Benjamin Joseph Bishop

TOPOLOGY AND THE INSCRIPTION OF THE CLINIC

Perhaps the most pressing challenge for anyone who attempts to construct an analytic practice with the material and means of mathematics is to justify the relation the two fields share with one another. Put otherwise, what exactly does topology have to do with psychoanalysis? This special issue of *S* responds to this question with essays by individuals who have, since Lacan's late seminars, established analytic practices and advanced a theory of topology in one of the few places left where suffering is still addressed, the clinic of psychoanalysis. This introduction attempts to isolate the clinical significance of these essays by responding to this question with a non-sardonic, though curtly punctuated, "nothing whatsoever." Topology and analysis bear a non-relation whose disjunction refuses any mimesis between clinical problems and topological objects, exposing the clinic to a real that reorients the approach to the symptom from a therapy of treatment to work of inscription.

But still, why topology? How, for example, may Lacan identify psychosis in something so seemingly un-psychoanalytic as the trefoil knot? The practice of reading and writing that topology requires uncovers an impossibility of identifying this clinical structure with the smallest non-trivial knot through the perception of a similarity of properties. That is to say, if one attempts to identify psychosis through an intuition, then he may find himself looking at the object for a very long time. For the trefoil and psychosis quite literally and actually look *nothing alike*. Indeed, the work of topology cuts through such a stare by requiring a material intervention on the part of the participant in order read and recognize the structure of the knot before presuming to locate that structure in something so complicated as psychosis. Whether or not such an identification between psychosis and the trefoil is possible, it is important to note that a perseveration of structure between the two cannot be mapped out by an intuition of likeness and similarity. Topology, if anything, demands a more precise work of analysis than one carried out by imitation.

Already then the analytic effects of working with things like knots, links and locks would seem to occur outside of an aesthetics secured by mimesis. Topology

is supported by a materiality whose plasticity functions according to the matheme, and whose legibility neither reduces to a concept of the beautiful, as determined by a *sensus communis,* nor becomes upended in the incalculability of the sublime. Though many of these figures are aesthetically pleasing and perhaps captivating, it is important to recognize that topology is not, in its final instance, a matter of aesthetic appreciation. Whereas aesthetics secures its principles and objects of inquiry, at least in the Kantian program, through an agreement within a community, topology is a mathematical field whose practice is secured by discourses such as algebra, graph theory, group theory, category theory and topology. And here is one of topology's chief analytical purchases: its transmissibility is confirmable or deniable. Whereas one may agree on the aesthetic value of an object through a *doxa*, topology demands for the classical and Platonic shift to *episteme.*

This special issue of *S* addresses these issues with texts authored by three individuals who have worked with Lacan and one another in small groups, cartels and seminars throughout the late 1970s and early 1980s. Both Jean- Michel Vappereau and Robert Groome continue analytical practices: Vappereau helped found *Topologie en extension* in Paris and Buenos Aires; Robert Groome has established P.L.A.C.E., an analytic association in Los Angeles. Michel Thomé, who co-edited Soury's three-volume work from which the included articles are excerpted, continues to present his topological achievements at analytic associations in Paris. By way of introduction, then, I limit my focus in a somewhat arbitrary manner on three places in these authors' works where I believe a simple clinical problem may be provisionally articulated.

This issue begins with an essay by Vappereau titled "A Method of Reading a Knot." Excerpted from his book *Noeud,* Vappereau aligns his project with the work of interpretation carried out by Freud in his book on dreams. While this eventually allows for a writing within the clinic, Vappereau is careful to emphasize the importance of reading at the beginning of an analytic practice. "A Method of Reading a Knot" proceeds much like, as I would suggest, the work of primarily narcissism, by taking an object as the first step in beginning to work with structure. Vappereau places the object within a planar surface where it presents one of its most basic and legible features, the crossing. If a crossing may be naively defined as a place where an object's curve crosses over another curve, be it the very same thread, as in knots and tangles, or another component, as in links and locks, then an immediate problem of reading presents itself: how can such a crossing be marked as distinct from other crossings in such a manner as to confirm that there is some alternation, and that the object being read is one of topological significance and not merely a mean looking tangle? Without a minimal alternation of crossings, three for a knot (trefoil) and two for a link (Hopf), the object would not hold together and would eventually come undone in to one or more unknots.

The problem raised by Vappereau as to how alternating crossings may be read is anything but easy. In fact, if one were to begin at a crossing of a closed curved object like the trefoil knot and mark it, per convention, "plus" and next precede to the

remaining crossings in the object, designating them "minus" and "plus" alternately and respectively, then upon returning to the initial crossing one would be forced, according to this naïve algorithm, to mark it "minus" and continue to reverse the previous labeling. At any given place in this knot, the same crossing would be marked doubly as "plus" and "minus"—a contradiction, if the object's crossings alternate. This naïve approach would, in short, render the knot unreadable, unsecure its identity and fail to recognize the structure of the object that makes it it. One would be forced to understand this object as a "trefoil" only through a visual inspection, the force of a name or (perhaps worse) hypnosis. If analytical practice is concerned with transmitting its material through different means, then already in this simple example of marking crossings does a clinical problem arise: how can a method of reading and writing be developed in order that the structural legibility and identity of something as seemingly simple as a trefoil knot may be rendered transmissible beyond subjective intuition and manipulative speech?

It is important to note that a clinical problem already presents itself here in the problem's description, which remains at a purely rhetorical register, unanchored by any graphic demonstration and mathematical calculation. Merely reading—and indeed writing—*about* labeling a trefoil's crossings inadequately exhibits its structural significance. The reader is therefore encouraged to sketch out a trefoil knot, label it, and confirm (or not) the claims made in the above paragraph, rather than rely on the imagination's capacity to adequately present the failure of this naïve approach to labeling. While this problem is not especially complicated, it does require a material support to secure its transmission, a support I leave out in order to show this clinical issue of transmission by way of a negative example. As each of the essays presented in this volume show—quite literally given their many diagrams and constructions—when it comes to topology and a work of analysis, one does not expressly "see" what is meant.

Against such an "intuitive" approach, Vappereau proceeds to a coding of crossings that he calls "Freudian," and then on to perhaps the most topologically significant work of his text, where he develops a subtle reading of the spanning surface of an object named the "Knot of 23 July 1993." Care must be taken with this object, as it is not immediately clear—again, at least by a mere glance—whether it is a one component knot or a tangle, or whether it is a composition of multiple components. Vappereau is careful to set up an algorithmic process of knot-reading that will only fully be developed in the course of his book. In this first part, however, he develops an elegant reading of a topological object's spanning surface that is capable of distinguishing a knot from an unknot.

Of especial interest to readers who remain unconvinced by topology's purchase for analytical work—and again, given the non-relation between the two fields, one has very good reason to proceed with suspicion—is Vappereau's reading of the permutations of the dream of the butcher's wife as recounted by Freud and further interpreted by Lacan. The significance of Vappereau's intervention is not his unique contribution to the interpretation of the dream, but rather the method he takes

in reading the dream's many layers in conjunction—or perhaps disjunction—with the algorithm he develops in reading the spanning surface of the "Knot of 23 July 1993." It remains up to the judgment of the reader, after having worked through Vappereau's text, to determine what analytical effects there may be in the decoding of a knot.

If Vappereau's text stresses the importance of reading in the analysis of a knot, Robert Groome's "Elements Of Analytic Knot Theory" extends the function of the signifier further into a practice of inscription. Groome's text recognizes the material implications of reading and writing and argues for the non-triviality of the diagram when constructing a topological theory that, as marked in the title of his essay, is worthy of the qualifier "analytic." The clinical significance of the diagram for knot theory or psychoanalysis is neither intuitive nor trivial. Indeed, given a long theoretical and philosophical tradition that eschews the image for the thing, a tradition that Groome locates in Plato's Republic, it would seem that the diagram of a topological object would function within a secondary or even tertiary register, subsumed under the formal requirements that regulate both the object and its representation. Groome undertakes a heresy of the best kind and places the dream of the cave not within the unenlightened souls of the slaves, but in the project that wants to awaken those bounded prisoners and force them to understand the image as a formal derivation. "Elements Of Analytic Knot Theory" presents something of a reverse Platonism by insisting on the constitutive function of the topological diagram. Importantly, this insistence does not deny such a formal approach, but rather incorporates the material practice of diagrammatic construction and refuses to relegate it to a representational order in service of a theory, whose principles and object precede any writing and reading.

Groome's essay subtlety anticipates Vappereau's in that where the latter begins with a diagram, Groome's recognizes a problem already in the mapping between a topological object in space and its graphic equivalent on the planar surface. This recognition of the surface underscores the significance of the mapping between these two dimensions. In order to understand how building a theory of the knot in such a way is "analytic," I return to the simple problem of the crossing addressed above. Even before one can approach any crossing as a proper crossing, where one thread's intersection with another strand may read as "over" or "under," the principles by which a three-dimensional object's projection onto a two-dimensional surface must be articulated. Groome's work denaturalizes the conditions where such a mapping occurs. For if one were to read, materially and literally, the intersection of any two threads inscribed onto the planar surface, then one would be forced, strictly speaking, to account for the gap in the lower thread's passing underneath the upper as a literal blank rather than an example of three-dimensional depth. Of course this blank on either side of the upper thread is obvious enough: it is a well-established, conventional use of traits meant only to represent the over/under passing that actually occurs one dimension up. But the insistence of Groome's essay demands that such conventions never be assumed and much of his essay is

dedicated to the meticulous work of writing the categorical theoretic conditions by which the mapping between object and diagram take place. And here Groome's work punctures convention and makes a place where the conjunction of analysis and topology invite a meaningful work. For is it not the work of analysis to articulate how the conditions in which a convention—be it mathematical, social or other—is established and rendered functional?

This issue closes with two short pieces authored by Pierre Soury from his three-volume work *Chaines et noeuds* and selected especially for this issue by his long-time collaborator, Michel Thomé. Soury's essays are unique in that they attempt to articulate an analytical practice out of a work of topology. *Chaines et noeuds* documents Soury's mathematical results of knots, links and locks along with a number of algebraic results on the topological objects that are painstakingly constructed and drawn out. Especially important is Soury's work on the generalized Borromean and the fundamental group of the lock, whose property of holding—what Lacan calls its consistency—poses a problem for many conventional ways of reading links and knots. It is important, therefore, to keep in mind that Soury's "A year in the company of knots" and "Topological objects and the current state of mathematics" are written in the wake of a rigorous mathematical work of topology and are not mere speculative essays on the analytical purchase of topological work.

"Topological objects and the current state of mathematics" nicely summarizes Soury's theory of topology and the attention that theory gives to defining its object. Soury takes issue with what he calls the "general" trend in topology that reduces its objects to a finite set of points whose specific and finite combinations become meaningful only within an infinite set—call it "space." Such a theory, Soury claims, establishes a distinction between finite objects and the massively infinite spaces that support them, reducing this complex relation to a mere question of "interiority" and "exteriority." What's especially concerning about this approach, according to Soury, is its failure to distinguish the object from its complement, which in turn overlooks the structurally significant feature that makes the object different—that its, its hole.

Attending this critique of the conventional approach to the knot is Soury's lamenting the lack of drawing—"good" drawing, he says—within the field of topology. The so-called general approach to the topological object confines the object to a series of points and leaves out the plastic dimension of the work. Interestingly enough, each page of Soury's Chaines et noeuds is printed on only half of the available space, so that on every page of his work the reader is presented with Soury's results and an empty leaf on which these results may be confirmed through an act of writing on the part of the reader.

And if this introduction began with a critique of the aesthetic approach to topology it ends, prompted by Soury's work, with an invitation to advance its theory through the practice of its materiality, to open up a blank in each of these texts and expose and inscribe the places where a transmission does and, equally important, does not occur.

JEAN-MICHEL VAPPEREAU

Translated by Kristina Valendinova

A METHOD OF READING A KNOT

1. Analysis of an example of a knot

The title I have chosen for this chapter indicates which among the less traditional approaches to the problem of knots I am inclined to follow. I would like to show how one can read a knot; if at the same time I help clarify some of the questions addressed by present-day research, this will only be an additional benefit, a by-product of the essential problem I am trying to solve. My basic assumption—that knots lend themselves to a reading—takes me somewhere else: to numbers, letters, graphics and plastic dimensions, which goes against not only currently accepted theories, but in fact all theories of knots (Kaufmann, 1983, 1987).

Changing topology means changing the object, as Quine argues in a different context (Quine, 119). However, it does not mean forgetting classical theory.

The idea that we can read a knot deserves some explanation. I am certainly not saying that the practice of knot-making is a form of writing [*une écriture*]; neither am I trying to argue that a knot is a letter.

Saying that is another matter, which needs to be further clarified before anyone may claim to accept the consequences of the answer I intend to give. In this text, I am not trying to offer a theory of writing.

For now, I would only like to demonstrate that these knots and links are readable, in the same way that we recognize as readable the notches on the bones from Mas-d'Azil, which are now kept in the National Archaeology Museum in Saint Germain-en-Laye.

This stage of readability is essential for writing itself to come into existence, even before we can speak of a constituted form of writing and before we can make any claims as to a specific type of writing in psychoanalysis. Thus reversing the naive order of precedence between writing and reading (Leroi-Gourhan, 1965 and Lacan,

Sem IX, lesson of 20 dec 1961 and 10 jan 1962), I will be speaking of reading objects, which our modern minds might mistakenly identify with imaginary projections and even with animism. Yet such terms explain nothing—just like before the Freudian discovery of the libido, the word "suggestion" could tell us nothing about hypnosis.

Writing will therefore be another stage, an action of individuals mutually connected by a discourse, by a social bond, who in their actual practice make use of material that is either already available, or some other material, but in any case a material already recovered, a relic of another discourse which has fallen into disuse.

First I would only like to explain that my use of the term reading is not an analogy, as it is often the case—that reading these objects is not the same as reading coffee grounds. In our case, we retain the distinction between calculation and language [*langue*], where we locate the metaphor as a mechanism of signifying condensation based on involution.

However, reading too is an involution of the gaze and the voice. Its structure is clearly seen already in our first section, first in terms of truth and then extended to speech, a formulation which remains a problem for the tired out communicationists. Speech brings us to the knot (Vappereau, 1988 and 1993).

It is apparent that scientific theories of knots are not primarily concerned with the question of reading; the algebraic element of their approach takes it entirely for granted. These theories fail to see that a knot implies an act to be carried out by the subject who is using the object, who fades into a condensation of figures in which he is immersed. They seek to substitute a known [form of] writing [*une écriture*] for the topological body and, taking empirical observation as their model, make no distinction between the two stages—the graphic and the plastic.

Therefore, in terms of the identity of knots discovered thanks to algebraic invariants of standard mathematics, these two aspects—the graphic and the plastic—are hardly at all differentiated.

As algebraic topology, standard mathematics aims to replace a plastic object with an algebraic group[1] or a polynomial[2]; the algebraic object represents a particular case in a vast family of more sophisticated and already known invariants (Kauffman n.d. and 1995). This is my first point.

Our approach does not confuse the formalisation of an object with its mathematisation. In terms of the formation of utterances, our method differs from the demonstration of a thesis in the formal language of mathematical logic. The cause of this confusion, rather than its result, is the forgetting which is the site of our signifying alienation.

Our formalisation, on the other hand, takes condensation into account, because it is both a graphic formalisation of the diagrams of topological objects and a math-

ematics of their plasticity. This crucial point is then illustrated by the following examples: the coloring and cutting, the duality of diagrams, Terrasson's graph, regular assemblies, Gordian movements and nodal movement.

Coding [*chiffrage*] has its own history and the absence of a distinction between calculation and language largely accounts for the inertia that prevents one from recognizing the actual gestures involved in these practices. This stage implies a subject, even if he is destined to perish in the process.[i]

Then comes the mathematization stage, if it takes place. A structure is discovered; its prototype is the example of algebraic structures and their role within number theory. We see a conversion here—in the psychoanalytic sense of the term—of a series of indexes into symbols, where the structure functions as a text and context to these elements.

This reading presumes that drawing is the site of an involution between a place (topos) and discourse (logos), as correlations of the gaze and the voice. We consider that such drawing is an operation of a cut which, once the drawing has been flattened, can give it the function of lituraterring, and allows us to write, in the small letters of algebra, the numbers [*chiffres*] we can assign to it or attribute to its singularities and which thus precipitate from it. In practice this fact may not be apparent but if we claim to make use of it, we must neither forget nor fail to recognize it. There are in fact theorems that do take the graphic and plastic qualities of knots into account.

Let us define signifying involution, the object of our topology, as "a copula which unites the identical with the different." (Lacan, *Seminar XIV*, lesson of 15.02.67).

Based on this we will also show, in terms of numbers and algebra, what remains unaccounted for in this graphic diagram—namely the problem of non-alterable objects—but can be covered once we finally isolate the plastic dimension, in other words, what is forgotten but insists through its plastic presence and in this way demonstrates the main topological difficulty of all future theories of the knot.

Having underscored the difference between formalization and mathematization, I must also emphasize the existence of a "structure chart" in this approach to involution, which Lacan discusses (Lacan, "Direction of the Treatment," 60/[75]) in connection to the historically crucial example of Newton's law of gravity.

Newton's formula cannot be understood, yet it is explanatory, illuminating and above all it is a solution. Lacan uses it to introduce the littoral function of the letter and to point out its effects of retroactive disruption (Lacan, "The Signification of the Phallus"). We understand that at the extreme it is neither the trace, nor the imprint that upholds the metaphor of the letter, which Lacan is using at this time, and of the practice of reading in psychoanalysis. This practice should be understood as mathematical, between the praxis of the Delphic oracle and Champollion's method.

In order to connect this issue of the handling of utterances [*modes de tenue des énoncés*] with what interests us here, we will take the most easily accessible aspect; however, this should again should warn us against relying on gross analogies. In the register of materiality, let us show that links and knots offer a practice covering the whole spectrum of writing.

This spectrum ranges from mathemes to poems. If we recognize signifying involution as its organizing principle, the two poles find themselves connected, from the simple use of the letter in logic to the practice of calligraphy. Once he has glimpsed this, Wittgenstein immediately gets back on the footpath.[ii] This is where this work would like to make a contribution, with a few remarks about the theoretical elaboration made necessary by Lacan's suggestions.

On the side of the matheme, links and knots depend on the handling [*tenue*] of the utterance, of text, of writing, as it is the case with the grammatical notion of the well-formed proposition in symbolic logic. However, as we have already argued, this also means that, if one is not careful, the reflection of meaning may easily be concealed. As we see in the concept of assemblies in set theory, when used rigorously, this handling can be taken very far. In this case it is the handling that is commonly masked by meaning, as evidenced by the authors who sign their books as N. Bourbaki. These assemblies do not designate sets but are themselves sets (Lacan, *Seminar XX, Encore*, 47-48/[46-47]). Here we will be speaking of a strictly mathematical use of the letter.

For example in Volume I of Bourbaki's "Set Theory," the character designating the empty set: ∅ is therefore

$$\varnothing \text{ est donc } \tau \qquad \in \tau \ \in \ \square\square\square$$

The reasons why this rigorous characteristics gets little attention have to do with the prohibition on the existence of the structure itself. We can therefore come back to the link between intuition, not just mathematical but also philosophical, and the handling of utterances which have yet to be written.

The quality of a knot and, more specifically, of the Borromean linknot [*chaînœud*], will, contrary to other links, have this function of handling or holding together, but this is not enough. We mustn't forget that between the utterance and the act of uttering, between the object of language and of metalanguage, this manner of handling depends on a subject, yet it can always be formalized all the way to his destitution.

It is true that in practice, this strict use is quickly exhausted, to the point of introducing certain symbols of function. Especially in classical mathematics, with the introduction of the matheme (f: a --> b) which represents its application in set

theory (Krivine, 1972; 21). This exhaustion requires other efforts of formalisation but does not repudiate all of them.

Concerning the poem, writing will go as far as to suit the art that is practiced with ink and a brush—the writing of Chinese poetry (Cheng, 1977).

The poem is a function of writing, eminently metaphorical, provided that neither here has it anything to do with analogy, the doctrinal reference of which we find in Lacan's text on the agency of the letter in the unconscious. (Lacan, "Instance of the Letter," 412-441/[493-528]).

As we explain it, starting with the presentation of this series of texts, this function, as it is the normally used in the analytic discourse, whose material aspects it guaranees, reaches as far as the example of the Japanese writing their language,which they had borrowed from China.

Let us take another example of this form of writing, which only applies to the set of results presented in this text.

désir   →   coupure
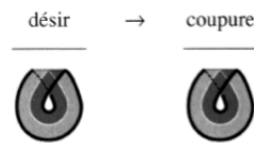
I argue that the knot can be included in the topological writing of holes, which constitutes the site of the existence of the subject's structure, as an important link that is similar to others and equal in value. This way of writing the *dérive* (drive, *Trieb*), accomplishes what Freud tells us about it (Freud, 1915, "The Unconscious) and what Lacan further clarifies ["Position of the Unconscious," 717-721/[846-850]). It relies on a border, the knot, provided that we also furnish a surface, the libido, which turns out to have a structure, desire, our cut. I have began to theorize this topology of holes and I am going to develop it with the help of the theory of intrinsic surfaces.[3]

As I have said, reading a knot in this way implies assigning it a topological structure, which can be provided by a number theories, the definitions of which are presented in this work. What would we think of a Japanese scholar reading a text written in Japanese, who would claim to ignore the ancient Chinese reading of the letter now used to write today's Japanese? This ancient reading could be dismissed as pure erudition, as supposedly outdated, or foreclosed since Lacan's disappearance; however, as we see particularly well in psychosis—where the foreclosed comes back in the real—in reality, prohibition always remains linked to horror.

I will come back to this practice of reading again in the last chapter, in order to provide a nodal diagram of the clinic of the sinthome, using the Freudian structures of neurosis, perversion, psychosis and analysis, as well as their mutual articulation, which present so many difficulties of reading to the analysands of Freud and of Lacan who lack the topological elements presented here.

If we take this spectrum of variation into account, we see an actual pulsation between the graphic and plastic dimensions of the object. I have already emphasized its invisible presence[4] in connection with masks and tattoos and it also lies at the origin of identification in Freud's understanding of it (Vappereau, 1996).

This is something else than using an image (Eliade, 1952) to try and explain the symbolic function (Frazer, 1981; 652; Leroi-Gourhan, 1965). We must approach the problem by starting from the character of André Gide, as Lacan points out by giving homage to Jean Delay, who in fact discusses the topic at the beginning of his essay on the young Gide. However, we must take this aspect further, as far as we are doing it here ("The Youth of Gide").

This was my second point.

Thirdly, in preparation for this drawing practice, we are first going to create an algorithm, which has previously been lacking, and apply it, until we extract from it a corresponding formula of nodal gravitation.

This algorithm, extended to several rings, is a requirement of this topology, as Lacan stresses in one of the lessons of his Seminar (Lacan, *Seminar XXI*, lesson of 12.03.74) . Here, he is in fact calling for a more rigorous algorithm of a knot, insofar as the latter insterests, as he puts it, more than one ring of string and thus extends, he says further on, Dehn's lemma, which is well known in cases of proper single-ring knots.

At the same time I would like to undertake the task of articulating the question of one and many (Plato, 1967). The thing is that we must pay careful attention to the fact that in addition to this algorithm, in the same lecture, at a specific moment in his teaching, Lacan also refers to having already moved from the Borromean knot (with several rings) to a trefoil (with a single ring). In the seminar of the previous year (Lacan, *Encore*, 122/[111]), we in fact find a brief indication that in order to study the first prime knot, the trefoil, we must refer to the Borromean knot.[5]

This remark carries still more interest once we know that Lacan only used this procedure in the last lecture of his 1979 seminar, in December (Lacan, *Seminar XXVII, Dissolution*), before dissolving his School in January 1980. We do not know whether he had ever explicitly defined this movement [from one to the other]. However, we are now going to construct it with the help of nodal movement[6] and using the tools I are now going to present.

It is also curious and noteworthy that the above-mentioned lecture of the seminar (Encore, lesson of 15.05.73, 122-124/[111-113]) uses the same outline and presents the same objects as a chapter on knots in one particular mathematical treatise (Steinhaus, 1964; 261-268).

I am now going to explain the terminology that we are going to use, so as to begin discussing our topic. When studying the embedding of several rings, we will speak

of a link [*chaîne*]. When studying the embedding of a single ring, we will speak of a proper knot, in order to follow Conway's terminology (Conway 1970).

This specification is important becquse our analysis will show that there are links with constant cuts. We are going to call these types of links improper knots or linknots. Whenever we will be dealing with links or knots indifferently, we are going to speak simply of objects.

In the following section, we are going to start by formulating the algorithm predicted by Lacan.

a1—Preliminary remarks

We are working with diagrams [*présentations*] of knots and links, flattened in general position[7], which we are going to call flat schemes [*schémas plats*] S.

Fig. 1:

In the general case, a diagram is non-alternating.

Alternation of a diagram

We say that a diagram is alternating if, in order to pass through all of its components, one after the other, each of the strands of a string moves alternately under, after it had passed over, and over, after it had passed under, the elements of the rings of string through which it is running.
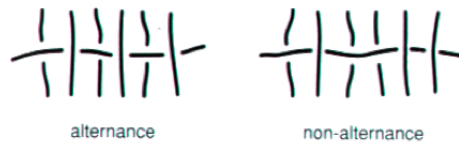

Fig. 2: alternation and non-alternation

In the opposite case we speak of a non-alternating diagram.

For any object in a given diagram, if the diagram is itself not alternating, we cannot be sure that an alternating diagram exists. There are thus alternable and non-alternable objects.

Looking at the flat scheme S, one may be tempted, in order to encrypt the alternance, to simply mark the crossings where a component passes over the elements of the string with a plus sign (+) and where it passes under with a minus sign (−).

Fig. 3

However, the irony of this structure lies in the fact that in encrypting all the components of an object in this way—and in the case of the knot this is done starting from the first component—we find that all the crossings will eventually marked in the same way: by both signs, + and −.

Fig. 4

We need a way of encrypting this alternation that would show the coherency of this specificity and would therefore enable us to explain, thanks to our method, the nature of this distinction.

The Freudian Encryption

Our approach is therefore different from, and we could say even contrary to, this first intuitive attempt.

The resulting encryption is specifically Freudian, in the sense that in order for him to calculate intuitively in this way, the one to discover the Ucs had to be Freud—think of the interpretation he gives of the dream of the "intelligent butcher's wife" and contradicted his own theory of dreams. Our concern is not to find out how did Freud arrive at his interpretation; we only need to recognize it, in order to understand what psychoanalysis depends on. The analysts`s desire carries with itself this unknown.

Starting from the flat scheme S, let us encrypt the alternation by marking the first crossing with a sign of our choice, for example the plus sign (+).

Then, for each component, starting from the crossings already marked:

- we place the same sign as what precedes it on top of the following crossing, if this component passes from one crossing to the other in an alternating manner,

- and put the opposite sign to the previous one at the following crossing if the component crosses it in non-alternating manner.
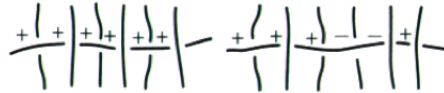

Fig. 5

In other words we are applying an encryption principle which can be formulated as follows:

When the elements of the string are alternating, we do not alternate the signs; when they are non-alternating, we alternate the signs.

This can be seen even more clearly in the following fragment.

alternance des croisements
constance des signes

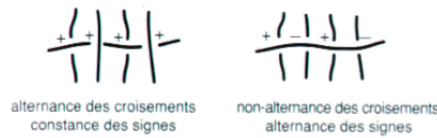non-alternance des croisements
alternance des signes

Fig. 6

I call this type of encryption a Freudian encryption.

Let us apply it to the same example, beginning as follows:

Fig. 7

Once completed, this gives us the following result:

Fig. 8

where you can see that among the crossings there are two halves which are themselves alternating but not necessarily related to each other, or, if you like, two sorts of crossings: those marked by a plus (+) and those marked by a minus (–).

Now we are going to introduce a new orientation[8] into the field of these diagrams, in order to account for this phenomenon and to make sense of the encryption, which, for the moment, only exists through its graphic significance.

a2—The knot of 23 July 1993

Présentation d'une chaîne non alternée, mise à plat[9]

Fig. 9: Diagram of a non-alternating link, flat scheme.[9]

a3—Analysis

The following three images show the main steps of the analysis we are going to carry out with the help of our algorithm, using colors, for each knot and each link.

Premier temps.
La surface d'empan de
la présentation donnée.

Deuxième temps.
La surface d'empan est
non orientable.
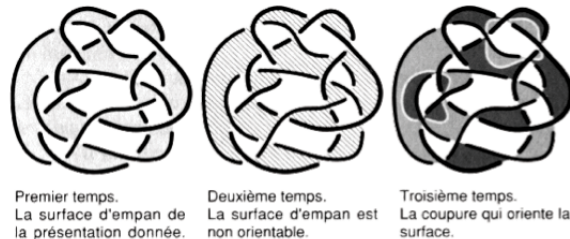
Troisième temps.
La coupure qui oriente la
surface.

Fig. 10

First step: the spanning surface of the given diagram

Second step: the spanning surface is not orientable

Third step: the cut which orients the surface

The colors we are using are represented here by the use of fixed plotting. Their respective functions will become clear in the course of the different stages.

2. The Three Steps of the Algorithm

Let us now look at the first and very simple coloring to be completed in a study of any flattened knot or link.

2.1. Step One: The Spanning Surface

This defines the spanning surface of a given diagram.

Premier temps
La surface d'empan de la présentation donnée.

Fig 11: First step: The spanning surface of a given diagram.

a1—The goal of this step

We are trying to show a surface in the diagram of a flattened object. This must be a real surface without any folding.

The folds appear as half-twists of the strands. We obtain a compression of the plane.

a2—Carrying out the procedure

Using a binary pair of signs, we go through the whole diagram and label all zones, moving along the free section of each part of an arc[10] and alternating between the two signs passing from one part to the other. This movement runs through the middle of each part of the arc, avoiding the crossings and their vicinity.

All the adjacent zones of the flattened object are then labeled with opposite signs, keeping in mind that two adjacent zones are separated by one part of the arc.

zones adjacentes
dans un schéma plat

Fig. 12: Adjacent zones in a flat schema

In order to define the spanning surface in the example of our object, we take a couple of signs, such as (+, −) or (0, 1), or (white, grey) or any other couple of distinct and opposite signs which one might use as raw differential elements. We begin by placing one of the signs in any given zone, using the binary (0, 1).
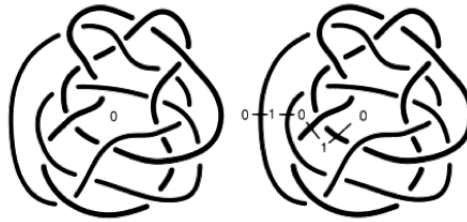

Fig. 13

We write the sign 0 in the first zone. We should cross freely through the middle of a single part of the arc into an adjacent zone. The new zone will be labeled 1. Then, from this zone labeled 1, we move into another one by crossing another part of the arc, and label it 0.

We continue from one zone to another, always crossing the section of the arc in the same way, staying clear of the crossings, until all zones have been labeled with a sign (0 or 1).
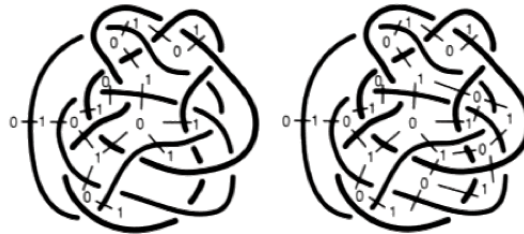

Fig. 14

Note that this algorithm never results in a contradictory situation: the same zone will never be labeled with two opposite signs; two parts of the same section of the arc will never have the same sign, as confirmed by Jordan's theory of plane curves.

We have thus obtained two distinct sets of planes: those labeled "0" and those labeled "1."
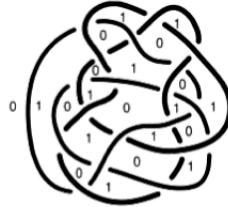
Fig. 15

End of the algorithmic procedure.

a3—Assessing the result

Now we adopt a terminological principle which will enable us to define the spanning surface of a diagram.

The spanning surface of a diagram

We agree on the following:

The set of zones labeled with the sign of a peripheral zone is the set of the empty zones of a given diagram.

Consequently, we define the set of the full zones of this diagram as the set of zones carrying a sign opposite to that of the peripheral zone.

According to this rule, the set of full zones which are connected by half-twists define the spanning surface of the diagram.

In order to emphasize it, we color this surface in: the knot or link now looks like a deformed checkerboard.

Fig. 16: The spanning surface of a given diagram.

We label the number of full zones P (here, P = 11) and the number of empty zones V (V = 10), not forgetting the exterior zone.

The first step of the algorithm is now finished.

However, if we label C the number of crossings, we arrive at a formula derived from Euler-Poincaré's characteristic of a sphere[11], as a result of the sphere's tessellation by the graph of full zones or its dual, the graph of empty zones [12].

This formula tells us that on a sphere, the number of full zones (apices of the graph of full zones), minus the number of crossings (bridges of the full zone graph), plus the number of empty zones (sides of the full-zone graph) always equals 2.

This can be written as:

$$P - C + V = 2$$

which we can then transform using a simple calculation resembling arithmetical calculation, which is quite legitimate since the letters necessarily refer to numbers. Thus:

$$P + V = C + 2$$

which gives us what we will call the elementary formula of a knot: $C = P + V - 2$.

Or in our general case: $C = 11 + 10 - 2 = 19$.

a4—The case of an alternating diagram

In alternating cases, in their alternating diagram, the minimum number of crossings allows us to find the diagram with minimum spanning surface.

In such cases, we designate the set of the more numerous zones as the full zones of the minimum spanning surface and the set of the less numerous as the empty zones.

The minimum number of crossings

We know that for each object there exists a diagram with a minimum of crossings; we are going to call these minimal diagrams, although we will not be able to find them for each case.

When the object is alternable, its alternating diagram is minimal. Using his polynomial, L. Kauffman has shown that in the context of the first stage of our algorithm, which serves to determine the spanning surface, the minimum number of crossings is a topological invariant of alternable knots.

In cases where an alternating diagram is found, we can be certain that the studied object is alternable and consequently in its minimal diagram.

If the alternating diagram exists, we are able to determine the graphic type of the object using the colorings produced by the algorithm. Such typology is a just an initial terminological convenience, which then allows us to reveal the object's nodal and plastic structure. These colorings can also be used for non-alternating

diagrams and they provide us with valuable information, e.g. for counting the link-ings or carrying out transformations.

The minimal spanning surface

In the alternating diagram of an alternable object, the set of the more numerous zones, which have been chosen as full, connected by half-twists, defines the mini-mal spanning surface. The empty zones must be the less numerous zones.

Fig. 17

Here, the spanning surface of this diagram is the minimal surface, since V = 4 is less than P = 5. However, minimal surface, which is defined by the full zones, does not always match the spanning surface of a given diagram as we have defined it.

Fig. 18

For example here, the surface of this diagram is not the required minimal surface because P = 3 and V = 4.

In order to reverse this relationship and obtain P = 4 and V = 3, there has to be an exchange of the full and empty quality between the two sets of zones defined by the algorithm.

However, the surface we obtain is no longer the spanning surface of the given diagram: it no longer meets the conditions we have set for such surface in its defi-nition. In order for it to be that of a dual diagram, we need a spanning surface that fits such definition.

Let us explain this with the help of precise definitions.

Duality

We call duality the exchange of full and empty zones in a given diagram.[13]

Dual Surface

We speak of surfaces which are dual to each other: two surfaces which can be obtained one from the other by means of duality.

