

Towards an Epistemology of the Unconscious¹

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Yes, what is it that forces us to admit that there exists a strong antithesis between «true» and «false»?

F. NIETZSCHE, *Jenseits von Gut und Böse*, 34.

Knowledge versus truth

I am going to present certain premises on the logic of the Unconscious, from which you can draw certain conclusions. What does a psychoanalyst speak about? You would expect an analyst to speak the truth about the subject, to speak of the subject's desire. You would expect a psychoanalyst to speak of the mythic forms in which desire is involved. Indeed, myths are important because they help us to speak of truth.

But I am not going to speak about the truth. I am going to speak of the subject's knowledge as an effect of the Other, of the Unconscious. And the Other, as Lacan put it, is another name of language.

The Other forces the subject to say what he or she does not know. Lacan posits the distinction between knowledge and truth. Alain Badiou, the philosopher, one of Lacan's students, proposed the following dichotomy: truth on the side of the infinite, knowledge on the side of the finite. I'll speak on the side of knowledge, of the finite, and address the logic of the knowledge that the subject does not know he or she knows. 333

Mind, not mind, never mind

What do I mean by logic? If you open up any standard, well established book of logic such as the one by John Dewey, you will read that logic is the art of reasoning well. This is not what I mean by the word logic. I know that there are good reasoning as a matter of fact. But I do not believe there is any such art (or algorithm) of producing all and only good reasoning. This is a narcissistic illusion that arises from the idea that somewhere in my Ego there is such a thing as a mind, which applies its well experienced logic to the analysis of the world where I live. I am speaking of the kind of logic used by English scientists and philosophers to produce many developments, for instance artificial intelligence and cognitivism. I am well aware that cognitive science originated in America. It is awkward for me to say here that the mind does not exist and its logic is a problem for the psychoanalyst. In U.S.A. this is probably heresy. I am saying it quietly, but I am saying it.

The illusion behind the belief that there is a mind lies in the supposition that to be and to think are the same thing. This old illusion goes back to the time of Parmenides; and passing by way of Descartes, who said «I think therefore I am», if I think then I am, we come to today's cognitivism. Psychoanalysis can only smile at the affirmation that there is a mind. This notion arises from the impotence that the speaker feels in the face of the real. In front of what escapes our awareness or in face of the unthinkable, the «reasoning» is as follows: momentarily my reason has failed me, but a moment before I had it. This is not true. It is not true that I was at any moment able to speak the truth about the real. As a matter of fact, to be and to think do not overlap.

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The mind as a self-adjusting mechanism to the real does not exist; it exists as a narcissistic illusion. I want to underscore that this is not pessimism on my part. Even if it is true that the mind is nonexistent, even if you do not have in your head some sort of universally functioning computer that you call your mind, you can still do a lot. One can still do a lot on a local level, on a partial level, connecting up tiny ³³⁴ particular facts. Analytical experience is clear on this. The work the mind can do is to pursue the signifiers, the elements of its own language. This is an high intellectual performance, a linguistic one.

If it is not a matter of reasoning clearly, logic is a way of speaking clearly. I shall be speaking of logic in this sense, as a way of speaking well. I shall speak about it as an amateur mathematician.

The Freudian unconscious is a container that does not contain itself, like Russell's sets. Bion says this as well. When he speaks of thoughts without a thinker, he distinguishes true thought and false thought. The true thought has a thinker and false thought has no thinker. Unconscious thoughts exist, without a receptacle containing them. In a sense they are scattered in the colloquial space among speakers. I prefer to say that they are independent of any predefined social code.

This poses a problem. It is difficult to speak of logic without there being a container for these thoughts. Can you speak of logic without presupposing a mind that operates according to a logic of identity and difference? This is not an easy matter. In fact it is an impossible one. You have to try anyway. You know that Lacan speaks of the real as the impossible. There is a quip he made: he says that logic is the science of the real, and therefore it is a science of the impossible. And this is what were going to be doing: a little bit of the science of the impossible.

We are encouraged by famous examples. Freud spoke of logic: for instance, when he said that in the unconscious there is no such thing as denial. When he proposed that in the unconscious there is no such thing as contradiction or temporal representation.

The columns of binarism

The most important aspect of this discussion is the attempt to go beyond binarism. My purpose is to approach three, to get over the binary operation of true and false, of good and bad, right and wrong, which are theoretical notions, however necessary they are to actual practice ³³⁵ and, naturally, to politics as well. They become matters of opposition like «us /them», with the same paranoical structure as the opposition «me /others».

