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PSYCHOANALYSIS:
TOPOLOGICAL
PERSPECTIVES

New Conceptions
of Geometry and Space
in Freud and Lacan

[transcript] Psychoanalysis
The volume addresses the philosophical, epistemological and interdisciplinary aspects of the link between psychoanalysis and topology. Looking at the historical developments of psychoanalytic theory, one can hardly overlook the significant presence of architectonic and geometrical references that traverse Freud’s writings. Lacan’s return to Freud made a decisive step in taking these metaphors seriously and engaged with the mathematical correspondence of Freud’s topological models. He thereby intensified the link with topology, which obtained an important didactic and conceptual value. The contributions highlight the ongoing relevance of this »topological turn« in psychoanalysis by exploring both concrete topological objects and outline the philosophical framework that supports the relation of psychoanalysis to topology.

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Introduction
That Obscure Space of Thinking

Michael Friedman and Samo Tomšič

1.

Psychoanalysis, whether one likes it or not, represents a deep epistemological break in the history of knowledge. With its invention, modern scientific revolution entered the terrain of human objects and subverted the way we conceive society and subjectivity. By demonstrating that thinking is deprived of stable centre, and consequently by dethroning the conscious ego as the predominant instance of mental life, Freud rigorously showed that thinking is essentially a form of alienation, a conflictual process, which consists of complex spatio-temporal relations. If the discoveries of early modern physics progressively led to the simple yet crucial insight that the universe knows no centre, and evolutionary biology to the recognition that life is a dispersed and non-hierarchical process, then psychoanalysis brought about yet another decentralisation: the space of thinking is no longer understood as rooted in a clear-cut division between the inside and outside, but instead appears paradoxical, curved and traversed with ruptures, folds, gaps, condensations and displacements. Freud from the very outset traced these structural dynamics in the multiplicity of apparently marginal psychological phenomena, such as dreams, slips of tongue, jokes, forgetting,
déjà vu, etc.\textsuperscript{1} In doing so, he inverted the standard procedures in explaining the *modus operandi* of human thought: rather than describing it from the perspective of what seems most stable, graspable and even normative, namely the conscious ego, he clarified thought-mechanisms from the perspective of their disturbance or disruption, destabilisation and out-of-jointness. The concept of the unconscious is the concentration of this out-of-jointness in thinking: constitutive rather than accidental, normal rather than abnormal state of mind. Since the invention of psychoanalysis, thinking no longer points toward a consistent substance, which “thinks, therefore it is” (Descartes); it is no longer analysed from the imaginary perspective of solidified consciousness but from the impossible perspective of impersonal disturbances. This shift of perspective essentially defines thinking in terms of constant exposure to errors, for which a rigorous analysis demonstrates that they do not simply come out of the blue, but already point toward a rational network of mental associations, symbolic chains, which intersect, intertwine or short-circuit one another – and thus constitute what we normally understand as thought processes. In a word, this immanent instability and dynamic logic of thinking surely contrasts with the centralised model of mental apparatus, but it also unveils the actual status of consciousness. This is where the topological reference most decisively enters the picture: consciousness is not simply dismissed as something illusionary, but instead redefined in terms of surface. In relation to this surface, the unconscious does not stand for some hidden depth of mental life, but rather for an immanent anomaly on the surface of consciousness, its anamorphosis (cf. Lacan 1998: 80–89). In this way, psychoanalysis abolishes

\textsuperscript{1} This is Freud’s own minimal epistemological account of the modern scientific revolution, which is condensed in the three proper names: Copernicus, Darwin and Freud himself (cf. Freud 2001 [1917]: 139-144).
the standard dichotomies such as “surface and depth”, “inside and outside”, and even “consciousness and the unconscious”.2