In the case in question, where we are looking for the minimal spanning surface of an alternating diagram, in the presence of this minimal surface, dual to the surface of the given diagram, we must pay careful attention to the definitions.

However, the previous rule which defines the spanning surface of a diagram forces us to change the diagram if we want this dual surface to be the diagram's spanning surface, in order for the empty zones to be of the same sign as the peripheral zone, as indeed the definition requires.

Let us therefore move on to the dual diagram.

Dual Diagram

In order to obtain the dual diagram of a given diagram, all we have to do is to draw around a peripheral arc and fold it over the other side of the figure.

In other words, it suffices to draw a circle around the figure and then connect it to the peripheral arc.

This planar trick, which consists in using a supplementary circle, is in face a change of the diagram. It is really a permanent deformation of the peripheral arc in question.

I will show this procedure on the example we chose at the very beginning.

Fig. 19

This change of diagram, which, if we run the deformed arc above and below the figure,[14] involves all the crossings of the diagram, is even more regular in the case of the unpunctured sphere, because there the deformed arc runs along the hidden side of the sphere and does not involve any of the crossings.

This change of diagram can be repeated several times.

In the case of a punctured sphere, our sheet of paper, we are therefore speaking of mutually dual diagrams, according to whether the peripheral zone, the zone which

carries the puncture in a sphere when the latter is punctured, is part of either one or the other half of zones as determined by our first algorithmic procedure.

This represents a solution to the question raised by Listing at the end of his habilitation thesis, in which he speaks about different diagrams of the same flattened object. Listing identified this binary system of zones and labeled them λ and θ.

I will come back to this notion, which is very important for our drawings, later in more detail.

Now that we have clarified these definitions, let us go back to the example of the alternating case whose spanning surface we were trying to find, and show that it is the spanning surface of our example's dual diagram, moving from one to the other using the procedure of the supplementary peripheral circle. This may initially appear artificial, but we are going to use it as a practical and graphic definition of the duality of diagrams.

Fig. 20

Looking for the minimal spanning surface in alternable cases when the objects are in their alternating presentation has lead us to change the diagram by using this still slightly enigmatic movement, the duality of diagrams, which will be explained later on.

Arriving at the spanning surface of this diagram, we in fact obtain the minimal spanning surface of the object, V < P,

Fig. 21

because in this case, V = 3 and P = 4. This is indeed the same object, as proven by the change of the diagram.

We may also encounter cases of balanced diagrams.

Balanced Diagrams

We say that a diagram is balanced if P = V.

In such cases, the two spanning surfaces, which are mutually dual, can both be called minimal.

a5—Crumpled surfaces

Readers of Freud may remember what little Hans says about the crumpled giraffe. As Lacan points out (Lacan, *Seminar IV*), if the big giraffe represents the mother, it is easier to sit on the small giraffe drawn on a piece of paper. In this way, he marks the key feature of this observation—that this is no longer the real giraffe. We are now in the Symbolic, which indicates the register of the little boy's naughtiness at this time. Freud highlights this when, at a certain moment in his commentary, he argues that Hans has not yet entered analysis because he has not yet elaborated the register of fiction to which the said naughtiness corresponds.

This dimension of fiction, the dimension of truth, which felt obliged to base on a calculation, is the topic of the first volume, dedicated to logic,[15] of this series of works, which introduce and review the topology and mathematics of the Freudian field.

Going back to the beginnings of psychoanalysis, to the meaning of dreams, we must emphasize the great importance of the optical apparatus described by Freud, in order to detach the reader from a prejudice that remains equally stubborn today—namely that the subject must be located in the mental structure. This is where Lacan begins: his optical scheme is slightly more elaborated, but it can be developed into an analysis of a painting, and not just any painting but Vélasquez' Las Meninas, in order to establish the real lines of the construction of linear perspective. These lines cannot be localised in space, althought they may be reproduced at any given moment. Therefore in order to understand the place of structure, we only need to move on to the virtual objects of our topology, where any given material can only provide us with a local view. Today's computer animations show us a nodal space, inasmuch as it can be calculated by recursive procedures; still, this space remains to be read and to read it we need a reader.

Freud's efforts to explain the dream's rhetoric and its place points towards the necessity of this topology. It would be a very rough approximation to say that the dream is written on a crumpled piece of paper, because it is as if knotted together by the dream work, desire itself; it is written on a libidinal substance, of which the text delivers us the fabric.

2.2. Second Step: Orientability

This determines whether the spanning surface is orientable or non-orientable.

Deuxième temps
La surface d'empan est non orientable.

Fig. 22: Second step: the spanning surface is non-orientable.

a1. The aim of this step

We are trying to decide if the surface produced by the previous step is unilateral or bilateral[16]. Let us recall the definition of the orientable (bilateral) or non-orientable (unilateral) properties of a topological surface.

Bilateral: this means that the surface has two sides (like a disk)—it is orientable.

Unilateral: the surface only has one side (like the Moebius strip) and it is non-orientable.

The second algorithmic step results in the formulation of a principle which determines the characteristics of the spanning surface. We will use it to decide on the answer or to verify a result obtained after the use of the algorithm.

a2—The principle resulting from the second step

If there exists at least one empty zone of odd valence, the surface is unilateral. In the opposite case the surface is bilateral: all empty zones are of even valence.

Definition of the valence of zones

Each zone is bordered by a certain number of crossings; this number defines the valence of the zone. We shall call the zones of valence one "loops" (boucles), zones of valence two "stitches" (mailles) and zones of valence three "triskeles" (triskels). Let us note that the valence of a zone also gives us the number of the parts of arc adjacent to it.

We can use this principle right away.

If all the empty zones have an even valence, the surface is bilateral. We color it in using two contrasting shades, one for each side.

Fig. 23

In the opposite case, where there is at least one empty zone of odd valence, the surface is unilateral. We can use hatching to fill it in.

Fig. 24

The parity of the valency of empty zones represents an important property, which our principle uses to determine whether the spanning surface is orientable or not.

Before we deduce the principle from the property, let us formulate the second step of our algorithm.

a3—The method

To do this, we are move through the full zones of the diagram, labelling them with distinct signs. The zones are connected by half-twists. This time we are moving from a full zone to another full zone, passing through these half-twists.

In order to determine the bilateral or unilateral character of the spanning surface, we need to use another binary pair. Let us use (+, −).

Using this new pair, we label the full zones which constitute the spanning surface.

We begin by writing a "+" inside the first full zone:

Fig. 25

We then move through a half-twist and write a "-" in the second full zone.

From here, we pass through another half-twist and write "+" in the following full zone,

Fig. 26

And so on, moving through all the half-twists.

—It is either possible that we find two opposite signs sharing the same zone:

Fig. 27

It may in fact happen that we are forced to move through the same full zone several times, passing through different half-twists. As a result, one full zone will carry with several signs. Moreover, these signs will not necessarily be identical but opposite, in which case we can interrupt the process.

—In the opposite case we have moved through each half-twist at least once and have not found a pair of opposite signs in any one zone.
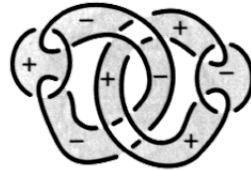
This is the end of the algorithmic procedure.

a4—Assessing the result

We may therefore face two different scenarios.

The first case

There is no opposition. Each full zone carries only identical signs. This is the case in the following example.

La surface d'empan est orientable.

Fig. 28: The spanning surface is orientable.

In this case, the full zones on either sides of each half-twist carry different signs.

The spanning surface is bilateral, there is a + side and a - side.

We will say that the object in question presents itself as an unknot.

Second case

We see that there is a conflict. The algorithm has lead us to put both a + and a - in the same full zone.

This is the case of our chosen example:

La surface d'empan est non orientable.

Fig. 29: The spanning surface is non-orientable.

In this case, all full zones are marked with both a + and a - .

The spanning surface is unilateral, there is only one side.

The object in question presents itself as a knot.

Definition of an object presenting itself as a unknot.

When the spanning surface is bilateral, the object in question presents itself as an unknot, or in other words, its diagram is a diagram of an unknot.

As we have explained earlier, until we have moved through all the half-twists, the unilateral or bilateral nature of the object cannot be determined with certainty. Only on this condition can we be sure that a surface is bilateral.

The diagrams of unknots have a bilateral spanning surface; we mark this using two distinct colors, each for one side.

La surface d'empan est orientable.

Fig. 30: The spanning surface is orientable.

Definition of an object presenting itself as a knot

When the spanning surface is bilateral, the object in question presents itself as a knot, or rather, its diagram is the diagram of a knot.

It is possible that the non-orientable character of the surface, which is shown by the opposition of two signs within the same zone, will not be revealed as quickly as in our example. As long as the signs labelling the same zones are homogeneous, we cannot decide on the type of the surface with certainty; it is necessary that we have moved through all the half-twists.

When objects present themselves as knots, their spanning surface is unilateral. We mark it by hatching.

La surface d'empan est non orientable.

Fig. 31: The spanning surface is non-orientable.

In cases where the surface is unilateral, we can reorient it and make it bilateral. To do this, we simply need to operate a cut. This cut can always be linked and drawn as a cercle, as we will see in the third step.

This is the end of the second step.

a5—Demonstration of the principle deduced from the second step

From the second step of our algorithm we can deduce a principle we have formulated, which helps us determine the bilateral or unilateral characteristic of the spanning surface and thus, in alternating cases, the type of the diagram in question (knot or unknot).

Let us recall the principle we would like to deduce.

If there exists an empty zone of odd valence, the surface is unilateral.

We have defined the valence of a zone as the number of crossings or the number of parts of the arc adjacent to it.

Considering solely the empty zones of our diagram, we are now going to focus on the parity of their valence, as in our example.

Fig. 32: Empty zones of odd valence / empty zones of even valence.

The parity of these numbers has an immediate consequence on our procedure. We notice that we only have to carry out a circular motion from one full zone to another and around an empty zone of odd valence, alternating between + or - each time we are moving through a half-twist, until we return to the initial zone.

Fig. 33

The last and first sign written in the final and initial zone of this cycle will be different because the full motion includes an odd number of passages through the half-twists. This creates an opposition between the two signs that are placed in the same zone.

From this we conclude that if there exists at least one empty zone of odd valence, the spanning surface is unilateral. This is the principle we had previously announced.

In the opposite case, if there are only empty zones of even valence, we never arrive at this opposition and the surface is bilateral.

The second step of the algorithm determines the key characteristic of the classification of surfaces presented in our work on intrinsic topological surfaces.[17]

a6—The case of alternating diagrams

In the case of an alternating diagram of an alternable object, both of the above cases are possible.

If the minimal spanning surface[18] presents the object as an unknot, we will say that this object is an unknot, inasmuch as unknots offer us the purest presentation of the distributions of linking numbers[19].

If the minimal spanning surface presents the object as a knot, we will say that it is a knot in the sense that it contains a knot in the knotting specific to this diagram. The knot will be shown by making the cut that is required to reorient the surface. Our next task is therefore to calculate the specific number of this knotting and the number of the knot it contains.

Balanced diagrams

If the diagram is balanced[20], that is to say if P = V, we should consider both minimal spanning surfaces.

If one of them is bilateral, we classify the object as an unknot and we can then speak of its minimal spanning surface.

If both surfaces are bilateral, we also classify it as an unknot and either of the two mutually dual spanning surfaces can be considered minimal.

If both surfaces are unilateral, we are going to see that they are characterized in the same way by the cut.

Knots and unknots

Amongst all knots and links, which consist of entanglements of one or several rings of string, we thus distinguish, among the alternable cases, between knots and unknots, as two types of objects which are both closer to the truth of a knot as distinct from a linking [*enlacement*].

In a link [*chaîne*], which in this case means an linking, one of the rings passes through the hole of another ring. In a knot, no ring ever passes through another one and when a ring enters into the hole of another ring, it must then also leave it (*Seminar XXII,* lesson of 13.05.75).

This distinction is key in the first step of our procedure: it is the most easily readable and it is shown by our use of coloring and the related commentary. In the following two chapters, I am going to show that the connection between, on the one hand a link and an unknot with two-colored surface, and, on the other hand, a knot and monochrome surfaces, is based on alternate diagrams.

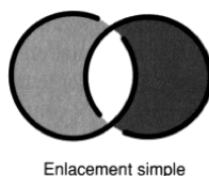The smallest unknot is a link, a linking.

Fig. 34: A simple linking.

Some unknots are made of a single ring. These are proper unknots. The smallest example is the knot Lacan proposes to call "Lacan's knot" (*Seminar XXIII*, lesson of 17.02.76).

Fig. 35: Lacan's knot.

a7—The structure of the libido

Let us establish that the surface characteristic of a fabric depends on the linking and knotting on its border, therefore corresponding to the structure of the drive (Trieb) as described by Freud, where the constant thrust (invariance of the fundamental group[21]) is connected to the source through its border (prevalence of the body orifices, erotogenisation by language).

It was necessary to introduce this surface (quotient of the fundamental group[22]), identified with the libido, as Lacan explains ("Position of the Unconscious" 717/[846]) in order to show this crucial connection in the structure of the Freudian drive. In the movement towards the intrinsic, knotting and linking disappear (s'effacent) like a fold on a fabric, leaving a trace in the form of these characteristics.

The cut, which we can now introduce in the case of monochromatic fabrics, non-orientable crumpled surfaces, traces the path that reveals the structure of the libido. In this way we may understand Lacan's remark (*Seminar XIII*) when he says that we need these non-orientable surfaces, associated with the gaze and the voice, to properly situate desire ("Direction of the Treatment" 502/[601]). Orientable cases, such as the sphere and the torus, are in fact insufficient to account for these connections and Lacan associates them with the objects of pregenital oral and anal drives.

We identify this cut, which condensates the nonorientation of the surface, with desire as metonymy. We can read this at a specific moment in Lacan's teaching, in the involution he makes between metonymy and metaphor, when he comments on

Freud's theorization of the double inscription in his 1915 attempt at a metapsychological work (Freud, "The Unconscious").

Starting from this moment, dream interpretation consists in using the associative material to locate the cut, i.e the main intrinsic characteristic of this fiction of a surface which cannot be found; Freud calls it the libido, i.e. the substance of jouissance which is not there.

This approach will turn out to be still more rigorous, if not exact, based on the number and invariance of cuts, when their number increases due to the number of rings.

2.3. Third Step: The Cut

This step determines the path of cutting which reorients the spanning surface.

Troisième temps.
La coupure qui oriente la surface.

Fig. 36: Third step. The cut which reorients the surface.

a1—The goal of this step

In case the surface is unilateral, we can reorient it and make it bilateral. All we have to do is operate a cut.

This cut can always appear as a circle; if it represents several components, these can be connected together.

a2—Carrying out the procedure

In order to decide on the cut, we must choose a new pari of colors. Let us use the following light and dark grey shades:

code 1

Using this color binary, we alternate between the two colors, filling in the parts of the arc of each ring, following the successive paths of these rings and putting color

on the side of the non-orientable surface, which was produced during the first two steps of the algorithm, as in our example below:

Fig. 37

We begin by coloring a part of the arc, using either of the two colors.

Fig. 38

It is important to note, in order to remain on the side of the spanning surface, that this surface necessitates that we change sides at each crossing. Here we move on to the next part of the arc and therefore must change colors.

Fig. 39

We continue this process until each part of the arc is marked with one color, for each ring we have traced in this way.

Fig. 40

When we are dealing with a proper knot consisting of a single ring, the cut has been identified when the procedure is completed.

When we are dealing with a link, the procedure of coloring each part of the arc of the same ring returns to the starting point, without us having colored the entire surface. We must start again, as many times as it is necessary given the number of rings. We may choose to begin with any part of the arc and use either of the two colors. We complete the task for each ring.

Difference between one and several rings

In the case of a link, the algorithm stops at the first stage—it jams. The procedure of coloring the parts of the arc of the same ring returns to its starting point without having covered the entire surface. We must restart the step, choosing to begin by any part of the arc and using either of the two colors:

Fig. 41

The procedure continues along the second component, moving through its entire length.

Fig. 42

The procedure stops again and we must therefore again move on to another ring, picking a new part of the arc and one of the colors at random.

Fig. 43

We continue until we have traced out the last ring.

Fig. 44

The coloring process has come to an end.

End of the algorithmic procedure.

a3—Assessing the result

We must now interpret the diagram by drawing the cut.

In the fully colored diagram, some of the full zones are monochromatic because all parts of their arc have the same color; other zones are two-colored.

plein bicolore   plein unicolore

Fig. 45: A full two-colored zone; a full monochromatic zone.

There are two kinds of zones. Full monochromatic zones can be filled in with the same color as the parts of the arcs which function as their borders. Full two-colored zones are held in by crossings, where two parts of the arc of a different color meet in the same full zone. We call these crossings cut crossings [*croisements coupures*].

Fig. 46

We can outline the cut by separating the two colors at the level of each of these crossings by a fragment of the border which lies in the full zone.

By putting these border fragments together we obtain the components of the cut.

The cut runs through each of the full two-colored zones, separating the two colors. This equals to saying that the cut runs around one or more empty zones where all the parts of the arc are of the same color.

La coupure qui oriente la surface.

Fig. 47: The cut which orients the surface.

Running through full two-colored zones, the cut joins together the cut crossings.

The third step is now finished.

Colorings and orientations

The final coloring strictly corresponds to an orientation of the link-rings and knot-rings[24], according to the following principle of correspondence.


code 2

The direction of orientation of a given element of string is shown by the color on the side of this element.

Based on this chosen correspondence, an orientation of the rings which form the boundaries of the fabric may be associated to a given coloring of the fabric.

Fig. 48

Another way of marking the chosen code can usually be extended to the plane of drawings; the boundaries of the zones filled with a given color can be oriented in the corresponding way.
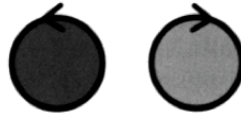
code 3

The knot and unknot parts of a diagram

In a given colored diagram, we will call the knot part (the part of the cut) [*partie noeud* (*partie coupure)*] the part composed of the full zone and the crossings through which we have made the cut. This part can have several components.

We will call the unknot part (the non-cut part) [*partie non-noeud* (*partie non-coupure*)] the part composed of monochromatic zones and crossings where no cut has been made. This can also consists of several components.

In the drawings these parts are isolated, by following the outline of a subgraph of Terrasson's graph[25]:

Partie nouage et partie non-nouage.

Fig. 49: The knot part and the unknot part.

The sources of these different parts[26] and their mode of composition[27] have been studied in detail.

Having defined the knot and unknot parts of the colored diagram, our algorithm is finished.

a4- Cases of links composed of several rings

In the case of a link comprising several rings, we have seen that the process interrupts itself and we must resume it arbitrarily, choosing a new part of the arc and a new color. A different choice can be made between the two colors, for the part of the arc chosen at the moment of restarting the coloring procedure. These different colorings do not lead to the same result. Therefore, in the case of a link composed of several rings it is possible to make a number of different cuts.

Here is an example based on a general case:

Une coupure par sept demi-torsions. Une coupure par onze demi-torsions.
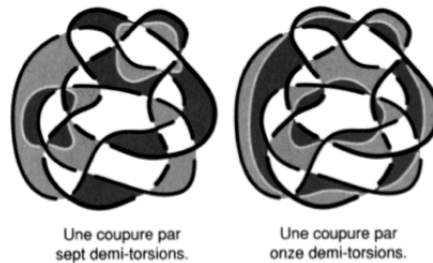
Fig. 50: A cut through seven half-twists and a cut through eleven half-twists.

In the case of links, we therefore have several different ways of making the cut. If we label the number of rings r, the number of possible colorings will be (2r) and the number of cuts (2r–1). These different cuts have the same parity. The theory of intrinsic topological surfaces[28] tells us that this is true because each time we are dealing with the same non-orientable surface, equivalent to a projective plane (in odd cases) or to Klein's bottle (in even cases), and in addition to them a certain number of tori, according to the main theorem of the theory of intrinsic surfaces.

a5—Four interpretations of the dream of "The Butcher's Wife"

Lacan gives us an example of an interpretation of a dream ("The Direction of the Treatment" 518523/[620-627]), which he says he does not do very often but which on this occasion will serve as a paradigm. This is the dream of the "Intelligent Butcher's Wife," transcribed by Freud in his crucial work ("The Interpretation of Dreams," 1900).

Freud's first interpretation is already quite surprising, given that, as we know, the lady in question has brought the dream to her analyst in order to contradict his own theory of dreams, according to which a dream is the fulfillment of a wish. Freud says this upfront—and it really takes Freud, and no-one else, to be able to answer to the beautiful hysteric that her desire is, precisely, to have an unfulfilled desire.

He then pursues his commentary by giving us the first lines of his theory of identification, specifically of hysterical identification, thus adding a second interpretation, which he does not in fact reveal to the butcher's wife. Her desire is to identify with her hysterical friend, who has appeared in the dream's associations, because although the friend is a slim woman, the patient's husband likes her, while full-figured women are usually more to his taste.

Lacan extends the dream's interpretation by giving us a third one, which further elaborates the second. He points out that in her dream, the dreamer also identifies with her husband because she is trying to answer the quintessentially hysterical question by acting like a man: how can a man desire what he does not love?

Finally, Lacan adds that the subject also identifies with the salmon. He speaks about the pieces of gauze separating the slices of smoked fish as an analogy of the veil hiding the phallus, which has just been discovered among the frescoes featuring the demon of modesty on the walls of Villa of the Mysteries in Pompey. This is the fourth interpretation.

How then can we better understand the fact that a dream can have four different interpretations, where each one is equally correct and coherent, if not by using these cuts, which condense the nonorientation of the spanning surface of a link comprised of several rings.

According to the algorithm and the simple calculation I have proposed, three rings can result in four different cuts.

The cut is what the interpretation of the knot should trace: it needn't be exhaustive and pass through all zones; it only has tosum up the nonorientation by reorienting the entire surface, giving direction [*sens*] to the zones of the unknot part through which it doesn't run.

I will discuss the result, dealing with the number of cuts, immediately in the next chapter, in order to interpret the variation in the number of cuts in terms of linkings.

a6—The case of alternating diagrams

In the case of minimal spanning surface of an alternating diagram, we are led to distinguish between two families of knots, as opposed to unknots identified in the second step of our algorithm. These two families are defined according to the parity of the cut.

The cut crosses a certain number of half-twists. We call this number the number of the cut and label it k.

Parity of the cut

We call the parity of the cut the even or odd property of the number of the cut.

If the cut is odd, the alternating knot belongs to the same family as the trefoil.

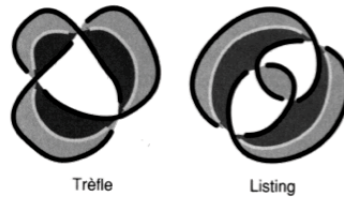If the cut is even, the alternating knot belongs to the same family as Listing's knot.

Fig. 51: Trefoil and Listing's knot.

The unknots we have already seen have a zero cut, of the same parity as the Listings[29].

Balanced diagrams

When the diagram is balanced, the uniqueness of the family to which the knot in question belongs, when it is alternable and in its alternating diagram, is also certain. If the two mutually dual spanning surfaces are unilateral, it is easy to show that in balanced cases, the cuts made on one and the other will be of equal parity.
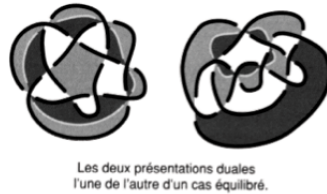

Fig. 52: Two mutually dual diagrams of a balanced case.

Let us now return to the elementary knot formula we established at the end of our first step.[30]

$$P + V = C + 2$$

and recall that, as we defined in the same step, balanced knots are such that P = V.

Under these conditions, the formula becomes:

$$2P = C + 2 \text{ or } 2V = C + 2$$

In this way, it is easy to ascertain that in the particular case of balanced knots, the crossing number is even:

$$C = 2 (V - 1)$$

The knot part and the unknot part therefore have the same parity because their sum is an even number.

This defines the parity of the cut of both balanced knots and balanced. Such knots and links indeed belong unequivocally to the same family.

3. Conclusion

In the following table, we see the vocabulary adopted, starting from the accepted mathematical distinction between knots, comprised of a single ring, and links, which are constituted by several rings.

For this mathematical criterion, based on the uniqueness or multiplicity of rings, we substitute another distinctive trait, which has to do with the necessity of the cut: whether or not a cut is needed.

We will use the term knot for alternating cases where the cut is necessary, this is to be understood as "a knot exists."

We will speak of proper knots in a case of a knot made of a single ring, and of improper knots when there are several rings.

We will use the term "unknots" for alternating cases where the minimal spanning surface is two-colored, that is to say it does not require a cut.

Knots (one)			Links (several rings)		
Cut (knots)		No cut (unknots)	Cut (knots)		No cut (unknots)
Proper knots			Improper knots		
even	odd	Lacan's knots	even	odd	Linkings
Listing	Trefoil		Listing	Trefoil	

Terminology for alternable links and knots of 1, 2 and 3 rings in their minimal alternating diagram.

This terminology is particularly relevant for alternating cases composed of one, two or three rings. In the following part, I am going to explain the reasons for this designation of objects and we will also look at its generalization for a higher number of rings.

In non-alternating cases we adopt a distinction articulated by the phrase "diagram as a knot" in cases where a cut is not necessary, i.e. when there is a coloring that does not require a cut.

The main consequence of these three algorithmic steps is that each proper knot and each alternable link belong to a family of a unique name, which we will use in our description of a variety of knots and alternating links.

This is so because:

- the parity of the cut is set for links comprising multiple rings;
- the parity of the cut is set for proper knots and links with only one and minimal spanning surface (non-balanced knots and links: P > V);

- the parity of the cut is set for proper knots and balanced links (P = V), whichever minimal spanning surface we choose between the two mutually dual spanning surfaces.

Proper and improper knots can be divided into two families, trefoils and Listings.

Unknots can be divided, according to unicity of multiplicity of the number of rings, into Lacan's knots and linkings.

The existence of improper knots among objects normally designated as links deserves some further comments, which I would now like to make by looking at the question of the variation of the cut in cases of multiple ring objects.

4. Exercises

e1—Coloring

In three steps and using a minimum of moves, identify the cut of one knot and one link, when it is necessary.

For example, the following are the three steps for the example of knot 62:

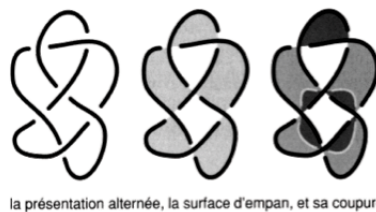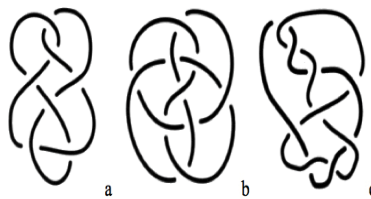la présentation alternée, la surface d'empan, et sa coupure.

Fig. a: Alternating diagram, the spanning surface and the cut.

Do the same exercise for each of the following knots and links:

Be careful with figures b and c. Should you need further explanation, refer to the following exercise.

e2—Making a cut through the folds

1. Transform the drawing of a spanning surface given in this exercise, so that the folding at the level of each half-twist appears clearly[31]. In this exercise, you will be able to see see how the cut runs through the folding and the colors are distributed at the crossings.

Fig. e

2. Find the outline of the cut in the folding and verify that it can run through there twice, in order to join together the two components of the cut of knot 9₄₀, the coloring of which you determined in the previous exercise.

Fig. f

Notes

1.   See Essaim.
2.   See Appendix to Chapter III in this work.
3.   See Étoffe, from the diagram of the series on pp. X and XI to the conclusion on pp. 277 to 299.
4.   Étoffe, p.41 and Chapter VII, p. 249.
5.   See Chapter V.
6.   See Chapter VII.
7.   See Essaim, pp. 79-88.
8.   See Chapter III.
9.   Here, we are using a less specific example.
10. The notion of the arcs of a given diagram is defined in Essaim, p. 82. The part of the arc is a piece of the arc between two of its consecutive crossings.
11. See Chapter IV of this work and Étoffe, Chapter III.

12. These graphs consist of vertices placed in the zone of each type, which are connected by edges that run through all the crossings; they are mutually dual. I am discussing these graphs in this work in Chapter IV.

13. See Chapter IV in this work and J-M. Vappereau and M. Bertheux, De la mise à plat et de la dualité des présentations (diagrams) de nœuds ou de chaînes. (Unpublished, Appendix II of this work).

14. See Chapter IV in this work.

15. See Nons, Chapter I.

16. See Étoffe, Chapter III, p. 122.

17. See Étoffe.

18. See above § 2.1.a4 for a definition of this notion.

19. See Chapter V.

20. See above § 2.1.a4.

21. See Essaim, this work deals primarily with the group of knots and links having this property.

22. See Étoffe, Chapter I, p. 60.

23. This cut is a boundary which makes consistent and transforms the surface into a tessellation which can be oriented by pieces, see Étoffe, p. 122, and pp. 134-135.

24. See Appendix to Chapter I.

25. Terrasson's graph connects the vertices placed in all the zones of the diagram by edges that run through all the parts of the arcs in the diagram. It is introduced and used in Chapter VI.

26. See Chapter V

27. See Chapter VI.

28. I refer the reader to Étoffe, Chapter II, where one finds the definitions of a sphere, a torus, a projective plane (cross-cap and Moebius' strip) and Klein's bottle, and in Chapter III of the boundary and the frontier (See the Appendix to Chapter I in this work).

29. In the case of unknots, when they are composed of several rings, we can study even cuts which have the property of making the surface disconnected.

30. See above § 2.1.a3 and Chapter IV.

31. See Étoffe, pp. 62-65, and Chapter III in this work.

Translator's notes

i. Chiffrage is derived from chiffre (figure, numeral, character), which the author situates on the side of writing, of the letter, and thus opposed to nombre (number, digit), on the side of the signifier [Personal communication, 3 march 2013].

ii. See the 9/2/1972 lesson of Lacan's 1971-72 seminar Ou pire... where he comments on Wittgenstein's prohibition in the Tractatus: Whereof one cannot speak, thereof one must be silent. Lacan says: "Hence he could hardly say anything. Every time he would step down from the footpath and into the gutter, he would get back on the footpath, the footpath defined by this imperative." As Jean-Michel Vappereau points out, this

is the very opposite of psychoanalysis, "where we stand with both feet in the gutter" [Personal communication, 3 march 2013].

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R O B E R T   G R O O M E

G E N E R A L I Z E D   P L A C E M E N T :   E L E M E N T S   O F   A N A L Y T I C   K N O T   T H E O R Y

§1 Preliminary Considerations

In order to represent the knot in more formal and algebraic theories, the mathematicians have tended to disregard how a presentation of the knot is necessary to its existence. The mathematician V. Jones outlines the project of the contemporary formal theory of knots in the following manner:
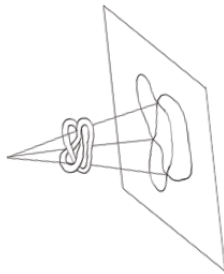
> Although the formalism (for mechanical statistical models or "vertex models") is quite general and not tied to braid presentations or induction, it is still hampered by the need for a two-dimensional projection (shadow) of a three-dimensional object. Our main reason for doing this work was as a step towards a useful and genuine understanding of three-dimensional invariants. So far we have not succeeded. The situation is the same as the poor prisoners in Plato's allegory of the cave. (Jones, 1989)

The project is coherent, though we believe it confused with regards to its aim of positing a realm of ideal formal entities beyond their appearance on a surface. The desire to bypass the problem of the presentation is an attractive idea that would bring knot theory much more in line with its more formal and 'abstract' cousins such as number theory, algebraic topology, etc. My only reservation is that it cannot be done since it bypasses a special existence of the knot that requires a reference to the two-dimensional projection.[1] More than one commentator from the scientific community has noticed the problem without quite figuring out what to do about it:

> As for the Jones Polynomial and its generalizations, these deal with the mysteries of knots in three-dimensional space. The puzzle on the mathematical side was that these objects are invariants of a three-dimensional situation, but one did not have an intrinsically three-dimensional definition. There were many elegant definitions of the knot polynomials, but they all involved looking in some way at a two-dimensional projection or slicing of the knot, giving a two-dimensional algorithm for computation, and proving that the result is independent of the chosen projection. This is analogous to studying a physical theory that is in fact relativistic but in which one does not know of a manifestly relativistic formulation—like quantum electrodynamics in the 1930's. (Witten, 1989)

To rescue the knot from a formal abyss, we begin by including its presentation as crucial to its identification and existence. We do this not by including the knot within the theory of relativistic physics, but within a theory of the signifier.

A historical and methodological reference may be helpful here: the linguist Roman Jakobson recalled how Einstein's theory of physical relativity was directly influenced by Jost Winteler's theory of linguistic relativity:[2]

> Winteler remained true to the principle of 'configurational relativity' (Relativität der Verhältnisse) that had been disclosed in his dissertation with special reference to the sound pattern of language. In particular his theory required a consistent distinction between the relational invariants and variables within language, respectively termed 'essential' and 'accidental' properties. According to Winteler's insight, speech sounds cannot be evaluated in isolation but only in their relation to all other sound units of the given language and to the linguistic functions assigned to them in such a manifold. (Jakobson, 1972)

To construct the diagram interior to a theory of knots is to show how the signifier conditions a variable identity and existence. In order not to confuse the contingent aspects of the signifier with the 'relativity' of physics, we could refer to the use of the knot in the history of techniques: the knot is not so much an object but a tool or ornament that is reliant upon its context and inscription. Or one could simply refer to an indiscernible of the linguistic signifier that is only identifiable via the 'artifice' of writing: Once upon a time, a bald *heir* who wore a wig to hide the fact that he had no *hair* tripped down the stairs while holding his pet *hare*. The problem of linguistic relativity becomes which hit the floor first? The /her/, /her/, or /er/? Strictly speaking, the spoken signifier /x/ is only an invariance across a variation of written letters.

Such examples, far from being trivial, go straight to the point when attempting to identify what is One and distinguish it from what is the Same and Different through the use of a trait and writing. It is evident that unless one makes a reference to the signifier the problem of identity cannot be formulated; while without writing the problem cannot be resolved.

I want to show that a knot theory that takes its reading and writing seriously—not as something simply to be pushed through or a mere means of de-coding and coding, but as fundamental to problems of identification and existence—is nothing other than an introduction to the problem of *structure*. Contrary to Jones, and the majority of workers in the field for whom the diagram is a mere sign or index of a formal object in space, we will show how the diagram is a condition for the existence and identification of the knot in its *structure*.

We abbreviate the problem of how to consider the knot as the structure of a diagram—and not merely as object in space—with the phrase Generalized Placement. We situate our approach not simply within the current theory and practice of Lacanian analysis, but profiting from such works as A. Tarski and A. Robinson. If the latter can write, "*If we are willing to accept the idea that a mathematical structure consists of a set of statements, we may even identify a structure with its diagrams*" (Robinson, 1956), it is because the problematic difference between diagram and object is far from being an extra-mathematical concern of physics or linguistics; on the contrary, it can be shown to go to the heart of mathematics as such once the difference between numeral and number is put into play.[3]

1.1§ Clinic and Experiment

Historical Background

If a theory is as sound as the problems it resolves, then the correlation of the *Generalized Placement Problem* with the clinic is straightforward: Freud distinguished between a premier narcissism that is the identification with an image and a secondary narcissism that separates from the image in an object choice. It is this passage from premier to secondary narcissism, from diagram to object, from mask to actor that is at stake. Hence, Freud's claim that, "*The ego is first and foremost a bodily ego, it is not merely surface entity, but a projection onto a surface*" (Freud, 1923) prefaces the *Mirror Phase* of the early Lacan.