I can cite one instance of Freudian reasoning in this. How can you conceive of the continuity between sadism and masochism within a binary arrangement? You cannot deal with it within any operation that declares one side good and the other bad, that sets up such oppositions. Drives are neither good nor bad, neither conscious nor unconscious, claims Freud.

True and false are truth values that get assigned to various human discourses but do not exhaust the possibilities of speech. Language is a trinary structure. Writers, artists, poets know this better than scientists. Stories, myths, fables, reflect such a structure. The *third* can also be approached in a formal way. You can approach it with mathemes, not only with mythemes.

Mythemes stand on the side of truth and mathemes on the side of knowledge. Nowadays almost all mathemes are binaristic in nature. But binarism does not account for the trinary dimension of language. Therefore, we need first to weaken binarism. The job is not a light one, because binarism is found within two fundamental subjective registers. At the core of the imaginary register, we find the binary operation of symmetry: my peers and me, my double and me, my neighbour and me, my mirror image and me. It takes two for narcissism to be. Another core of binarism is within the symbolic register; and this may be a slightly harder nut to crack. For the signifiers that form such a register, the binary system has validity. The fact that a signi-

fier always sends back to another signifier, is a binary operation. This means that one signifier is never self-referential. It cannot speak of itself. It is not the same even with respect to itself.

Our battle is against binarism in order to defend the subject of desire. I am speaking in soldierly terms: binary thinking is based upon four columns. And there is a fifth column, a secret one; I have to leave some surprise for the end. ³³⁶

I've numbered the four columns, upon which the logical binarism of true and false lies, in order of hardness. The hardest is the first. I call it univocity. Univocity is calling a spade a spade. Its law is the principle of identity: *if A, then A*. It allows only one level of truth, only one truth-value, the true, for every speech. Univocity strongly implies one.

Bivalence is the second column. Here there are two truth-values. There is the true and the false and nothing else. Not paradoxically, bivalence is a generalization of univocity. It presents univocity in a black and white movie.

The third column is the principle of non-contradiction. I am going back to Aristotle here. Non-contradiction means that you cannot have at the same time both *A and not A*. Black cannot be white and white cannot be black.

And last but not least, the fourth column is the excluded middle. This means that *A or not A* is a logical thesis, a tautology of binarism. In the binaristic context, colours others than black and white are not allowed.

The weakening of binarism

To weaken binarism, we have at our disposal as many strategies as columns. First of all we could attack univocity. We shall not follow this approach. Why? Because we know our limits. We should build a theory of ambiguity. This logic is in our everyday practices of transference (a right love for wrong people) and of ambivalence (love and hate for the same people). But we do not know how to formalize it, while still keeping the essential ambiguity of the practices within the theory. We have to formalize a logical system without formalizing it—a task with which our intellectual tools cannot yet cope.

The weakening of bivalence may be achieved introducing polyvalence. That is a set of truth-values which contains properly the binary set of true and false. Polyvalence is a latent form of binarism. It naively ³³⁷ dares to tackle binarism, introducing directly a third element or more. But it fails to introduce a third dimension. It is easy to verify that polyvalence reduces itself to bivalence through the division of the original set of truth-values into two sets: the designated truth-values and the undesignated.

The weakening of the principle of non-contradiction generates a minimal logic. We can call it the dictionary logic, because as in a dictionary false coexists with true and black with white, without forcing the system to collapse. We feel that this weakening is too strong and we do not adopt it.

The weakening that interests us occurs through the suspension of the excluded middle. This move produces Brouwer's intuitionistic logic, which we prefer to call epistemic (or effective) logic. The reason for choosing such a name lies in the empirical observation that this logic allows to treat the function of effective knowledge and not only the function of the truth, like classical logic. Actually within the context of Brouwer's work, it is possible to define some epistemic operators that transform a formula into a sentence with a content of knowledge. Theorems about these operators mimic the behaviour of the epistemic construction that Freud called the Unconscious. This point seems to be interesting for an epistemology of psychoanalysis. I shall discuss it without going too technical.