In Freud another important insight announces itself, namely that the space of thinking and the space of language share the same characteristics and need to be thought together in a specifically materialist way. The question was – and in the light of recent disputes regarding the notion of matter and the conception of materialism, it still remains a question – how to conceive this materialist orientation? It is needless to recall that Freud began his career as a neurologist, and his later, psychoanalytic work remained bound to the ideals of “hard science”, even to the positivist worldview, according to which (to paraphrase Friedrich Kittler) any reference to “spirit” should be exorcised not only from the human sciences (Geisteswissenschaften, literally “sciences of spirit”) but from the conception of science in general.3

The persistence of neurological, biological, chemical and thermodynamic metaphors in Freud’s work is overwhelming; and despite the striking evidence of the symbolic character of unconscious formations, there is disappointingly little trace of linguistic references, and none of mathematics, geometry or topology.4 In this respect, the implications of Freud’s theories and discoveries were already embedded in

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2 | It is well known that Lacan was not satisfied with the term “the unconscious”, claiming that it was misleading due to its negative connotation. As negation of consciousness it still left room for the primacy of consciousness (cf. Lacan 1990: 5).

3 | It is also needless to remark that the technicist epistemology of this peculiar crusade against “spirit” ended up ignoring the speculative dimension of “hard sciences”, promoted an impoverished conception of scientificity and often fell into vulgar technicist reductionism and empiricism.

4 | The linguistic “authorities” are most often poorly chosen, for instance Karl Abel and his speculative theory of primordial words [Urworte] and of their antithetical meaning (cf. Freud 2001 [1910]: 155-161). For a broader discussion of Freud’s relation to Abel, cf. (Benveniste 1966: 75-87; Milner 2008: 91-120).
different epistemological constellations and implied other scientific alliances than the father of psychoanalysis could acknowledge. It was with Jacques Lacan's epistemological and linguistic turn in psychoanalysis, his return to Freud based on the structuralist research program (Saussure, Lévi-Strauss and Jakobson) that the psychoanalytic theory and practice obtained their formalist-epistemological grounds. In Lacan's teaching mathematical formalisation, topological models and the method of structural linguistics predominate in the theorisation of human thinking and direct psychoanalysis toward a more counter-empirical notion of materiality than the Freudian biological and energetic materialism.

This does not mean to suggest that Freud did not have any insight into the actual spatial nature of the human mental apparatus, but that his efforts to ground psychoanalysis as a positive science of the mind prevented him from exploring complex epistemological connections, which would more “adequately” visualise and spatialise the processes his clinical work exposed in the human mind. While Freud was still preoccupied with providing a convincing affirmative answer to the pressing question “Is psychoanalysis a science?” this merely testified that he more or less adopted a hegemonic conception of scientificity, precisely the positivistic one, accompanied by a narrow empiricist interpretation of the experimental character of modern science. Ironically, positivistic epistemology could not be more incompatible with psychoanalysis, since it privileges the cognising value of science, the progress of consciousness, and thus perpetuates the correlation of science with the subject of cognition. The “scientific ideology” (Canguilhem) in question reduces the entirety of subjectivity to consciousness, whose historical-conceptual root is sought in the Cartesian cogito, this modern formulation, one could argue, of the philosophical ideal of “identity of thinking and being” (Parmenides). The empiricist and logical-positivist notion of scientificity, which
remains the predominant spontaneous epistemology in the majority of (natural and human) sciences, recentralised scientific practice on the narrow problematic of human cognition, and by renewing the primacy of consciousness in the production of knowledge it effectively re-psychologised science. Let us not forget that the Freudian concept of the unconscious introduced something unprecedented: a form of “knowledge that does not know itself” (Lacan 1999: 96, transl. modified), in other words, a knowledge that does not constitute a stable “corpus”, but is instead traversed by dynamics, instabilities, inconsistencies and disclosure. This form of decentralised and depyschologised knowledge – for the Freudian unconscious is precisely not a psychological notion – implies a dialectical conception of scientificity and experimentation. The privileged sign of scientificity consists in the way thinking uncovers, mobilises and theoretically grasps the instability and dynamic of the real, be it physical, biological or (when it comes to society and subjectivity) discursive. Lacan introduced the concept of pas-tout (not-all) in order to draw attention to the problematic character of the scientific object, including the object of psychoanalysis.