Yet it would be grossly unfair to Lacan to say that this is where he leaves the problem, even though the virtues of mirrors have been extolled for the last 40 years by child psychiatrists, at least in France, who have included little mirrors in their waiting rooms alongside coffee tables with magazines. Though neo-Lacanians have been removing every trace of topology from the practice of analysis, others have been working to get it out of the waiting rooms.

Lacan first formulated the generalization of the mirror phase into an experimental context in terms of a *Topology in Extension*. Mythologically, this generalization may be called a 'Screen Phase' in the sense that it is the projection of a *real image* on a surface or concave mirror that is not simply that of the *virtual image* in a flat mirror. The most evident presentation of the problem was first given by Lacan in optical

models that were only developed later in a purely topological presentation of surfaces. Of course, Lacan still developed the mythology and literary references, even if they remained 'tongue in cheek.' For example unlike a philosophical conception of *mimesis*—or the actor and her role—Lacan insisted that Freudian identification could be described as a mask that you cannot quite take off: it has an investment or charge of *Libido* that 'glues' it to the subject: a lamella that results in the horrifying creation of the *Hommelette*.

In either case, optically or mythologically, an explication of narcissism requires a theory of identification presented in terms of a screen and not a child reflecting on its image in front of a mirror. Indeed, the term *Mirror Phase*, as it is commonly understood by the psychologically minded, presupposes the very identity of the child that the theory is supposed to explain. No doubt, if left at this level, Lacan's *Mirror Phase* is nothing more than a frustrated account of origins that any myth attempts to explain: if Saint-Denis walked to the Louvre with his head on a platter, what showed him the way? Beyond the comic relief provided by such paradoxes of representation, what is important is not the specific content of Freud's *Narcissism* and Lacan's *Mirror Phase,* but how they approached the problem of differentiating object and image.

Lacan's lasting contribution was an insight into what would be required to introduce a rigor into such problems yet did not depend on an unshakable '*Grund*' or quest for certainty. On the contrary, it is a search for a clear account of the basic notions of a discipline such that one can construct a theory in practice, experimentally, in the clinic, and not in a speculative philosophy.

Topologically, the generalization of the mirror phase requires distinguishing *Mirror Symmetry* from *Duality* (§4): it is well known that symmetries are determined on axes determined by points of duality. But this insight in turn, depends on a clear and novel account of what is involved with the space of a mirror: it is the fundamental space of a *Torus*.

In *Seminar XII, Crucial Problems for Psychoanalysis (1964-1965),* Lacan had indicated more than once that the toric generalization of the *mirror* phase occurs by turning the torus inside out. Thus, providing the mirror symmetry necessary for the passage from premier narcissism to *secondary narcissism.* Yet, what is rarely explained well is that this turning inside-out of the torus is a 2-dimensional template for the Borromean requiring an articulation of *Duality.*[4]

Interdependence of Clinic and Experiment

We take the position that Lacan achieved the theory of Freud experimentally in a topology. By experiment, I do not simply mean what comes to formulate the laws of Nature under a positive science, but a collection of written laws and constructions used in the refutation and corroboration of conjectures—by which I mean, a group

of statements coming to bear not simply—or primarily—on the transmission of a knowledge (savoir), but the distillation of an *ignorance.*

An experiment may proceed by the use of hardware in the impossibility of a direct observation or human ability, but experimentation need not be limited to such instruments: in linguistics one commonly refers to the 'commutation test' as purely experimental procedure for identifying the sounds (phonemes) and significant units of a language.

Moreover, an experiment need not be empirical. A. Koyré has shown how the imaginary plays an important part in the history of scientific thought since experimentation is never a simple application onto the real. Rather, from Galileo's 'discourse experiments' to Mach's 'thought-experiments' (*Gedankenexperimente*), an experiment bridges a gap between empirical fact and theoretical concept through an effective use of the imaginary.[5]

Lacan's experimental topology does not present an over-arching philosophy, complete methodology, or analytic worldview, but a scattered series of problems that appear to be constructed in ignorance of a precise solution. Yet, a work by *zig-zags* or 'bricolage' could only be viewed negatively if it were assumed that a psychoanalytic discourse could be homogenized by a school, religion, or philosophical-scientific community trying to say and refer to the same thing. If one proceeds experimentally, then the problem of presentation, ignorance, and discontinuity comes to the fore. So much so, analysts, at least since Lacan, can no longer simply refer to the clinical cases of a notable analyst and attempt to apply the results in the clinic as if they were simply memorizing a recipe of a chef.

Habitually, within the sciences, the medical clinic is viewed as a place to apply a theory and confirm hypotheses that were tested and verified experimentally in a laboratory. By analogy, a psychoanalytic clinic could be viewed as a place to apply a theory and confirm a psychoanalytic theory, if it were not for the fact that the majority of analysts have absolutely no way of doing a psychoanalytic experiment if it is not on people to begin with. Thus, in therapeutic analysis, the interdependence between clinic-experiment-theory has collapsed and the professional analyst is merely left with applying generalities or cooking strategies onto others using the buzzword 'clinic.' This is not to deny that certain therapeutic effects may occur in such games or that one could not write a psychoanalytic cookbook claiming to be an '*Introduction to the Clinical Lacan.*' Rather the problem with such approaches is that the passion transferred onto psychoanalysis is never adequate to distill its ignorance beyond a question of taste.

Enter the experimental topology of Lacan.

The crucial problem of psychoanalysis is not to develop its practice and theory by reading books and applying ideas to people in the clinic, but to develop what one thinks one (mis)understands of the theory in a practice experimentally. It is not in asking '*What is Narcissism?*' that one finds the response in science, philosophy,

myth, politics, literature, or in a clinical case. Only a psychoanalytic scholar could think so. For the question itself can only be formulated by establishing the experimental conditions for the functioning of something like a mask, a real image, and the deduction of their consequences in the practice of a theory.

That there does not exist today any qualification of competency in the application or construction of a psychoanalytic theory does not mean there is not a just constraint of discourse by which anyone who claims to practice a cure may be at the same time asked to do more than talk. Indeed, without an experimental dimension it is difficult to see how psychoanalysts could imagine assuming responsibility for their discourse on any other level than a juridical sanction coming to bear on a professional obligation—and not a practice of the theory itself. One discovers here how the scruples of a too professional idea of analysis becomes aligned with a philosophy that finishes by annulling Lacan's topology in the same way they trivialize the clinic in the argument that topology is only theory while the clinic is just therapeutic practice. If one abstains from an experimental entry to psychoanalysis, its experience will never be adequate: its topology confused with theory and its clinic with therapy. To counter such an all too common reaction, the problem of imprudence in psychoanalysis should receive a more precise elaboration. Until then, Lacan has left us with what could only be a call for a reform of understanding: "*What the ideology of contemporary psychoanalysis suffers from is the lack of an adequate topology.*"

Once Lacan achieves Freud's theory of narcissism in an experimental topology, the references to biological and cultural analogies may be dropped (or saved for university conferences). Yet, topology does not relate to the main body of psychoanalytic theory, but to that practice of psychoanalytic *observation* called reading. Such an experimental manner of proceeding is not only slow, but encounters equivocations and impossibilities that do not lend itself to general introductions. That this lack and contingency would not be *read*, developed experimentally, or receive a just writing (or mathematics), but would be rejected, has a parallel clinical development. W. Bion wrote:

> Ordinary language is already more than a method of recording and enables work to be done, like mathematics, in the absence of the object worked on, it is less effective in precision and universality. So long as our communications are reliable only in the presence of the objects we study we work under disabilities analogous to those of the psychotic and quality must suffer correspondingly. (W. Bion, *Transformations*, 41-42)

It is not a question of asking whether a psychoanalytic community or institute would be a group of psychotics, but on what conditions a passage to the act in the name of a psychoanalytic theory is, if not avoidable, then treatable experimentally at the level of the clinic—and not through a policing of a government or science.

In an essay entitled "Therapy, Experimentation, and Responsibility," Georges Canguilhem recounts the difficulty that any medical practice faces the moment the

anxiety of experimentation and technique is bypassed in reserving the exercise of a profession to only those having a university diploma in exclusion of the 'empirics': no *Jus impune occidendi*, following the principle *Fiat Experimentum in copore vili*. To remain at this level, the government can and must require that any practice come under the judgment of a medical police, while the laws of a theory, once constrained to the laws of nature, must be carried out under reason and policed by philosophy and science. In both cases, what is bypassed by such regulations is a real of technique and experimentation that only medicine, and by implication psychoanalysis, can resolve: the limit between the beneficial and the harmful varies case by case since in medicine one must experiment, that is to say, *"one only cures in trembling."*

To establish the conditions of the cure, in medicine or psychoanalysis, can only mean to truly have an experience of the other, not as alter-ego or forms of empathy-antipathy, but in the concern for the singularity of the other through experiment. To proceed otherwise amounts to making the patient anonymous under the *a priori* of a theory whose practice is reduced to attaining the other's singularity only in a transference: through a passion counter any clinical and experimental approach. Canguilhem summarizes the problem thus:

> To assume the lesson of clinical experimentation is to accept the formidable moral and intellectual exigencies. The unconsciousness of too many doctors today is not a misrecognition, but on the contrary an indirect recognition by one of the mechanisms of flight and forgetting whose elucidation constitutes a trait of Freud's genius.[6]

Drawing attention to the importance of experimentation in purifying the ignorance and imaginary of the subject, Lacan writes:

> For the knowledge accumulated in the analyst's experience concerns the imaginary which *experimentation* constantly runs up against to the point of coming to regulate its allure on the systematic exploration of the imaginary in the subject. [...]

> In this respect, *experiment* privileges neither the so called "biological" tendency in analytic theory, which of course has nothing biological about it except the terminology, nor the sociological tendency sometimes referred to as "culturalist." [...]

> In truth, if analysis borders closely enough on the scientific domains thus evoked that certain of its concepts have been adopted by them, these concepts are not grounded in the *experiments* of those domains.[7]

If today it has become possible to understand how the subject is not the ego and differentiate the two by making analogies to the transcendental subject of philosophy or the alienated subject of language and a literary practice, this is not to resolve the analytic problem since the resurgence of the ego is not responded to by ridicule or by assimilating it to the experiential clinic of therapy. On the contrary, what such

strategies of misreading bypass is how an analytic experiment provides neither an experiential nor an empirical condition, but an ethics: a de-ontology of the clinic whereby a transfer—or passion of ignorance—can be constructed, separated from, and not merely lived.

Forty years ago, Lacan signaled that this *experience-experiment* signals a 'beyond' of psychoanalysis that is the place of the future analyst (Lacan, *The Four Fundamental Concepts of Psychoanalysis*. The position put forward by this article is that future is what concerns us here today.
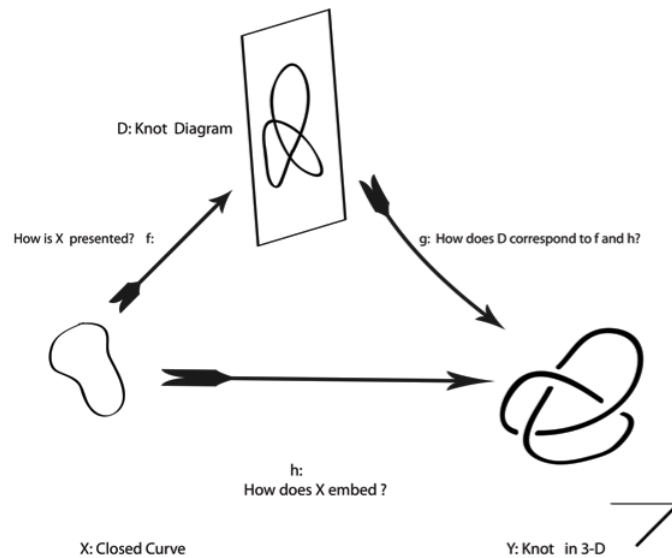
2§ Generalized Placement

It is often said (Kauffman, 1983, 1987) that a theory of knots is about the placement problem: How is an object X put in a place Y by the function h:

1) h: X—————————>Y

If X = a closed curve S^1 and Y = three dimensional space or R^3, and the function h is injective (for each point in R^3 there is at most one point in X that corresponds to it), then we can speak of placing S^1 into R^3 and draw its diagram as:

Thus, a formal knot theory may said to begin with the classification of h, that is to say, how h embeds S^1 into R^3. Yet what this way of proceeding forgets are not only the properties that are not interesting for the embedding of a formal knot by h (its color, texture, etc.), but those scriptural traits and letters that allowed the knot to be identified in diagrams in the first place. For example, the first embedding that took place was the way the Cartesian coordinates (x, y, z) were oriented on the page. To reinsert this forgotten place or *parameter* back into the theory we must generalize the placement problem by recognizing a double: there is not only a question of how h places a space X into a space Y, but how f places a knot—or space—X in a diagram D. Thus:

D: Knot Diagram

How is X presented? f:

g: How does D correspond to f and h?

h:
How does X embed ?

X: Closed Curve

Y: Knot in 3-D

Generalized Placement Problem

X: S¹ = closed curve f: presentation/transcription

Y: R³ = three-dimensional space g: representation/interpretation

D: = diagram   h: embedding of object

In mathematics, this way of systematically setting up a space is called a category and includes the various ways a mathematical territory may be *mapped* as functions, or more generally *morphisms*, between spaces. For instance, in knot theory mathematicians can be said to work in the category of *Differential Topology and Piecewise Algebraic Topology*. Depending on the researcher's epistemology, either they are fine with abstract knotted mathematical objects or they suppose that the object is physical and the formal mathematical theory is only an abstract representation. In either case, it is the referent that is knotted, while it is only the *diagram* that *represents* this knottedness in a secondary way—as a convention, as commodity, or indeed, a mere map. Thus, the ancient of history of knots as design or ornamentation may be of interest, but like the diagram itself, it is viewed as a mere cultural artefact.

I want to begin otherwise: by bringing out how the putting into place of the knot-diagram is itself productive of knotting; not as culture or an aesthetic aid, but as constitutive of the knot itself.

2.1§ A Peculiar Problem from the Contemporary Mathematical Theory of Knots

Let us landmark the problem that insists between diagram and object with a concrete example from the mathematical theory of knots itself. The two knot diagrams below are each of the same 10 crossing knot but the one on the right is in a *non-alternate* presentation having 14 crossings, while the one on the left is the *alternate* presentation having 10 crossings.
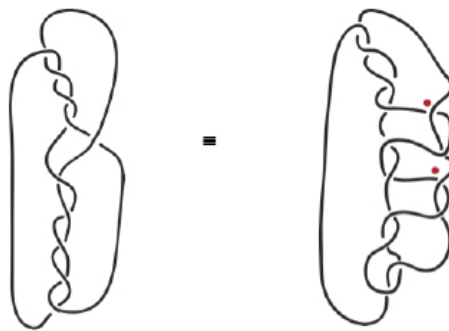
10-Crossings
Alternating Presentation
Undoes with minimum of 3 reversals
Unknotting number = 3

14-Crossings
Non-alternating Presentation
Undoes with minimum of 2 reversals
Unknotting number =2

Call the *unknotting* of the knot the reversal of over and under—a *homotopy*—at a crossing of a diagram such that through one or more reversals the knot is untied, i.e. reduced to a mere closed circle.[8] It is important to note that in order to define the *unknotting number* of the knot u(k) we must refer to the diagram D, and not simply the object in space. Thus:

u(k) = the minimal amount of crossings changes on D, i.e., u(D)

What is surprising is that the more complicated knot diagram of 14 crossings undoes with less untying, i.e. with fewer *homotopies*. Both knot diagrams are of the same knot and can be undone by a reversal of over and under at a crossing, but the knot with more crossings undoes with fewer reversals (=2), while the one with fewer crossings undoes with more reversals (=3). This difference can be expressed by saying that the *crossing number* (= the minimal amount of crossings in a diagram) does not determine the *existence* of knotting as defined by the *unknotting number* (= the minimal number of reversals of over and unders at a crossing sufficient to produce the unknot).[9]

In short, what this difference implies is that the existence of knottting is dependent upon a projection and cannot be established as mere object in space.

If we define the unknotting number u min(k) on the minimal crossing diagram, we can write this in terms of an inequality:

u(k) ≤ u min(k)

Which states that the unknotting number is less than or equal to the unknotting on the miminal crossing diagram. Where in the above diagram, u(k) = 2 and u min(k) = 3.

There are two important problems here:

1) if we can undo a knot with one homotopy u(k) =1 , then it can be shown that u(k) = u min(k) = 1 and its converse.

2) However, if u(k) ≥ 2 , then we are unable to show that it is equal to u min(k). That is why we write, in general: u(k) ≤ u min(k) .

What this result states is that unknotting problem for proper knots, i.e., knots with one component, may be *complete* (decidable and discernible); while knots that can only be undone with two or more homotopies introduce a certain *incompleteness* (undecidable/indiscernible) problem.

We will not have time in this paper to examine the unknotting of single string proper knots or problems of *completeness/incompleteness*. Rather we will concentrate on the problem of linking and locking, then return in Part II to re-examine proper knots. For the moment, it suffices to call attention to the curious detour that is introduced when referring to both diagram and object: strictly speaking, the unknotting number of a knot is not an invariant of space since it requires a presentation in two-dimensions.[10] Thus, to truly recognize knotting one must not simply appeal to the sameness and difference of its form, but two seemingly opposed aspects: its *existence* and *diagram*.

Our contention is that this bi-modal entry into the theory of knots, both object and image, knot and diagram, three and two dimensions, opens up an experimental dimension of knot theory. That this *experimental* dimension would be indicative of an *incompleteness* inherent to the field requires that we not simply prove theorems in a formal knot theory, but construct diagrams in a structural knot theory. The work becomes *clinical*, in the analytic sense of the term, to the degree that this bi-modal presentation can be shown to be translatable into the same difficulties that the analyst encounters in his or her practice of speech and language.

2.2§. A Formal Versus an Informal Structural Knot Theory

We call a theory of knots 'abstract' and 'formal' when there is an extreme parametrization of the knot such that there is essentially only one way **h** to place one
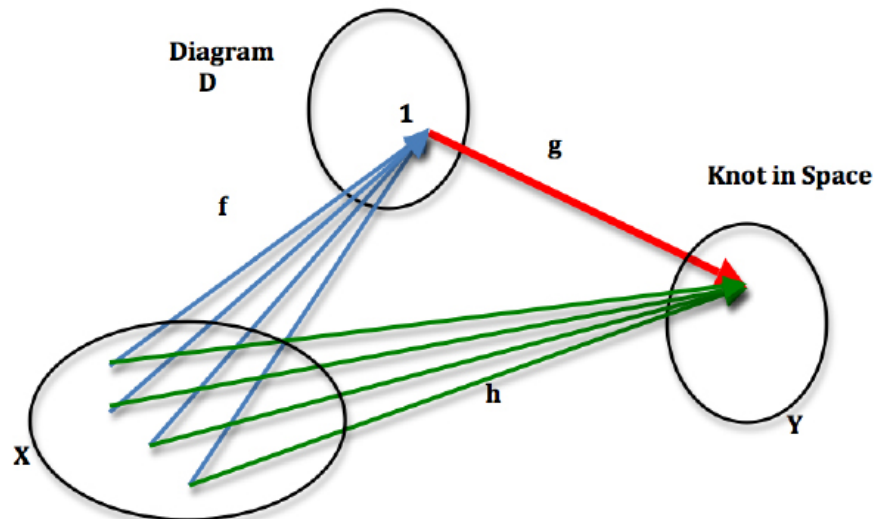
knot (up to a movement) in the space **Y** since the diagram correspondence **f: X--->D** is assumed to be the same as the object once **g** is assumed fixed, that is to say, once the object is already supposed to be in space and the diagram is merely a question of representing it. One way to show this is to assume that the map at **D** is unique—a *standard presentation*—so that now all the different ways of placing **X** in the space **Y** are exactly all the ways of representing it in the diagram **D**.

If h = (g o f), then the placement h is *forced* to go to the unique point to which g does. If we relax the parameterization of X by D and g so that that the diagram at D is no longer the same as the thing at Y, then we have an introduction to a *structural* theory and the foundations for an *experimental* and *clinical* theory of knots. At which point there is the suspicion that g may not be univocal: one may have a *trompe-l'oeil*, *anamorphosis*, or *Kandinsky effect* where the difference between object and image is isolated. In such a case, g no longer responds to the question of how to *represent* Y in D, but how to interpret Y in D. Said otherwise, at this point, as we will show, there is both a problem of *indiscernibility* and decision crucial to articulate within the theory of knots itself.

3§ Introduction to Linking & Borromeans

The standard formal theory of knots and links takes the position that the *planar graph* is a *projection* of the knot and then calls a *diagram* a projection in which the *overs* and *unders* have been established at each crossing by Maxwell's right hand rule:

+1   -1
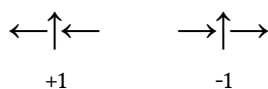
What is interpreted in the diagram as '*over*' is the '*height*' of a string that is represented in the diagram by a broken trait.[11] One of the oldest knot invariants in the history of knot theory is the crossing number: for any knot there is a minimal number of crossings (Tait, 1877); but to find this minimal number we first have to find a way of identifying what the knot or link is in theory.

Let us confine ourselves to a classical theory of links, that is, multi-component closed curves in space. The objects of the theory are equivalence classes [L] of presentations where each class is determined by a movement. Confining ourselves to the theory of links, the equivalence classes [L] are link presentations that are invariant across the Reidemeister moves or *isotopy*:

R1

R2

R3
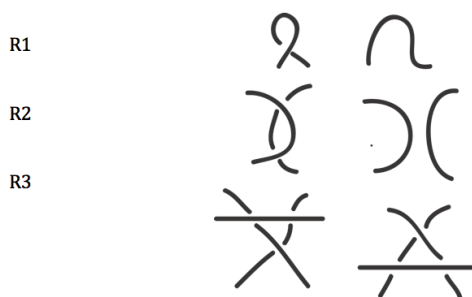
To say the link is invariant across an isotopy is to say that the link creates an obstacle to the movement of isotopy in space. The diagram itself viewed in this theory as a commodity of presentation—an illustration—of what is happening in three dimensions.

Each object L, or equivalence class of presentations [L], is named by a number called its linking number: L = lk(x,y).

In a proof, this name, or formula, should designate an object uniquely—two different objects cannot have the same name—and exhaustively. The Standard Definition: Let L = a ∪ b be a link of two components, then let Σ(a, b) be the sum of crossings with a and b.

Lk(a,b) = (a U b)1/2 where 'a' and 'b' denote the sum of the set of signed crossings {+1,–1)

To show the linking number is unique and complete, it suffices to label each crossing of the Reidemeister moves with the corresponding {+1, -1} then show that it remains invariant in the sense that lk = 0 with regard to any sliding in the plane. For example, the second Reidemester move is:
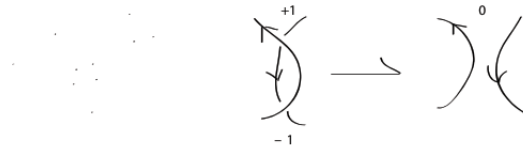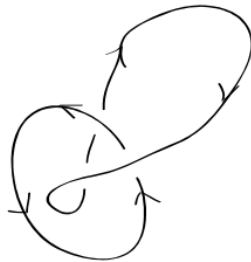
Once this is achieved, then the crossings are labeled on any multi-component diagrams to verify that the sum of crossings is not equal to zero:
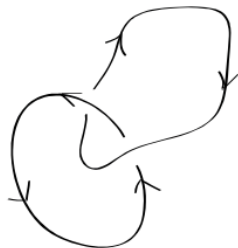

$\Sigma(-1-1+1-1)/2 = -1$
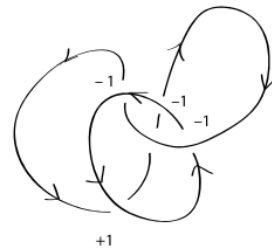
R2

R1

It may be verified that there is a finite series of Reidemeister moves that undo tangling just until the obstacle of the link. We write this finite series of moves: $R_2(R_1(L))) = -1$.

However, there are a few different problems with this method. One is well known and the other less so.

1) First, there are multi-component closed curves that are connected but have a linking number of zero.

Link: L(x,y) = 1 Lock: L(x,y) = 0
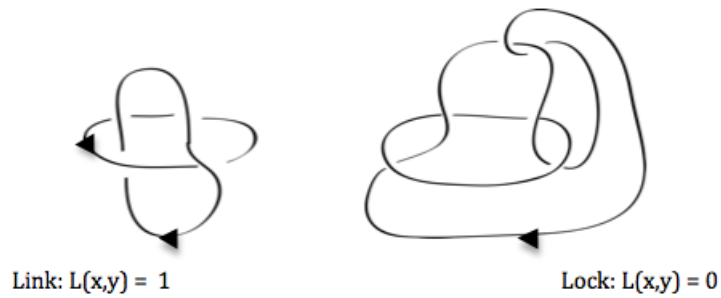
The figure on the right is what Tait called a *Lock* and J. Milnor has called *trivial* and *almost trivial Homotopy Chains*. Two of the most famed examples being the Borromean and the Whitehead:

Lk =0 Lk =0
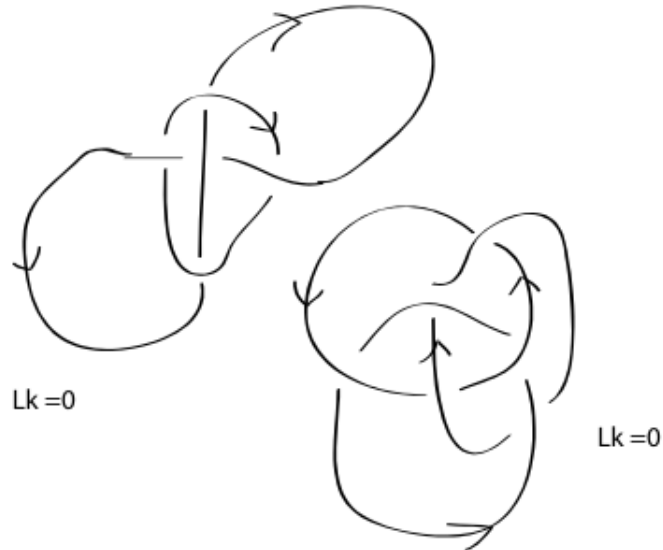
In such cases, the movement of *isotopy* no longer functions to identify the connection holding the components together. What is required is a higher order movement

called *homotopy* such that that Locks (at least some of them) can be identified as obstacles to *homotopy*.

Defining a *homotopy* intuitively as the change of crossing sign on *one* component:

HOMOTOPY

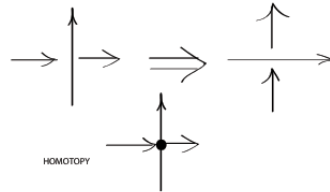We can now define new types of object that poses a resistance to the movement of homotopy. Notice that a link as such, poses no obstacle to a *homotopy* because *homotopies* are only defined on one and the same string.

So then, if a configuration of closed curves has a linking number of zero, then there are still ways it can be connected. These fall into a combination of three main groups:

1) the *trivial homotopy* chains like the Whitehead above that undo with one homotopy;

Lk =0
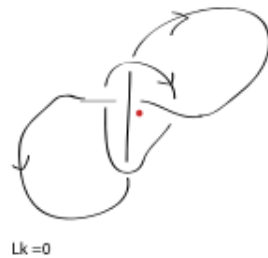
2) the *non-trivial* like the Borromean which does not undo with any homotopies, but only in the removal of one of the components;

3) the *almost trivial* that do not undo with one homotopy, but with several on the condition that you change the presentation.
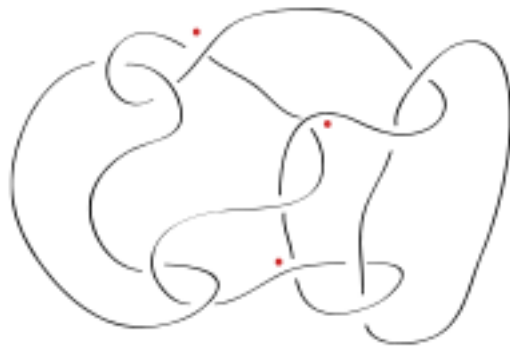
With (2) and (3) there emerges different types of homotopy chains that generalize the Borromean:

3.a.) Those that do not undo with one homotopy on one component, but several different components (Sourry Generalization):
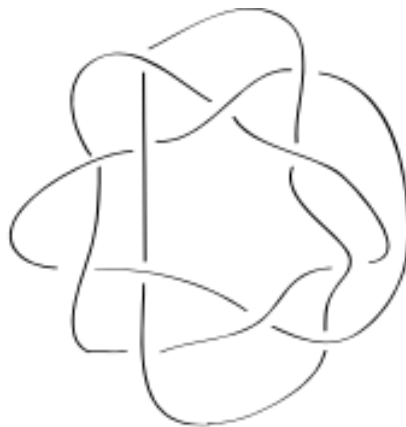
2.a) Those that do not undo by any homotopy or the removal of one component of the configuration, but will undo with the removal of more than one component (Penney Generalization).

4) Those that are a mix of the above types (Large Generalization).

Our goal is not to classify the different types of Borromeans, but to use their characteristic properties to account for the problem that is introduced by this higher order manner of connecting and by problems of presentation.

The introduction of homotopy chains effectively introduces, without ever pointing directly at it, a threefold problem:

> a) the complementary space of a Borromean is defined by the fact it is not simply "complementary": this can be intuitively stated by stating that the connection is holding the rings together without 'borrowing' the holes of the other component, i.e., it is not linking.

> b) this non-complementarity of the negative space of the Borromean can be called duality in a sense that will be explained shortly;

> c) the unlocking of the *Generalized Borromeans* is dependent on their projections; that is to say, a change of presentation can determine an augmentation or subtraction of the number of moves needed to disconnect the components.

A direction for future work must explain the correlation between non-complementary duality, projective sensitivity, and un-doing a configuration-knot, link, or lock.

4§ The Mirror Phase: Problems of Symmetry & Duality

> Two things are identical if and only if they share all the same properties. Before we look at the claim itself, does anyone note anything funny? How can two things be identical?
>
> > Max Black

> Oh you look like John.
> I am John!
> No wonder you look like him.
>
> > Old Timer's Joke

I will pay more attention than a standard presentation to how the descriptive statements of a knot theory may be put into logical form. The reason I do so is that the symmetry relations between antecedent and consequent, respectively, p and q, in the statement (p implies q) will be important to account for once we begin to construct a logic of narcissism.

The standard way of proceeding begins with two: if it can be shown that any two link diagrams $D(k_1)$ and $D(k_2)$ are the Same (equivalent), then it can be said that the two links ($k_1 = k_2$) are One (identical).

Call this manner of reading an object 'Leibnizian' since it follows his celebrated principle of the *identity of indiscernibles*.[12] Or in everyday language, how the Same is One.

If we are in the theory of Links, two may be the same object in the sense that they belong to an equivalence class [L] of diagrams that is nothing other than their *link-type*.

Essentially, any link-knot theory is seeking to prove the following type of conjecture:

1) If $D(L_1) \iff D(L_2)$, then $(L_1 = L_2)$

Call this the unidirectional formula (UI), where the reasoning goes from *equivalence* of diagrams to an *equality*—or invariance—of *objects*.[13] In the theory of Links, the predicates D account for the movements—the Reidemeister moves—by which two things can be considered the same or different in the space R^3.

In general, L_1 and L_2 are said to be of the same *isotopy type* if there exists an isotopic deformation of R_3—an equivalence relation —such that the class of movements are equal, i.e, $[L_1] = [L_2]$. Said more simply, in the classical theory of links, links L_1 and L_2 are said to be equal if they can be defined as an equivalence class of some particular representative Link.[14]

The converse, however, is false: it is possible to have links that are equal, but do not belong to the same *isotopy type*, if we define *isotopy type* as having the same linking number and attainable by the Reidemeister moves. This is the classic case of Kant's symmetric objects and the Parmedian paradox of the One is the Same.

For example, the two oriented links below are equal since they are once-linked closed curves, but they neither have the same sign, nor can they be deformed into each other by isotopy. Thus, they do not have the same *isotopy-type* according to (1) above.

This has led the standard theory of links to call such opposed pairs 'mirror images,' 'symmetric objects,' or 'left and right-hand objects.'

Assuming the classic terminology, the oriented link is the same as its mirror image but not of the same *isotopy type* since one cannot be transformed into the other through Reidemeister moves.

Thus, we are in the difficult but familiar situation, at least since Kant, of two objects that are the same, but not super-imposable.[15]

What is assumed in classical knot theory is that one can use this non-superimposition to define a subgenre of equivalence: there are those objects that can be made equivalent to their mirror and those that cannot. If they can, then the two objects are called *amphichieral*. If they cannot they are called *chiral*.

In each case, to determine the identity of one object, one is left with trying to make two objects the same—The Same is One—instead of asking how the converse, how the One is the Same opens up a more difficult problem of identification and *Duality*.

The classical theory of knots is dependent upon a picture of the world and is as much a strategy of approach as it is mathematics: it is a *Leibnizian* question of beginning each time with Two and letting a rigorous definition of what is the Same about the One escape by the door. I will follow the tradition for a bit longer since I will not have time to return in future chapters.

The classical *Leibnizian* theories always begin with Two: if the Two are equivalent, but not isotopic through a series of Reidemeister moves, then one can still insist that they are equal (one, identical) if there is a continuous transformation h that reverses a voluminous object of the embedding space such that: h:(x,y,z) ----à (x,y,—z).

At the end of this continuous transformation or *flype*—think of pulling a glove inside out where you reverse everything but a finger—if the orientation and sign of the link matches its 'mirror' then the two are called 'amphichieral,' if not 'chiral.' The once linked oriented chain above is, therefore, *chiral*, as it is not transformable onto its 'mirror.' For instance, some have called the two oriented links above chiral, while the unoriented Listing knot is *amphichieral* because it can be transformed onto its flat mirror image by the transformation just described:

1.   2.   3.   4.   5.
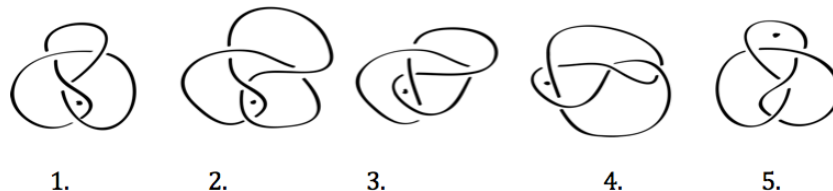
But there is a problem: let the reader pick up any book on knot theory to discover that the sequence depicted above is called a orientation preserving continuous transformation (homeomorphism) that turns a left handed 4-crossing knot to a right-handed one. As such the Listing is an amphichieral knot. Depending on the text, the knot depicted in figure (5) will be called the 'mirror image' of (1), or they will be called 'symmetric objects'; while some even suggest that it is a question of merely reversing all the overs and unders of (1) to achieve the mirror image in (5).

Yet the careful reader will notice that the black dot placed in the diagram does not correspond to a mirror reflection of (1) into (5). Further still, to achieve a so-called

'mirror-image' transformation, (4) has to be rotated by a quarter-turn to (5). This quarter turn rotation is not a Reidemeister move and is nowhere detailed as crucial to the establishment of a mirror image. This problem is dire enough to receive a construction in Part II of our introduction.