The suspension of the excluded middle (EM) has some simple consequences. The most immediate is that the EM itself and all the theses deriving from it in binary logic are no longer valid theses in this new logical context. For instance, the law of double negation (DN), which

makes it possible to delete the negative of the negative: if *not (not A)*, then *A*, is no longer valid in epistemic logic, because it is a consequence of the EM. Our idea is to utilize the EM and DN to define operators ε and δ that transform every formula X in a new one: εX or δX . While presenting their properties, we shall show that the new formulae share some features that are epistemic in nature. Two examples will make the procedure clear. ³³⁸

The EM epistemic operator ε

The ε operator (epistemic operator) transforms every formula X into the assertion εX , which now simply means: *X or not X*. The reason why we call ε an epistemic operator lies in two quite immediate theorems concerning ε . For the psychoanalyst they are interesting, because they give the structural and ethical basis of unconscious knowledge.

The structural theorem is easily written as a conditional: *if X, then εX* . It means that everything can be known if it can be expressed in any suitable language. This theorem excludes every mystical approach to the Unconscious as something ineffable. It sets language as a precondition of the Unconscious and suggests a linguistic ontology: *to be means to be articulated in words*. It is not only metaphorically that we can claim: our knowledge may go only as far as our words can reach. It is just a matter of time. Time in this logic becomes epistemic time: the time to know. Freud proposed the same principle with his aphorism: *Wo Es war, soll Ich werden*. We can translate it here as: *where words are, there is my knowledge*.

Obviously it is impossible to invert the structural theorem. But we know a quasi-inversion: *if not ε notX, then notX*. This is the principle of *in dubio pro reo* until one has proof to the contrary. As a consequence the subject is born in the Unconscious as guilty. His primary sense of guilt, which not paradoxically at all come before and not after committing a crime, tells us the very truth about him.

The ethical theorem makes a categorical statement: *not $\varepsilon \varepsilon X$* . It means that the subject of the Unconscious cannot not know, even if it is ignorant. The Unconscious is a knowledge we do not know we have. In our formalism: *if not εX , then εX* . If you do not know, then you know. The paradox is only apparent. The subject may learn a lot of his own unconscious desire ... if like a detective he agrees to spend time and money to follow the elements of the unconscious significant chain. *Scilicet, tu peux savoir*, «you may know», translated Lacan. We add an ethical but crucial premise: *si tu veux*, «if you want». ³³⁹

Among the many other features of ε we stress idempotence and a negative peculiarity, which goes back to the ontological proof of God's existence.

ε is idempotent, i.e. *εX if and only if $\varepsilon \varepsilon X$* . In terms of unconscious knowledge we can interpret this theorem in two different ways, the first negative and the second positive. The first says: «I regret, there is no metaunconscious». The Unconscious of the Unconscious is again simply unconscious. Lacan's formula is similar: «There is no Other of the Other». The positive interpretation is a clinical one and resorts to epistemic time. «What you learned about your knowledge, you already knew». This is a self-evident fact in the analysis of the slip of the tongue, which anticipates a truth the subject will know later.

In such a way we prove that the Unconscious is a knowledge that is less at the subject's disposal than the not conscious. As a rule it becomes conscious but in a negated form. For the sake of completeness, we have to observe that the negation of idempotence is also a form of knowledge: *If not $\varepsilon \varepsilon X$, then εX* . Here we find the core of the unconscious knowledge as not knowing one knows (*das Unbewußte*, following Freud).

We conclude our discussion of the ε operator by pointing out a not-theorem involving the relationship between ε and the existential operator. We meet here a counter-ontological (more precisely counter-existential) argument: *if there exists an x which we know satisfies X, then it*

does not necessarily follow that we know that such an x exists. Within this logic it is impossible to prove the existence of God as *id quo maius nequit cogitari*. The epistemic logic is prudent. By suspending the EM, it puts out of its field any form of omniscience, that of God first. Knowledge is always partial with respect to truth, existence, truth of existence and existence of truth, as we see every day in analytical practice, where it may happen that the obsessional subject knows (or better, assumes) what kind of object causes his desire, without being able to recognize it when he meets it. ³⁴⁰

The DN epistemic operator δ

Now I have come to a parallel discussion of the δ operator. Since the DN is a logical consequence of the EM (that is, when the EM is true, the DN is always true too), the δ operator is weaker as ϵ in the sense that *if ϵX , then δX* . This means that, if δ simulates unconscious desire, in any event of desire we may find epistemic markers. In our opinion this trait makes the Freudian concept of desire (*Wunsch*) quite different from any other: biological, phenomenological and so on. As a consequence of the weakness of δ with respect to ϵ , all not-theorems about ϵ are still not-theorems about δ . But some positive analogy is also preserved.