Freud was rightly concerned that the scientific character of psychoanalysis would not be recognised under the reign of the positivistic worldview, which makes it all the more striking that he persisted in it. Lacan, however, no longer asked the question that tormented Freud. For him, the crucial question was not: “Is psychoanalysis a science,” but rather: “What is a science, which includes psychoanalysis?” (Lacan 2001: 187) This shift sufficiently shows Lacan’s engagement in questioning positivistic epistemology. Moreover, if modern scientific innovations indeed brought about a radical epistemic revolution, also in the sense that they revolutionised both social and subjective reality, then this already suggests that the effects and consequences of science lie well beyond the conscious intentions of apparently neutral human
observers. Such an observer position is inevitably fictitious. Indeed, a more critical, and one should add, dialectical and materialist epistemology is required in order to account not only for positive achievements of various sciences from Galileo via Darwin to Freud and beyond, but also for the immanent conflictuality, deadlocks and failures, which are no less essential components of the structure and logic of scientific discourse. Moreover, while the first two proper names, Galileo and Darwin, still serve as authorities that apparently legitimise the reductionist notion of scientificity, the latecomer Freud introduced a systematic disturbance, an epistemic anomaly. He did this precisely by turning into an object of scientific inquiry only such mental phenomena, which seem to lack meaning and consistency and which therefore appear enigmatic, nonsensical and irregular both to the conscious observer and to the positivistic “man of science”.

Or, did not the displacement, which laid the foundations of modern scientificity, consist in something similar? Did Galileo not strive to explain precisely the irregularities in the movements of celestial bodies that the Ptolomeian and Aristotelian physics failed to account for? He could only do so by ignoring the fact that the universe appears to the human observer as a harmonious, totalised and well-ordered reality. In other words, Galileo no longer strove to explain the phenomena and save the world of appearances, but instead dissolved them in his attempt to theorise the anomalies that puzzled the conscious observer and pushed the premodern scientific doctrines into serious dilemmas. Furthermore, did not Darwin’s theory of evolution achieve something similar in relation to appearances in the biological world? That is to say, Darwin’s achievement went precisely against natural history, philosophy and religion each of which still strove to preserve the human exception by placing it once again at the apex of the hierarchy of beings. The philosophical and
epistemological kernel of biological revolution consisted in the fact that Darwin included among the defining features of life the possibility of error.\(^5\) Throughout modernity revolutionary sciences on all major levels of experience progressively inverted the premodern paradigm by ceasing to translate physical, biological or any other reality into what human consciousness valued as the perfect form or harmonious order. By contrast, the scientific revolution accomplished the turn from appearances to the real. In this universe, sciences old and new henceforth transform the instabilities, irregularities and negativities that seem to disrupt the world of appearances into epistemic objects.

With Freud, psychoanalysis entered the scene as something like a science of errors *par excellence*, since it demonstrated that the perspective of error could not be exempted from any form of thought, not even the scientific one. Lapsus, failed actions, dreams and jokes, these and other mental phenomena seem to be furthest from the appearances of coherent and logically consistent conscious thought; nevertheless, they are thought in action. Furthermore, these marginal phenomena know complex bodily manifestations, all of which suggest that the materiality of thought is more problematic than neuroscientific monism allows us to think. To paraphrase Lacan, once the unconscious is at stake, we are no longer dealing with one single substance (body), but can also observe that two substances (body and mind) are not yet in question either.\(^6\) The materiality of thought is rooted in a grey zone between the mental and the neuronal, a zone that every reductionist monism and metaphysical dualism failed to thematise. One should therefore not exorcise the “spirit” too

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5 | We can recall the role of error, irregularity and abnormality in Georges Canguilhem’s epistemology of biology (cf. notably Canguilhem 2009: 204-205; Foucault 1998: 476-477).