What can be stated at this point is the following: what has occurred in the transformation from (1) to (5) is that the knot has been 'flyped' in the sense that one pulls a glove inside out.[16] Thus, the correlation between L_1 and L2 is not what is seen in a flat mirror, this only reverses the direction you look from, but a more subtle 'perversion' reversing the voids and the surface distinction of the diagram. Such a transformation is, strictly speaking, a problem of *duality*. The suggestion that either knot corresponds to a 'mirror-image' of the other must be put on hold until a more careful investigation of perversion has been brought out (See §6).

Let us state from this point forward that the continuous transformation from 1. to 5. results in a *Dual Presentation* L**.

Put a surface on any closed curve in the plane, using the rule that every time you cross an arc change a color from a binary set of opposed colors {+, -). Then put the put it onto a sphere and perform a *flype* transformation h:(x, y, z) $\longrightarrow$ (x, y, -z).[17]

We discover two things:

a) the 4-Listing knot has been turned inside out or 'flyped.'

b) the result at 5. only appears to be *virtual mirror* images of 1. In fact it is not, as the correspondence of zones is not exact while the whole configuration at 4. requires a rotation through a quarter turn to go to 5.

L₁   **L₂**/ Dual Presentation**
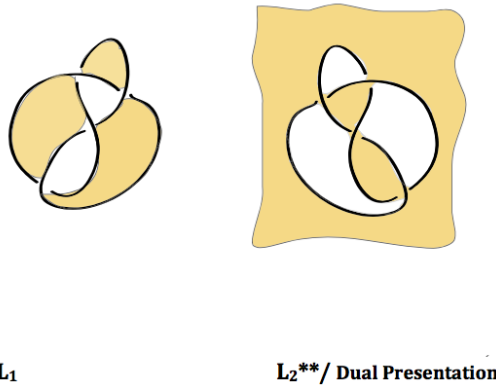
By calling the diagram what it is, a *Dual presentation* that is only secondarily one of symmetry, we must refine our method and rethink the correlation to the symmetric image.

The problem of Duality in each case is not a question of the orientation of the component, but the transposition of the void/surface distinction.
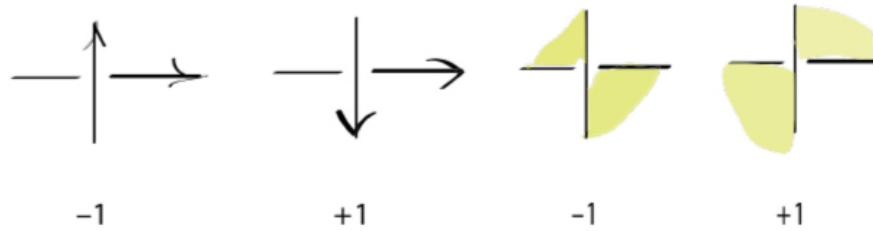
Currently, at least to this author and a few others, there is a grand confusion in the mathematical literature in not distinguishing *Duality* from *Symmetry*. Just a few examples:

1) the author of a classic introduction to knot theory defines *amphichierality* without reference to the arrow orientation of the component; elsewhere he defines *amphichierality* with reference to the arrow orientation of the components.

2) a well-known mathematician defines links as chiral with reference to the arrow orientation of components, then uses non-continuous transformations between linking numbers to explain why Möbius bands have mirror images (strictly speaking, intrinsically the Möbius band is neither right nor left).

3) the Jones polynomial is said to distinguish a left from right hand trefoil, but only works on oriented diagrams.

Though probably none of these difficulties would be seen as a 'problem' by the classical theory of knots, for us they point towards a difficulty in the construction of its foundations. The work of such authors is not what is in question; there have been remarkable results from the formal theories and methods they have invented. However, each time that the identification of the knot is raised, questions of symmetry emerge whose successful treatment depends more on an overriding theory, largely an algebraic method, than the knot.

No doubt, there are other examples where my confusion insists, but in each case it is difficult to ascertain at what point in the mathematical literature:

1) *duality* problems are confused with symmetry;

2) *chirality* problems are confused with orientation by arrows;

3) placement in diagrams is assimilated to placement in space;

4) *structure* is confused with *form*;

5) *thing* is assimilated to *object*.

What follows are a series of exploratory constructions to bring out these problems.

If we begin by orienting a link with arrows, then two of the 22=4 projections[18] are dismissed as being the 'same,' while the two others must be called *chiral*—since no space perversion will allow the orientation of one link to turn into that of the other, i.e. the linking number does not change its sign or undo no matter how you twist it around through a continuous transformation. This also implies that the link is an object independent of its diagram. However, if one does not orient the links by arrows, then we have another theory in which links can be *chiral* or *amphichieral* by isotopy.

Chiral

−2　　　　≠　　　　+ 2

Amphichieral

− 1　　　=　　　+ 1
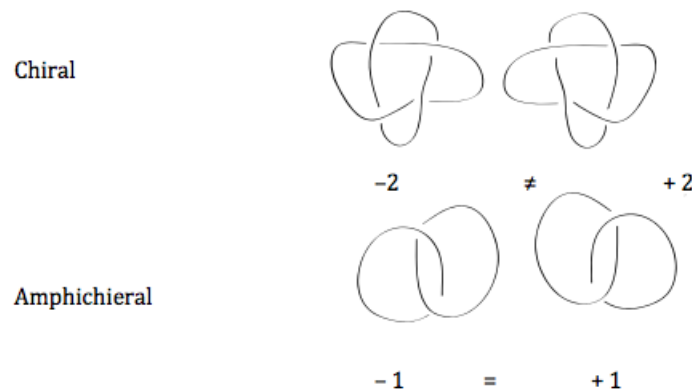
More to the point, if we do not orient the link by arrows, it becomes dependent on its projection, that is to say, through a change of presentation via Reidemeister moves the once linked chain -1 transforms to + 1; whereas in the case of the twice non-oriented linked chain -2 no amount of movement will change it to +2.

Call the first case, *amphichieral* and the second *chiral* with regard to isotopy. We will return to this problem shortly.

Neither vocabulary nor method have been standardized with regard to these problems in the mathematical theory, or if it has, at least to this author's taste, it is done prematurely in trivializing what is really at stake. I will simply state the problems before returning to put forward a new framework for its consideration.

　　a) First, in the classical theory, it is an *abuse of language* to speak of the difference between image and object: in each case, the transformation is between object-object or image-image, but not object-image.

　　b) Second, in the classical theory, it is an *abuse of language* to speak of a mirror: rather there is an 'ideal mirror' which is silvered on both sides.

　　c) Third, *chirality*, or 'handedness' is only defined by default, by what is not *amphichierality*. The assumption that a condition of amphichierality and

continuous transformations is primary causes one to lose sight of the internal difference and discontinuity of the *One*.[19]

In the desire to main a conception of invariance based on (1) above, the *identity of indiscernibles*, classical knot theory begins with Two and the Same then runs into predictable difficulties when it encounters a One that is the Same.

This problem jumps to the forefront when the theory is faced with the problem of symmetric objects that no longer respond to any mode of continuous transformation except by default and by an *abuse of language.*

Of course, I could not imagine that these problems will be worked out for me or others overnight, but what we can do is present a theory of knots and links that accounts for these gaps by engaging a wider audience of listeners to weigh in on the problems.

We call our approach anti-Leibnizian for several reasons, but one of the most apparent is that that we do not begin with Two then seek to determine how they are the Same, but with One and seek to determine who it is the Same. That this 'Sameness' would be cloven, or dual, is an indication of the constructive problem.

I will explain this starting point shortly.

Another reason for insisting on an *anti-Leibnizian* approach is the insistence on examining the converse of proposition (1) above:

2) If $(L_1=L_2) \Longrightarrow D(L_1) \Longleftrightarrow D(L_2)$

Call this converse of the principle in (1) above: the *indiscernibility of identity* or what some call a *'principle of substitution' salvae veritae.*[20]

The converse of (1) above leads to a series of well-known problems.[21]

Problem #1:

Two things may be the same with regard to a predicate (or equivalence relation), but still not equal or substitutable. Thus, the converse of (1) does not always hold. This is Kant's celebrated critique: a left and right hand can be equivalent in all their properties by (1), but not congruent in space, i.e., $(k_1=k_2) \not\Longrightarrow D(k_1) \Longleftrightarrow D(k_2)$. Again, the contemporary mathematical theory of links speak of two links as having exactly the same properties with regard to their linking since they both have a linking number of 1, but they are differently oriented.

Problem #2:

Two links may be equal, but we may not yet have discovered how many Reidemeister moves it will take to make them so. That is to say, if we cannot determine an upper-bound on how many Reidemeister moves it will take to transform one

link into another, then there is no finite characterization of linking; i.e. the linking number is not a complete invariant.

Thus, if we remain with the attempt to define a link simply by the linking number and isotopy alone, then not only do we run into (1) the problem with mirror image links that have different isotopy types, but we run into (2) incompleteness: there may be no limit to determining when Two that are the Same will become One.

If left in such a situation, a theory of links remains vague. What is required is a precise way to both identify and determine the existence of linking. It is our position that only by considering the often forgotten converse proposition (2) that the problems can be clarified. I will show an introductory approach starting in section §6 then isolate a conjecture and proposal that has already been made in the field of analysis.

If we can show that the unidirectional formula (UI) is not simply unidirectional, i.e., it has a valid converse, then we can determine a complete link invariant just as we can speak of the converse of the *identity of indiscernibles* being completed with the *indiscernibility of identity*. If possible, this would constitute a complete and formal theory of links and knots.

In general, a knot-invariant is stated in the UI formula as:

If two links k_1 and k_2 are equivalent by diagrams, then their invariants are equal.

Or more precisely:

If two link-types $[k_1]$ & $[k_2]$ are equal, then their invariants are equal.

That is to say,

If $c_1[k_1] = c_2 [k_2] \Longrightarrow c_1 = c_2$

It is considered *complete*, if the converse is valid, or if we can construct a model in a higher-level theory in which it would confirmed.

It is crucial to our work to show how in knot-link theory the general invariance formulas above are only unidirectional: that is to say, an *incompleteness* and an *undecidable* emerges when the *converse* and *contrapositive* are introduced.[22]

If in knot-link theory one can only speak of uni-directional proofs, then there are incompleteness problems present: unlike classical geometry, there are no complete invariants in knot and link theory. The reason for this is the insistence of duality problems that not only introduce the necessity of including both diagram and object into the theory, but of rethinking how the problem of identity is established in the first place.

Such an incomplete knot theory must make room for a certain 'informality' in the sense that whereas one had been searching—in vain—for complete invariants, there is a more realistic approach: write the indecisions and problematic identities into the theory not as a 'error' or 'vagueness,' but as the precision required for a con-

struction of the difference between image and object in a mathematical construc-
tion. We call this new theory *A Structural Knot Theory*, then show how it gives rise
to a Generalized Placement Problem forming the basis of the clinic.

5§ A Love Triangle of the Butcher's Wife

The Link is not simply an object L embedded into a space h: L → R³ but has a place
in its Diagram of diagrams f: L→S ^{L}. To situate the link in its diagrams is to deter-
mine its structure:

Local **L** --------> **S** ^{L} **: Place in Diagrams – Structure**

h   g   g⁻¹

Global **R³: Embedded in Space – object**
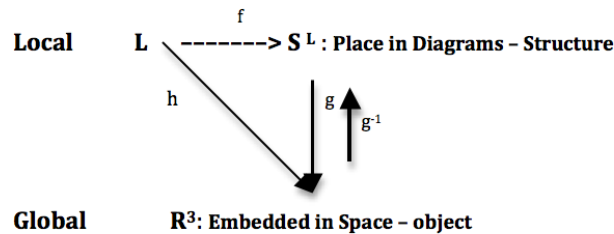
If f is a morphism determining the inscription of L in the place of Diagrams S^L
and h a morphism determining the embedding of L in space, then h=(g(f(x))) is the
subtraction of a trait by which the one is made the same and the local is identified
in the global R³. If we go the other way by the inverse of g-1, then we begin to put
back the object into the diagrams, not as representations in space, but as the frag-
mentation of a presentation. I will not present this theory or problem here, but am
concerned uniquely with drawing out the implications of this schema within the
classical theory of links.

We condense the details in the passage from global to local in Freud's treatment of
hysteria in the *Butchers Wife*[23] into three times:

   1) the butcher's wife has a desire to have an unsatisfied desire;

   2) she identifies with her husband via a woman she suspects him of having
   an affair with;

   3) she identifies with the woman via the smoked salmon.

These three statements set the framework for what Freud calls 'hysterical mimesis'
or 'hysterical identification,' which we call simply a mode of *Duality* or *Originary
mimesis*. It is important to recall that Freud insists that 'hysterical imitation,' or
identification in general, is not simple imitation, but what he calls '*assimilation*'
(*Gleichstellung*), an identification between diagram and object, mask and actor, that
involves an investment of libido that does not allow it to be easily removed.

Each statement above can be viewed as corresponding to a major operator of the analytic clinic:

> 1) A Representative of Representation (*Vorstellungrepräsentanz*) of the dream presents the stamp of the unconscious in a denegation—'I want to have a party that I do not want to have.'

> 2) A global identification between three people: the wife, the husband, and the young woman, all of whom are locked together in a 'love triangle' or 'triskel.'

> 3) A local identification with an object a: behind the smoke—or veil of gauze—lies the salmon that the butcher's wife identifies with in a substitution for her husband's lover and a displacement of her caviar sandwiches.

It can be proposed that if the first two global hypotheses are Freud's, the local identification with an object only takes its full weight in the reading of Lacan.

6§ Determining the Identity of the Link in a Structure

Let us determine here a lattice of all the possible manners of two linking components $2^2 = 4$ in a diagram f: L $\rightarrow$ S^L:
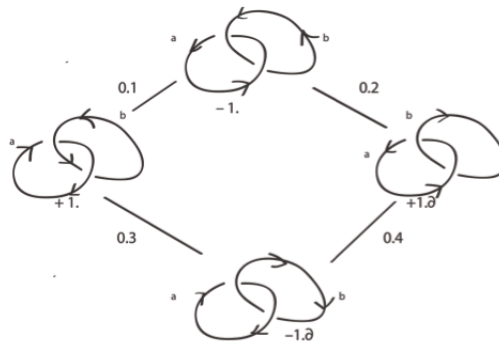
Space of Diagrams with Orientation

Here we have diagrammed a space of potentials: the structure of any possible two-component 2 crossing link L in a scale of links, or lattice, where one moves from one link to another by reversing an orientation. Thus, in going from the link (-1) at the top by 0.1 we reverse the orientation of a. In so doing, we pass from the negative linking number (-1) to the positive linking number (+1). Or again, in going from the bottom link (-1.∂) to the right via 0.4, the orientation of a is reversed. It will be remarked that the classical theory of knots and links does not distinguish all four

links since it assumes that those links marked by '∂' can be subtracted out as being the same modulo isotopy. Thus, the classical theory of links collapses this structure to 22-1 = 2 diagrams with opposed linking numbers. Taking {+1,-1} the classical theory of links only recognizes:

I want to show how, by leaving in the diagrams {+1.∂, —1.∂} of the excluded subtraction, we introduce a structural theory that determines in a more precise way the identity and existence of the link. Classical link theory begins with the two: it begins with the oppositional pair {+1, -1}, then runs into predictable difficulties when it tries to show how these two are the same but not one, i.e., they are symmetric objects allowing no movement by isotopy from one to the other. For example, the temptation to call the two {+1,-1} links 'left' and 'right' or 'mirror images' has, from Tait and Thomson forward, lead to an ambiguity of terminology from which there is no escape (Tait, 1877). I will not have time to enter into this problem at this point of my presentation, rather I will only concentrate on what are the implications in beginning differently: not with two that are symmetric or that we try to make one, but one that is two. To do so, I will show how the identity of the link can only be introduced by reconsidering diagrams {-1, -1.∂} as a One defined by a *Triple Point Movement:*[24]
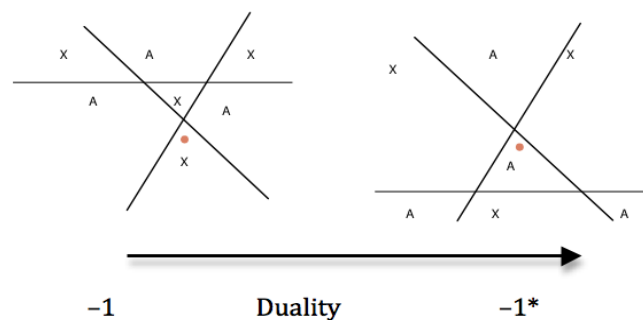
Here, the *Duality* between -1 and -1* is defined as the change of surface X and void distinctions A. Though it is possible to determine different 3-dimensional diagrams of this one projection, we will only use one type of triple point movement in our presentation called a 'Hybrid Knot Movement' that we adopt from the working of J. M. Vappereau.[25]

Topologically, we will show how this *Triple Point Movement* introduces a *duality* between the two link presentations {-1, -1,} determining their identity as One but not the Same modulo isotopy. To determine the object of a link theory in terms of an equivalence class, we must add this movement to the Reidemeister moves.[26]
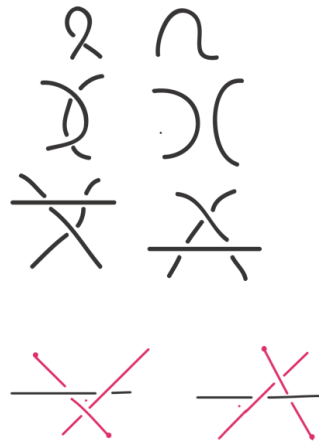
7§ Triads & Duality

One of the simplest ways to recognize the importance of all four poles of the lattice structure of the link is to notice that despite the linking number of each link, the gyrations of the components are different from station to station:
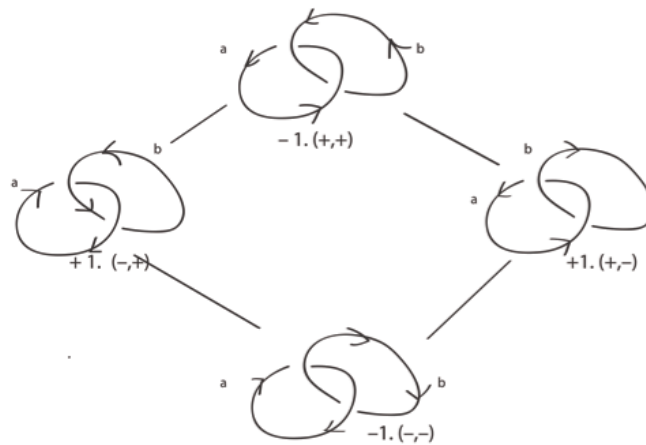
Lattice of Link Diagrams with Triads

To distinguish each link we determine a triple that determines the gyration 'g' of each component. Call this triple the generalized linking number lk(z g(x,y)).

To achieve the lattice of linking Triads, we would require sixteen diagrams. We only begin with the first eight on (-1), the other eight on (+1) being symmetric. First, we interpret the gyration pair (x, y) as a surface/void distinction on the link where X and Y are surface indicators and A and B are void indicators. Thus, placing these indications only on the (-1) diagram we have:
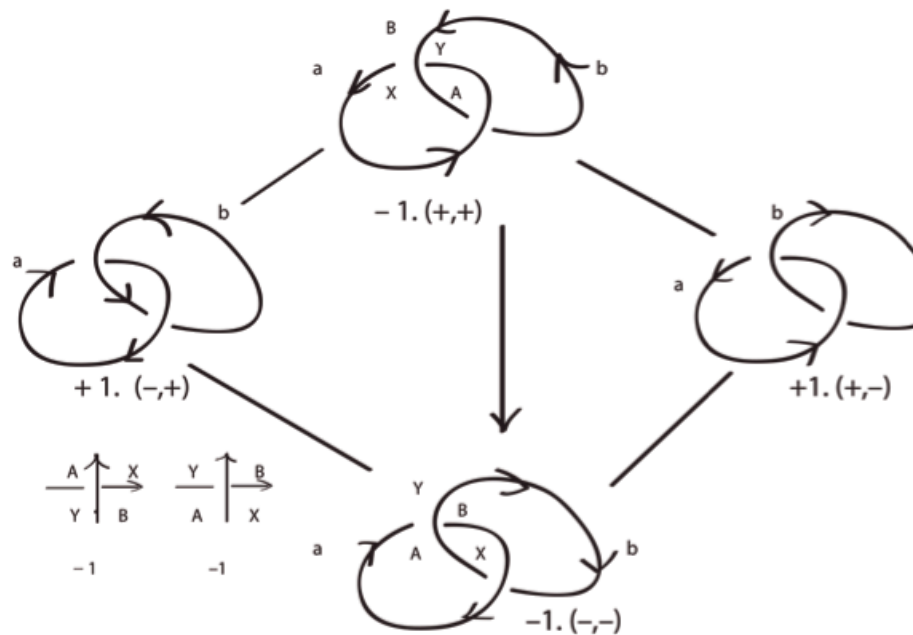
Surface Indicators of Diagrams

What this interpretation of the gyration pair (x, y) effectively does is to provide the closed curves with a surface. In an initial probe, such an interpretation may be compared to putting a Seifert surface onto the links: draw a film covering the top -1(+1, +1), while the bottom -1(-1, -1) draw the surface to the interior and extending around the link leaving A and B to mark voids.

−1(+1, +1)

− 1(−1,−1)

The achieved twisted lattice of all eight -1 diagrams is:

$-1(x^1,y^1)$

$-1(-y^{-1},-x^1,$ fa   fb

$-1(-y^{-1}-x^1,$

N

$-1(-x^1,-y^{-1})$

N

$-1(-x^1,-y^{-1})$

fa

$-1*(x^{-1},y^{-1})$
Dual

$-1(y^{-1}x^{-1})$

N: Triple Point
Movement

flype b

N

fb

flype a

$-1(x^{-1},y^b)$

$-1(-x^{-1},-y^{-b})$
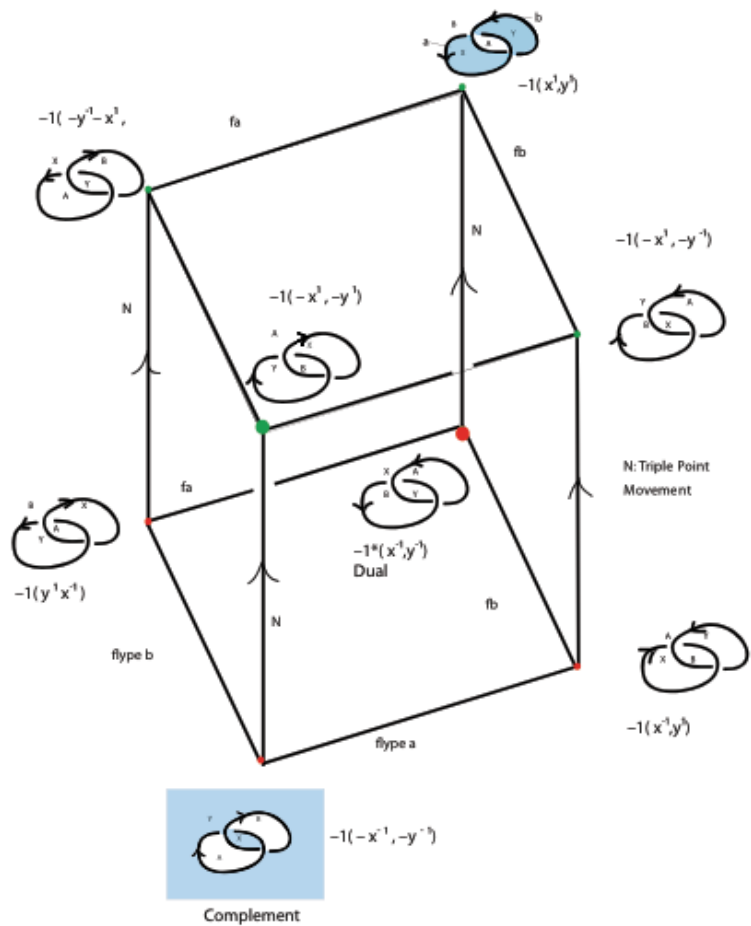
Complement

9§ Commentary and Monstration on the Lattice

1. It is important to note that the vertical movement on the lattice is a discontinuity signaled by the need for the *Triple Point Movement* that indicates *complementation* and *dualities* between a One that is 'not quite the same.'

2. The calculation of linking on a simple set of {+1, -1} modulo isotopy does not suffice to identify the link or determine its existence in a precise way. To do so requires distinguishing the obstacle between -1 and -1*/*Dual* and the *Complement* including the gyration of (+1,+1) or (-1, -1) indicative of the void/surface distinction.

3. Traveling along the lattice to the same color corners, one proceeds by a continuous movement of *flyping* a component f(a) or f(b). This movement could also occur through a series of Reidemeister moves.

4. The lattice itself its twisted and forms a link diagram, i.e., if one follows carefully the edges of the lattice it is not a cube, but an Escher Cube, which is nothing other than a link.

To conclude, we construct an example of the *Triple Point Movement* which permits a discontinuous transformation from the top most link -1(x1, y1) to its Dual -1* (-x-1y-1). The sequence of movement is composed of all Reidemeister moves, except step 5. A *Triple Point* movement on two separate strings:

Triple Point Movement

1.

$-1(x^1, y^1)$

9. *Dual: $-1(-x^1, -y^1)$

8

7.

6.

2.

3.

5. N4 -
Triple Point

4. Close-up
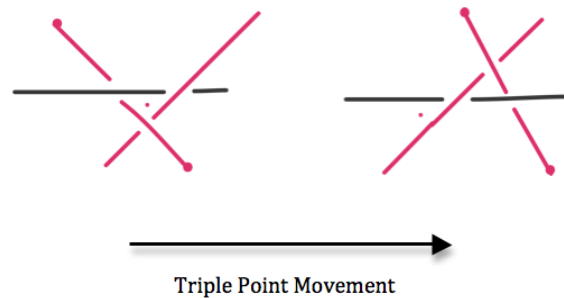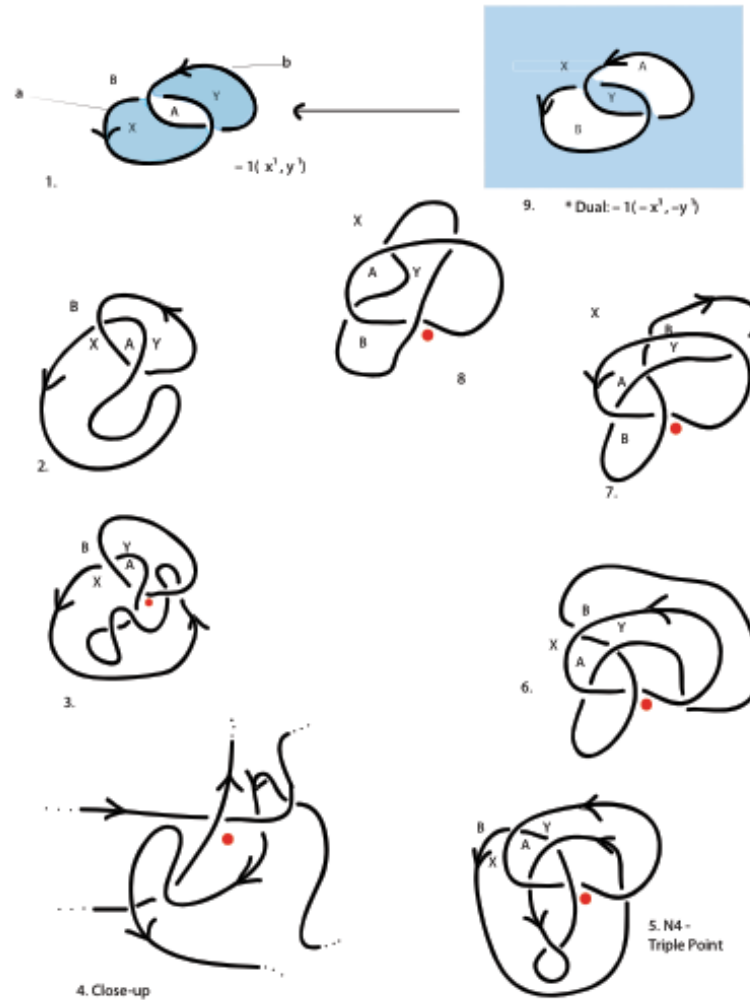
10§ En Guise of a Conclusion: A Clinic of Mathematics

I have undertaken in this paper to describe a placement problem that is crucial to both a topological and analytical theory. I have been careful to not accept as valid any of the techniques or presumptions that would normally be accepted as standard in the contemporary mathematical theory, while not de-supposing the merit or rigor of such methods.

I have barely calculated anything at this point, but have tried to show how there is something like a *style* in the contemporary mathematical theories that consti-

tutes an extra-mathematical set of choices that is not so much a paradigm, but an inhibition to the materiality and locality of the signifier. Call this inhibition, at the minimum, *Lebinizian*, and at the maximum, a form of sleep that can be approached clinically.

Whatever formal theory one may be trying to construct, whatever the sophistication of techniques, it is necessary to analyze a point of diffraction that occurs the moment one works a theory of the signifier and letter into a mathematical practice. I have called this point of diffraction *anti-Leibnizian*.

The place and implications of an *anti-Leibnizian* reading were indicated in §1 *Generalized Placement*—but I did little more than locate the problem when I situated the contingency of the diagram with regard to a theory of the signifier. Let me simply say that a fuller analysis must be left until a later study.

For the moment, the most I can do is to indicate the direction in which the problems raised by this article can proceed to be resolved. This may be summarized thus:

1) Is the link sensitive to its diagram, i.e., does it depend upon its projection?

If one supposes that isotopy suffices to determine an invariance of form, then the answer is 'no.' But if one can show that there are links with the same linking number that cannot be isotoped into each other via the Reidemeister moves, then we must respond 'yes.' We showed this with the non-oriented link -1 and its *Dual* *-1.

2) If the link depends on its projection, then:

a) The identity of the link can no longer be strictly determined by a binary linking number lk(x, y), but requires a triple lk(x (y, z)).

b) The oriented crossings governed by Maxwell's right hand rule no longer suffice to determine either the existence or identity of linking; on the contrary, what is required is a crossing number determined by a surface void/distinction:

−1   +1   −1   +1

Not   **But**
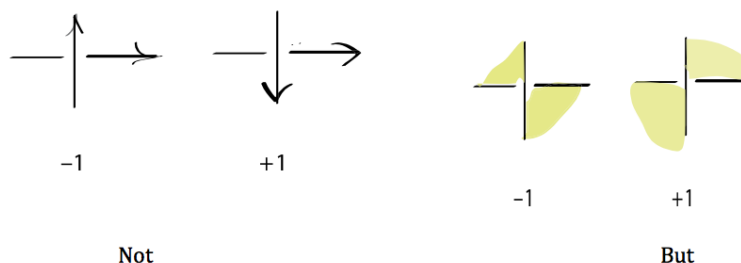
    c) The distinction of mirror symmetric links {+1,-1} can be established only if a prior question of how to regulate the problem of duality {-1,-1} is resolved. Thus, we may in any respect consider that a theory of linking exists prior to putting any orientation on the components or symmetry between them.

3) The Link can be identified only if it can be determined in its structure; in other words, if one can show what makes it different not only from knots, tangles, and locks, but from itself.

    a) Call this interior difference of the One, *Duality*: it is the *Representative of the Representation* constituting a local Freudian Identification in the same way an actor identifies with a mask he can not take off, or a mime mimes herself miming; or a knot identified with a diagram is a one that is two.

    b) The moment -1 is differentiated from its *Dual* *-1, one is made the same and is two in the production of an object in the discontinuous passage of a triple point.[27]

    c) Call the exterior difference with 'all the rest'—non-links: locks, tangles, and links—the *global differences* between types. Whereas the interior difference of the One as the Same is the *Dual* and results in the bifurcation of the type.

The principal result of this article is not to have invented anything new, but to have restated a problem in a way that is precise enough to develop the consequences.

I landmark this problem here with a conjecture on the clinic I call:

*4) The Vappereau Conjecture: T*he only objects, whether Knots, Locks, or Links, not undone by a *Triple Point Move* are Links.[28]

If true, it provides a criterion for the identification of Links in a way that is no longer reliant upon isotopy equivalence. Thus, it would permit the following conjecture to be responded to:

a) The *unknotting number* requires a projection dependent theory where:

$u(k) \leq \min u(k)$

A theory of links today must resolve the following problem: if the existence and identity of linking, in the sense strict, cannot be established by the oriented crossing number of diagrams, then we must begin with a structural theory of un-oriented linking number of a diagram. Given the first un-oriented link, place a surface on it as follows:

$\Sigma(1 + 1)/2 = |1|$ (absolute value)
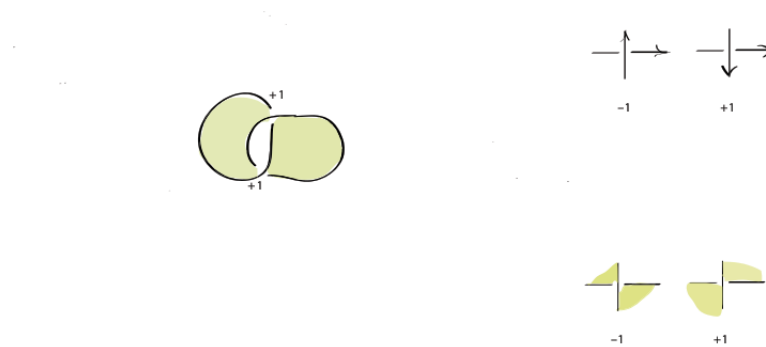
Now, designate the crossing number exactly as one had done with the oriented diagram. It will be discovered that the un-oriented linking number is sensitive to a change of presentation and cannot be undone by a triple point move.

There are different presentations of one diagram: it can be both {+1, -1}. Unlike the oriented theory of links that asks how the same two are one, the un-oriented theory asks how one is the same two.

Appendix I—Leibniz's Clinical Analysis Situs

The *manner* by which the Same—considered as an equivalence class of predicates —never suffices to establish an identity of the One we call a *style*, or clinically speaking, a *symptom*. It is important to bring out, however briefly, the correlation between *symptom* and *topology* since this shared perspective did not begin with Lacan and has led to confusion.

Already Leibniz declared that disease can be considered analytically, based upon symptoms, or synthetically, based upon causes ("*una Analytica per symptomata, altera Synthetica per causas*," Leibniz, 217), and asks if "all symptoms are simple illnesses" since analysis is "a general healing method, which is to the pathological synthesis what algebra is to the elements of geometry."[29]

Leibniz's conception of truth is based on his principles of identity which are based on his *principle of sufficient reason*: it is only on the assumption that the Same is One that Leibniz sets up the possibility of a regressive analysis that proceeds by assuming the truth of what it wants to prove: that two can be the same, at least formally, and from this infer identity of the one. This is his principle of the *identity of indiscernibles* and the basis of his *analysis situs.*

The project of Leibniz traces both a formal symptom and dilemma inherited by modern mathematics: the converse of the *identity of indiscernibles*—the *indiscernibility of identity*—is only thought pathologically: if one begins with two, two leaves or

two sexes, then there can be no indiscernibles by nature, since no two can ever be alike or truly one materially. For Leibniz, if two can be one it is only on the conditions that they be the same in a formal system of equivalence. Thus, any reference to a real is extra-mathematical: what Leibniz calls a 'pathological synthesis,' an error of logic or a geometry without an algebra.

Experiment: Trace a circle on the page. How many circles did you trace One or Two?

There are only two strategies this author knows to take here.

> 1) *The Same is One*: you suppose a circle is only truly a circle in a formal theory, then the circle you just traced with a compass on the page is not the same and can only be a second symptom-circle defined as an exception to the form of the first circle. The first absent formal circle is only supposed, even though there may be a desire to prove its existence in a regressive analysis and in the use of the "healing method" Leibniz calls *algebra*. Call this strategy *Leibnizian*: it begins with two, then tries to show, through a regressive analysis, how the two is the same in a formal theory by trivializing any material difference.

