause only in something that doesn't work. /.../ the Freudian unconscious is situated at that point, where, between cause and that which it affects, there is always something wrong. The important thing is not that the unconscious determines neurosis—of that one Freud can quite happily, like Pontius Pilate, wash his hands. Sooner or later, something would have been found, humoral determinates, for example—for Freud, it would be quite immaterial. For what the unconscious does is to show the gap through which neurosis recreates a harmony with a real—a real that may well not be determined. [Lacan, 1978:22]

The unconscious intervenes when something "goes wrong" in the order of causality that encompasses our daily activity: a slip of tongue introduces a gap in the connection between intention-to-signify and words, a failed gesture frustrates my act. However, Lacan's point is, precisely, that psychoanalytic interpretation does not simply fill in this gap by way of providing the hidden complete network of causality that "explains" the slip: the cause whose "insistence" interrupts the normal functioning of the order of causality is not another positive entity; as Lacan emphasizes, it rather belongs to the order of the *non-realized*, thwarted, i.e. *it is in itself structured as a gap*, a void insisting indefinitely on its fulfillment. (The psychoanalytic name for this gap, of course, is death drive, while its philosophical name in German Idealism is "abstract negativity", the point of absolute self-contraction which constitutes the subject as the void of pure self-relating.)

And the psychoanalytic notion of *fantasy* is precisely the name for the illusory/failed attempt to fill in this ontological gap. The basic paradox of the Freudian notion of *fantasy* resides in the fact that it subverts the standard opposition of "subjective" and "objective": of course, fantasy is by definition not "objective" (in the naive sense of "existing independently of the subject's perceptions"); however, it is also not "subjective" (in the sense of being reducible to the subject's consciously experienced intuitions). Fantasy rather belongs to the "bizarre category of the objectively subjective—the way things actually, objectively seem to you even if

they don't seem that way to you" (Dennett, 1991:132).[9] When for example, the subject actually experiences a series of fantasmatic formations which interrelate as so many permutations of each other, this series is never complete: it is always as if the actually experienced series presents so many variations of some underlying "fundamental" fantasy which is *never* actually experienced by the subject. (In Freud's "Ein Kind wird geschlagen," the two consciously experienced fantasies presuppose and thus relate to a third one, "My father is beating me," which was never actually experienced and can only be retroactively reconstructed as the presupposed reference of—or, in this case, the intermediate term between—the other two fantasies.) One can even go further and claim that, in this sense, the Freudian unconscious itself is "objectively subjective": when, for example, we claim that someone who is consciously well disposed towards Jews, nonetheless harbors profound anti-Semitic prejudices he is not consciously aware of, do we not claim that (in-so-far as these prejudices do not render the way Jews really are, but the way they appear to him) *he is not aware how Jews really seem to him*?

Furthermore, does this not allow us to throw new light on the mystery of the Marxian *Warenfetischismus*? What the fetish objectivizes is "my true belief," the way things "truly seem to me," although I never effectively experience them this way—Marx himself uses here the term "*objektiv-notwendiges Schein*." So, when a critical Marxist encounters a bourgeois subject immersed in *Warenfetischismus*, the Marxist's reproach to him is not "Commodity may seem to you a magical object endowed with special powers, but it really is just a reified expression of relations between people"; the actual Marxist's reproach is rather "You may think that the commodity appears to you as a simple embodiment of social relations (that, for example, money is just a kind of voucher entitling you to a part of the social product), but *this is not how things really seem to you*—in your social reality, by means of your participation in social exchange, you bear witness to the uncanny fact that a commodity really appears to you as a magical object endowed with special powers".