First of all the structural theorem: *if X , then δX* , is still valid. This means that where there is a linguistic structure, there is desire. In Lacanian terms: Unconscious desire is the speech of the Other. Unconscious desire is not a matter of the Ego, because the Ego is plunged in language and language is not the exclusive domain of the Ego, nor one organ of it, as in Chomsky's psycho-linguistic interpretation. Our theory puts psychoanalysis on a not-anthropomorphic plane, which in our opinion is a more solid foundation than any other that anthropology may offer.

And the differences now. Idempotence has only half validity. *If δX , then $\delta\delta X$* . It is clear that when I desire, I desire to desire. In Lacan's theory this aspect is formulated with more subtlety: when I desire, I desire the desire of the Other. But the contrary is false: *If $\delta\delta X$, then δX* is no longer a theorem in this logic. The desire of desire is nearer to the subject's (demand of) love than to pure desire (of the Other). The not-equivalence between love and desire is a commonplace in analysis of transference. From a theoretical point of view the non-equivalence between δ and $\delta\delta$ opens to an infinite series of operators: δ , $\delta\delta$, $\delta\delta\delta$, $\delta\delta\delta\delta$... all different but similarly built. We recall that Matte Blanco had pointed out the relationship between Unconscious and infinite sets. ² ³⁴¹

In the place of the ethical theorem we have a different version with respect to that of ϵ , which would not be wrong to call the Oedipus version, that is, δ *not* δX . Oedipus's *mè phunai*, to never have been born, is in epistemic logic translated into *to desire not to desire*. Beyond the screen of tragedy our epistemic logic interprets this desire as the desire not to know. The theorem which combines ϵ and δ , knowledge and desire, makes possible the interpretation: *If ϵX , then $\epsilon\delta X$* . This theorem justifies stating that the epistemic scope of knowledge is the field of desire. Therefore, people prefer ignorance (and hate any practice of knowledge like mathematics, philosophy and psychoanalysis) because knowing means to know (something, not all, about) desire. And desire is something, following Freud, that may lie beyond the principle of pleasure.

It is noteworthy that the last theorem is not true in general for any formula X and Y . It is quite easy to verify that, given *If X , then Y* , it does not necessarily follow that *if ϵX , then ϵY* . Here we are confronted with the intransitiveness of unconscious knowledge, which makes up the main difference with respect to conscious knowledge. The latter «downloads» itself on the object,

² I. Matte Blanco, *Inconscious as infinite sets. An essay In Biologic*, G. Duckworth Press, London 1975.

the former restrains itself within itself. In a sense, unconscious knowledge is inhibited, also with respect to self-knowing. It is this epistemic inhibition which hinders analytical work. When such an inhibition gets itself, at least a bit, out of the subject's way, he or she can be regarded as analytically «healed».

The interaction we pointed out between the ϵ and δ operators, which restores transitivity between unconscious knowledge and unconscious desire, is worth studying in depth not only inasmuch as a typical trait of this epistemic logic, but also for practical reasons. The healing that psychoanalysis produces concerns more the reform of the human intellect (*Spinoza dixit*) than magical manipulations of emotions. ³⁴²

Completeness, incompleteness and partiality

We have to recognize that intuitionistic logic is consistent. Therefore, our epistemic logic, which is based upon intuitionism, is also consistent. But what is the meaning of consistency? Logicians have identified various definitions of consistency, syntactical and semantical. The following are the most important.

From the syntactical point of view, absolute consistence comes first. A logical system is absolutely consistent if not all formulae are theorems. Obviously, intuitionistic logic is absolutely consistent, because at least one formula, that of the EM, is not a theorem.

Then comes relative consistency. A logical system is relatively consistent if there is no formula X such that both X and *not* X are theorems. Intuitionistic logic is relatively consistent. (Let us suppose that X and *not* X are theorems. Then, by the Duns Scotto's law [*if* X *then* (*if not* X , *then* Y)], Y is a theorem for every Y . At that moment the EM becomes a theorem. A contradiction.)

The semantic definition of consistency introduces the notion of interpretation. A logical system is semantically consistent if its theorems are true in any interpretation. In this sense consistency is the same as correctness. The demonstration that intuitionistic logic is correct is long enough but not difficult and we need not go into here.