> 2) *The One is the Same:* you pose that one circle is the same only *in fact*: from the choice of conditions by which it is presented. For instance, in projective geometry one circle is never just a circle, but always dual in consideration of a pole or polar presentation and the equation fixing its signification. This difference of the same does not arise because it was badly drawn on the page, but in the consideration of a choice of presentation and writing. Thus, intrinsically, one circle is different *in principle,* but is only the same in fact, experimentally, in reference to a choice of presentation. Call this strategy *anti-Leibnizian*: it begins with One, then shows how it is the Same on the basis of a material presentation.

For the *anti-Leibnizian,* a mathematical or case presentation is not a secondary material deviation from a true form, any more than a symptom is a deviation from the norm: both are manners of discerning and writing how the one is the same with a difference. When a woman substitutes a hat for her husband, or a diagram for a knot, she is very well substituting on discernibles—counter to Leibniz's wishes— though she may still seek a normative therapist for a principle of sufficient reason and a regressive analysis of a symptom.

Yet, if we begin with the premise that the one is the same, then we can always substitute one for the other in a manner that does not repose on reducing a symptom to a regressive analysis and the search for good form, but a division of the one itself. For example, we must ask if a truly good text is ever the same. No doubt, if it is One, it can be Same, but this does not imply the Same is One: there is a text that is productive of a division not contained by the Book. Not only will no regressive analysis find the cause of a difference of the One, but its symptom and clinic are not

responded to by therapeutic questions: it is not a question of returning a deviation to a norm of life or a regressive analysis, but of working with a different style of negation and a structural cleavage.

In recognizing how the One is the Same, but cloven, we discover the *anti-Leibnizian* Freud: counter to a psychology aiming to reduce identity to a unification of what is the Same (the soul), Freud determined identification in a repetition (*Wiederholungszwang*) of what is One: the *Einziger Zug*. No doubt, there was a period where the psychoanalytic symptom was treated in a regressive analysis of the cathartic cure, but later not only would Freud discover its *principle of sufficient reason*—the Phallus—but show how its lack founds the basis of the clinic. Said otherwise, the Phallus as Form of the Same veils the problem of Structure, more specifically, the structure of castration.[30] Beyond the hypnosis of Form and a regressive therapeutics, analysis reposes on a reading and writing of this unary trait in a theory of the signifier. In the *Sinthome*, Lacan proposed Freud's *Einziger Zug* could be formulated topologically as a *triskel*:

It is a question of how three is in two, or more precisely, how this third reduces two to a one. For Freud what makes a man a man is a phallus, but what makes a woman a woman is a phallus also, which is the scandal of reducing two to one in the same.

My short introduction asked what makes a knot a knot? What is this repetition of one in the same that is bypassed in the classical theory of knots? The problem of *Symmetry* is aligned, but not a problem of *Duality*. Just as how the problem of Two become One in the Same is not how One becomes Two in the Same. The former constitutes the phallic stage, while the second is the introduction of the Oedipus by which Freud discovered castration in the *Einziger Zug*.

Without denying the narratives of Mama and Papa or the cultural situation in which analysis today is asked to give regressive reasons for everything—from pipi, caca, tics, and political runny noses—there is a practice of an experimental topology that can only constitute a progress for analysis.

Appendix II

Robert Groome, "Generalized Crossing Numbers: A Theory of Triple Points" (circulated pre-print 2002).

Robert Groome, "Generalized Placement PartII: Reading the Knot" (circulated pre-print 2010).

Acknowledgements

Notes

1. See 2.1§ below.

2. Einstein acknowledged that his relativistic approach mirrored Winteler's linguistic courses that defined a structure in terms of invariants and variants. Although it is well known that Jakobson equates the 'differential elements' of language discovered by Saussure with the 'elementary quanta' of phonemes, his reference to Winteler's work is often bypassed. See Jakobson, 1972.

3. See my pre-print article: Groome, R. T. "From A Set Theory of Numbers to a Topological Theory of Numerals" (2000). See <r-t-groome.com>. Site currently under construction.

4. See Jacques Lacan, L'étourdit, *Scilicet* 4 (1973): 5-25.

5. Koyré writes, "Indeed, an experiment—as Galileo so beautifully expressed it—being a question put before nature, it is perfectly clear that the activity which results in the asking of this question is a function of the elaboration of the language in which it is formulated. Experimentation is a teleological process of which the goal is determined by theory." Alexandere Koyré, "An Experiment in Measurement," *Proceedings of the American Philosophical Society* 97 (1953): 222-237.

6. Revendiquer le devoir d'expérimentation clinique, c'est en accepter toutes les exigences intellectuelles et morales. Or, selon nous, elles sont écrasantes. L'inconscience où en sont trop de médicins, de nos jours, n'en est pas la méconnaissance, mais au contraire la reconnaissance indirecte, par un de ces mécanismes de fuite ou d'oubli, dont l'élucidation constitue un trait de génie de Freud. Georges Canguilhem, "Therapeutique, Expérimentation, Responsibilité," *Revue de l'enseignement supérieur* (1959): 130-137.

7. "Car le savoir accumulé dans on expérience concerne l'imagination, où elle vient buter sans cesse, au point d'en être venue à régler son allure sur son exploration systématique chez le sujet. [...]. L'experience en ceci ne donne de privilege ni à la tendance dite 'biologique' de la théorie, qui n'a bien entendu de biologique que la terminologie, ni à la tendance sociologique qu'on appelle parfois "culturaliste." [...]. A vrai dire, si l'analyse confine d'assez près aux domaines ainsi évoqués de la science pour que certains de ses concepts y aient été utilizes, ceux-ci ne trouvent pas leur foundement dans l'expérience de ces domaines, [...]." Jacques Lacan, *Variantes De La Cure Type* (Paris: Seuil, 1966). It is important to remark that the word used by Lacan in the original French, '*expérience*,' is underlined here and translated by myself as both 'experiment' and 'experience' in English since it is not by simple experience, but by experiment that the growth and struggle of science transpires. The subject of science, and by implication psychoanalysis, is not experiential, but experimental. In misrecognizing the experimental dimension of the subject, the scholar Bruce Fink's unilateral translation of the French word 'expérience' into the English 'experience' trivializes the text and makes it impossible to recognize the clinic as anything other than experiential

vignettes. See the English translation of the *Écrits: A Selection* by Bruce Fink (New York and London: W.W. Norton & Company, 2002, 290) and his *A Clinical Introduction to Lacan* (Boston: Havard University Press, 1997).

8. See page 61 for diagram of homotopy.

9. The two-knot diagrams reproduced above were first discovered by Steven Bleiler, "A note on the unknoting number," Math. Proc. Cambridge Philosophical Soc. 96 (1984): 469-471. In the mathematical literature, also see, Nakanishi, "Unknotting numbers and knot diagrams with the minimum crossing," *Mathematical Seminar Notes* 11 (1983): 257-258.

10. To the objection that the existence of the knot can be determined by its complement in space, it must be recognized that this type of existence—as being different from a closed curve or trivial knot—is not the same thing as to calculate the unknotting number with regard to its presentation. Moreover, to identify a knot by calculating its complement only works for proper knots, i.e., knotted single component closed curves. Links and Locks, for example, do not have calculable complements sufficient to identify them much less determine their existence.

11. For a presentation that relies only on a logic of the traits of the diagram to establish a crossing, see R. Groome "Generalized Crossing Numbers: A Theory of Triple Points," (2002).

12. I have no intention here of giving a development on Leibniz's Principium Identitatis Indiscernibilium. Rather I would like to use it to open up a set of logical problems that arises once the unidirectional formula of invariance is generalized to include its converse—the indiscernibility of identity. Stated in predicate logic, Leibniz's principle of the identity of indiscernibles may be written $\forall F(Fx \leftrightarrow Fy) \rightarrow x=y$ where the statement may be parsed in ordinary language as: if, for every property F, object x has F if and only if object y has F, then x is 'equal' to y. The assimilation of an equality to identity may be assumed, but requires one to entertain the applicability of properties P to objects x, or to consider the truth and falsity of values P(x) of a predicate, before the objects of the domain are clearly distinguished. This move is not taken in a formal theory of knots. We will call this not yet distinguished or un-named object a Thing of knot theory in Part II of our presentation.

13. Again, we may drop the quantification on the predicate D only if we assume the notion of equality underlies the space (domain) and the predicates we are working in.

14. The choice of a particular link or a class of movements may be defined as a Representative of the Representation (*Vorstellungrepresäntanz*) , i.e., a model for a particular type of knot. For example, the choice of a particular cloverleaf may be used to determine the type for all clover leafs. It is important to determine whether such a choice and particularization of a type can be trivialized or not. See §5: The Love Triangle of the Butcher's Wife.

15. It should be remarked immediately, if the arrow-orientations are left off the links, then they are of the same isotopy-type.

16. P.G. Tait (1877) first introduced this term in borrowing from the Scottish dialectic meaning to 'turn inside out.'

17. See Appendix II.

18. See section §6.

19. Counter to Leibniz, and known at least since Parmenides, the Same is One—Leibniz's identity of indiscernibles—is not equivalent to the One is the Same—Leibniz's indiscernibility of identity. See Appendix I.

20. Two terms which contain each other and are nevertheless equal may be called 'coincident' in the manner of Leibniz. For example, everything that is denoted by the term 'triangle' may be denoted by the term 'trilateral,' yet the two have a different sense and may be used in different manners. Yet, it is well known that the whole substitution principle *salvae veritate* falls under the critique of Frege's *Über Sinn and Bedeutung* (1952) for failing to make the distinction between 'mention' and 'usage.' Here we have the linguistic version of complexity involved in not making the distinction between sign and object or diagram and knot.

21. These questions have a long, perplexing tradition and are far from being resolved. For example, Leibniz himself shows that the substitution principle breaks down *salvae veritate* on reflexive conditions in which the manner of designating what is one is brought into play. For example, Leibniz states: If A is B and B is A, the A and B are called the same. Or, A and B are the same if they can be substituted for one another everywhere (excepting, however, those cases in which not the thing itself but the manner of conceiving the thing, which may be different, is under consideration; thus, Peter and the apostle who denied Christ are the same, and the one term maybe substituted for the other, unless we are considering the manner in the way some people call "reflexive": for example, if I say, "Peter in so far as he was the apostle who denied Christ sinned," I cannot substitute "Peter" and say "Peter, in so far as he was Peter, sinned." E. Bodemann (1966).

22. Similarly, a fundamental clinical problem is posed the moment a medical doctor examines a patient and proposes there is nothing biologically wrong with the patient—no lesion in an organ or chemical imbalance—even though there seems to be a disturbance in the functioning of organ: an arm will not move or an eye is 'blind.' If p implies q, i.e., if I have a lesion in my brain, it implies that a motor activity will be disturbed; but the converse, 'q implies p,' if I have motor disturbance does not mean there is a lesion in my brain. To think so, would be to confuse implication with equivalence.

23. Sigmund Freud, "The Interpretation of Dreams" (1900), in *The Standard Edition of the Complete Psychological Works of Sigmund Freud* vols. 4 and 5, trans. and ed. James Strachey (London: Hogarth Press, 1953) 1-715.

24. The mathematical literature shows a similar use in the Yang-Baxter constructions: a term.

25. In "Noeud" (1997), J. M. Vappereau introduces a second movement necessary to the general theory of links which he calls Gordians. This generalization need not be considered in my presentation here.

26. In so doing, we begin to shift the global-local correspondence of the object and diagram from 3-d space to 2-dimensional plane to a projective space and projective plane. At which point, the reference to the Borromean is put into play since it determines the connectivity of the projective plane in the same manner that closed curves determine the connectivity of the sphere.

27. Recalling that Lacan proposed the butcher's wife identified with the salmon behind the veil.

28. On the communication of this statement to J.M. Vappereau, he informs me that he considers it a theorem with regard to p.278 in his Nœuds. With regard to 4(b) below, I have not been able to confirm this result with regard to non-alternating knots and presentations.

29. Duplex Methodus tractandi Morbos, una Analytica per symptomata, altera Synthetica percausas. Considerandumest, omnia symptomata esse morbos quosdam simplices, semper enim sunt laesae function[es,] sed quia una functio laesa facit plures [alias] collaedi, hinc saepe causa plurium symptomatum unica haberi potest. Si laesio functionis non sit perceptilis per se non appellatur symptoma. Methodus tractandi per symptomata, infinita esset si omnes eorum combinationes enumerare vellemus. Sunt quaedam signa bonae malaeque constitutionis, quae symptomata dici non possunt, ut color, urina, juvantia et laedentia; vera tradenda est analysis, seu ars tum in signa inquirendi, tum ex signis concludendi morbum. Tradenda est synthesis post subjicendum specimen analyseos; seu Methodi medendi generalis, quae habet se ad synthesin pathologicam ut algebra ad Elementa Geometriae. G. Leibniz, *De scribendis novis medicinae elementis*, 1680-1682

30. The analytic theory of Homosexuality does not repose on a definition of Same-Sex relations, but how the Same—or Homo—is radically Hetero. A woman who chooses a man as a sexual partner is just as homosexual as a man who chooses a man as a sexual partner; inversely, a woman who chooses a woman as a sexual partner is just as heterosexual as a man who chooses a woman. In either case, the same never suffices to stabilize the conditions for what is one.

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PIERRE SOURY

Translated by Baba Singh

TOPOLOGICAL OBJECTS AND THE CURRENT STATE OF MATHEMATICS

Topological objects, meaning here: knots, chains, braids, surfaces, and others. Topological objects are present in artisanship, in decorative motifs, in puzzles, in mathematics, and in the lectures of Lacan.

Topological objects seem to me to be a bricolage, as possibilities of bricolage. In particular, drawing topological objects, that's a bricolage.

That's not to say that topological objects are made of pieces and bits, of bric-o-brac. Quite the contrary. However, such a point of view exists, under the name "combinatorial topology." This point of view seems to me unsatisfactory because it manages to define topological objects starting from non-topological things; I mean to say, it defines objects that have holes as a set of things without holes. From this point of view, a circle is not a primary object. A circle is defined as a patchwork of various segments. There must be a vicious circle somewhere here.

"Combinatorial topology" is one of the points of view in present day mathematical topology. We remember how topology separates itself from geometry. But today, topology is being erased by something calling itself "general topology."

"General topology" is also called "set-theoretic topology" or "topology of sets of points." As "general topology," a "set of points" is called a "topological space."

I will not use "topological object" in the sense of "topological space" because, on the contrary, I want to oppose topological objects to "general topology." This opposition is indicated, for example, by Fréchet in *Introduction à la Topologie Combinatoire* (1946, pp. 20-22), and also by others.

"General topology" is a theory of infinite sets of points, called "topological spaces." It's full of infinity: there is the infinitesimal, that is to say the infinitely divisible and the infinitely small; there is actual infinity, that is to say that space is conceived of as the coexistence of an infinity of points. What helps deal with this actual infinity is set theory language.

"General topology" is also a theory of boundaries and boundary incidents. It's a theory that refines notions of part and part complement with notions of "interior" and "exterior," and, by doing so, problematizes boundary phenomena.

What relationship there is between this double infinity (infinitesimal and actual infinity) and boundary problems, is not clear to me.

This double infinity, I put it under the heading of "massive infinity." "General topology" is a theory of massive infinity. To make an image of it, I would say that it's like the sea (the coastal sea). I also put it under a formula of indetermination: "zero x infinity" or "0 x ∞.

I've heard Lacan assimilate the body to this thing of "general topology." Body = "topological space."

Massive infinity is different from other infinities. It is different from "repetitive infinity," that is to say, the infinity of a sequence of numbers. It is also different from "topological infinity." "Topological infinity," that's what says that a circle and a line are different, that a sphere and a plane are different.

Lacan has put "topological infinity" into play many times: by introducing chains of lines and circles; by giving the "object a" the status of a plane; by making a reversal of the torus; by situating the couple (desire/demand) on the torus.
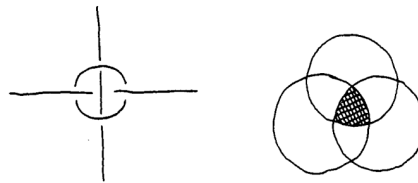
With "general topology," space thus has been associated with a sophisticated infinity. But all the same, a big confusion prevails today, because there is a tendency to reduce all spatial consideration to massive infinity. And the finite finds itself defined by the infinite. This is what I put under formulas of indetermination: "infinity—infinity" or "∞" and "infinite / infinite" or "∞/ ∞." And especially, topological objects have nothing to do with massive infinity. Said otherwise, the notion of "hole" has nothing to do with the infinitesimal. Said otherwise, topological objects—that is to say pure topology—have nothing to do with what is called "general topology."

Why has massive infinity, since its establishment, become inescapable? Why is this infinity supposed to be founded on the finite?

To make a comparison, the massive infinity of "general topology" is like the microscopic of chemistry and physics. There is an ideal, a belief, that makes the infinitesimal or the microscopic the foundational infrastructure of all things.

The infinitesimal and infinite sets of points would make an absolute foundation. This would bring logical difficulties in terms of: identity, equality, equivalence; and in terms of: inscription and differentiation; and in terms of: absolute space, relative space, ether.

For topological objects, there are also logical difficulties in terms of: presentation, object, differentiation; and in terms of: existence and coexistence. There is an analogy of Lacanian dimensions and of something calling itself "binary dimensions," which allows me to believe that Lacanian dimensions are a "beyond of the impossibility of founding."

In conclusion, it seems to me that it would be worth the effort to pay attention to the difficulties of founding things in a topology.

There is another thing that I would like to advance: it seems to me that it would be worth the effort to pay attention to drawings in topology.

Paying attention to good drawings, to bad drawings, to the absence of drawings. How is it that there are no topological drawings of the quality of Escher's drawings? Has there been a decline in drawing? Were there not more topological drawings in the 19th century than today?

What doesn't go well in drawings of mathematical topology? To be precise on this, I am going to apply myself to the following oppositions: (designating/defining), (showing/demonstrating), (possible/impossible), (complete configuration/partial configuration), (presentation/object), (example/counterexample), (object/type of object), (particular/general).

There is a declared tendency, which, in the name of an obligatory ideal, wants to do away with drawings. Drawings are suspected of distorting demonstrations. It's true. And it's true in another sense, that is to say, that demonstrations make for bad drawings and drawings without interest.

This is what goes on most of the time in geometry and in topology. Drawings are bad drawings. They are construction sites, mementos of successively introduced partial elements, indexes of used up letters, trash heaps. This is what corresponds to the fact that a demonstration is a sequence, and poses problems of existence and of construction. On the contrary, a drawing is something to be achieved, it's like a little complete theory, it's like a little complete system.

There is also the suspense of demonstrating. Once a drawing has given a complete, achieved configuration, it becomes difficult to render certain existences and certain constructions problematic. This is easier to do with a partial drawing, with an unachieved drawing. It's for this reason that lots of drawings are partial drawings. Partial drawings are usually supports of a demonstration. They are not showy and not interesting. However, in art, partial drawings, under the name "detailed studies," can be interesting.

I will mention only that there is communication between partial configuration and topological infinity.

In a demonstration, what is discussed are partial configurations and impossible configurations and especially impossible partial configurations. Drawing, on the other hand, is a showing of complete and possible configurations. Demonstration is above all the demonstration of impossibilities; showing is above all the showing of possibilities. Preoccupation with generality lends itself to showing only counterexamples. Preoccupation with generality produces especially unpleasing drawings: these are drawings that would indicate a generality of possible drawings. A drawing shows only one thing. To dwell on drawing a particular case, you have to be supported by the existence of examples.

In topology, there are examples. "General topology," on the other hand, is the land of counterexamples.

So there are bad effects of demonstrations and generalities on drawings. This is not the same thing as the difficulties proper to drawing, to presentation, to designation. Just like the difficulties linked to planar presentations of objects in three-dimensional space. Like, for example, traditionally, problems of perspective in geometry. These difficulties that I call problems of designation, or problems of presentation, are a source of failed drawings, obscure drawings. But these difficulties seem to me interesting and fertile.

A presentation of an object is much less ambitious than a general definition, than the definition of a type of object. To start with, because a presentation—or rather a designation—is particular, whereas a definition is general. Secondly, because designating a thing in three dimensions by a thing in two dimensions is less ambitious than designating and defining spatial things by language alone.

So here is the second reason that renders drawings suspect. It's that a particular designation by drawing would be too easy, and would create misunderstanding of the difficulties of general definition.

And today in mathematics, there is a foundational work that is applying itself to the potential of difficulties and problems of definition.

Difficulties and problems of designation have a very different potential, and to me this seems characteristic of topology.

Thus, I have opposed one part (definition, type of object, demonstration, generality, impossibility, counterexample, partial configuration) to another part (presentation or designation, object, showing, particularity, possibility, example, complete configuration). They're so different that one could believe that they are separated and independent; one could believe that mathematics is consecrated only to the abstraction of demonstration and definition. In part it's this that is happening today, and this makes for all the confusion. The difficulties of showing and presenting come back from time to time in demonstrations. An exact statement (*énoncé*) often

has two halves, a showing half and a demonstrating half. Demonstrating impossibilities is only clear with reference to the showing of possibilities.

That is to say that demonstrating doesn't work without showing. And a definition doesn't work without designation.

Acknowledgements

PIERRE SOURY

Translated by Baba Singh

A YEAR IN THE COMPANY OF KNOTS

Problems

This will concern a workgroup on knots. This workgroup started at the beginning of the year 1973-1974 when Lacan started talking about the Borromean knot again.

In the past, I had tried many times to get a hold of the Lacanian mathemes. It never happened. Here, it happened, it happened not alone, it happened with two. We made a workgroup of two.

What was our point of departure? There was the passage on braids, in the special case of the Borromean. Then there was the definition of a puzzle. A puzzle is not a math problem. a puzzle is a simple problem without precondition, for which the solution is not easily repeatable, consciously transmissible, or teachable. The puzzle in question was: how to render any knot in "tangles." We were lucky that many people were trying this puzzle. It was this puzzle that taught us to respect the difficulties of knots. From then on, these difficulties were confirmed as constitutive. This was our happy accident, to respect the difficulties of knots.

From this point of departure onward, when the two of us made a workgroup (or speech group), there was always a certain hesitancy. We scheduled regular meetings. We had difficulties of speech. We instituted a speech protocol called "the interruption—association protocol." This was a rule of asymmetric speech. This asymmetry was inverted from one meeting to the next.

The interruption—association protocol: There are two persons. One among them has a monopoly on interruption, that is to say can interrupt freely, speak, interrupt himself, stop. The other person has to speak without stopping, in a place left up to him to define. Speaking is taken here in the wider sense of speaking, writing, drawing, manipulating.

There was a crisis of speech that, latent or acute, remained irresolute. There were three prohibitions, in the sense of three badly maintained censorships:

—don't talk about the person of Lacan;

—don't make free use of Lacan's words and concepts;

—don't make free use of mathematical words and concepts.

Thus a progression took place. I will not give a full account of this progression, but rather make a few points.

The Borromean knot is a guide. It is not a guide in the desert.[i] There is a multitude of artisanal motifs that are present throughout. At times I found this presence intolerable.

To have a work of the knot, in the sense of a work of knitting, is useful. It's useful as a way of splitting one's attention.

The borromean knot brought us up against three references that must, I believe, from what Lacan says, be distinguished from the Borromean knot itself. This is not done. They are:

The 2. The 2 gets in the way. The 2 is a source of error, error is the source of the 2. The 2 has to be left to proliferate. You can't master the uncertainty linked to the 2, like we have the bad habit of doing with mnemonics. But you can get around this uncertainty, thanks to the fact that: uncertainty linked to the 2 is itself binary.

The combinatory of the 3 of the 4 and of the 6, and the tetrahedron. The combinatory put me into a state of sadness. "The sadness of these infinite spaces scares me."[ii]

The braid and the tangle. These are some knot presentations. They make sure that a knot is like a ring. Or again, that many rings are like a ring. As said already, it was this reference, under the form of a puzzle, that was our point of departure.

Two problems here:

Tetrahedron problem. It is necessary to distinguish the tetrahedron and the Borromean knot. It takes very little for a tetrahedron to appear. It takes two things:

—Orientation of the rings;

—The equivalence "three rings are like a ring." It's a particular case of "many rings are like a ring." This is made by rendering in tangles or rendering in a braid.

Said otherwise, in order for the 4 to appear, it takes the two following things:

—Elements of the 3 are of the 2;

—There is an equivalence "1=3."

Said otherwise, the tetrahedron appears as an intermediary between one part: oriented knots of three rings or of three colors; and another part: the oriented ring.

Thus, the tetrahedron has nothing to do with the property of writing, in the sense that: the three elements are linked and two by two independent.

The combinatory of the 3 and of the 4 is present elsewhere. It is present in the equations:

$$x(1-x)\,(1+x)=0$$

$$1+1=0$$

Problem of "stupidly using the Borromean knot." The Borromean knot is a guide, a common thread, it doesn't "end well."[iii] Can there be a relationship between "using it stupidly" and "using it humbly" [*platement*]?

We have seen the mathematical literature on knots. It's not nothing, but it's not fundamental, in the sense of the Borromean knot being a foundation. All the same there are reasons to remain cautious about this literature, for which Lacan has defined a project that can be called "the reversal of algebraic topology"—that is to say, to found space from knots and not knots from space.

In general, knots evoke amused or even smug reactions.

Not long ago, we were thinking of meeting up with other workgroups taking an interest with knots, and for this, asked the EFP[iv] about it.

We gave one talk, soon to be two, at the seminar of Lacombe, B. Jaulin, and R. Jaulin.

Acknowledgements

Translator's Notes

i.   Possibly a pun on Edward Elgar's Un voix dans le désert (A Voice in the Desert).

ii. A reference to Pascal's Pensées: "Le silence éternel de ces espaces infinis m'effraie" ("The eternal silence of these infinite spaces scares me").

iii. ça ne "tourne pas court"—a pun combining two expressions: 1) ne tourne pas rond (doesn't work well); and 2) ne tourne pas court (doesn't end quickly). My translation here is very approximate.

iv. The École Freudienne de Paris, Lacan's school from 1964-1980.

Samo Tomšič

HOMOLOGY: MARX AND LACAN

1. From Saussure to Marx

In my paper I would like to focus on the shift in Lacan's teaching after 1968, when he introduces his reference to Marx. I will limit myself only to this shift, in order to show why Marx should be understood as more than mere "occasional" reference in Lacan's teaching. I could, of course, trace this reference back to the very beginnings of this teaching, but I will confine myself to *Seminar XVI* (1968-69), since it is here that Lacan elaborates the connection between Marx's critique of political economy and Freud's discovery of the unconscious for the first time in a more systematic way, and in close reference to what then appears as the deadlocks of classical structuralism. Lacan introduces his reference to Marx as follows: "I will proceed with a homological outlook based on Marx in order to introduce today the place where we need to situate the essential function of object *a*."[1] I would like to specifically focus on this notion of homology for two main reasons: First, because this is how Lacan subsequently describes the relation between surplus value, and surplus jouissance; and second, because the term homology, the emphasis on the shared logic in the Freudian and the Marxian field, exemplifies the specificity of Lacan's approach in difference to other attempts to link, in one way or another, psychoanalysis with Marxism.

Regarding the first point I can immediately mention that the notion of surplus jouissance is not something Lacan would simply pull out of his hat. The term is of course coined according to *Mehrwert*, surplus value, and Lacan even proposes a German version, *Mehrlust*. But this connection of jouissance and surplus exists already in Freud. In his book on jokes, Freud articulated his analysis of the mechanism of satisfaction around the notion of *Lustgewinn,* gain in pleasure, or simply pleasure-profit.[2] This connection of pleasure with surplus already indicates the direction that will push Freud's theoretical development towards what he will later call "beyond the pleasure principle." To keep it brief we can say that as soon as pleasure is marked by a certain surplus, it is no longer what we would spontaneously understand under pleasure, i.e. the bodily feeling accompanying the decrease of tension,

as in the case of satisfaction of hunger or thirst. On the contrary, pleasure beyond the pleasure principle, or pleasure-profit, is no longer something that simply accompanies the decrease of tension, but something that is *produced* in its increase. A by-product, then, that Freud articulates with two objects of his early analysis, unconscious desire (in *Interpretation of Dreams*) and drive (in *Three Essays on the Theory of Sexuality* and in *Jokes and their Relation to the Unconscious*). And what is striking in Freud is that he links the reaching of satisfaction of unconscious desire, and later of drive, with labour: *Traumarbeit,* dream-work, *Witzarbeit,* joke-work etc. In this process of unconscious labour he discovers that the satisfaction deviates from the content of unconscious formations and clings onto its form. Postulating *Lust,* pleasure—a term that Lacan will for good reasons translate as jouissance—as profit therefore already sets the terrain for Lacan's reading of Freud through Marx. If jouissance is produced, and produced as surplus, as a possible source of profit, then the unconscious seems to bear the same structure as the capitalist mode of production; but also the other way around, the capitalist structure is inscribed in the unconscious, so that we can discern a thesis here: "Capitalism is unconscious." This thesis, too, can already be found formulated in Freud's *Interpretation of Dreams,* in a crucial passage where he compares the unconscious desire with the role of the capitalist in the social organisation of production processes.[3]

When Lacan later starts speaking of capitalist discourse he strengthens the homological link between Freud and Marx, since saying "the capitalist discourse" means as much as saying "the capitalist mode of production." Given the Freudian focus on the *productive* aspect of the unconscious, and given the Lacanian re-elaboration of this productive dimension, I would say that psychoanalysis started with the discovery not of just any unconscious, but precisely of the *capitalist* unconscious, or more generally with the discovery of the "ex-sistance of unconscious to discourse," as Lacan will repeatedly claim in his later teaching. This is, for instance, where Freud's discovery has nothing in common with the Jungian subconsciousness, or with philosophical ideas of the unconscious.[4] We can find the confirmation of this "ex-sistance" all over Freud's work: the connection between capitalism and the emergence of traumatic neurosis; the central role of capitalist instability in the determination of cultural discontent (discontent in culture precisely *is* discontent in capitalism) and, as already mentioned, the explicit comparison of unconscious desire with the capitalist. Lacan's introduction of Marx implies that Freud's comparison should be taken literally, that is, logically, and not analogically.

Regarding the second point we can note that the specificity of Lacan's approach in comparison to Freudo-Marxism consists in the fact that he is not interested in translating psychoanalytic contents into Marxist contents, or the other way around. He is not interested in shaping Marx's contents, so that they would be "integrated" into psychoanalysis. His emphasis is on logic, and in Lacan's teaching logical links are never innocent. Logic (and notably mathematical logic) is understood as the "science of the real," aiming at the paradoxes of the symbolic order, or on what Lacan in *Seminar XVI* calls "discursive consequences." By claiming that the relation

between Marx and Freud is logical, he therefore redirects the debate towards the structural deadlocks within the social bond, and on the logical connection between these deadlocks and production. The relation between Marxism and psychoanalysis changes as well. To illustrate this change let me recall the famous passage from Lacan's responses to the Epistemological circle of École normale superieure:

> Only my theory of language as structure of the unconscious can be described as something that is implied by Marxism, if only you are not more demanding than material implication [...] my theory of language is true, no matter what the sufficiency of Marxism turns out to be, and it is necessary for Marxism, no matter what defaults it produces to it. So much for the theory of language that Marxism implies logically. (AE, 208.)

Naturally, to say Marxism does not mean the same as to say Marx. And it is clear that Lacan aims here at Stalin's intervention into Soviet linguistic debates. Nevertheless the movement of Lacan's teaching will take a direction that can be summed up in an implication as simple as this: "If Marx then Lacan." We can recall that a material implication is false (0) only when truth implies something false. In other words, we have only the options that Marx is true, which implies Lacan's theory of language as something true; or Marx is false, which nevertheless implies Lacan's theory of language as true; there is, naturally, the third option in which both Marx and Lacan would be false, but let their opponents engage with this position.

Lacan then turns towards the theory of language that Marxism implied historically, pointing out the debate regarding Marrism, which considered language as "superstructure," a debate that was interrupted by Stalin's "order" that "language is *not* a superstructure."[5] The logical relation is here already pointed out in its discrepancy with the historical relation—which is based on a series of misunderstandings on both sides (for instance Freud's critique of Marxism as a "worldview," Marxist critique of psychoanalysis as a bourgeois practice etc.). Then Lacan concludes as follows:

> The minimum that you can admit to me regarding my theory of language, if that interests you, that it is materialist. The signifier is matter that transcends itself into language. (AE, 209.)

I will not make an exegesis of this complex statement here, but I can briefly indicate that the definition of the signifier proposed in this passage is not unrelated with Marx's notion of "commodity language" and with his demonstration of impossibility to delimit commodity language from language of political economists (cf. the famous prosopopoeia of commodities that concludes the discussion of commodity fetishism in the first volume of *Capital*). The lesson of Marx's critique of fetishism is that there is no metalanguage, and that language therefore *is* commodity language. But Lacan's answer also points out that he considered his contribution both to Marxist debates and to the debates surrounding the articulation of Marx with Freud in the connection between logic and materialism, a connection that he will recapitulate in his notion of discourse. And one could even claim that this connec-

tion of formalization and materialism, the matheme doctrine, can be considered as the persistence of dialectics in Lacan's teaching.

It is apparent at this point that there is a significant shift in Lacan's teaching in the mid-1960's: his theory of language is no longer referred exclusively to structural linguistics but also to the critique of political economy. The reason for this shift lies in the fact that Lacan finds in Marx something that Saussurean structuralism failed to offer, precisely the theory of production, or better a theory of production that departs from discursive asymmetry or social non-relation. Considering this connection between production and social non-relation Lacan will claim that Marx invented the function of the symptom, which is again a logical function: the proletariat as the social symptom embodies the truth of the social bond, which consists in the fact that there is no social relation, that theories of "contract," be it social or economic—liberty, equality, freedom and Bentham, as Marx famously puts it,—are constructions, the function of which is to mask a discursive deadlock. But in order to understand the shift that leads Lacan to homology, let me make here a longer detour via Saussure.

In his *Course in general linguistics,* Saussure draws a strong analogy between linguistics and political economy. He justifies this analogy with the fact that they are both sciences of values. But as such sciences they are both internally doubled. This doubling is caused by the temporal dimension of their object. In order to illustrate his point, Saussure first gives examples of sciences, where time does not cause particular complications in the structure of the scientific field and object. Such a case is astronomy, which investigates changes in the composition of stars, the temporality of which does not call for an inner differentiation of astronomy as such; the same holds for geology, which, on the one hand, explores different geological epochs, and can, on the other hand, provide descriptions of unchangeable states. In short, the temporal shift does not change the object of research.

All these conditions of scientificity change in linguistics and political economy, where the object transforms depending on whether we think it within or without temporality (which also means: within or without the relation to a body—the speaking body, the working body). Political economy and economic history form two separated disciplines within one science, and the same goes for static linguistics and evolutionary linguistics. As I have already mentioned, the reason for this immanent split within the two sciences lies in the concept of value: "Both sciences are concerned with a *system for equating things of different orders*—labour and wage in one and a signified and signifier in the other."[6] Of course, the notion of value has a different meaning in economy and in linguistics. But the common trait of both understandings of value consists in the structure of exchange. From the perspective of value, the relation of labour to wage is logically identical with the relation between the signified and the signifier. Commodity exchange is structured as a language.[7] But the system of equivalence can have two directions. Equivalence can concern things here and now (commodity exchange), as well as things in temporal succession (production). Here the split produced by the notion of value finally en-

ters the picture. Saussure illustrates it with the intersection of two axes, the axis of simultaneities that designates the relations between co-existing things, and from which the dimension of time is excluded; and the axis of successions, "on which only one thing can be considered at a time but upon which are located all the things on the first axis together with their changes."[8]

In linguistics, this distinction is absolute, imperative, for "language is a system of pure values which are determined by nothing except the momentary arrangement of its terms."[9] This distinction is therefore necessary in a field that has no external determination or from which it is, so to speak, impossible to step out: language and market, two fields that know no exteriority. Because of this absoluteness, their scientific discussion is possible only by splitting it to its temporal and atemporal aspects. Language and the market can be scientific objects only insofar as their positive existence is stained with the same break that, according to Lacan, reveals the Other as inexistent. Because they have no exteriority they do not exist. Because they have no exteriority they are internally barred.