quickly from sciences, since the “spirit” in question stands less for the metaphysical soul or immaterial thinking substance and more for the negativity, conflictuality or tension in the relation between the neurocognitive process of thinking and its objective outside (whether this “outside” is inside or outside the human mind). Psychoanalysis brought about a double rejection: it most decisively rejected the dualism of body and soul (its rejection is engraved in its very name: analysis of psyché, dissolution of the soul), and also refused to simply embrace the emerging reductionist monism of the neurosciences.\(^7\)

Psychoanalysis conceives thinking as a material process traversed by negativity, reducible neither to immaterial substance nor to cerebral processes without remainder. This negativity assumes different forms, from the already mentioned discontinuities of conscious intentionality and speech, via the “splitting of the ego in the process of defence” (Freud 2001 [1940]: 275-278) up to the minimal gap between the enunciation and the enunciated in Descartes’ formula of the cogito that Lacan rewrote in the following way: “I think: I am” (cf. Lacan 1998: 36, 140, 224) – whereby the I that is associated with thinking is not throughout identical with or reducible to the I that is linked with existence (the I, whose being provides the content of thought). The physiological materiality of thought is always contaminated by another

\(^7\) A possible meaning or interpretation of Lacan’s question “What is a science, which includes psychoanalysis?” could be the following one: what notion of scientificity follows from the fact that in the modern epistemic horizon various sciences, at a certain level, seem to emancipate themselves from the conscious human observer and thus from the ideal of cognition as a centralising-stabilising instance and ultimate point of reference? Thus Lacan’s question implies a struggle for a sophisticated notion of scientificity, which does not understand science as a neutral terrain of continuous progress, but rather as a conflictual space, in which, in the last instance, ideological confrontations always-already take place.
materiality, that of alienation, and as Lacan never tired of repeating, the materiality of the signifier;\textsuperscript{8} in other words, what is at stake is the materiality of relations, given that a signifier is nothing but a relation of difference to another signifier. This materiality of relations and its link with the nature of thinking is underlined in another famous Lacanian bon mot, according to which “man thinks with his object” (ibid: 62). With this rather enigmatic remark Lacan rejects both the metaphysical association of thinking with the soul and the neuroscientific reduction of thinking to cerebral processes. In both cases we are dealing with essentialism, which misses its object by reducing thought to either immaterial or material substance. Lacan's remark contains a crucial critical point, which leads to the core of psychoanalytic insights into the nature of thinking, namely that thinking – because it knows no stable and fixed centre – is a constitutively relational process, taking place both inside and outside. Again, what is at stake in this process (whose correct placement is precisely this futile border, this topological grey zone between inside and outside) is not mind-body dualism but a split of materiality. One could say that thought is a loop within matter, a loop, which has been most often misperceived as active sign of a supposedly immaterial substance.

The second crucial aspect of Freud's discoveries concerns the insight that the alienated nature of thinking is conditioned by nothing other than our most everyday tool – language. The linguistic character of the unconscious stands in the foreground of Freud's founding psychoanalytic works \textit{(Interpretation of Dreams, Psychopathology of Everyday

\textsuperscript{8} Not only the phonetic materiality of the signifier or the materiality of writing is at stake here but also and above all what Freud's early work examined under the problematic of conversion of the psychological into the physiological. This conversion testifies that the symbolic networks, the networks of signifiers are endowed with the power to produce effects in physiological materiality simply through their associative connections.
Life, Jokes and Their Relation to the Unconscious), where the
discovery of what Lacan at some point called “the causality of
the signifier” is directly confronted – the fact that thought is the
affect that language causes in the living body. Consequently,
the materiality of language, too, can be thought in two ways:
the reductionist neuro-linguistic way, which conceives it
exclusively as tool of communication developed though the
evolution of the human brain; and the psychoanalytic way,
which reveals in language the materiality of relations, whose
consequences escape the traditional conception of language
as communicative organon.

2.