The definition of syntactic completeness depends on that of consistency. A logical system is absolutely complete if, for every formula Y , either Y is a theorem or, upon the addition of ³⁴³ Y , the system becomes absolutely inconsistent. What would you guess about intuitionistic logic? Is it absolutely complete or not? Strangely enough it is not. You may add the non-theorem of the EM and the system does not collapse to absolute inconsistency. (When you work with propositional intuitionistic calculus, the addition of the EM transforms it in its classical propositional calculus, which in its turn is absolutely complete.) The same has to be said about relative completeness. A logical system is relatively complete if, for every Y , either Y is a theorem or, upon the addition of Y , the system becomes relatively inconsistent. Intuitionistic logic is relatively (and infinitely) incomplete. You may add upon it how many terms you want from the series δX , $\delta\delta X$, $\delta\delta\delta X$... and you'll always fail in completing the system in relative sense.

The semantic notion of completeness is weaker than the syntactic one. A logical system is semantically complete when its valid formulae (that is, formulae which are true in every interpretation) are also theorems. Thanks to Kripke, since 1963 we have known the right semantics with respect to which the intuitionistic system is semantically complete and the intuitionistic proof of the fact. I shall not go into details about this. I want only to point out the main difference between classical and intuitionistic semantics, which may turn out relevant to our epistemology.

Classic semantics is about one. In it there is only one world or one epistemic state. The statement X establishes a correspondence between descriptions of the world and the real state of the world X . The statement is true when it corresponds truly to the state of the world, and false

otherwise. The binarism of true and false, which we have already discussed at length, is the syntactical reflex of this semantic monism. Intuitionistic semantics breaks away from the uniqueness of the epistemic state (and therefore from binarism). Intuitionistic epistemic states form a set, even an infinite one. (This result was anticipated by Gödel in 1932.) Kripke introduced in this set a reflexive and transitive relation. This makes the truth as well as the falsity of a statement depend on the state of all the epistemic states, which are downward with respect to that in which the statement is actually uttered. As a consequence the evaluation of its truth requires time: an epistemic time.

Incompleteness, infinity and time are the ingredients of the psychoanalytical epistemology, which we have assembled in our epistemic logic. Can we sum up these three words just in one? I propose partiality. Why? Because partiality is at the very core of both the practice and the theory of psychoanalysis. Partial is the overcoming of the inhibition to knowing. Partial is the overthrow of repression. With respect ³⁴⁴ to the Thing a person tries to speak about, he/she always lacks the words to tell the whole business.

Where all this partiality comes from?

ϵ and δ correctness

It is only fair to report the correctness of the epistemic operators.

The syntactic correctness of epistemic operators is a consequence of the syntactic correctness of intuitionistic logic. In this context we are interested in semantic correctness. We show that for every formula X , ϵX and δX are correct in that they have a model, that is an interpretation which is true. The theorem is easily predictable, since semantic correctness is a weaker property than syntactic correctness. Nevertheless, the argument is for us so interesting that we supply two independent demonstrations of it.

A) ϵX has a model.

First demonstration. Suppose the contrary. This means that within every epistemic state the interpretation of ϵX is false, that is X or $not X$ is always false. It follows that $not X$ is false. Therefore there is a world in which X is true. This provides a model of ϵX .

Second demonstration. Suppose an isolated epistemic state Γ in which the formula Y is true.

First case. $X = Y$. X has a model and therefore X or $not X$ is true in Γ , that is ϵX , has a model.

Second case. $X \neq Y$. $not X$ has a model and therefore X or $not X$ is true in Γ , that is ϵX , has a model.

There is no other case since every formula is a finite expression and in finite domain EM is a valid principle.

B) δX has a model

First demonstration. Suppose the contrary. This means that within every epistemic state the interpretation of δX is false, that is *if not not X, then X* is always false. It follows that *not not X* is true, according to Frege. Therefore there is a world in which X and *not not X* are true. This provides a model of δX . ³⁴⁵

Second demonstration. Suppose an isolated epistemic state Γ in which the formula Y is true.

First case. $X = Y$. X and therefore *not not X* have a model in Γ . It follows that *if not not X, then X*, is true in Γ and δX has a model.

Second case. $X \neq Y$. X is false in Γ . $not X$ has a model in Γ , therefore *not not X* is false in Γ . It follows that *if not not X, then X* is true in Γ and δX has a model.

We conclude as before.

It is noteworthy that our epistemic operators give a model, that is a representation, to every formula, even if contradictory. In a sense Freud's thesis that the Unconscious, as epistemic construction, does not know contradiction is justified in our logic.