The passage from Saussure's *Course* concludes with the introduction of synchronicity and diachronicity, describing the split within linguistics (static linguistics and evolutionary linguistics) and the split within the object itself. Language is both state *and* movement, and if linguistics focuses only on the static, atemporal aspect of language, it becomes the "ponding of knowledge," as Lacan will say in *Encore.* For this reason he will later also claim that he strives to construct a linguistics that would take language "more seriously," considering more the temporality of language, or as he also puts it, its "life."[10] Lacan's *linguisterie* will consequently become a critique of linguistics, and antiphilosophy a critique, not of philosophy, as one might think, but of university discourse (including capitalism). All these efforts of Lacan's later teaching affirm the Marxian notion of critique.

Saussure compares the inscription of language into the intersection of synchronicity and diachronicity with a chess-game, not only because it brings together the static and the dynamic dimension of language but also because it acknowledges that the value of particular elements depends on their position on the chessboard. Signifiers have value only insofar as they relate to other signifiers. Value is not something that would be immanent to signifiers as such, but emerges from difference. The logic of the signifier is here very unambiguously related to the logic of exchange.

This point can be described as critical because with it Saussure reveals and rejects what we could call linguistic fetishism or fetishisation of language. In the history of philosophy we can detect two versions of such fetishism. First in *Cratylus,* where Plato strives to demonstrate the relation between words and things, and thus to think linguistic value as an immanent feature of the signifier: language is presented in mimetic relation to *physis,* so that on the very level of its basic elements, its phonemes, we encounter an imitation of natural sounds. Plato tries to demonstrate that the relation between the signifier and the signified is as such rooted in nature,

and that signifiers always-already mean something in themselves: meaning and value overlap, the signifiers are supposed to have "natural" meanings. Another case of linguistic fetishism can be situated in the pragmatic tradition that leads back to Aristotle's *Organon*. Although this pragmatism does not want to demonstrate any natural link between *logos* and *physis*, it nevertheless continues to presuppose that the nature of language consists in referentiality and communication. Language is understood as an *organon*, a tool, an organ, and even if it appears that this reduces language to its communicational "use-value," we find the same hypothesis as in Plato: the signifier, in itself, supports a relation between words and things, between the symbolic and the real. There is more at stake here than the mere problematic of language. What Plato and Aristotle do is the following: on the case of language they repeat the very same operation as in relation to usury. Just like usury detaches money from its social function, turning it into an obscene self-reproducing entity (*Geld heckendes Geld*, as Marx will put it), the sophists, these usurers in language, detach language from its supposed communicative and relational function, turning it into an apparatus of jouissance.[11] The signifier becomes denaturalized; it starts causing "pleasure in speaking," as Aristotle will explicitly claim in *Metaphysics*. And this is tantamount to the evacuation of value from the field of meaning.

A further pertinence of Saussure's comparison of language with chess resides in the fact that the system is only temporary and depends on the rules of the game, which remain unaltered. The passage from one synchronicity to another takes place with each move, establishing a new distribution of figures and new relations, thereby modifying the values between particular figures. But Saussure expresses the following reserve:

> At only one point is the comparison weak: the chess player *intends* to bring about a shift and thereby to exert an action on the system, whereas language premeditates nothing. The pieces of language are shifted—or rather modified—spontaneously and fortuitously. [...]. In order to make the game of chess seem at every point like the functioning of language, we would have to imagine an unconscious or unintelligent player.[12]

Here the Freudian discovery gets its full weight. Did not Freud in *The Interpretation of Dreams* do precisely this, namely draw a strict equivalence, in all points, between chess and language? He did this precisely by presupposing an unconscious player. But with this presupposition Freud complicated the matter, because what *The Interpretation of Dreams* actually discovers as the unconscious is internally doubled on unconscious desire and dream work. The unconscious player is split into Two, and in order to illustrate this Two, and the specific relation they stand in, he will refer to nothing other than political economy: unconscious desire plays the part of the capitalist, dream work the role of the labourer. What is important to note here is that Freud separates intention from the subject. The unconscious desire is *intention without a subject,* whereas the dream work, once it stands in relation to the unconscious desire, implies a *subject without intention:* the subject of the signifier (Freud will say that the dream work does not think, nor calculate, nor judge).[13] By linking

language and labour with the unconscious Freud modifies the figure of the speaker *and* the labourer: *ça parle,* as Lacan will say, but we could also add, *ça travaille.* This is already the first point where the path of psychoanalysis reaches beyond the Saussurean project, and points towards Marx's analysis of labour.

The common ground that brings together Marx, Saussure and Freud is the key role of the form in the constitution of their scientific object. Marx discovers that the commodity form captures the subject into the fetishist relation to value; Saussure shows that the linguistic form displays a discrepancy between value and meaning; and finally the Freudian analysis leads to the conclusion that the unconscious formations do not only carry meaning but also codify jouissance: they bear the "value of jouissance."[14] The analysis of form aligns two heterogeneous kinds of production: the production of meaning and the production of value. Use-value in Marx describes a commodity that has only the meaning of satisfying needs, whereas (exchange) value points towards an "other satisfaction," as Lacan will say in *Encore*, one that parasites on the satisfaction of needs, but aims at production of surplus value. To this production no need corresponds, and this is also why Lacan will later claim that jouissance is something that serves to nothing (it does not presuppose any use-value).

2. Homology and materialism

When Lacan elaborates the idea of homology between the Marxian and the Freudian discovery, he expresses his regret that he did not introduce Marx earlier into "the field in which he is after all fully at home."[15] Let us define this field by recalling what the homology is supposed to explain: it concerns "the place where we need to situate the essential function of object *a*."[16] We first notice that the homology is also a homotopy. It concerns both the (logical) function of object *a*, and the (structural) place of this function in the discourse that constitutes the network of social bonds. There is an immediate connection between logic and topology. This overlapping of homology and homotopy has its conceptual development in Lacan, namely the progressive identification of topology and structure, explicitly formulated in *L'étourdit,*[17] but already indicated in the very title of *Seminar XVI (*1968-69), *D'un Autre à l'autre:* from an Other to the other. The focus is no longer on the Other as such, but on the logico-spatial connection between the big Other (language) and the small other, object *a,* the function and the place of production, appearing in its two fundamental roles, surplus value and surplus jouissance. A year later, in *Radiophonie,* Lacan will even go on saying that "*Mehrwert* is *Marxlust,* Marx's surplus jouissance,"[18] leaving no doubt that the social contextualization of surplus jouissance is surplus value. We see again that speaking about an analogy would mean to see in surplus value a metaphor of surplus jouissance, and the other way around; and we would be dealing with a parallel: what is surplus value in capitalist social bond is surplus jouissance in psychic life. Lacan does not say this. He says surplus value *is* surplus jouissance, redirecting the debate on the logical

articulation of the subjective and the social, and thereby also de-substantializing the notion of jouissance. We can also remind ourselves that psychoanalysis rejects the division of the subjective and the social. All Freud's efforts consisted in placing psychoanalysis on the very border between the two spheres, pointing out a (topo)logical continuity between the subjective sphere and the social bond. The Lacanian notion of discourse formalizes this Freudian movement. It describes both the structure that articulates itself in the individual speech, and the structuration of the social sphere. The discourse thus becomes the "management of jouissance," whereby jouissance itself is detached from the subjective reference. The Lacanian lesson here would be that there is no subject of jouissance, just like for Marx there is no subject of surplus value.

Marx is said to have been familiar with the function of object *a,* because his theory of the capitalist mode of production turns around the relation between representation (of labour) and production (of value). This is how Lacan introduces his reading:

> Marx departs from the function of the market. His novelty is the place where he situates labour. It is not that labour is something new, but that it is bought, that there is a market of labour. This is what allows Marx to demonstrate what is inaugural in his discourse and what is called surplus value.[19]

The point of departure is the connection between market and labour, with which Marx determines the coordinates that will enable him to trace the historic transformation of labour under capitalism, and alongside the transformation of the subject into labour-power.[20] Hence we can say that Marx departs from the relation between the subject and the Other. The market appears as a battery of values that designate relations between commodities ("the immense collection of commodities" that constitutes the wealth of nations is precisely this battery); the field in which commodity exchange takes place appears as homogeneous and structured on stable and predictable relations, just like in the Saussurean analogy, where there are only values that designate commodities. The introduction of labour, Marx's permanent and apparently insignificant insisting that it is not enough to say "labour" but "socially productive labour," shifts the discussion from the mere relation between values to a more complex feature of the capitalist discourse that includes four levels: production, distribution, exchange and consumption. Marx shows that the same problem, the same discrepancy traverses all these levels, which continuously turns around the way labour is represented in terms of value.

When labour is freed from its feudal boundaries, when it becomes something that is sold, a commodity, this shift from the commodity market to the market of labour—a process that Lacan calls "the absolutisation of the market"—reveals an anomaly within the logic of representation as such, and simultaneously demonstrates how this anomaly gives rise to an entirely new historic mode of production. The anomaly discovered by Marx in the transformation of the commodity market, already present in previous historic regimes, into the labour market is linked with two things: firstly, with the introduction of a new commodity, the labour power,

that is, an exceptional commodity, the only commodity-producing commodity; and secondly, to the fact that as soon as we think of labour as something that is being sold, just like any other commodity, we are dealing with an internal break, a minimal shift, a discrepancy in representation: representation of commodity-producing commodity in terms of value becomes problematic, because both value and production are internally differentiated. This will be the point of departure of Lacan's homology.

In his classical Saussurean phase, Lacan defined the signifier as what represents the subject for another signifier. In *Seminar XVI,* he relates this definition to Marx, claiming that it is "copied from the fact that, in what Marx deciphered, namely economic reality, the subject of exchange value is represented next to the use-value."[21] We can again recall the Saussurean comparison of the relation between the signifier and the signified with the relation between wage and labour. But while with Saussure the comparison remained in the frames of political economy (where all commodities are considered as equal), Lacan actually focuses on a gap between commodities (products of labour) and commodity (labour power).

Let us consider carefully what Lacan says in his redefinition of the signifier in terms of value-representation. He actually sums up the very same discrepancy that Marx extensively analyzes in the first 200 pages of Capital, that is, the discrepancy that reveals the capitalist mode of production as a non-relation between two different circulations. As we know, the circulation C—M—C formalizes the exchange (selling and buying), and aims at the equivalence Saussure was already talking about in his analogy; the circulation M—C—M (that Marx also writes M—C—M', whereby M' = M + ΔM), on the other hand, no longer produces equivalence but non-equivalence or difference within apparent equivalence. Lacan speaks of a gap in representation, and it is within this gap that the surplus value is produced. Marx considered the proletarian as a social symptom precisely because (s)he is a sign of the gap between the two circulations, a sign that there is no social relation.

There are two modes of circulation then: the first one, selling and buying, concerns the labourer, and the second, apparently symmetrical one, buying and selling, the capitalist. But what the labourer is selling is not the same thing as what the capitalist is buying, or to be more precise, the value for which the labour is sold is not the same as the value for which it is bought:

> We pay labour with money, because we are on the market. We pay it according to its true price, as it is defined on the market by the function of exchange value. But there is unpaid value in what appears as the fruit of labour, because the true price of this fruit is in its use-value. This unpaid labour, which is nevertheless paid in the just way in relation to the consistency of the market in the functioning of capitalist discourse, is surplus value.[22]

The apparently banal remark that we pay labour with money demonstrates its point if we remember the fundamental Marxian lesson regarding money. Since we are dealing with two different circulations, money appears once as money, in other words, as the general equivalent, that "sameness" that is expressed by all commodities that are exchanged, and once as capital. The labourer only deals with money as money, that is, the labour power is only represented in terms of exchange value, and in this regard the labourer gets paid according to the "just" price. The capitalist, on the other hand, deals with money as capital, and from this perspective the use of the labourer does not consist so much in producing commodities but in producing the surplus. The labourer gets paid "fairly," according to the representation in terms of exchange value. But since the production is internally doubled the just payment is simultaneously unjust. Translated into the vocabulary of the logic of the signifier: the subject is represented only as far as it is misrepresented. The subject of exchange value is represented next to the use-value hence means that labour power implies a fundamental non-identity because value is internally differentiated on use-value and value, and because exchange value cannot stand alone. This is where Lacan passes over to the question of jouissance: "Henceforth non-identical to itself the subject no longer enjoys. Something called surplus jouissance is lost."[23] There is a loss (of jouissance) implied in its very production, and the basic point that Lacan makes here is that the subject is not the one to enjoy. Again, there is no subject of jouissance.

Marx described this as alienation, whereby we also need to take into account that the concept of alienation becomes radicalized in *Capital*, since it is no longer referred to some presupposed "human essence." The key figure here is of course abstract labour or labour power, which showed that Marx's effort was to depsychologise and deindividualize the labourer—but *not* in order to present it as collective labourer. Better put, the subject produced by capitalism, the proletarian, is irreducible both to individual labourer and to collective labourer. The labourer as subject is an effect produced by the transformation of the commodity market into the labour market. Consequently, Lacan also seems to claim that we are not only dealing with a homology between the two surpluses, but also with the same subject: the subject of capitalism is the same as the subject of the signifier.

What I want to point out here is the very expression *Arbeitskraft*, where the expression *Kraft* (power but also force) seems to bear the same meaning as in physics. For Lacan, and I think he is merely following Marx here, there is a connection between the transformation of the market and the discursive consequences of modern science, which place formalization in relation to the real. There are two ways that Lacan frames this position in *Seminar XVI:* "reduction of materiality" (*réduction du materiel*) and "renunciation to jouissance," two fundamental discursive effects, around which Lacan develops his materialist reading of the discourse.

Let us first take a brief look at the renunciation to jouissance. Lacan starts by reminding his audience that this renunciation needs to be related to labour, which is

in itself nothing new. What is new is the way how Marx and Freud, starting from this renunciation, "correct" Hegel:

> From the very start, contrary to what claims or seems to claim Hegel, it is precisely this renunciation that constitutes the master, who knows very well how to make it the principle of his power. What is new here is that there is a discourse that articulates this renunciation and makes it appear within something that I will call the function of *surplus jouissance*.[24]

The novelty of Marx's analysis is that he links surplus value with the discrepancy in the representation of labour, making this discrepancy the fundament of the capitalist social bond. Accordingly, the novelty of Marx's approach resides in the fact that he defines society as grounded on non-relation.

If we think the Marxian and the Freudian project together, their shared novelty consists not so much in the focus on the relation between labour and renunciation but in the discovery that this "renunciation to jouissance is an effect of discourse,"[25] and more importantly, that the capitalist mastery is grounded on the connection between this renunciation and production. Insofar as commodity in capitalism is defined as a product of human labour, it presents itself as something that contains surplus value. Every object carries a stamp of surplus, but this stamp is simultaneously a stamp of lack. This relation between the surplus and the lack, against the background of the relation between renunciation and jouissance, is the driving force of the capitalist discourse, or as Lacan himself puts it elsewhere: "Surplus value is the cause of desire of which a certain economy has made its principle: that of the extensive and therefore unsatisfiable production of a lack-of-jouissance."[26]

The function of object *a* reveals the double character of the object that assumes the place of production. Surplus value and surplus jouissance are caught in a parallax structure that makes them appear once as surplus and once as lack. Discourse produces both surplus jouissance and lack of jouissance, but it is the *same* production, and the same jouissance. And the structural reason for this doubling lies again in the deadlock of representation.

Surplus jouissance is lost for the subject, thus the subject is not the one to enjoy. The commodity, as such, becomes the sign of the evacuation of jouissance: commodity is jouissance without jouissance, which means that it is stamped with surplus jouissance. We could then think that the one to enjoy is the capitalist, since he appropriates surplus value. But actually this is not the case, and Marx makes it very clear when he states that capitalists are merely administrators (or personifications) of capital. Capitalism is socialized hoarding, which is why the capitalist economy needs the fantasy of a social relation, the "contract" between the labourer and the capitalist, the "just" price, which is in constitutive discrepancy with the "true" price. Justice is the founding lie of capitalism. And if we return to the question of "who enjoys?" we could say that, in capitalism, jouissance reveals itself as what it essentially is, a presupposition that supports the intertwining of surplus and lack in an objectal function. Everyone is "supposed to enjoy," when in fact no one actu-

ally does: no one is in possession of jouissance because the production of surplus jouissance is the same as the production of lack-of-jouissance. It is this supposition of jouissance that is pointing towards this new figure of the master that Lacan indicates when he speaks of the capitalist discourse as the discourse that is based on the articulation of renunciation to jouissance. This renunciation is the source of capitalist power, and the new figure of the master, produced together with capitalism, is no other than what Freud described the unconscious desire, the headless master.[27]

Before concluding I would like to quickly address the second point: the reduction of materiality. With this, Lacan approaches the relation between scientific and capitalist discourse. If, for Koyré, the revolution in modernity consisted in the passage from the "closed world" to the "infinite universe," or from the "world of approximation" to the "universe of precision," then Lacan addresses this passage within the development of language. This is how he condenses this point in *Seminar XVI:*

> It is more than possible that the emergence of surplus value in the discourse was conditioned by the absolutization of the market. The latter is hard to separate from the development of certain effects of language, and this is why we have introduced surplus jouissance. In order for surplus value to be defined as a follow-up there needed to be the absolutization of the market, up to the point to swallow labour itself.[28]

Here we see the kernel of Lacan's argument: the absolutization of the market responds to another absolutization that concerns the functioning of the scientific discourse, the ideal of formalization. Once formalization becomes the privileged access to the real, a specific development takes place in the functioning of language. Lacan calls this development reduction of materiality and links it back to the historical emergence of logic, with the difference that the scientific modernity establishes a connection between formalization and the infinite. Both operations, as Marx has already shown, leave their mark on the historical development of capitalism. What is the metamorphosis of labour, the absolutization of the market, if not a reduction of materiality that, as Marx explicitly puts it in *Capital*, instead of freeing the labourer from labour, frees labour from its content?

I would like to mention another point that Lacan makes with the reduction of materiality (formalization). In *Seminar XVI* he constantly repeats, "discourse has consequences," whereby he is taking discursive production as the point where the connection between logic and materialism should be sought. I would again claim that the role of formalization in Lacan is logically equivalent to the role of dialectics in Marx (we can play with the thought that Lacan makes with mathematical formalization what Marx claims to have made with Hegelian dialectics—making it walk on its feet again, thus forcing its materialist character). It is dialectical precisely in the sense that it does not formalize something existent (the "great Outdoors" that exists independently from life and thinking, as Quentin Meillassoux would put it); what is formalized is, rather, something that *inexists independently within life*

and thinking, an irreducible inexistence, the "there is no" of sexual relation and of social relation. In short, what is formalized, in both Marx and Lacan, is inexistence with consequences, an *effective inexistence*. Precisely in this sense mathematical logics, as science of the real, is materialist, because it thinks the convergence of the symbolic towards the impossible: it thinks positive, that is, material effects of an independent and irreducible inexistence: class struggle (History) does not exist but nevertheless has social consequences, the Other (language) does not exist but nevertheless has bodily consequences.

Lacan starts his materialist reading of the discursive production by drawing the equivalence between the structure and the real: "Structure should be taken in the sense in which it is something upmost real, the real itself," or further, "Structure is therefore the real. This is in general determined by its convergence towards the impossible. Precisely in this the structure is real."[29] Within Saussure this understanding of structure has no place. There the structure is simply equivalent to the symbolic order (the system of differences, the system of equivalence). The overlapping of structure and the real will get another expression in the following statement: "Let us say that in general it is not worth speaking of anything else than of the real in which discourse has consequences."[30] In this shift from the supposed real as absolute exteriority to the discursive real lies the entire Lacanian concept of the real. In this formalization, the central problem concerns the discursive operation that brings together the logic and the real:

> If you operate this reduction of materiality you do this why? In order to evaluate a functioning, in which consequences can be grasped. When you grasp these consequences you articulate them in something you can consider as metalanguage—only that this "meta" merely causes confusion. For this reason I will only claim that if in discourse we can distinguish something that should be called with its proper name, logic, this distinction is always conditioned by a reduction of materiality and by nothing else.[31]

Here Lacan naturally speaks of his own use of formalization, which consists in grasping the consequences, that is, the real kernel of discursive production. One such kernel for Lacan is connected with the problem of jouissance, which is why the entire follow-up to *Seminar XVI* will elaborate a formalized theory of social bonds. But his (mis)use of formalization is not the only thing that is addressed here. Lacan also aims at the transformation of labour under capitalism. Discursive consequences in question need to be related to the constitution of subjectivity: "Mathematical logic is highly essential for your existence in the real, whether you know it or not."[32] There is an intimate relation between the reduction of the materiality, the place of the subject in the discourse, and the production of surplus.

The homology of surplus value and surplus jouissance then logically passes over to the constitution of subjectivity. The place of the proletarian and the place of the subject of the unconscious is the same. And further development of Lacan's teaching will take precisely this direction. Two quotes to illustrate this point: "Let

us say that the unconscious is the ideal labourer, the one Marx made the flower of capitalist economy in the hope to see him take over the relay from the master's discourse";[33] and "There is only one social symptom—every individual is really a proletarian, having no discourse to form a social bond, differently put, a semblant. This is where Marx got stuck in an incredible fashion."[34]

The proletarian as the subject of the unconscious? This claim, of course, has its implications that are codified in Lacan's statements, "the unconscious is politics" and "the unconscious is history," which means that in psychoanalysis a certain displacement, but also a radicalization of Marx's analysis of capitalism can be discerned. This radicalization does not necessarily pretend to offer a solution, but it does, at least, expose a problem: the capitalist mode of jouissance that makes us all reproduce capitalism in the unconscious. It is for this reason that psychoanalysis, as far as it consists in modifying the subjective relation to jouissance, should be considered in logical continuity with Marx's project of a critique of political economy. Unfortunately this is something that psychoanalysts themselves, today more than ever, tend to forget, and instead celebrate the fact that the capitalist state occasionally admits that they are "serving the public good."[35]

Notes

1. Jacques Lacan, *Le Séminaire, livre XVI, D'un Autre à l'autre* (Paris: Éditions du Seuil, 2006), 16.

2. See also Jacques Lacan, *Le Séminaire, livre XXI, Les non-dupes errent*, 20 November 1973, unpublished, where Lacan already translates the Freudian *Lustgewinn* with *plus-de-jouir.*

3. The appropriate quote goes as follows: "The motive force, which the dream required had to be provided by a wish; it was the business of the worry to get hold of a wish to act as the motive force of the dream. The position may be explained by an analogy. A daytime thought may very well play the part of entrepreneur for a dream; but the entrepreneur, who, as people say, has the idea and the initiative to carry it out, can do nothing without the capital; he needs a capitalist who can afford the outlay, and the capitalist who provides the psychical outlay for the dream is invariably and indisputably, whatever may be the thoughts of the previous day, a wish from the unconscious." Sigmund Freud, *The Standard Edition of the Complete Psychological Works of Sigmund Freud,* trans. James Strachey, et. al. (London: The Hogarth Press, 1953-1974), vol 4, 560-561. Freud's emphasis. I will discuss this passage more extensively in Samo Tomšič, *The Capitalist Unconscious: Marx and Laca*n, forthcoming in 2013.

4. Freud does claim that the unconscious knows no time, but as Slavoj Žižek has shown on several occasions, this atemporal aspect of the unconscious is the same as the atemporality of ideology that Marx already thematized in his early writings (see notably *German Ideology* and *Misery of Philosophy*). The connection between both atemporalities, ideological and unconscious, was first pointed out by Althusser. It is therefore easy to understand, why the unconscious appears as something that transcends 'concrete cultural circumstances,' while simultaneously being determined by the logic of capitalist discourse.

5. For a detailed contextualization of the Stalinist "axiom" in Lacan's teaching see Jean-Claude Milner, *L'oeuvre claire* (Paris: Éditions du Seuil, 1995).

6. Ferdinand de Saussure, *Course in general linguistics* (New York: The Philosophical library, 1959) 79.

7. Here I can already underline the problematic aspect of Saussure's comparison. Namely, he does not pick any relation between commodity and value, but the most problematic relation that puts the entire political economy under question, the relation between "commodity producing commodity" and its representation in terms of value. He thus picks an example that would have to orientate him towards the critique of political economy, which will be precisely Lacan's case. But let us for now follow Saussure's line of reasoning.

8. Saussure, 80.

9. Saussure, 80.

10. See Jacques Lacan, "Peut-être à Vincennes…," in *Autres écrits,* 313-314. What Lacan in *Seminar* XX and in *Television* calls linguisterie relates to linguistics in the same way as critique of political economy to political economy.

11. For a systematic discussion of the problem of value in Plato and Aristotle see Marcel Hénaff, *Le prix de la vérité* (Paris: Éditions du Seuil, 2002).

12. Saussure, 80. Saussure actually says that the unconscious player would need to be presupposed, and not imagined.

13. The subject without an intention is caught between the signifier of unconscious desire (S1) and all other signifiers (S2). For Freud the unconscious labourer comprises heterogeneous operations that Interpretation of Dreams nevertheless classifies into four categories, the two main ones being condensation and displacement, or translated into linguistic vocabulary metaphor and metonymy.

14. An expression that will serve Lacan to translate the notion of exchange value.

15. Lacan, *Le Séminaire, livre XVI, D'un Autre à l'autre,* 16.

16. *Le Séminaire XVI*, 16.

17. Just to recall some crucial passages: "Is topology not this notspace (n'espace), where the mathematical discourse leads us and which necessitates a revision of the Kantian aesthetics? No other stuff should be given to it than this language of pure matheme…" Jacques Lacan "L'étourdit," in *Autres écrits*, 472. Further: "Structure is the real, which shows itself in language. Of course it has no relation whatsoever with a 'correct form,'" *Autres écrits*, 476. And finally: "Topology is not 'made to guide us' in the structure. Topology is this structure—as a retroaction of the chain order of which consists language." *Autres écrits*, 483.

18. Jacques Lacan, "Radiophonie," *Autres écrits*, 434.

19. Lacan, *Le Séminaire XVI*, 17.

20. For a Lacanian reading of Marx's theory of the subject see Jean-Claude Milner, *Clartés de tout*, Paris: Verdier, 2011.

21. *Le Séminaire XVI,* 21.

22. *Le Séminaire XVI,* 37.

23. *Le Séminaire XVI,* 21.

24. *Le Séminaire XVI,* 21.

25. *Le Séminaire XVI,* 21.

26. Lacan, "Radiophonie," 435.

27. I can add here that the question of repression (of unconscious desire) and the question of accumulation (of capital) point toward the same temporal-logical problem or paradox: they presuppose a primitive accumulation and a primal repression. Here the homology and homotopy between Marx and Freud continues since they both discover a double structure in repression and accumulation (they both have to take twice in order to take place at all). We can formulate a provisory thesis that repression is the logical pedant of the capitalist accumulation in the unconscious.

28. Lacan, *Le Séminaire XVI,*37.

29. *Le Séminaire XVI,* 30.

30. *Le Séminaire XVI,* 31.

31. *Le Séminaire XVI,* 34.

32. *Le Séminaire XVI,* 35.

33. Jacques Lacan, "Télévision," in, *Autres écrits*, 518.

34. Jacques Lacan, "La troisième," in: *La Cause freudienne*, 79, Paris: Navarin, 2011, 18. In *Seminar* XX Lacan proposed what he called 'his' hypothesis, which goes as follows: the individual that is affected by the unconscious is the same as the subject of the signifier. We can say that Lacan's subject-hypothesis, too, is copied from Marx. Marx's subject-hypothesis is namely: the individual that is exploited by capitalism is the same as labour power (or the subject of value). This, of course, does not mean that the subject is reduced back to the individual. On the contrary, Lacan's subject-hypothesis is a specific translation of Freud's *Wo Es war soll Ich werden*, and it is no coincidence that the main theoretical struggle of Lacan's teaching evolves around the understanding of Freud's sentence. From its understanding depends the entire political range of psychoanalysis.

35. Another political moment of Lacan's return to Freud lies in his matheme doctrine. While today several analysts remain stuck in what one could easily call the mysticism of clinical experience and of poetic interpretation, Lacan insisted on the transmissible character of psychoanalysis. As soon as psychoanalysis is entirely reduced to the clinical hermetism psychoanalysts themselves risk to become experts, that is, they start believing in their own status of "subjects supposed to know," Psychoanalysts as the experts, united in the supposed impenetrability of clinical experience, risk turning psychoanalysis into a reactionary discipline, or simply into a church of experts, that will be only capable assuming cynical positions towards contemporary political struggles.

PIETRO BIANCHI

FROM REPRESENTATION TO CLASS STRUGGLE

A Response to Samo Tomšič

In the long and somehow unfortunate encounter between psychoanalysis and Marxism, the references that Lacan made to Marx in *Seminar XVI D'un Autre à l'autre* and in some other parts of his teaching feature some undisputed elements of originality. Samo Tomšič in his text made clear how Lacanian interest in Marx parts ways with the tradition of Freudo-Marxism and in general with any approach that considers psychoanalysis a ready-made set of concepts applicable to a certain field. Psychoanalysis cannot be used to give an "unconscious flavour" to a relation of exploitation along the lines of the concept of "repression" as in a Marcusean fashion. The path that Lacan chose to develop is rather structural, logical, or as perspicuously underlined in the text, homological. Moreover the reference to Marx represents a fundamental step in order for Lacan to develop in a more precise manner—to "situate the function" as he says—the concept of object (*a*) in his own conceptual apparatus. Thus the problem is not so much to fill a gap between psychoanalysis and Marxism in order to provide a theory of social relations to psychoanalysis. It is rather to incorporate the already psychoanalytically relevant (although implicit) Marxian reflections into psychoanalysis itself. We could say that Lacan is not interested in proving the validity of Marxism per se, but rather in testing how Marxism relies on fundamentally relevant concepts for psychoanalysis: or even more how Marxism manages to untangle some deadlocks which would be extremely problematic if remaining on the pure logic of signifier. As Tomšič said "Lacan finds in Marx something that Saussurean structuralism failed to offer, precisely the theory of production, or better a theory of production that departs from discursive asymmetry or social non-relation."[1] More than being the instrument for a more effective analysis of social relations—such as complicating the relation between the classes with unconscious processes, libidinal implications etc.—psychoanalysis can actually benefit from a stronger engagement with Marxism. Why? Because Marx invented the logical function of the symptom: "the proletariat as the social symptom embodies the truth of the social bond, which consists in the fact that there is no social relation, that theories of 'contract,' be it social or economic [...] are constructions, the function of which is to mask a discursive deadlock."[2]

From Structure to *Jouissance*

What does it mean that social bond relies on a fundamental deadlock? What does it mean that the social field is characterized by a non-relation or by a discursive asymmetry? The purpose of the theory of discourses that Lacan developed starting with *Seminar XVI, D'un Autre à l'autre* and in the years after until *Seminar XX, Encore* is precisely to clarify this point. The emergence of the concept of object (*a*) in the sixties forced Lacan to reconsider the whole problematic of the relationship between the subject and the signifier chain in a different manner if compared to the Saussurean years of his early teaching. Simply put, from a model based on three terms—Ꞩ, S1 and S2—we pass to a model on four terms—Ꞩ, S1, S2, *a*.

In the classical Lacan, the Subject—an unsubstantial void lacking any positive determination—is destined to never find a *single* signifier able to successfully represent it: the latter being precisely defined by *not* being something or in other terms, a pure negative difference in respect to another signifier. The lack of the subject and the negative differentiality of the signifying chain are two sides of the same coin: the constant movement of substitution and permutation that characterizes the series S1-S2 is none other than the impossibility of the subject to be counted *as a presence* in the chain; from here the famous definition of the subject "as what a signifier represents for another signifier." The theory of *suture* developed by Miller in the early sixties will try to give an account of this relation: according to this theory, the lack of the subject is responsible for putting into motion the signifying chain while being at the same time rejected from it. The subject can have access to the series of signifiers only *under the guise of an absence.* What underlies the seemingly autonomous negative difference between S1 and S2 is none other than the causality of the *manque-à-être.*

In those early years, the problem of the relationship between Ꞩ and S1-S2 was accounted for as a short-circuit between two levels. Lacan named this problem in a lot of different ways but, in the end, they all responded to the same fundamental dialectic: the sequence of the signifying chain *and* the foundational point of the chain; the series of signifiers *and* the master-signifier; the structure *and* the causal truth of the structure etc. In this leap between level and meta-level, a certain term sneaks into the picture: *identification.* An end of analysis would be defined as the successful shift from an individual imaginary identification—characterized by the representation *as presence* in the form of an image—to a symbolic identification: the identification with a founding lack (in the form of the signifier that signifies the signifying chain, the master-signifier, the unary-trait etc.). The subject of the unconscious needs to identify with the pure void of the self-referential enunciation in order to surpass the lure of the subject's ideological/imaginary presence.

But identification with the signifying chain (especially when it is supposed to have been successful) risks overshadowing one of the pivotal elements of the logic of the signifier—which is also, and not by coincidence, a fundamental building block of the

second Freud: *repetition*. Interestingly, a new importance given to the term *repetition* and the emergence of the object (*a*) appear at the same time in Lacan's teaching, roughly during the years of *Seminar X* and *XI*.[3] In particular, during these seminars Lacan differentiates two different meanings of the term repetition: the *automaton*, which is the insistence of the relation between signs in the symbolic chain (we could say: repetition as it was addressed in the "Seminar of 'The Purloined Letter'"); and *tuche*, which is the originary trauma triggering this very insistence. This second meaning of repetition aims at separating the aforementioned two dimensions of difference: the first between S1 and S2; and the second between $ and S1-S2. Now we have two different levels that in the theory of suture were previously conflated in a short-circuit between level and meta-level.

The unsurpassable reluctance of *tuche* to be resolved in the relationship between the void subject of enunciation and the sequence S1-S2, between level and meta-level, opens up a dimension of radical *impossibility*. There is a remainder of *tuche* impossible to be symbolized and it characterizes the function of (*a*). Here it is important to be extremely precise: such an impossibility should not be mistaken for a dimension entirely beyond the signifying chain (as Tomšič underlined: an unmediated "great outdoors"). The function of the (*a*) is rather a combination and simultaneity of three features:

> Internality: it is a part, even though *not counted* as such, of the symbolic (a part of no-part);

> Foundational, or causal: it is the primary trauma at the base of the insistence of the structure;

> Exclusion: even though not in the sense of being carried out of the space of the symbolic structure, but rather in the sense of being an internal *remainder* (and at the same time a product) of the very impossibility of the subject to successfully achieve a symbolic identification with the signifying chain (a successful resolution of the relation $/S1-S2).