Hence, the problematic that Lacan rediscovers in his return to
Freud is exactly how to conceptualise language as constitutive
alienation, as thinking with object. This conception avoids
both reducing language to an organ and to a collection of fixed
signifiers in the form of geometric, unsplittable points. What
is sought is a crossing of this scientific reduction, a crossing
that shows the always-already embroiled, instigated and
interlaced relations between man and his objects, between
body and mind, between the mind and his organs. Following
Freud and Lacan, psychoanalysis deals with the constant
subversion of the inside-outside relations that the above-
mentioned reduction hints towards. Why constant? Because
despite the epistemic revolutions, whose consequences also
reach the space of thinking (e.g. Kepler’s mathematisation of
elliptic movement) – man continues to think in a spherical
space, a space that ancient and medieval science valued as

9 | “Thought is not a category. I would almost say it is an affect. Although,
this is not to say that it is at its most fundamental under the aspect of affect.
There is only one affect.” (Lacan 2006c: 150)
conforming to the ideal of perfection (cf. Lacan 1999: 43). To reshape science or scientificity in such a way that it would include psychoanalysis means to insert an intrusive element into science itself, an element that would be constantly disruptive. In so doing, scientific language would emerge as what makes man think with objects – and this is indeed objective thinking in the strongest possible sense, thinking qua constitutive form of alienation. What this disturbing, intrusive element signals towards is the contingency of the materiality of relations; at the same time it warns against the meaningful overinvestment or fetishisation of jokes and chuckles, slips of tongue and “random” coughs. Jokes, sniggers, pauses in the middle of the sentence, each point towards what cannot be written in language, towards its object-character. But one should always bear in mind that coughing and chuckling, being other examples of the embroiled relations with language and thought, are not just “new” Freudian mechanisms by which one can simply understand the operation of language. By contrast, they indicate non-writable, unimaginable ruptures in language, thus signalling the shaken, ever-changing and ever-becoming border of language between the inside and outside.

This is where topological thinking becomes the Lacanian Other scene, if one might use this expression. However, by topology we mean not only different ways or strategies for producing topological objects (e.g. different ways of attaching the edges of a flexible square piece of paper in order to obtain a model of a torus, a Möbius strip or a Klein bottle), but rather the various mathematical apparatuses, that show the topological–material dimension of language itself.

It is important to note that mathematics here for several reasons does not constitute a new language or a “metalanguage”. Firstly, metalanguage in the strict sense of term does not exist, because every metalanguage inevitably carries the structural characteristics of any other language,
in relation to which it situates itself as “meta”. One could thus say that there is always something fake in the “meta” status of a language. In addition, one could also say that every language is a metalanguage, or differently, that there is nothing but metalanguage, since there is no other option of speaking of a language than to assume the position of another language, be it formal or natural. Secondly, mathematics does not attempt to reinstate a position of one language, as with the reductionism of the body-mind dyad to an instance of simple materialism, where everything is grounded and founded on how one atom relates to another and how one neuron transmits its signals. In short, a mathematics is not at all the mathematics. And thirdly, a reduction to an axiomatic approach beckons again toward a separation of inside and outside, i.e. toward a “natural” basis that is always-already written and might be known, which exists once the subject is inaugurated. This basis may be covered by the habitual layers of language, “clean” from chuckles and coughing, where from time to time, slips of tongue, jokes and the forgetting of words may indicate its founding structures. Presenting the linguistic phenomena in that way, where a key – here by way of language – might be retroactively discovered in order to decode the mysteries of language and hence the being of the subject, would reintroduce in the foreground the mere isolation of special instances of language. The emphasis and isolation of these instances would constitute singular anchoring points, just as the axioms are singular sentences of an axiomatic system, such as in geometry, where they constitute the entire system, but have no justification of their own other than the fact that they “successfully” function, regardless of the definition of “success”. In short, even while in the modern