A scientific foundation of psychoanalysis?

Science and psychoanalysis have much in common, at least their origin in the *Cogito*. Both are epistemic processes. Both are Cartesian processes. But science and psychoanalysis are also quite different. Science let the subject drop out of its epistemic practice. Science seeks certainty as objectivity; the price it pays to reach this goal is the annulment of any scientific consideration concerning the subjects that science is made of.

On the contrary psychoanalysis is concerned with subjects. That is why psychoanalysis can never be a science, even if it is presented in a highly formalized way as here. Formalism is a necessary condition to build a scientific model, but it is not sufficient. Indeed, in mathematics there are a lot of formalisms that find no application in science (for instance the pure theory of number) and there are formalisms that are not scientific (for instance in astrology). Typical of the current pseudoscientific ideology, is the false implication: *if it is mathematics, then it is scientific*.

Psychoanalysts can find their own niche, which is not scientific, within mathematics. Our intuitionistic formalism has been introduced here in ³⁴⁶ order to cope with the not scientific, epistemic exigencies that the trinary structure of language introduces in the subject; the logic exigencies and the ethic responsibilities of the Unconscious. By weakening binarism, intuitionistic logic makes room for a third element between those, for instance, of the mother / child couple: a third dimension, that of language, of the symbolic function of the father. This is an operation that gets out the scientific range. In effect, I do not know if up to now intuitionism has ever found any applications in the hard sciences, I mean physics or chemistry. I have never heard of Nobel prizes speaking in intuitionistic terms. In *The L.E.J. Brouwer centenary Symposium*³, I do not find any scientific or technological application of Brouwer's thought. Today's technology (above all informatics) and modern pragmatism prefer hard-line binarism. This is self-evident. Binarism is more reliable, even in coping with uncertainty. The same modern calculus of uncertainty, the theory of probability, relies on the binary axiom: *the probability of A + the probability of not A = 1*.

As we have shown in our presentation of the four columns of binarism, there are many possible ways to weaken binarism with escalating effectiveness. We have lingered over Brouwer's form of weakening. We shall present in a moment another and even more effective way to weaken binarism, developed by von Neumann. This multiplicity of theoretical approaches is a good sign that we are out of the domain of science. From Aristotle through to the present big project to unify the physical forces, science works ideally within the context of one: one world, one theory. We have just seen that scientific binarism is a consequence of science's monistic ontology. At the same time, breaking down this monism, for instance in Kripke's intuitionistic semantics, weakens binarism and leads the way to the infinite. The situation is similar to that with which we are confronted in psychoanalysis, where ³⁴⁷ we experience the effects of a structure, that of the subject in relation to the Other, which is too complex to be entirely represented within a single model. Theoreticians can only present different partial models of it and content themselves with comparing and discussing them.

We are in position to explain this phenomenon. What cannot be forced into a unit is language. The disciplines, like science, that succeed in keeping language and its effects on the subject out

³ Edited by A.S. Troelstra and D. Van Dalen Edition, North Holland, Amsterdam 1982.

of their own field, have their unity guaranteed by binaristic logic. The others, like psychoanalysis, are «condemned» to a not-unitary ontology and to a weakened binarism in logic. Accordingly, this means that any project of transforming psychoanalysis into a science, in order to restore its unity and to give it solid foundations, represents a «logical» attempt on its life.

Not all can be told

The battle against binarism is not definitively won until we tackle the problem of the fifth column. Up to now the difference between hard and soft binarism is only nominal. In a sense, lacking the EM and its consequences, intuitionism seems to have fewer theorems than binarism. In 1968 Schütte stated precisely what here «fewer» means, proving Gödel's conjecture (1932) that a formula is intuitionistically valid if and only if when transcribing negation as necessity of negation and implication as necessity of implication, it becomes a valid formula within the Lewis's modal system S4. But on the other side the set of intuitionistic theorems is infinite exactly as the set of classical theorems. This suggests that the two sets may differ from one another in that their elements are merely different transcriptions of the same basic elements. Are they not? If not, are we faced with a paradox? If yes, have we done an useless job, since the two logic, that of truth and that of knowledge, are basically the same, except for a transcription?

When toying with the infinite one must be prudent. That is the very ³⁴⁸ lesson of intuitionism. The analyst puts it into his practice by reckoning a lack in the structure producing the subject, that is language. But what kind of lack may language suffer?