The logical quandary is: how to account for the simultaneous integration of these three features? As with every mathematical function, the definition of a variable is equal to its relative position to the other factors. Therefore the articulation of the four terms— $, S1, S2, *a*—will also constitute for Lacan the building block in order to account for a renewed structuralism where concepts such as repetition, *jouissance*, remainder, will be included along with the signifier battery and the subject of the unconscious. The goal would be to account for the *a priori* conditions that regulate the relationship between these terms. Discourse is in fact etymologically derived from the Latin *discursus*, which comes from *dis-currere*: i.e. to run from a place to another. The Lacanian discourse is in fact a structural system of places and relations that regulates the interaction between these terms, i.e. their *currere* from a place to another and their mutual exchange of positions. Differently than Foucault, whose theory of discourses is centered on the historical and anonymous conditions that regulate a set of enunciations in a historicist transcendentalism, Lacan tries to

elaborate the structure of these places without referring to any historical external-ity. As Jean-Claude Milner perspicuously puts it, the theory of discourses is a way for Lacan to purify a theory of break:

> By a doctrine of the plurality of places, of the plurality of terms, of the difference between properties of place and property of terms, of the mutability of terms in relation to places, what is obtained is what could be called a nonchronological and more generally nonsuccessive articulation of the concept of break.[4]

Some psychoanalysts tend to underline the clinical dimension of the theory of discourses and describe it as the different positions that a subject can occupy in relation to his/her *jouissance* and to his/her location in the structure.[5] But the risk in such simplifications is to reduce a formalization to a purely abstract categorization of different particularities. The subject in Lacan is never *represented* by a structure, it is always *subjected* to it; it is therefore deceiving to consider the discourses clinical models, as if they were more formalized versions of traditional clinical types such as obsessional neurotics, hysterics, perverts, phobics etc. The four discourses are four nonhistorical configurations of the possible relations of places and elements within a structure, with the inclusion—if compared to the early Lacan—of a fundamental element: *joussiance*.

Such is the project outlined in *Seminar XVII, The Other Side of Psychoanalysis*. Lacan in fact invokes in the inaugural session of the seminar a return to Freud, but of a slightly different kind than before, i.e. in a reversed mode. Freud should be taken from the end, from *Beyond the Pleasure Principle* and from the Freudian reflection on the repetitive dimension of *jouissance*. In the theory of discourses, the key in the relationship between the subject and the signifier chain is not only the causal effect of truth (and the structural causality of the lack), but also the insistent repetition of this very effect. The shift is from the *content* of the effect of truth to its topological and morphological placement: the effect of *jouissance*.

The Production of the Discourses

But how does the relationship between elements function in the theory of discourses? And why do they rely on a fundamental deadlock? And why would Marx be essential in order to account for this formalization?

First of all we have to consider the matheme of the discourses abstracted from any specific element, as a pure system of void places. Lacan bases his explanation on a premise: every structure is based on a fundamental relation of one signifier to another. The battery of signifiers ("that we have no right, ever, to take as dispersed, as not already forming a network of what is called knowledge"[6]) is presupposed but, as with every system of negative differences, there has to be a founding point in order for it to emerge as an ensemble of differences. The minimal founding gesture is therefore

the intervention of an active point toward an Other. Given this primary relation, we have a structure of differences along the model S1–S2.

Every system of knowledge is dead, however, if there is not an agent that intervenes in it (every *langue* needs a *parole*); at the same time the agent would be completely closed in itself if it couldn't pose itself as other-of-itself. This dialectic of mutual positing of the One and the Other conceals something: on one hand the causal dimension of truth, on the other, as we saw with the repetition of *tuche*, the fact that this relation cannot be posed as successful once and for all. There is always something that sticks out and forces the relation between the element and its positing gesture to continuously repeat itself. The upper level of the matheme with the Agent and the Other is structurally dependent on a lower level. On the one hand, the Agent is put into motion by the causality of truth (the arrow from Truth to the Agent). It is therefore not an autonomous Agent but a "seemingly" autonomous one, i.e. a Semblance. On the other hand, the relation between the Agent and the Other always produces a remainder, which forces the relation to continuously repose itself (the Agent is doomed to continuously intervene on the Other).
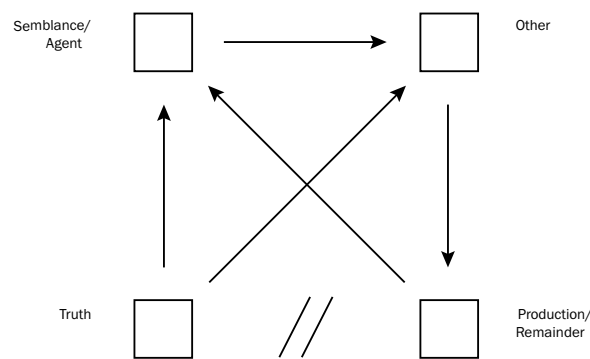
If we start to fill the places with the elements of the first discourse of the four—the Discourse of the Master—we can see that things become much clearer.

$$ \frac{S_1}{\cancel{S}} \quad \rightarrow \quad \frac{S_1}{a} $$

The system of knowledge of the signifiers, S2, is structurally depended on the contingent foundational inscription of the Master Signifier that puts them into motion. But this agent is only seemingly the true active part in this relation: it is in fact only a Semblance dependent on the causal dimension of truth. The stabilizing effect of the capitonnage of the Master Signifier is only a perspective illusion destined to never be definitively successful. The relation between the Agent and the Other (S1 and S2) has a causal truth in the manque-à-être of the $\cancel{S}$ which, as the theory of

suture claimed, is present in the signifying chain while being at the same time rejected from it. This system of three element would successfully resolve the relation between the S̸ and the signifying chain (meaning, it would guarantee a successful identification/signification for S̸) if there weren't an unsymbolazable remainder which always jeopardizes the structure, which is (*a*).

> We have not left undesignated the point from which we extract this function of the lost object. It's from Freud's discourse about the specific sense that repetition has in the speaking being. Indeed, repetition is not about just any old effect of memory in the biological sense. Repetition bears a certain relationship to what is the limit of this knowledge, and which we call *jouissance*.[7]

This remainder marks the limits of knowledge (S2) while being at the same time a constitutive part of it. The function of (*a*) is therefore at the same time that of production (it is the variance difference of the irresolvable relation between S̸ and the structure) and of loss/remainder. This is what Samo Tomšič means when he claims that *jouissance* "is no longer something that simply accompanies the decrease of tension, but something that is produced in its increase."[8] Object (*a*) is at the same time an inassimilable too-muchness—a surplus product—and a bare nothing—a loss, a remainder. Here we can start to see why this concept has resonances with the Marxian theory of value in the capitalist mode of production.

> 1. Value in capitalism is structurally in surplus. There is no such a thing as a non-surplus value. Like the object (*a*), it embodies the constant productive dynamism of capitalism.
>
> 2. The discursive asymmetry of (*a*)—i.e. the fact that there's no such a thing as a successful relationship between S̸ and the signifying chain—is the same discursive asymmetry of the social sphere where the relation between the classes has a structural incompatibility based on the system of production of value.
>
> 3. Value, like the object (*a*), has a relation with the capitalist mode of production of internality, causality and exclusion: a) the source of value, i.e. living labor, is at the core of the production process; b) it is the foundation of capital given that all the accumulation of capital is none other than dead labor, i.e. made possible by the extraction of living labor from labor-power; and c) it is internally excluded given that none of the surplus-value produced will go to benefit the living-labor that has previously produced it. There is thus a relation of exclusion between living labor and surplus-value.

The argument according to which the reference to Marx is not a metaphor nor a pure analogy for Lacan is thus absolutely correct. It is rather a necessary resource in order to explain the logic underlying that element that stays at the bottom right of the schema of the discourses. It is an element which, as we saw, emerges in order to address the question of the relation between the subject of the unconscious and

the chain of its discourse, and which is pivotal for Lacan's teaching. But there is another important consequence for this argument that emerges in Tomšič's text. Paradoxically enough, Marx is relevant for Lacan within the theory of discourses not so much as a theorist of the social bond, as everyone would expect, but rather as a theorist of the structure as such (or better, of the integration of the inassimilable element within the functioning of the structure). What Marx enables Lacan to locate is the function of (*a*) within an abstract system of relations. Lacan is not interested in Marx as a sociological description of the relation between social classes within capitalism. If it is true that Marx gives a formalization of the functioning of the capitalist mode of production, the emphasis for Lacan should be put on "formalization" far more than on "the functioning of the capitalism mode of production." Lacan, in fact, does not seem to have properly understood the Marxian analysis if not in its more abstract and formalized way. Proof of this is when Lacan tries to translate the functioning of the discourses into an analysis of capitalism as an historical formation with the infamous fifth discourse—the discourse of the capitalist. On that occasion[9] Lacan gives a profoundly non-Marxian account based on a presumably infinite and maniacal drive of consumption triggered by capitalism which would ignore the unsurpassable limit of lack and castration. We cannot develop this point further here but it is known that the law of accumulation in Marx was never based on consumption and the fundamental contradiction incarnated by the extraction of living-labor from labor-power cannot but be a continuous limit imposed on capital by the materiality of the production process.

But despite the discourse of the capitalist, Lacan seems to look in another direction and to rather be interested in the fact that surplus-value within capitalism demonstrates that any theory of production can never be anything but a theory of *surplus*-production. And as much as the object (*a*) is not a mere deviation in an otherwise manageable system of relations between $\bar{S}$ and S1-S2, super-value is not a mere deviation in an otherwise fair distribution of the products of labor: surplus-value is the fundamental disequilibrium at the core of the relation between the worker-as-labor-power and the worker-as-living-labor.

Surplus-value: a problem of representation?

The problem is that while Lacan's argument for the homology between the (*a*) and surplus-value may sound convincing in abstract, it becomes less convincing when we start to go deeper into what Lacan has in mind with surplus-value, and therefore *which* relation of homology would be involved between the two elements. Regardless of whether the relation is homology, analogy etc., a preliminary problem is the correct definition of what the two elements *are*. In Samo Tomšič's words, Lacan gives an account of the origin of surplus-value in terms of *representation*:

> [Lacan] sums up the very same discrepancy […] that reveals the capitalist mode of production as a non-relation between two different circulations. As

we know the circulation C—M—C formalizes the exchange (selling and buying), and aims at the equivalence Saussure was already talking about in his analogy; the circulation M—C—M (that Marx also writes M—C—M', whereby M' = M + ΔM), on the other hand, no longer produces equivalence but non-equivalence or difference within apparent equivalence. Lacan speaks of a gap in representation, and it is within this gap that the surplus value is produced. Marx considered the proletarian as a social symptom precisely because (s)he is a sign of the gap between the two circulations, a sign that there is no social relation.[10]

It seems here that surplus-value is generated from an impossible relation between two different circulations: a deceiving one represented by the schema Commodity—Money—Commodity where "selling" and "buying" seems to follow a logic of equality (the value of the first and the second commodity is equal) and the circulation Money—Commodity—(Surplus)Money which produces a surplus: the money generated at the end of the process is not of the same quantity as at the beginning. Tomšič claims that money as a means for purchasing a commodity in the realm of circulation is different than money used "as capital" to buy labor-power for the production process. Labor-power is in fact the only element outside of capital and therefore the most important one (and logically the only one) in order for a surplus to be generated. The problem here is that this structural asymmetry is described by Lacan as a problem of representation. As Tomšič said:

> The labourer gets paid "fairly," according to the representation in terms of exchange value. But since the production is internally doubled the just payment is simultaneously unjust. Translated in the vocabulary of the logic of the signifier: the subject is represented only as far as it is misrepresented. The subject of exchange value is represented next to the use-value hence means that labour power implies a fundamental non-identity because value is internally differentiated on use-value and value, and because exchange value cannot stand alone.[11]

Following this logic, the problem would be that the worker cannot be represented fairly, because in order for the surplus to be generated it is necessary to have a certain dissymmetry between the worker as labor-power in the sphere of exchange and the worker as use-value in the realm of production. There would be an impossible coexistence in the worker between its side as exchange-value and its side as use-value. The production of (*a*) is therefore reduced to a question of non-identity with itself,[12] as happens with the logic of the signifier. Such an outcome is coherent with the schema of the theory of the discourses recalled earlier: as Lacan said "henceforth non-identical to itself the subject no longer enjoys. Something called surplus *jouissance* is lost." The impossibility of the representation of the subject is the other side of the lost enjoyment in the product/remainder of the lower part of the schema.

In order to sustain such a homology, Lacan has to stick to the definition of the relation between use-value and exchange-value as a problem of mis-representation which is problematic as a reference to the Marxian text. Once the relation between (*a*) and surplus-value is believed to be homological, the consequences have to be followed until the end. Tomšič in fact coherently claims that, according to Lacan, "we are not only dealing with a homology between two surpluses, but also with the same subject: the subject of capitalism is the same as the subject of the signifier."[13] But is the problem of the relation between use-value and exchange-value of the worker really a problem of representation, as in the relation between the subject and the signifier? Is the symptomatic kernel of capitalism really only the impossible representation of these two different and incompatible logics? The logic of exchange and the logic of the surplus? The use-value and the exchange value? Money as means of exchange and money as capital?

Conclusion

In conclusion, I will present some thoughts on the value of the introduction of the concept of *jouissance* in the Marxian reflection, and some implicit critical remarks on the Lacanian reading of the asymmetry at the base of the capitalist social bond as a problem of representation.

The translation of *jouissance* from subjective-individual terms in the discourse of psychoanalysis to a wider reflection concerning a mode of production can be in fact extremely fruitful. The idea to define labor activity as irreducible to any good/moderate measure and aimed only at satisfying a pure self-propelled drive for accumulation of abstract wealth is one of the most important features underlined by Marx in the analysis of the capitalist mode of production. The law of accumulation is at the base of a production process not concerned with the satisfaction of basic needs and not even with the satisfaction of the capitalists' needs. Contrary to a common belief according to which Marxism would be the narration of a conflict between two groups of people—the people who are rich and have the majority of the resources and the means of production, and the ones who are poor and have nothing—capitalism is a perfect abstract machinery where actual people are only personifications of a structural necessity. If there is one thing Marx is sure about, it is that capitalism is not driven by greediness, theft or mere inequality. Relations of inequality of access to resources were common in many non-capitalist modes of production. Capitalist accumulation means first and foremost that the surplus-value produced in the cycle has to be converted into constant capital and variable capital in order to have more surplus-value in the following cycle. The fact that in the process some people, known as capitalists, will actually consume some of the commodities produced is an accident, not a structural necessity.

Even before defining surplus-value as a quantity in excess over social necessary labor, it is interesting to follow Marx's counterintuitive argument when introduc-

ing the genesis of the concept of surplus. According to Marx, capitalism managed to mobilize an unprecedented potential of transformation. Far from developing a merely negative critique of capitalism, Marx is renowned for having been fascinated by the potentiality of capitalism in many passages of his work. Contrary to the production of pre-capitalist societies, capitalism is able to deploy that *surplus* Lacan talks about with the term *jouissance*.

In the *Grundrisse*, Marx traces a division between societies whose production is devoted to satisfying a pure reproduction of themselves (therefore societies only aimed at the entire consumption of the produced use-values)—where the social character of labor is reduced to a function of the basic needs of the community— and proper capitalist societies. In the former, no surplus is generated because only what is needed for survival is produced. The question regarding the purpose of labor—i.e. the aim, the goal, what a certain labor should be used for—emerges only in capitalism when the equilibrium is ruptured:

> Thus the old view, in which the human being appears as the aim of production, regardless of his limited national, religious, political character, seems to be very lofty when contrasted to the modern world, where production appears as the aim of mankind and wealth as the aim of production. In fact, however, when the limited bourgeois form is stripped away, what is wealth other than the universality of individual needs, capacities, pleasures, productive forces etc., created through universal exchange? The full development of human mastery over the forces of nature, those of so called nature as well as of humanity's own nature? The absolute working out of his creative potentialities, with no presupposition other than the previous historic development, which makes this totality of development, i.e. the development of all human powers as such the end in itself, not as measured on a predetermined yardstick?[14]

Even though limited by its bourgeois form, capitalism is able to generate a surplus which retains the possibility of expressing and developing the creative potentialities of the universality of mankind. The cut separating the capitalist mode of production from allegedly ancient societies devoted to the pure reproduction of themselves should be welcomed as great progress. This excess—i.e. a surplus in the way humans relate to their world and reproduce themselves—is not limited to the satisfaction of basic needs. It is an element that, as with *jouissance*, cannot be explained in pure conservative and homeostatic terms. It is something more than pure survival. Marx believes that it is only when a surplus is created that a certain knot that ties together the community is broken, leaving the space for something new to emerge. A community that produces only for its own survival, as in the schema of simple reproduction, cannot inscribe itself in a proper history because its production cannot create anything that changes the system of equilibrium of the community itself. Pre-capitalist societies technically do not feature any production but only a *re*production: at the end of the cycle, things are exactly as they

were at the beginning. A community of that type would be a community where the production of the new, and therefore of history, would be impossible.

This irreducibility to the plan of basic needs recalls a basic Lacanian concept: desire. If a human being is defined by the impossibility to be reduced to a pure level of satisfaction of the basic needs; if a human being is defined by being thrown into the domain of language from its very first day in this world and because of that to be condemned to be permanently detached from a mere survival, does it entail the connection between a mode of production aimed at the creation of the anti-naturalistic excess of the surplus and desire? Should we conclude that capitalism is the most developed expression of desire? Does capitalism produce for the sake of desire? Were Deleuze and Guattari right when they understood capitalism as a system of mobilization, organization and canalization of desire?

On the one hand, it would seem that capitalism is the most natural form where desire, being irreducible to the level of the basic needs, can express itself. On the other hand, it would seem that the current "bourgeois form," as Marx claimed, imposes some limitations on it. If capitalism, in its current state, is defined by the satisfaction of one and only one law—the law of accumulation—whose desire is this kind of satisfaction? The Italian philosopher Roberto Finelli[15] hypothesizes that in capitalism there are no longer any subjects. There is only one subject, which is capital. And its purpose is the expression of its striving for accumulation. From the point of view of capital, there is only one reason to live in this world: the continuance of the extraction of living labor from the labor power in order to accumulate abstract wealth. The scission desire/needs is in the end only an ideological one: every surplus produced by the cycle of accumulation is not meant to trigger and cultivate a desire in excess over its basic survival needs. A worker's desire is not mis-represented by the capitalist organization of production, because following the inversion of subject and predicate typical of capital, it is not the worker who is subjected to its being labor-power. It is labor-power that is the true agency of the production process, which features as an unfortunate appendix: the real worker in flesh and bones. Nevertheless this unfortunate appendix cannot be cut out by capital. Even though capital tries in every way to extract living-labor without the presence of the worker; it has never managed to do so, and the presence of the worker attached to the labor-power seems to expose an inevitable sign of weakness in the cycle of accumulation. As Claudio Napoleoni said "[Labour-power] is a very particular commodity, because it is not an object belonging to the worker, it is the worker himself in one of his own particular determinations , i.e. his being a labour-power."[16] Finelli seems to forget that capital has at least this unsurpassable symptomatic weak point: in order to extract living-labor—the only source of value—from labor-power it has to rely on this minimal element of uncertainty: with the labor-power, it also has to trail along its human appendix.

The curious consequence is that despite the drive for accumulation being the only true desire expressed by capital, it cannot realize it by itself. It has to deal with the "vanishing mediator" of the worker, which blocks up the path going from the

labor-power to the living-labor. The problem is not the impossible representation of worker as both use-value (living-labor) and exchange-value (labor-power). It is rather the continuous transition in every cycle of accumulation from labor-power to living-labor—a transition that despite being regulated in every possible way, from repression to ideology, from labor legislation to partial concessions to the workers, it can never be taken for granted once and for all. More than an impossible representation, the cycle of accumulation should actually be accounted for as a never-ending dynamic: a continuous and unstoppable movement that in every cycle goes from abstract value (dead labor, as capital at the beginning of the cycle) to more abstract value (living labor morphed into abstract labor or money, through the mediation of the body of the commodity). The problem for capital is that, in order to be effective and to accumulate an increased quantity of money, the movement that leads from abstractness to abstractness is forced to pass through the concreteness of living-labor. In this passage from abstractness to concreteness to abstractness lies the symptomatic critical point of the cycle of accumulation. The symptom of capital is the dependence on the activity of living labor.

The *jouissance* of capital is therefore strictly incompatible with the potentiality of a change of desire. The transformative capacity of living-labor—its power to negate, transform and rearticulate the concrete determinations of the world—is subjected to a pure drive of accumulation of abstracted wealth. The creativeness and inventiveness triggered by the capitalist mode of production, even though incomparable in relation to the previous modes of production, are still not expressed at their fullest. For Marx, capitalism is by far the best mode of production that has appeared in history so far, but there is a better one: communism. The symptom incarnated by the possibility of class struggle at the core of the production process—in that uncertain moment where the potentiality of the labor-power is converted into the actuality of the living-labor—is the only political space for a transformation of the capitalist mode of production into something where the *jouissance* is not subjugated to a circular repetitive movement but is liberated into a new form. The wager of the translation of the concept of *jouissance* into the vocabulary of the capitalist mode of production relies on this shift in terms of scale. *Jouissance* in capitalism is not deprived of a subject: its subject is capital. But if we follow the argument to its most radical consequences, we have to ask ourselves how to interact with such a perverse and *jouisseur* subject. The problem for an anti-capitalist psychoanalysis should not be the cure of hystericized subjects in order for them to be compatible with such a regime of unethical and anti-psychoanalytic mode of accumulation. A regime of accumulation of such a kind depresses and humiliates the possibility of the new. The only possible question would thus be: how to hystericize the only subject of modernity: capital? How to work through the symptom of the extraction of living labor in order for the subject of capital to abandon the repetitive drive of accumulation? If class struggle is capital's symptom, how to listen to that symptom in order to rearticulate capital's way of enjoyment? Maybe Lacan was only partially

right in *Seminar XVII*. It may be that structures do not march in the street, but they definitely do work in a factory.

Notes

1. Samo Tomšič, "Homology: Marx and Lacan," *S: Journal of the Circle for Lacanian Ideology Critique* 5 (2012): 96-111.

2. Tomšič, 99.

3. Brigitte Balbure writes regarding the conceptualization of the term repetition in the "Seminar on 'The Purloined Letter'" that "the functioning of the signifier chain, based on which the subject has to recognize itself as such in order to open up the dimension of parole, is determined by the operation of repetition. The signifiers constantly return—which is a linguistic structural fact—because they depend on a primary signifier originarily disappeared to which this very disappearance gives a value of inaugural trauma." Brigitte Balbure, "Repetition" in Roland Chemana, Bernard Vandermersch eds., *Dictionnaire de la Psychanalyse* (Larousse-Bordas, 1998).

4. Jean-Claude Milner, "The Doctrine of Science," trans. Oliver Feltham, *Umbr(a): Science and Truth*, 1 (2000): 33-63; 51.

5. Jacques-Alain Miller, Postfazione [forewords to the Italian edition], in *Jacques Lacan, Il seminario, Libro XVII, Il rovescio della psicoanalisi* (Einaudi, Torino 2001) 279.

6. Jacques Lacan, *The Seminar of Jacques Lacan. Book XVII. The Other Side of Psychoanalysis*, trans. Russell Grigg (New York and London: W. W. Norton & Co., 2007) 15.

7. Lacan, *Sem XVII*, 15.

8. Tomšič, 97.

9. Jacques Lacan, "Del discorso psicanalitico" (1972) in Giacomo Contri, ed., *Lacan in Italia. 1953-1978* (Milano: La Salamandra, 1978) 48

10. Tomšič, 104

11. Tomšič, 105.

12. The position of S as "non-identical to itself"—as a lack, or as a generating agent of truth—was the main argument of Jacques-Alain Miller's text *La Suture: Éléments de la logique du signifiant*, one of the most influential Lacanian article of the *Cahiers pour l'analyse*, the famous journal published between 1966 and 1969 by the Cercle d'Épistémologie of the École Normale Supérieure.

13. Tomšič, 105

14. Karl Marx, *Grundrisse. Foundations of the Critique of Political Economy*, trans. Martin Nicolaus (London: Penguin, 1973) 487-488.

15. Roberto Finelli, "'Globalizzazione': una questione astratta ma non troppo." *L'Ospite Ingrato*. Annuario del Centro Studi Franco Fortini, 3 (2000): 113–130.

16. Claudio Napoleoni, *Lezioni sul capitolo sesto inedito di Marx* (Torino: Bollati Boringhieri, 1972) 55.

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CURRENT CONTROVERSIES IN THE TREATMENT OF AUTISM IN FRANCE

What is at Stake for Psychoanalysis

The French Situation

A very real problem exists: the suffering, the anxiety and the violence to which an autistic person sadly bears witness and the turmoil experienced by certain families as they attempt to deal with the emotional and educational problems of their family member as well as the attendant economic burdens. The distress of all those concerned is only magnified by the insufficiency—at least in France (which is what concerns us here)—of treatment centers and dedicated treatment programs, compounded by social stigmatization, the instrumentalization of autism for ideological or commercial ends, and, now, a polemic from which the main characters are essentially absent, despite the involvement of associations, many of which can be suspected of bias because of their collusion with various anti-psychoanalytic lobbies.[1]

This article aims to highlight the reasons for the polemic concerning autism, in terms of the way in which the latter is generally understood and explained, and to draw out the content of the attack by those in the opposing camp: some (but not all) neurobiologists, behaviorists or other neuroscientists as well as the associations of families of autistic people who support and even participate in their studies. We will also examine why psychoanalysis is so often the target of their attacks, even if, as we shall see, psychoanalysts themselves do not feel that the allegations really apply to their work. We will conclude by clarifying what psychoanalysis actually does offer to these patients.

1. A Bit of History

Faced with the necessity of responding to the psychological consequences of the Second World War, in the wake of the provisional government of the French Republic (1944-1946), the state (in the form of the Fourth Republic) made Daniel Lagache responsible for training the nation's first clinical psychologists.[2] Whatever we might think of this initiative or of the man who ran it, the clinicians he trained did have a psychoanalytic orientation. The initial signs of the decline in psychopathological models, which were incapable of providing a general theory of mental illness, led psychiatrists to take up an individualized approach and a treatment adapted to it, which psychoanalysis seemed to promise them. Eventually, successive governments continued with this institutional effort, begun during the Occupation, by creating clinics and treatment plans that accepted many psychoanalytically-oriented practitioners (psychiatrists, psychologists, and educators). This was a project of both Pétain's collaborationist government and psychiatry itself. Thus, already during the war and especially after the Liberation, psychiatrists such as Georges Daumezon (the Fleury-les-Aubrais psychiatric hospital), Lucien Bonnafé (Sotteville-lès-Rouen) and François Tosquelles (Saint-Alban en Lozère) developed a new form of inpatient treatment that would come to be known as "institutional psychiatry."[3]

Initially, and as a consequence of the accusation in 1953 that psychologists and psychoanalysts were practicing medicine illegally (without a license), French law made clinical psychology subordinate to the therapeutic oversight of a physician; as a result, what had been known as "Psycho-Pedagogical Centers" (*Centres Psycho-Pédagogiques*, or CPP) became "Medico-Psycho-Pedagogical Centers" (*Centres Médico-Psycho-Pédagogiques* or CMPP). There was a *de facto* opposition in France to the Freudian idea of lay analysis (analysis by non-physicians), which was not, however, extended to forbidding it in private practice. At the same time, the first version of the *American Psychiatric Association's Diagnostic and Statistical Manual of Mental Disorders* (*DSM*)[4] which incorporated a psychoanalytic approach, arrived in France. A later moment would be characterized by the third version of the *DSM*,[5] which was now resolutely a-theoretical, and from then on, all subsequent editions of the text have worked to get rid of what we would hardly dare to call "psychopathology" (given that there is so little of the "psyche" left), and of every last trace of psychoanalysis (exit "hysteria," "obsessional neurosis," etc.). There is a *de facto* contrast—one that is in the process of being dissolved—between, on the one hand, the new French psychiatry, first at the university and its research units, which is increasingly contaminated by the *DSM*, on the other, the traditional psychodynamic—or only psychopathological—orientation of French psychiatry, which endures in the psychiatric treatment centers. This is a quick overview of a situation that would benefit from further clarification in relation to the ideology of globalization and the parallel history of cognitive science (from the Macy conferences to their phagocytic absorption of psychopathology and psychiatry).[6] This history serves as the

backdrop for a dispute that is internal to France, but it also gives us a clue regarding the transformation of knowledge that is involved in the "frontiers of globalization."

In France, at least, this conflict has been taking shape for quite a while, fed by direct attacks on psychoanalysis (on Freud, Lacan and the rest), to which disagreements among psychoanalysts (Lacanians and non-Lacanians) have contributed and also by a questioning of the way in which psychoanalysts or psychoanalytically-oriented psychiatrists have been treating autism (and not only autism); this has been the case even when the practice that is under attack has nothing to do with psychoanalysis properly speaking (i.e., "packing," a technique that involves enveloping the body with a damp sheet, which we will discuss later). We will examine the principal criticisms in part three of this article.

As an example here, we recall some of the steps in the development of the polemic: the various submissions to the national bioethics advisory board (*Comité consultatif national d'éthique* or CCNE) by the *Autisme France* association among others, which included allegations that psychoanalysts were failing in their duty to rescue;[7] the succession of reports by INSERM (*Institut National de la santé et de la recherche médicale*), the public health board, first on the evaluation of different psychotherapeutic techniques (which disqualified psychoanalysis),[8] then on behavior disturbances in children and adolescents (which favored biopsychosocial causations);[9] a series of books including: *Mensonges freudiens* [*Freudian Lies*] by Jacques Bénesteau,[10] *Le Livre noir de la psychanalyse* [*The Black Book of Psychoanalysis*] edited by Catherine Meyer,[11] Michel Onfray's *Le Crépuscule d'une idole* [*Twilight of an Idol*],[12] not to forget the film *The Wall*, directed by Sophie Robert[13] who was condemned in court for having misrepresented the analysts whom she interviewed.[14]

The current peak of this confrontation was reached with the double proposition of a right-wing member of the National Assembly, Daniel Fasquelle, who sought to prohibit not only the psychoanalytic treatment of autistic people but also the teaching and researching of psychoanalysis in the university, a proposition that has already been transmitted by the independent public health regulatory commission (*Haute autorité de santé* or HAS). In a forthcoming report, the latter writes: "The absence of data on their effectiveness and the divergence of opinions expressed do not allow us to reach a conclusion about the suitability of treatments based on psychoanalytic approaches or on institutional psychotherapy." This report, quoted in the newspaper, *Libération*,[15] would later be disavowed by the HAS (despite the protests of associations that are hostile to psychoanalysis) . . . although the HAS would go on to confirm its unfavorable opinion of psychoanalysis.[16] Another summit in the struggle against psychoanalysis was the election, in the Psychology Section (16) of the National University Council [*Conseil national universitaire*]—the section that oversees the teaching of and research into psychology in the French university—of researchers who, in the name of the (experimental) scientific clinic, had run on the platform of putting an end to the specificity of the (psychoanalytic) clinic.[17]

The real effectiveness of lobbying can be seen clearly in the modifications of the law in the direction of constituting a "State Psychology":[18] the various proposals for a mandatory minimum sentence law (which permits a person to be imprisoned not for what he or she has done, but for what he or she is; for example, a pedophile could remain incarcerated after serving his sentence, because of a fear of recidivism); the criminalization of adolescents (lowering the age of legal majority); the proscriptions specifically targeted at adolescents (limitations on the right to peaceful public assembly or on gathering in the lobbies of buildings); the double penalty inflicted on families of delinquent youths who face losing welfare benefits, etc., etc. This ad nauseam list could be topped off with several cherries: the elimination of 2,500 special education teaching assistants (*Réseaux d'aides spécialisées aux enfants en difficulté de l'éducation nationale* or RASED),[19] the withdrawal of psychologists' right to time for training and research (*Formation, information et recherche*)—time used for writing clinical notes, student supervision, and continuing education;[20] and the new regulation of the title "psychotherapist" so as to require the exclusive use of state-approved techniques. In the context of this extension of the legal and penal apparatus, it is easy to understand how different and increasingly aggressive associations end up taking child psychiatrists to court over their treatment methods, which is just what happened to Professor Delion (a proponent of packing, which is used in the children's ward he directs) who was called before his local medical college board.[21] Let us also not forget how the Council of Europe, which investigates human rights standards, has upheld the complaint brought by *Autisme France* to the effect that France has neglected to offer autistic individuals the educational opportunities that they need, and has therefore not respected the international responsibilities stated in the European Social Charter.[22]

That autism has suddenly become an important national concern, which allows the government to show its preoccupation with the wishes of affected families—without also allocating any additional resources to them—makes one wonder whether this has not fundamentally been an electoral ploy. Yet not solely: perhaps it is also a fortuitous moment to take up the ideological anthropology by which the modern world invites each of us to conceptualize ourselves.

Very early on, a few keen observers began to notice the symptoms of disenchantment with psychoanalysis. When they tried to draw attention to this phenomenon and to account for it in terms of changes in the nature of the social bond itself, the majority of psychoanalysts were skeptical; according to the latter, since psychoanalysis had always provoked resistance and continued to do so, this was nothing new and no one should lose any sleep over it. The resistance to that which was being born with Freud is not, however, the same as the rejection of what he engendered: in Freud's own terms, repression (*Verdrängung*) is not rejection (*Verwerfung*, i.e., foreclosure). In his own inimitable fashion, Lacan provided a key to this problem, by locating resistance on the side of the analyst, with whom the analysand talks through what he or she does not want to know. Insofar as analysts embody that which resists being known, they are a symptom—and surely not only in the context

of the treatment itself but also for the times in which they live. As long as there is some movement from resistance to the "psychoanalyst-symptom," as understood in this way, it remains possible to explain things by stating that something of the psychoanalytic discourse still continues to manifest itself. Yet it is precisely the "psychoanalyst-symptom" that is being impinged upon by the ideological and political revisions of psychopathology by a State that can conceive of the psyche only in terms of "disorder" and "dysfunction." Such revisionists can thus repeat their indictment of the "ineffectiveness" and "toxic" quality of psychoanalysis until they are blue in the face; there is no place for debate, and therefore there is no place within which to confront the psychoanalyst-symptom.

To give an exaggerated summary of the first point of this argument, we could say that the dispute comes down to an opposition between two heterogeneous conceptions of the symptom: for behaviorists, the symptom is the sign of illness as understood in terms of the model of organic medicine, whereas for psychoanalysts, the symptom also happens to be that which bears witness to a hidden (repressed) meaning that regulates psychic functioning. Now, as regards autism, this second point of view is quite far from being as evident as it is in conversion hysteria, for example—and this only adds to the criticism of those who reject it *a priori.*

2. Definition of terms

What is autism in this context? It is useful to distinguish several steps that have been involved in constructing the dominant notions of autism.

Step one is the best known: Bleuler's use of the term[23] to designate a feature of schizophrenia; Kanner's invention of it as a nosographic category;[24] Asperger's extension of it to include "savants."[25] With the help of the *DSM*, "specialists" observed actual children (or recorded the stories told by their families and other caretakers) which permitted them to list a series of problematic behaviors: impaired response to social stimuli, inability to maintain eye contact, mutism, anxiety, aggressive tantrums, stereotypies (stimming), echolalia, etc. No single individual could possess all the characteristics enumerated in such a list, which means that the latter does not provide a precise definition of the condition: each particular case of autism is potentially different, not only in terms of the abstract portrait painted by such a list, but also because each autistic person on which it is based is unique. This is where the notion of the "autism spectrum" comes into play, for it allows a series of types to be grouped together: profound autism or low functioning autism (Kanner), late-onset autism, autism with savant syndrome (Asperger) and atypical forms of autism ("pervasive developmental disorder not otherwise specified").