10 | It comes as no surprise that Lacan saw in translation an activity that deals precisely with this double character of metalanguage: its simultaneous inexistence and omnipresence.
conception of axiomatic method emphasis was given to the constituting relations, from which different elements and their characteristics are derived, these relations, although decentralising, are still stabilising. But why does this establish an inner-outer relationship? This is since epistemologically, seen in that way, these anchoring points are always-already fixed, in a fixed zone, where they constitute an inside. This is despite the fact that from them new and surprising results and instances of the subject’s being may pop up, long after the discussed domain has been predominantly considered both mechanised and exhausted. This zone could be seen as an inner domain once an overinvestment of these “quilting points” (Lacan) is accomplished, leaving them untouched. By seeing these anchoring points in that way, one might assume it is the key to explain outer symptoms and behaviour in general, i.e. what takes place outside. Hence, the effects of these inner anchoring points could be considered as an outside, an outer zone. However, the effects and the results of this ‘inner’ structure are to be seen on the surface and what is written on it (in terms of symptoms, for example). Thus it is exactly the problematics of this surface that ought to be called into question, and not its ‘inner’ singular points. More precisely – not only is there nothing inner to these anchoring points, which is obvious from the topological understanding of the unconscious, but also that these singular points are always decentralised and not at all fixed.

With topology Lacan emphasises another interlacing of mathematics into the non-Parmenidean dyad of non-being and non-thinking, and by that he repeatedly decomposes and rewrites, as we noted before, the Cartesian formula “I

11 | This is to be compared to Morley’s Theorem in geometry, discovered in 1899, where already in 1837 Chasles remarked that everyone can prove a theorem in geometry and the genius (or the mathematician) that proves is redundant (cf. Bourbaki 1994: 135).
think therefore I am”.\textsuperscript{12} Mathematics should be regarded neither as some sort of fiction, nor as a production of social constructs. It should also not be regarded as a science, where the epistemological status of its objects always vacillates between developing the old, creating the new and unveiling what was already there but exists only due to the activity of the mathematician. Another conception can be found in Lacan’s unpublished Seminar XIII on the object of psychoanalysis (Lacan 1965–66: 15.06.66), where he talks about what really interested Freud: the Umschreibung, being either mannerism or a constant rewriting of what cannot be written. By this Lacan refers to a series of numbers, 1,2,3,4,5 asking what is the “smallest whole number that is not written on the board”. One might think that this number should be either 0 or 6, but in fact, Lacan already indicates that no matter how we formulise the axioms of whole numbers, or different systems of mathematics, or even follow Bourbaki’s methods, this object cannot be written without preface or text, that is, mathematics is always in a process of rewriting itself. Lacan’s remark on Bourbaki is not at all a lapsus. In his famous manifesto “The Architecture of Mathematics” (1950), Bourbaki commented that the structures of mathematics “are by no means finished edifices” (ibid: 11) and that mathematics is “like a big city, whose outlying districts and suburbs encroach incessantly, and in a somewhat chaotic manner, on the surrounding country, while the center is rebuilt from time to time” (ibid).

\textsuperscript{12} This disintegration is a recurrent theme in Lacan’s writings, and he uses different mathematical dispositifs to demonstrate it. For example, by associating the loops on the torus with the neologism pensêtrer (combination of penser – think, and être – to be) and the verb s’empêtrer (during Seminar IX on identification, [1961–62: 22.11.61]) in order to indicate the non-tautology between thinking and being, or by thinking the infinite converging series $1/(1+1/(1+1/(1+...)))$ as what signals that it is the “I am” – including all the different aspects of being – that enables the “I think” even to be written (Lacan 2006c: 154-157).
The metaphor of architecture is in fact not a metaphor at all, but rather points both towards the structure of mathematics and the structure of the unconscious. Mathematics always rewrites itself, its centres are being rebuilt – i.e. it always goes through a process of decentralisation and it is certainly not a model providing certainty. If according to Bourbaki, “tearing down the old sections with their labyrinths of alleys [...]” gives space to “more commodious [avenues]” (ibid), for Lacan, tearing down the old labyrinths gives rise to the possibility of new labyrinths.