Lets start from the inscription we read on one of the fragment of the fifth column of binarism now knocked down, which lies on our epistemic ground: *you can tell all*. The column of the classical speech meant: *about all you can tell, when it is true, that it is true and, when it is false, that it is false*.

We just debunked one half of this principle when we quoted the structural theorem of knowledge: *if X, then ϵX* . Then we stressed that it is impossible to invert it. We affirmed that everything can be known, if it can be expressed in any suitable language. But it may happen, as in the case of unconscious knowledge, that the subject knows something, but nonetheless he is not able to find the right words to express it.

Does this mean that it is *in general* impossible to built an epistemic logic? I am an analyst. I do not seek a general formalism valid for all cases. I restrict myself to the particular ones that are suited for particular situations. The route of the analyst goes from particular to particular.

Brouwer's logic, upon which my epistemic logic is based, originated at the start of the century as an attempt to contain all mathematics within itself. My desire is actually analogous to the logician's in wanting to keep discourse open, also in clinical practice.

To the subject of a discourse you can always apply the predicate «true or false»: the first to doubt this principle was Wittgenstein. The doubt was in the air. The doubt started with Russell and Cantor. With the antinomy of Russell and Cantor it was borne in mind that you cannot assign true or false to everything; you cannot say whether everything is true or false. I do not want to go into this business, which is very complicated. But at the end of his *Tractatus*, Wittgenstein writes a single sentence, number 7, which states explicitly: «What you cannot speak about you must be silent about.»

The first true blow to the fifth column was delivered in 1931 by Gödel, with the theorem of incompleteness, which says: «If a logical ³⁴⁹ system is coherent, then there exists within it a truth that cannot be proven». It is worth lingering over this for a moment. Much of the work we have done as far as here has been on the syntactic level. Broader than the syntactic is the semantic one. I have alluded briefly to Kripke's system of connections between states of knowledge. Generally the semantic field is broader than the syntactic. This is a constant in mathemat-

ics. When you set up a writing system, one field closes off, and you lose something outside. That is precisely what Gödel's theorem is saying. Try to build an axiomatic system of arithmetic. There exist several: the Peano system is one of the first. Your system would work, but be careful. If it is not contradictory, eventually you will find sentences within it that will be true but that you cannot prove. Gödel gave an example of one of these unprovable sentences that is about the coherence of mathematics. You cannot demonstrate the coherence of arithmetic within arithmetic. The mathematician must accept the coherence of arithmetic as an ordinary empirical datum without being able to ascertain certainty as meta-arithmetical truth.

Gödel's theory is a syntactic one. The same incompleteness may be proved at semantic level. Two years later Tarski proved it is impossible to define a truth predicate, which states that a sentence is true when it is true and false when it is false. Since this is precisely the definition of truth according to Aristotle, Aristotle's truth predicate cannot be built. Binarism becomes basically ineffective with respect to his own premises, when it is forced to tell the truth of the truth.

«Not all» can be told

Between Wittgenstein and Gödel and Tarski, there is an author, a genius in his ability to simplify, about whom I would like to speak briefly. He is one who said something truly definitive about the matter of all and not all.

Johann von Neumann is the name of that author. A man who ³⁵⁰ invented game theory for economists, quantum mechanics for physicists and who built the first computer. A lesser known fact is that he started, at the beginning in 1925, to develop an axiomatic theory of sets, without any contradictions, which was perfected until 1965 by Gödel and by his Swiss friend, Bernays. Let me give you briefly the concept, insofar as it can be useful for psychoanalytic practice.

It is a matter of abandoning the principle of logical closure according to which everything can become a matter of logic and logic can make a judgment by establishing true and false about everything. You have perhaps already heard this. As Lacan said, truth can only be half spoken. What Lacan meant in a metaphorical and aphoristic sense corresponds to what von Neumann in a more scientific way affirmed about functions that cannot become the argument of other functions or classes that cannot be elements of other classes. Simply put, there exist certain discourses that do not have to become subjects of other discourses.

Here you have to be careful. There is latent a temptation to mysticism. If truth cannot be said, then I shall not say it. And I am going to take shelter in the night of God or in the ineffable. The fact that you cannot say everything in no way reduces the need to say everything you can say. The structural impossibility of telling all does not relieve your responsibility to say everything you can. And Freud's fundamental rule of course is this: say everything, knowing that you cannot tell all. This is a way of respecting certain linkages, certain articulations, chains, ties, connections, restrictions at work in every language.