Step two: what causes this "autism," which, as a result of its early appearance, is presented as a developmental accident? Within the optics of behaviorism, cohort studies of groups of autistic individuals have already resulted in statistical correlations between the diagnosis of autism and various biological, social and psy-

chological factors. Lists of these factors have been established which, once again, involve so many items that it is impossible to find all of them in one autistic person. However, experts conclude (by virtue of the many attendant organic events), for example, that brain imaging has demonstrated that autism has an organic cause and that international medical literature supports the conclusion that the autism spectrum is caused by neuro-developmental disturbances.[26]

Now, no one would deny that organic complications exist or that they can lead to psychological dysfunction. Yet unless we are going to diagnose autism in any child who has suffered any sort of biological problem that alters cognitive functioning, then the same organic causes will also be identified in other psychopathologies, and it is not certain that a particular cause has the same effect on everyone. From this observation, we ought to conclude that it is very important to ensure that treatment is tailored to the needs of each autistic patient. It also ought to lead us to acknowledge that we still have a lot to learn about what autism really is. The proliferation of implicated factors and behaviors attributed to autism reveals not only that there is an organic dimension to psychic functions, but also that there is also a margin of uncertainty between these causal determinations and their supposed "autism-producing" effect.

Nancy Andreasen[27] understood this as early as 1998, when she wrote, in regard to schizophrenia:

> Fortunately, the Europeans still have a proud tradition of clinical research and descriptive psychopathology. Someday in the twenty-first century, after the human genome and the human brain have been mapped, someone may need to organize a reverse Marshall plan so that the Europeans can save American science by helping us figure out who really has schizophrenia or what schizophrenia really is. The fledgling American school of descriptive psychopathology will have become extinct. Yet we cannot apply the potentially great fruits of the Human Genome Project to complex mental illnesses if we no longer have clinical investigators who have devoted their research careers to conceptualizing the nature and definitions of symptoms, syndromes, diseases, or diagnoses.[28]

This is what the clinic is about: not the observation of specific cases integrated into a statistical database that spits out a picture of some abstract entity with autism, but instead the taking into full consideration of each case. Here is our second divergence with behaviorists, following the conception of the symptom described earlier. It is only on this level that psychoanalysis can intervene as a treatment approach that is open to a subject called autistic. From that point forward, is it not rather unfair to appeal to a scientific clinic? In other words, could the quarrel over diagnosis be a red herring, insofar as science deals with the general while the clinic deals with the singular? At a minimum, it ought to be acknowledged that each of these approaches has its own relation to science.

This quarrel, however, keeps coming back, for those who hold to cognitive-behaviorist approaches use the pretext that autism is incurable and rely on observed developmental deficiencies—here again, the abstract entity—in order to set up educational programs that would serve the "general welfare" (the best known in France are TEACCH, ABA and a few others). We would be so bold as to suggest here that to take the singular into account is not the equivalent of wanting its good (welfare); to do so would imply that we already know what would be helpful, without having thought about it in the context of a clinical encounter. Each of us can legitimately wonder not only about the subjective effects of substituting an educational approach controlled by science for the relationships with the parents, but also about the effects of labelling a child as "autistic," if the term is understood in this way.

3. The Content of the Polemic

Of what has psychoanalysis been accused, generally speaking (a detailed evaluation of all the specifics is beyond the scope[29] of this article)? The various reproaches can be divided into four groups: a) psychoanalysis supports a psychogenesis of autism rather than physiological causes (and evidence-based medicine, as well); b) psychoanalysis gives preference to the subject rather than to a unified biopsychosocial orientation; c) it sustains a notion of singularity in opposition to the prevailing, politically correct, humanistic scientism; d) psychoanalysis wants to retain therapeutic methods that are "inefficient and toxic" as opposed to educational methods.

3.1 "Delirious" Psychogenesis

A short piece from the newspaper, *Le Figaro*, published on February 8, 2012, says it all, summing up the grievances repeated in one article after another:

> Why does the notion that the autistic child is imprisoned within him- or herself because of the mother, an idea espoused by the psychoanalyst Bruno Bettelheim in *The Empty Fortress*, published in 1967, remain popular only in France? The answer is to be found with the psychoanalysts, who stubbornly oppose any objective evaluation of their methods. Many of them have turned a deaf ear to the clear evidence that there is a very strong genetic component to the disorder, which, without solving the mystery of autism's cause, discredits psychoanalytic models . . . In 2007, *The Lancet*, an international medical journal, noted with surprise that a technique like "packing" (which involves wrapping children in cold, damp sheets to give them a sense of the boundaries of their bodies) is still used in France, even though its effectiveness has never been studied. In France, and nowhere else! Other psychoanalysts continue to prescribe, and again this is only in France, that parents be kept away from the child (Perez and Mascret).

Packing and residential treatment are presented, yet again, as psychoanalytic techniques that could be used to fill out the idea of a "French exceptionalism" attributed to institutions that provide mental health care.

The proponents of this so-called "French exceptionalism" (as if France were the only country in the world where psychoanalysts treat autism!) are accused of being willfully ignorant of the biological aetiology guaranteed by biologists such as Thomas Bourgeron,[30] for example, an official backer of Sophie Robert, who directed the film *The Wall*:

> At present, on the international level, autism research brings together many disciplines such as psychiatry, neurobiology and genetics. This approach to autism, founded on scientific data, has allowed for significant advances, which we hope will improve the diagnosis, treatment and integration of people with autism.

> Concerning genetics, recent results show: 1) that there are particular genes associated with autism, and 2) these genes are currently grouped into two large biological pathways that modulate the formation of neuronal connections (synapses).[31]

This aetiology itself is not, however, uncontroversial and other geneticists have drawn a more nuanced picture. Thus, in 2004, Jacqueline Nadel[32] called for the founding of a multidisciplinary network, and while certainly confirming that the troubles characterizing autism are, in part, of genetic origin ("the result of cerebral abnormalities" that occurred prematurely), also specified two sentences further down, that,

> The nature of these abnormalities is beginning to be understood, but their connection with the behavioral characteristics of autism is still far from having been identified. Furthermore, neither the biological markers of this syndrome nor the most effective modes of intervening have been elucidated.[33]

We shall insist on the fact that, at this time, less than a quarter of the cases are considered to be linked to pathological factors that have been identified; these factors, by the way, are quite diverse.

What, then, is the use of accusing psychoanalysis of a determination to know nothing about organic aetiology? There are multiple uses. Doing so allows:

- all psychoanalysts, without any nuances, to be labelled as obscurantists;
- a deterministic hypothesis to be attributed to psychoanalysts; this hypothesis can be refuted, and is, of course, immediately refuted;
- parental guilt to be eliminated by blaming psychoanalysts for it; they are accused of having created it with their theory (the proof by Bettelheim);

- an attribution to psychoanalysts of a theory that would bring education into play (since, according to psychoanalysts, autism supposedly results from a bad positioning of the mother): their critics could then legitimately introduce new educational practices linked to science;

- psychoanalysts to be reproached for the ineffectiveness of their form of treatment, thereby invalidating any conception of psychoanalysis; by the same token, we cannot reproach our critics for their own lack of effectiveness, since they have adopted the thesis of an incurable biological aetiology;

- the critics of psychoanalysis to portray themselves as the champions of education and to corner the market on autism (institutions, public funds, learning-methods);

- these critics to pay no attention to psychoanalytic publications, as is shown by the criticism—which seeks to be radical, but which is, at best, ignorant—leveled at psychoanalysis by Bernadette Rogé: it is useless to put someone with autism on the couch.[34]

3.2 Guilt and the Refusal of the Biopsychosocial Conception

Psychoanalysts, and they are not the only ones, have not seen any evidence that such a theory gets rid of guilt: according to the advocates of cognitive-behavioral therapy, autism is the fault of the Other—of the organism, of the psychic apparatus, of the environment (but never of the mother!). This conception enables them to demand that people with autism be recognized . . . as handicapped. Above all, it allows proponents of this approach to obtain money and research facilities in a field that is recognized scientifically by their peers.

There is no use in insisting on the fact that, from the perspective of psychoanalysis, guilt has very little to do with either a (moral) fault or an educational error; it is, instead, constitutive of the human as such. This guilt seeks only to find some reason to justify it, a reason that could include having transmitted a genetic "defect" or having been unable to protect one's child from an organic accident. Knowing that, in objective terms, one is guilty of nothing does little to affect the situation.

Perhaps it is necessary to begin an inventory of psychoanalytic elaborations of autism, and to undertake a tenacious critique of theories that have brought problematic behavior in their wake. It is difficult, however, in this connection, not to remark that although autism was invented by Kanner and Asperger, it has been psychologists and psychoanalysts such as Melanie Klein (and her paranoid-schizoid position), Bruno Bettelheim (and his controversial conception of the "empty fortress"), Frances Tustin (and the different variations of childhood autism), to whom we are indebted for the interest that they took in children who had, until then, most often

been abandoned to their fate, despite their families' energetic efforts to get someone to work with them.

It should be noted that the rejection of the theory that blames mothers, attributed—not without a bit of caricature—to Bruno Bettelheim,[35] and the attempt to reduce autism to biological causes, thereby forbidding any accusations directed against the family, have not produced the effects that were sought: they have neither reduced the autistic person's anxiety nor the parents' feelings of guilt. Perhaps we could see in this fact the mark precisely of the subject (parent or child), which is not disposed to abandon its prerogatives in the face of any supposed cause, whatever might be said about it!

We shall not enter here into a discussion of the subjective position of a person diagnosed with autism: the question of whether autism is a separate category or is to be subsumed under that of psychosis. On this point, there is no unanimity, but numerous psychoanalysts have argued for its specificity; among many others, there are Geneviève Haag, Marie-Christine Laznik, Jean-Claude Maleval, Henri Rey-Flaud, etc.[36] Their disagreements concern whether autism is a category that would complete the Freudian trio (neurosis, psychosis, perversion) or whether it is a supplementary psychosis—one *becomes* autistic—that is to be located beside schizophrenia and paranoia[37] . . . .

3.3 Antihumanist Psychoanalysis

Psychoanalysts are being accused of failing in their duty to rescue, because they supposedly refuse to allow people with autism access to special-needs education and training. Thus, the debate opposing behaviorists and psychoanalysts can usually be summed up by the following question: "Should the autistic child be stimulated with educational therapies, or should we wait for the child to express himself or herself?"[38] By opting for the second solution, psychoanalysts are supposedly not "caring about the welfare" of people with autism. However, critics of psychoanalysis never ask autistic patients for their own opinions on the question. Behaviorists and neuroscientists are prevented from asking these patients by their conception not only of what is good for them but also of what human nature is. They say they believe in free will, which means that they think that only people who are healthy in body and mind are responsible for their acts. Perhaps this is why more attention is paid to autism than to other problems—suicide, for example—which should deserve at least as much publicity and financial support. Indeed, autism provides the opportunity for a real-world test, as it were, of the biopsychosocial model of the individual on which the entire functioning of capitalism is based. It is an individual that can be reduced completely to the factors that determine it—a useful, effective, profitable, flexible, durable, economical machine that exists to process information; what has been subtracted from it is the capacity for judgment and the responsibility for both its choices and for the place by which it can "live together" with others.

In short (and in apparent contradiction with the neuroscientist's apparent belief in free will), it is an individual unable to make any real choices.[39]

There is no wish to demonize the critics of psychoanalysis here; the debate has nothing to gain from that. It remains the case, however, that this biologically compatible conception of the subject is just what underlay both Nazi ideology and scientific materialism (in its Stalinist version). We know just what kinds of social organizations sought to organize the collectivity in such a "scientific" way. What makes us loathe to admit this knowledge? Many "scientific" journals refuse to publish the argument, despite the literature that has been referenced in its support. Even if what has just been said is nothing more than a caricature, the traits that are accentuated by it should give us pause. In any case, it is up to those who reduce the human to biological determinants to explain to us how their "biologism" can be distinguished from the terrible biologisms that stained the history of the twentieth century. Wouldn't anyone who refuses to engage these questions become an accomplice of the worst that could be done? We regard it as rather telling that people from both the most powerful right-wing party in France, the Union for a Popular Movement (UMP) and from the far right figure among the proponents of biologist theories and defend behavioral theories of autism; their support may not suffice to disqualify these theories, but the proximity should also give us pause. Perhaps, then, the very least that a theory based on a "caricature" can do is to show the folly of setting up an opposition between educational and psychoanalytic methods and of presenting psychoanalysis, improperly, as an alternative to education; the life of autistic children does not stop at the door of the special-needs classroom nor at that of the psychoanalyst's office.

4. What Psychoanalysis Offers

In the context of the dispute that we have attempted to explain, how can we present what psychoanalysis has to offer without either giving up what is fundamental or continuing to act as if this disagreement were unreadable?

It seems that educational techniques do not really take the autistic person's opinion into account and neglect the anxious anguish that accompanies the condition (or they consider it only as a form of stress). For the psychoanalyst, however, this anxiety is a path to the real with which the subject called autistic is confronted. On this basis, psychoanalysis is justified in supposing that there is a subject in the full sense of the term, and thus in offering it the attention needed for the subject to manifest itself in its ownmost way; it is also justified in seeking to give the appropriate welcoming response to the subject's particularity (and this is the case whatever the psychoanalyst's orientation may be—we would need another article to discuss the differences). Further, psychoanalysis tries to accompany this subject in its effort to find or to construct an answer to its anxiety (as well as to its violence and hatred) and to give support for the inventions through which it already

inhabits the analytic relation and even, sometimes, a social bond that exceeds the boundaries of the treatment. When this kind of work is evaluated, this aspect of "living together" is often forgotten, or is reduced to (i.e., confused with) the cumulative effects of childcare, of educational therapies and of reductions in anxiety, aggressiveness and sexual difficulties. It even happens that time passed with the subject called autistic is itself held against psychoanalysis, due to its cost and the fact that it does not seem to teach new skills; such criticism occurs even if the child has had a good experience.

Critics of psychoanalysis and, consequently, of all post-war treatment centers (CMPP, day treatment programs, etc.) seem to have forgotten that education has always been an important part of autism services; there have always been educators on staff to support the children in their daily activities as well as during different learning activities and children are sent to school as soon as possible, whether within the treatment facility or in the public school system (in France, this has been in practice since the 1960s). Speech, occupational and physical therapists provide different kinds of treatment, as well. Opponents of psychoanalysis often do not take these forms of treatment into account, thereby automatically reaching the conclusion that only TEACCH or ABA methods are worthwhile for autism (justified, as usual, on the basis of so-called scientific expertise): it is thus not only psychoanalysts and child psychiatrists who are pilloried, but also all other professionals who work in centers where autistic children are treated, since there are many kinds of care given by a network of different disciplines.

The stubborn effort to restrict the treatment to a strict plan of skill learning and education, as a result of reducing autism to an ultimately incurable biological determinism, has the triple advantage of being integrated within scientific discourse, providing scientifically measurable evaluations of possible progress (or lack thereof) and being isomorphic with today's scientistic ideology. Is that really going to improve the response to the suffering of families of autistic children?

Basically, the psychoanalytic approach could come down to one very simple conclusion, from which one could allow oneself to be taught in each case: in contrast with what happens when everything is run according to scientific rules, the same causes (biological, psychological or social) do not produce the same effects, because one must count on the indeterminacy of the subject to which we leave the responsibility for its position—even if, in autism, this subject does not intend to use this responsibility or uses it only under certain conditions. This is, in the final analysis, the foundation of, and what is at stake in, the argument we are discussing. There is a particular exigency for the psychoanalyst who, in order to keep up with the requirements of scientific discourse, is seeking to explain what even an autistic person does with this indeterminacy. This exigency is a lesson that we believe to have been confirmed by the words of an autistic adolescent who was usually mute, and whose words were reported by one of her aides. Abandoning for a moment the educational method she had been introduced to, the adolescent reached out and

stroked the aide's hair, looked right at her, and exclaimed (thereby appropriating the well-known advertising slogan): "Because I'm worth it!"

About the Authors

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Notes

1. Jean-Claude Maleval, "Ecoutez les autistes!," *La Règle du Jeu*, 2012. Retrieved from <http://laregledujeu.org/2012/02/15/8916/ecoutez-les-autistes/>.

2. Annick Ohayon, *L'impossible rencontre: psychologie et psychanalyse en France, 1919-1969* (Paris: Éditions de la Découverte, 1999); Marie-Jean Sauret and Christine Alberti, *La psychologie clinique: histoire et discours: de l'intérêt de la psychanalyse* (Toulouse: Presses universitaires du Mirail, 1995).

3. Joseph Mornet, *Psychothérapie institutionnelle: histoire & actualité* (Nîmes: Champ social, 2007).

4. American Psychiatric Association, *Diagnostic and Statistical Manual of Mental Disorders: DSM-I*, 1st edn (Washington, DC: American Psychiatric Association, 1952).

5. American Psychiatric Association, *Diagnostic and Statistical Manual of Mental Disorders: DSM-III*, 3rd edn (Washington, DC: American Psychiatric Association, 1980).

6. *Introduction aux sciences cognitives*, ed. by Daniel Andler (Paris: Gallimard, 2004); Jean-Pierre Dupuy, *Aux origines des sciences cognitives* (Paris: Éditions de la Découverte, 1994).

7. Comité consultatif national d'ethique pour les sciences de la vie et de la santé, *Avis sur la prise en charge des personnes autistes en France*, 10 january 1996. Retrieved from <http://www.ccne-ethique.fr/docs/fr/avis047.pdf>; Comité consultatif national d'ethique pour les sciences de la vie et de la santé, *Sur la situation en France des personnes, enfants et adultes, atteintes d'autisme*, 8 november 2007. Retrieved from <http://www.ccne-ethique.fr/docs/ccne-avisn102_autisme.pdf>.

8. Institut national de la santé et de la recherche médicale (France), *Psychothérapie: trois approches évaluées* (Paris: INSERM, 2004). Retrieved from <http://www.inserm.fr:80/content/download/7356/56523/version/1/file/psychotherapie%5B1%5D.pdf>.

9. Institut national de la santé et de la recherche médicale (France), *Trouble des conduites chez l'enfant et l'adolescent* (Paris: INSERM, 2005). Retrieved from <http://www.inserm.fr/content/download/7154/55249/file/troubles+des+conduites.pdf>.

10. Jacques Bénesteau, *Mensonges freudiens: histoire d'une désinformation séculaire* (Liège: Mardaga, 2002). As Élisabeth Roudinesco explains, in a letter published on the site of a

digital journal, *Les C@hiers de psychologie politique,* Bénesteau sued her for defamation when she wrote about the antisemitism of his book (which stated that Freud falsely portrayed himself as a victim and did not suffer any kind of professional discrimination from the rise of Nazism; he based these claims on the dubious grounds that "more than half of all doctors and lawyers were Jewish and that most of the banks and nearly all of the press were controlled by Jews"). Bénesteau was joined in the suit by the author of the book's preface, Jacques Corraze, and by Henry de Lesquen, the president of the *Club de l'Horloge* and then, after an appeal by the *Club*, this ruling was confirmed on 1 March 2006 by the Court of Appeal of Paris. Then, finally, on 6 March 2007, the Court of Cassation rejected a final appeal by the *Club de l'Horloge*, thus confirming the two preceding judgments. It added that Roudinesco had engaged in a critical analysis, "which can be published freely, in which it is a matter of questioning the plaintiff's intellectual attitudes, and which is therefore a part of the domain of ideas and not an imputation that relates to a precise tangible fact, which would be subject to proof." See Élisabeth Roudinesco, "Réponse de Madame Élisabeth Roudinesco," *Les C@hiers de psychologie politique*, 11 (2007). Retrieved from <http://lodel.irevues.inist.fr/cahierspsychologiepolitique/index.php?id=625>.

11. *Le livre noir de la psychanalyse: vivre, penser et aller mieux sans Freud*, ed. by Catherine Meyer (Paris: Éditions des Arènes, 2005). The subtitle of the book, Living, Thinking and Feeling Better Without Freud, is eloquent. "The Black Book" is the name that Ilya Ehrenburg gave in 1943 to the list of abuses committed against Jews during the Second World War; the list was compiled by the literary commission of the Jewish Anti-Fascist Committee. In 1945, under the direction of Solomon Lozovsky, the committee published the list as two volumes: the first contained documentary evidence and the second was edited by Vasily Grossman and Ilya Ehrenburg. This second part has been criticized for according pride of place to "ignoble crimes committed by traitors to the homeland." Yet it was published in part in Romania in 1946. See Philippe Burrin, "Le livre noir: textes et témoignages," *La solution finale de la question juive: In memoriam, 2012*. Retrieved from <http://shoah-solutionfinale.fr/livrenoir.htm>. One really must wonder about the process of sanitization required to enable the title "Black Book" to become synonymous with what we French call a "*cahier de doléances*," a book of grievances that highlights different problems, issues and concerns, or a kind of complaint report filed against a product, service or institution. By what kind of reversal of history has it come to designate an ideological revision that can be used to charge Marxism (with no regard for the Red Army's liberation of the concentration camps) or a discipline, psychoanalysis, and its founder, whose works fed the Nazi auto-da-fés, and a part of whose family perished at Auschwitz?

12. Michel Onfray, *Le crépuscule d'une idole: l'affabulation freudienne* (Paris: Grasset, 2010). The English translation of the subtitle of Onfray's book would be *The Freudian Confabulation;* it was followed a book whose title could be rendered in English as *Marginal Notes on the Twilight: For a Non-Freudian Psychoanalysis,* i.e., *Apostille au crépuscule: pour une psychanalyse non freudienne* (Paris: Grasset, 2010). Like the behavioral psychologist Bénesteau, on whose work he relies, Onfray thinks that psychoanalysis in its entirety ought to submit to an evaluation by experimental science, which operates only in terms of true and false, correct and incorrect. Viewed in that light, an entire series of practices—the life histories of the mentally ill, interpretations, the assumption that a "cure" consists in the way that a subject manages with its symptoms—are all judged to be nothing but "lies." This notion that science itself is able to answer existential ques-

tions is what defines "scientism," and this is what ignited the polemic around Onfray's book.

13. Sophie Robert, *The Wall: Psychoanalysis Put to the Test for Autism*, 2012. Retrieved from <https://www.youtube.com/watch?v=uRU-aojZFzs>.

14. FTVi with AFP, "Un documentaire sur l'autisme interdit après des plaintes de psychanalystes," *Francetv Info* (Internet, 26 January 2012), *Société* section. Retrieved from <http://www.francetv.fr/info/un-documentaire-sur-l-autisme-interdit-apres-des-plaintes-de-psychanalystes_55243.html>.

15. Eric Favereau, "Deux approches en guerre totale," *Liberation.fr*, 13 February 2012, *Société* section. Retrieved from <http://www.liberation.fr/societe/01012389571-deux-approches-en-guerre-totale>.

16. APM, "Autisme: la HAS dément demander l'interdiction des méthodes psychanalytiques et du packing," *APM International*, 13 February 2012, *Dépêche* section. Retrieved from <http://www.apmnews.com/story.php?numero=222991>.

17. "Clinique moderne et scientifique: profession de foi," 2011. Retrieved from <http://www.galaxie.enseignementsup-recherche.gouv.fr/ensup/cnupf/A16_103748.pdf>. The statement concludes as follows: "Our pledge: In order to establish coherence within psychology, we commit ourselves to the defense of a modern, scientific clinical approach that will investigate and advance thanks to the same evaluative criteria adopted by other branches of psychology. Clinical psychology has no need for special treatment or for different evaluative criteria." French university professors are involved in both teaching and research, and universities are home to both academic departments (*Unités de formation et de recherche*) and research laboratories such as the French National Center for Scientific Research (CNRS) and the INSERM. They are governed by the "Liberties and Responsibilities of Universities" law of 2007 (LRU), which, in practice, institutes the Bologna process in France, and seeks to transform the university into a free enterprise in which knowledge, information and skills become commodities to be produced for the "new knowledge economy." See Isabelle Bruno, Pierre Clément and Christian Laval, *La grande mutation: néolibéralisme et éducation en Europe* (Les Lilas: Institut de recherches de la FSU; Paris: Éditions Syllepse, 2010); Christian Laval, *L'école n'est pas une entreprise: le néo-libéralisme à l'assaut de l'enseignement public* (Paris: Éditions de la Découverte, 2004); Christian Laval and others, *La nouvelle école capitaliste* (Paris: Éditions de la Découverte, 2011).

18. Jean-Claude Maleval and Marie-Jean Sauret, "De la nouvelle «psychopathologie clinique» d'état," *Séminaire Inter-Universitaire Européen d'Enseignement et de Recherche en Psychopathologie et Psychanalyse*, 2006. Retrieved from <http://siueerpp.org/spip.php?article61>.

19. LeMonde.fr with AFP, "Vers la suppression de 2 500 postes d'enseignants Rased en 2012," *LeMonde.fr*, 25 January 2012, *Éducation* section. Retrieved from <http://www.lemonde.fr/education/article/2012/01/25/vers-la-suppression-de-2-500-postes-d-enseignants-rased-en-2012_1634346_1473685.html>.

20. Audrey Vucher, "Les Psychologues, espèce en voie de disparition?," *Mediapart*, 28 January 2011. Retrieved from <http://www.psychologuesenresistance.org/spip.php?article385>.

21. LeMonde.fr, "Autisme: la technique du «packing», enjeu d'un violent conflit," *LeMonde.fr*, 16 February 2012, *Actualité Société* section. Retrieved from <http://www.lemonde.fr/

cgi-bin/ACHATS/acheter.cgi?offre=ARCHIVES&type_item=ART_ARCH_30J&objet_id=1188839&xtmc=packing_autisme_enjeu&xtcr=1>; Laura Spinney, "Therapy for autistic children causes outcry in France," *The Lancet*, 370 (2007): 645-646. doi:10.1016/S0140-6736(07)61322-1

22. mag2, "Condamnations de la France," *OverBlog*, 2012. Retrieved from <http://autisteen-france.over-blog.com/article-condamnations-de-la-france-96092876.html>. Delion and Golse had reason to worry. The lawsuit brought by psychoanalysts against the film *The Wall* was something altogether different: the psychoanalysts won, because the courts recognized that their interviews had been misrepresented.

23. Eugen Bleuler, *Dementia Praecox [Dementia praecox oder Gruppe der Schizophrenien]* (New York: International Universities Press, 1950); Eugen Bleuler, *L'invention de l'autisme*, trans. by Yves Kaufmant (Paris: Navarin, 1988).

24. Leo Kanner, "Autistic disturbances of affective contact," *Nervous Child*, 2 (1943): 217-250.

25. Hans Asperger, "Das psychisch abnormale Kind [The psychically abnormal child]," *Wien Klin Wochenschr*, 51 (1938): 1314-7.

26. "Several research teams in different countries, including the one directed by Thomas Bourgeron in France, have identified nearly 100 genes as implicated in this multi-faceted illness; a certain number of the genes have been observed inducing alterations in neuronal transmission at the level of the central nervous system." See Martine Perez and Damien Mascret, "Autisme : la neurobiologie discrédite la psychanalyse," *LeFigaro.fr*, 8 February 2012, *Santé* section. Retrieved from <http://sante.lefigaro.fr/actualite/2012/02/08/17243-autisme-neurobiologie-discredite-psychanalyse>. This, effectively, is not the end: "One hundred and seventy-six scientists, from more than 60 research institutions in 11 different countries, presented results of the Phase 2 of the international consortium of genetic research in autism, the Autism Genome Project. This group of researchers, which includes French scientists, has discovered genetic mutations as well as new genes involved in autism. Their results were published in the journal *Nature* on 10 June 2010." See Institut national de la santé et de la recherche médicale (France), "Consortium sur l'autisme: Découverte de nouveaux gènes," *Inserm.fr*, 2010. Retrieved from <http://www.inserm.fr/espace-journalistes/consortium-sur-l-autisme-decouverte-de-nouveaux-genes>; Dalila Pinto and others, "Functional impact of global rare copy number variation in autism spectrum disorders," *Nature*, 466 (2010), 368-372. doi:10.1038/nature09146. See also Marie-Jean Sauret, "Autisme: de qui se moque-t-on?," *Barca!*, 3 (1994), 171-178.

27. Nancy Andreasen holds the Andrew H. Woods Chair of Psychiatry at the University of Iowa. In 2000, she was awarded the National Medal of Science. She is the past president of the American Psychopathological Association and of the Psychiatric Research Society and a former Editor-in-Chief of *The American Journal of Psychiatry*.

28. Nancy Andreasen, "The Crisis in Clinical Research," *The American Journal of Psychiatry*, 155 (1998), 455.

29. For an overview, see Pierre Delion and Bernard Golse, *Autisme: état des lieux et horizons* (Toulouse: Érès, 2008).

30. Thomas Bourgeron is a professor of genetics at the University of Paris 7 (Denis Diderot) and directs the "Human Genetics and Cognitive Functions" research team: "Our group aims to identify the genetic sequences involved in the elaboration of human cognitive functioning. To this end, we identify inter-individual differences linked to psychiatric

disturbances and evaluate the selective forces that act on the DNA sequences in the course of their evolution. This work has enabled us to characterize new candidate genes (FAM8A1, GRIK2, NLGNs) and to identify the first mutations associated with autism (neuroligins NLGN3 et NLGN4)." See Thomas Bourgeron, "Rapport d'activité de l'unité Génétique humaine et Fonctions cognitives pour l'année 2004," *Institut Pasteur*, 2005. Retrieved from <http://www.pasteur.fr/recherche/RAR/RAR2004/Ghfc.html>.

31. Thomas Bourgeron, "Soutiens: Pr. Thomas Bourgeron, Directeur du département de Neuroscience de l'Institut Pasteur," *Soutenons Le Mur*, 2011. Retrieved from <http://www.soutenonslemur.org/2011/12/16/reactions-pr-thomas-bourgeron/>. It would be useful to take a closer look at this mechanism of hijacking, which is condemned when psychoanalysts use it, but praiseworthy when used to misrepresent psychoanalysis in favor of a "good cause." Here, we will simply note our surprise at seeing Thomas Bourgeron's collaboration with the "International Network of Freud Critics" (see the Internet site of the same name, as well as Bougeron's personal blog) along with both Bénesteau who, as we have seen, was found guilty for having accused Roudinesco of inventing the antisemitism that Freud experienced, and Corraze, who wrote the preface to this work, and who has close relations with the National Front. Bizarrely, the rulings condemning Bénesteau and Sophie Robert have been taken as proof that there exists a conspiracy of psychoanalysts! Is this factual data merely a matter of coincidence or does it indicate the proximity of biologism to reactionary ideologies, although of course all biologists do not identify with such ideologies and some biologists even actively oppose them, such as, for example, Jean-Jacques Kupiec and his theory of cellular Darwinism. See Jean-Jacques Kupiec, "The extension of Darwinian principles to embryogenesis," *Speculations in Science and Technology*, 9 (1986): 19-22; Jean-Jacques Kupiec and Pierre Sonigo, *Ni Dieu ni gène: pour une autre théorie de l'hérédité* (Paris: Éditions du Seuil, 2003). Many European authors have developed this theme. In *Malaise dans le capitalisme* (Toulouse: Presses universitaires du Mirail, 2009), Sauret provides a list of nearly one hundred publications from different disciplines, including anthropology, economics, philosophy, psychoanalysis, psychology and sociology (22-27). For example, see André Bellon and Anne-Cécile Robert, *Un totalitarisme tranquille: la démocratie confisquée* (Paris, France: Éditions Syllepse, 2001); Jean-Pierre Le Goff, *La barbarie douce: la modernisation aveugle des entreprises et de l'école* (Paris, France: La Découverte, 1999); Jean-Pierre Le Goff, *La démocratie post-totalitaire* (Paris, France: La Découverte, 2002); Marie-Jean Sauret, "Un écueil de la mémoire: la science nazie," *Barca!*, 6 (1996): 77-117; Slavoj Žižek, *Did Somebody Say Totalitarianism?: Five Interventions in the (Mis)use of a Notion* (London: Verso, 2001); Slavoj Žižek, *Looking Awry: An Introduction to Jacques Lacan Through Popular Culture* (The MIT Press, 1991). And, who does not recall Hannah Arendt's severe critique of behavioral psychology in *The Origins of Totalitarianism* (Benediction Books, 2009) 347 and in *Qu'est-ce que la politique?*, ed. by Ursula Ludz, trans. by Sylvie Courtine-Denamy (Paris, France: Éditions du Seuil, 1995) 56-57? She thought that this psychological approach is on the same level as Nazi ideology, for it deprives the subject of its singularity and its symptom, homogenizes all subjects into a mass, and thus prepares them for totalitarianism.

32. Jacqueline Nadel is a research director at the CNRS (*Centre Emotion*, USR3246) and is the editor of the journal *Enfance*.

33. "Création d'un réseau national d'études interdisciplinaires de l'autisme : Autisme-science," *Enfance*, 56 (2004): 323. doi:10.3917/enf.563.0323; Bertrand Jordan, *Autisme, le gène introuvable: De la science au business* (Paris: Seuil, 2012).

34. See Sophie Dufau, "Autisme: l'ABA trouble l'université de Lille," *Mediapart*, mai 2012. Retrieved from <http://www.collectifpsychiatrie.fr/?p=3563>. Here is a translation of the exact quotation: "The concrete dimension is very important for autistic individuals. Asking them to lie down on a couch is a meaningless idea if you know how these people function." Clearly, Bernadette Rogé has no idea what she is talking about as far as child psychoanalysis, and in particular psychoanalytic work with autistic children, is concerned . . . .

35. Along with Anna Freud, Bettelheim was delighted by the fact that "Fortunately, psychoanalysts are beginning to decry the haunting image of the rejecting mother"; for him, all mothers and all fathers display both destructive and loving intentions. That is the source of the following claim, which involves precisely the response of the subject: ". . . it is not the maternal attitude that produces autism, but the child's spontaneous reaction to it." See *The Empty Fortress: Infantile Autism and the Birth of the Self* (New York, NY: The Free Press, 1972) 69.

36. See Geneviève Haag, "Clivages dans les premières organisations du moi: sensorialités, organisation perceptive et image du corps," in *Bébés-ados: crises et chuchotements*, ed. by Alain Braconnier and Bernard Golse (Érès, 2008). Retrieved from <http://www.genevievehaagpublications.fr/?p=860>; Marie-Christine Laznik-Penot, *Vers la parole: trois enfants autistes en psychanalyse* (Paris, France: Denoël, 2003); Marie-Christine Laznik-Penot, "La prosodie avec les bébés à risque d'autisme: clinique et recherche," in *Langage, voix et parole dans l'autisme*, ed. by Bernard Touati, Fabien Joly and Marie-Christine Laznik-Penot (Paris: Presses universitaires de France, 2007), 181-215; Jean-Claude Maleval, *L'autiste et sa voix* (Paris: Éditions du Seuil, 2009); Maleval, "Ecoutez les autistes!"; Henri Rey-Flaud, *L'enfant qui s'est arrêté au seuil du langage: comprendre l'autisme* (Paris: Flammarion, 2010); Henri Rey-Flaud, *Les enfants de l'indicible peur: nouveau regard sur l'autisme* (Paris, France: Aubier, 2010).

37. See *Les paradoxes de l'autisme*, ed. by Jean-Daniel Causse and Henri Rey-Flaud (Toulouse: Érès, 2011).

38. See Laure Daussy, "Autour des enfants autistes, une bataille de bac à sable," *Arrêt sur images*, 2012. Retrieved from <http://www.arretsurimages.net/contenu.php?id=4689>.

39. See Marie-Jean Sauret, *Psychanalyse et politique: huit questions de la psychanalyse au politique* (Toulouse: Presses universitaires du Mirail, 2000); Marie-Jean Sauret, *L'effet révolutionnaire du symptôme* (Ramonville Saint-Agne: Érès, 2008); Sauret, *Malaise dans le capitalisme*.