This already sheds some light on Lacan’s different attempts to mathematise the subject and language, or rather to subjectivise mathematics. What is being transmitted with the endless mathematical masquerade during the different stages of Lacan’s teaching? The list of references is indeed without end: it consists of the analysis of purloined letter with formal languages and automata; the different topological terms (compactness, fundamental group) and constellations: torus, Möbius strip, cross-cap, projective plane, knot theory, where knots and links interplay with each other; and the different articulations of mathemes as what can fully transmit knowledge. This partial list always points towards the impossibility of being able to transmit fully anything about the human subject. To emphasise, this impossibility can be conceptualised through mathematics, not through the “mathematical monsters” that operate against intuition, such as Antoine’s Necklace or Peano curve, but rather as the failure of mathematics to re-centralise itself. This failure, at the core of psychoanalytical subject, is what carries both language and the subject towards yet another but different mathematical problematisation of being.

13 | Cf. (Dieudonné 1975: 42). Note that the cross-cap and Klein bottle can certainly be put under this category as well.
This is what is at the heart of Lacan’s use of mathematics: it points towards the dissolution of the immediacy of the dyad being-thinking, a dyad which is presumably always (in the immediate) present, in the immediacy of what in analytical philosophy might be called the basic condition of the mathematical, the I=I. Against this dissolution Lacan posits throughout his teaching a different, uncanny pair: the mathematical-mathematisable. Against the immediate present that thinking and being share, the dyad mathematical-mathematisable calls attention to a unique temporality at the intersection of mathematics and the subject of the unconscious. The strange temporality is of course already present in Freud’s treatment of traumatic events, which obtain their traumatic status retroactively, and in general, with his handling of the phenomenon of Nachträglichkeit. This temporality is conceptualised topologically, when for example the subject is characterised as anticipation, in line with Lacan’s famous matheme: “the signifier represents a subject to another signifier”. The chain of signifiers is composed endlessly of signifiers that point to following signifiers, in a chain that does not come to a stop, where the subject is to be found in the constant anticipation of “another signifier”, which would always, in its turn, point towards yet another signifier. And while this insight hints towards a future project, where the future inconsistencies of language call for a mathematisation that is meant to conceptualise this slipping remainder, in a form of interminable analysis, producing – as in Freud’s analysis – the impossibility of coming to a stop, one can hardly overlook that this chain of signifiers already has a spatial-mathematical structure (for example, of the Klein bottle; cf. Lacan 2006a: 58–61). This is affected by Nachträglichkeit, where the signification of “another signifier” changes the spatial relations between the first signifier, which has already appeared, and the future signifiers, which will-have-been-signified, i.e. the signifiers-
to-be. This chain is therefore already a mathematical structure, which organises what lets itself be written. However, this already-mathematical leaves a non-writable remainder, opening “a horizon of mathematicity” (Badiou 2001: 128). But to reformulate Badiou, un-clarity is the only thing that this topological horizon opens up; it calls for a further becoming of structure, a becoming which is temporalised and mathematised in terms of the infamous Lacanian use of futur antérieur. The topological clash, between what the subject is and what it will have been, comprises the “caput mortuum of the signifier” (Lacan 2006b: 38) and calls for the re-appearance of the real, its rewriting.

The real is the mathematical impasse; it “can only be inscribed on the basis of an impasse of formalization” (Lacan 1999: 93). The real is to be found where one encounters the impossible while enforcing formalisation, or rather where there is a resistance to symbolisation. This is not to say, however, that topology resists symbolisation at all costs, which can be easily seen in the field of algebraic topology. To repeat, what should be emphasised here is that the real itself, while encountering this impasse, also has its historicity, its being always re-written. Therefore events in mathematics change the space of thinking, and with it, how the real and its impasses of formalisation emerge. Indeed, in encountering this impasse, it cannot be said that no one can write or inscribe it, but rather that it is always re-written by a no-one, by an unconscious, by what is “in charge” of lapsus, symptoms, dreams and daydreaming, i.e. by a constant crossing and

14 | Here is the complete citation from Badiou: “every time we examine something that is presented, from the strict point of view of its objective presentation, we will have a horizon of mathematicity, which is, in my opinion, the only thing that can be clear” (emphasis added). The first author thanks Angelika Seppi for fruitful conversations on Badiou and mathematics.