This is also one of the ways of specifying the meaning of Lacan's assertion of the subject's constitutive "decentrement": its point is not that my subjective experience is regulated by objective

unconscious mechanisms that are "decentred" with regard to my self-experience and, as such, beyond my control (a point asserted by every materialist), but rather something much more unsettling—I am deprived of even my most intimate "subjective" experience, the way things "really seem to me," that of the fundamental fantasy that constitutes and guarantees the core of my being, since I can never consciously experience it and assume it. According to the standard view, the dimension that is constitutive of subjectivity is that of the phenomenal (self)experience—I am a subject the moment I can say to myself: "No matter what unknown mechanism governs my acts, perceptions and thoughts, nobody can take from me what I see and feel now." Say, when I am passionately in love, and a biochemist informs me that all my intense sentiments are just the result of biochemical processes in my body, I can answer him by clinging to the appearance: "All that you're saying may be true, but, nonetheless, nothing can take from me the intensity of the passion that I am experiencing now . . ." Lacan's point, however, is that the psychoanalyst is the one who, precisely, CAN take this from the subject, i.e. his ultimate aim is to deprive the subject of the very fundamental fantasy that regulates the universe of his (self)-experience. The Freudian "subject of the unconscious" emerges only when a key aspect of the subject's *phenomenal* (self)experience (his "fundamental fantasy"), becomes *inaccessible* to him, i.e. is "primordially repressed". At its most radical, the unconscious is the *inaccessible phenomenon*, not the objective mechanism that regulates my phenomenal experience. So, in contrast to the commonplace that we are dealing with a subject the moment an entity displays signs of "inner life," i.e. of a fantasmatic self-experience that cannot be reduced to external behavior, one should claim that what characterizes human subjectivity proper is rather the gap that separates the two, i.e. the fact that fantasy, at its most elementary, becomes inaccessible to the subject; it is this inaccessibility that makes the subject "empty" ($). We thus obtain a relationship that totally subverts the standard notion of the subject who directly experiences himself, his "inner states": an "impossible" relationship between the *empty, non-phenomenal subject* and the *phenomena that remain inaccesible to the subject*—the very relation registered by Lacan's formula of fantasy, $\$\Diamond a$.

Geneticists predict that in about 10 to 15 years, they will be able

to identify and manipulate each individual's exact genome. Potentially, at least, each individual will thus have at his disposal the complete formula of what he or she "objectively is." How will this "knowledge in the real," the fact that I will be able to locate and identify myself completely as an object in reality, affect the status of subjectivity? Will it lead to the end of human subjectivity? Lacan's answer is negative: what will continue to elude the geneticist is not my phenomenal self-experience (say, the experience of passionate love that no knowledge of the genetic and other material mechanisms determining it can take from me), but the "objectively subjective" fundamental fantasy, the fantasmatic core inaccessible to my conscious experience. Even if science formulates the genetic formula of what I objectively am, it will still be unable to formulate my "objectively subjective" fantasmatic identity, this objectal counterpoint to my subjectivity, which is neither subjective (experienced) nor objective.

Notes

1. See "Introduction," in Brockman (1996).
2. See, as one among the thousand of paradigmatic passages: "Is there, as David Bohm says, an 'implicate order' to matter that is beyond our present comprehension and presumes a 'wholeness' to all things? Can we conceive of a 'tao of physics', as Fritjof Capra's million-selling book terms it, in which Eastern philosophies parallel the mind-wrenching paradoxes of the quantum world?" (Kane, 1998:78–79).
3. It is interesting to note how the opposition of "hard" science, whose conceptual structure embodies the stance of domination, and "gentle" science bent on collaboration etc., comes dangerously close to the New Age ideology of two mental universes, masculine and feminine, competitive and cooperative, rational-dissecting and intuitive-encompassing. In short, we come dangerously close to the premodern sexualization of the universe which is conceived of as the tension between the two principles, Masculine and Feminine.
4. See Derrida (1971).
5. See "Le supplement de la copule," in Derrida (1972).
6. See Varela et al. (1993).
7. See Jackendoff (1987).
8. See Varela et al. (1993:126).

9. Dennett, of course, evokes this concept in a purely negative way, as a nonsensical *contradictio in adjecto*.

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JASON GLYNOS & YANNIS STAVRAKAKIS

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