Respecting these linguistic restrictions is a precondition for listening to the unconscious. The Freudian unconscious is an effect of natural language, not a biological fact. So to listen to the unconscious you have to listen to language. But in listening to language you have to respect the laws upon which it is based. The general characteristic of natural languages is that they are incomplete. The term *general* is itself incomplete. It means that each natural language, one by one enumerated, is incomplete. It does not mean that all are incomplete. The use of plural and singular points out the difference, which is structural. Various ³⁵¹ authors have said this in various ways. Freud, for instance, did not say that the speaker cannot say everything about

everything. He affirmed that a death drive is silently working in language. Such a drive «cannot say everything, what it wants»⁴.

Lacan developed a different idea. He spoke of the signifier of the lack of the Other. I want pause briefly on this signifier, to give one model, among many others, of what it means. I think my model concretizes very well what would otherwise be the very abstract notion. What at first must be humbly admitted is that this notion is too big to be conceived. It is certainly too big to reduce it to a subject of a discourse (or of any predicate), so that you can assign it a true or false value.

The very notion of the bigness of a totality immediately appeared as problematic, at the outset of Cantorian set theory. The attempt to make set theory rigorous has always been an attempt to respond to the problem that the «too big» posed. Von Neumann, for instance, distinguishes between very big classes and slightly smaller sets. What does «big» and «small» mean in this context?

The difference, which seems to be a quantitative one, is topological. The too-big is too big to find a place in any predicate, so it cannot become a subject of discourse. The less too-big can become subject of discourse. It finds a place without contradiction in a predicate that affirms something about it as a whole. The first are totalities bigger than the second ones in the sense that they are not a whole; the others are smaller in the sense that they can be conceived as a whole. Likewise von Neumann distinguishes between two kinds of bigness, the too-big one and the slightly less too-big. The first kind of bigness, the really big, is called precisely a class, a proper class. The other bignesses, the smaller, are sets. Von Neumann's set theory is the theory of classes. ³⁵² All the bignesses are classes, but he distinguishes two different kinds of classes. The sets are classes in that they belong to classes. To the contrary, proper classes, the big ones, do not belong to classes. This solution avoids antinomies.

Next step. Sets belong to classes, but what does this mean, this belonging? It means that a single set can be reduced to a unit and this unit can be planted within a class. It is the same discourse as before. The set can be a subject of discourse through any predicate. In this case the discourse takes the set as a whole and places it within a class. But this discourse does not hold true for proper classes. Proper classes are too big to be reduced to a unit. They are too big to become an element for another class. As such these proper classes lack something. They lack unity (and I should point out to you that *unità* means both unity and unit in Italian). Which does not eliminate the fact that you can still write something that says precisely that something is lacking. Lacan wrote it this way: signifier of the lack. And he added that this is a strange signifier, it cannot be uttered but it can be written.

I consider proper classes models for excessive bignesses, such as «language», «the feminine», and also «the paternal». «The Other», «the feminine», «the paternal» are instances of *not all*, according to Lacan's terminology. This terminology can be criticized because it is negative. I prefer using positive terminology such as proper classes.

There comes an interesting corollary in relation to proper classes. I said before that proper classes cannot be reduced to being elements of another class. If this were possible, they would no longer be proper classes, but they would be sets. What would happen if I took two proper classes and I tried to couple them?

I take two different classes, for instance, to make the reasoning concrete, the *two* sexes. (I underscored *two* because I do not know yet if they are effectively *two*. For the human baby there is only *one* sex: the phallophorus.) At least one sex, the female, is a proper class, warrants La-

⁴ «Es kann nicht sagen, was es will». Sigmund Freud, «Das Ich und das Es», in *Gesammelte Werke*, vol. XIII.S. Fisher Verlag, Frankfurt am Main, 1940, p. 289

can. About the other, the male, we do not know if it is proper or not but we can hardly endure this kind of ignorance. The result that ³⁵³ follows is a strange one. Now we must admit that a proper class belongs to a couple. A couple is a set. But a proper class cannot belong to any set. A contradiction? Not at all. It suffices to recognize that the couple we have built is the empty set. Is this a good idea? It seems to be. Indeed, nothing belongs to the empty set. Not even our proper class the feminine gender. We are forced to admit that the two sexes are less than two, and that the sexual relationship among them cannot be written at all.