15 | Cf. also (Epple 1999) regarding the origins of knot theory and the early attempts to formulise it.
problematising of the inside-and-outside, of body-and-mind or past-and-future relation. Lacan's persistent use of mathematics shows the necessity of reemphasising the obscurity of the topological space of thinking, its structure and decentralisation. This necessity derives from the confrontation with lapsus and involuntary silences. Instead of surrendering to the famous Wittgensteinian thesis ("whereof one cannot speak, thereof one must be silent"), Lacan shows how one should observe that where one is silent there a subject – both de-individualised and decentralised – speaks topologically. This constant topological decentralisation is necessary before the no-one – concisely, the unconscious – is ossified into the one who thinks (and hence exists), before re-writing a non-written number would be possible; in short, before psychoanalysis itself would emerge from obscurity into “the clearing” (Heidegger); in short, before it would become an organon.

3.

The present volume unites eight interventions, which focus on the general role of topology in Freudian and Lacanian psychoanalysis, as well as on specific contexts, in which this epistemological reference provides insight into the nature of mental apparatus, language and knowledge. The first part is dedicated to the background and the philosophical relevance of the “topological condition” of psychoanalysis. In her contribution, Mai Wegener thus maps the problem from a bird's eye view, following the passage from Freud's spatialisations of the mental apparatus to the main topological models in Lacan's structuralist re-interpretation of Freud's discoveries: the mirror-scheme (the imaginary), the Möbius strip (the symbolic) and finally the Borromean knot (the real). Dominiek Hoens's intervention then continues the exploration
of Lacan's use of topology, drawing attention notably to its contribution to the Lacanian theory of the subject qua subject of the unconscious. The subject remains one of the main critical points, around which psychoanalysis articulates its most significant philosophical implications. The texts by Mladen Dolar and Samo Tomšič pursue this philosophical perspective. Dolar turns toward the spatiality of language and addresses one of the most curious linguistic phenomena, inner speech, which can be considered as the privileged entry point of what Lacan conceptualised under the expression “the big Other”. Tomšič then directs the debate toward Lacan's critique of philosophy and contextualises the role of topology in Lacan's attempt to construct a materialist transcendental aesthetics, which corresponds to the conception of space and structure in modern topology and non-Euclidian geometries.

This general perspective is followed by the second part, which comprises four specific case-studies. These contributions examine in length the topological dispositifs that guided Lacan in his epistemological endeavours. Inspecting various works of art and their distortion of Euclidean space, Claudia Blümle shows how Lacan broke with the imaginary dimension and the perspectival space while formulating his theory of the image. The texts of Michael Friedman and Renen Amir then thematise two topological apparatuses, which emphasise the uniqueness of Lacan's approach to topology. Friedman presents a thorough investigation of Lacan's Seminar IX (1961-62), dedicated to the topic of identification. Being the first seminar that deals extensively with topology, Friedman presents how the operation of identification and the torus are knotted together. Amir's contribution, on the other hand, picks upon a problematic from the later phase of Lacan's teaching (Seminar XVIII (1970)), the topology of the littoral and its subversion of the inside-outside relation. While the various known topological apparatuses proposed by Lacan problematise the above-mentioned relations,
littoral collapses the ability to even relate to this distinction. The last contribution of Rona Cohen turns to one of the most enigmatic topological objects of psychoanalysis: the body. Examining the spatial structure of the speaking body, Cohen shows the complicated relations between the subject’s body, the space that envelops it and its non-specular objects.

**BIBLIOGRAPHY**