The Difference Between Neuroscience and Psychoanalysis: Irreducibility of Absence to Brain States

Cadell Last

ABSTRACT: There is a difference between neuroscience and psychoanalysis in terms of their object-other for subjectivity. Neuroscience defines its discourse in relationship to the materiality of the brain, and psychoanalysis defines its discourse in relationship to problematic forms of absence. For psychoanalysis, its relationship to problematic forms of absence has been formalized with the discovery of unconscious mental processes as a wish-fulfillment. In this paper the logic of the unconscious as a wish-fulfillment is mobilized as a knowledge with significant value to understanding neuroscience as a social and historical community. From this perspective one of the central problems of neuroscience as the "hard problem of consciousness" is framed not as a problem of neurological correlation but of problematic experience itself. This reframing of the hard problem of consciousness suggests that in order to bring together neuroscience and psychoanalysis theorists need to think principles of absence. Thinking principles of absence can be built from the philosophy of the metaphysics of absence, and also the psychoanalytic discovery of the death drive. From this foundation neuroscience and psychoanalysis may find productive dialogue in thinking an "absential science" which would allow a space for new theory of the human relationship to sex (libido) and death (mortality). Such new theory is necessary as the future development of neuroscientific technologies could transform fundamental experiences of absence which structure subjective discourse.

1. INTRODUCTION: NOTHING IN COMMON

This work is an attempt to work through a meta-level discourse forwarded at a recent psychoanalytic conference titled “The Unconscious and the Brain: Nothing in Common” (PIPOL 9, 2019) informed by Freudian and Lacanian theory and experience, in order to put its central thesis to some productive utility. The central hypothesis of the conference was that the theoretical and practical dimensions of neuroscience and psychoanalysis were fundamentally and irreconcilably different. The central thesis was that this fundamental and irreconcilable difference manifests in the fact that the brain as defined by neuroscience, and the unconscious as defined by psychoanalysis, have “nothing in common”.

This paper will ultimately attempt to discover what this lack of commonality means given that contemporary neuroscience presupposes its practices will have universal material consequences for future human experience. The paper will first attempt to achieve this aim by isolating the fundamental difference in analytic approach between the two knowledge forms, as it relates to “the brain” and “the unconscious” as an object-other. Here object-other refers precisely to the primary correlate of the real of the subject (not the ego), and thus the site of truthful investigation over imaginary identification. The difference in these object-others can be found in implicit presuppositions about “presence” of material (the brain) and “absence” of ideality (the unconscious), and thus introduces a difference in need of serious philosophical reflection. Here “absence” of ideality is mobilized as a concept in order to understand how psychoanalysis could conceive neuroscience’s own absence as a historical social phenomenon.

From this framing “nothing” (unconscious) gains a new meaning and link to “something” (the brain). The brain may have “nothing” in common with the unconscious when it comes to the concrete material practices of psychoanalysis. However, in terms of the social history of the brain, this something is being reflectively mediated by objective science in the unconscious negativity of nothing. Such a link between the brain and the unconscious is inherently difficult to think because it invites into analysis the logic of negativity (as opposed to “logical positivism”) where different forms of absence of a phenomena can have real effects and consequences. However, thinking this negativity is pragmatically worth the struggle, because it gives new perspectives on the hard problem of consciousness that could have an essential relevance for the future of neuroscientific presuppositions and general theories of consciousness.

Towards this end we explore the way in which a new kind of abential science could be thought from our rethinking of consciousness and metaphysics which focuses on the

problematics of absence as a non-substantial formal void, and potentials as purely virtual content of fantasmatic wish-fulfillment. Such a science situates itself in a paradoxical negativity with positive generative capacity in the coincidence of a formal void and virtual content. This science could start to productively work the classical psychoanalytic problems related to libidinal energy (sexuality) and mortality/finitude (death). In problems of sex and death analytic experience has isolated a structural relation between a formal void and virtual content as determining subjective action. In this link there may be a space for future dialogue between neuroscience and psychoanalysis ("neuropsychoanalysis") on the ultimate relationship between the brain open to reflective mediation, and the unconscious as a wish fulfillment.

2. IDENTIFYING THE DIFFERENCE

First let us start with an analysis of foundational presuppositions. From the classical neuroscience perspective we get what could be called an external or third-person point of view on the nature of subjectivity. This external view attempts to understand subjectivity in terms of the mechanics of the brain and its neuronal scaffolding (Bear et al., 2007; Izhikevich, 2007; Platek et al., 2007; Cozolino, 2014). These mechanics are not only articulated in a discourse which attempts to be objective, universal and general to all subjectivity, but also in a discourse that provides us with a materiality that can be strictly correlated to subjectivity as such (Dehaene, 2014). The human image is thus re-thought from the perspective of our neuronal circuits ("neuronal man") (Changeax, 1997). In terms of causality it is claimed that these neuronal circuits produce the higher level thoughts and symbols which make humanity "humanity". In other words neuroscience knowledge of "the brain" becomes the object-other of the truth of subjectivity.

However, it should be noted that such a reduction of subjectivity or "mind" to "the brain" has been recognized as both philosophically and scientifically problematic in general (Bennett & Hacker, 2003), and by the emerging field of neuropsychoanalysis in particular (Solms & Turnbull, 2010). These problematics tend to point towards the idea that neuroscience's a priori conceptual framing prevents analysis from approaching the reality of subjective experience from the inside, or first-person point of view (Yovell et al. 2017). In order to approach the reality of subjective experience from the inside, and consequently appreciating the richness and complexity of the emotional world, we need methods that are uniquely aligned to an ontology of first-person experience. Thus, what the external view sees as a negativity in the form of limitation to objective knowledge (direct observation, repetitive testing), the first-person experience has to mobilize as a positivity in the form of self-determined objectivity. Neuropsychoanalysis approaches

this level with the metaphysics of “dual-aspect monism”, where the brain and the mind (“dual-aspect”) are seen as two incomplete perspectives on the same phenomena (“monism”), but which cannot be reduced to either (i.e. neuroscience cannot reduce psychoanalysis; psychoanalysis cannot reduce neuroscience) (Solms & Turnbull 2014).

In order to understand one-aspect of the dual-monism, the properly psychoanalytic approach to subjectivity, we have to introduce the foundational presuppositions of psychoanalysis as directly related to its original Freudian interpretation (Boothby 2001). From a psychoanalytic point of view we can suggest that its tradition is both in alignment and antagonism with the discourse and object-other of neuroscience, which points towards this “two” (mind-body) of the “one” (reality) as an integrative tension. Psychoanalysis can be in alignment with neuroscience insofar as many analysts see pragmatic utility in attempting to understand the mechanics and nature of the brain, which could enhance ethical directives guiding future development of subjectivity insofar as it may improve the substrate upon which subjectivity feels, thinks, and acts (Malabou 2004). From the very beginning of psychoanalytic inquiry there is little doubt that the materiality of being plays a substantial or essential role in conditioning both the appearance of subjectivity and the drama of the social world (Freud, 1916-17, p. 3133). Furthermore, there is little conflict with the idea that knowledge of this materiality (i.e. physics, chemistry, biology, or neurology), can potentially further our understanding of truth for subjectivity (ibid). Thus, there can be in principle an alignment between knowledge of neuroscience and knowledge of psychoanalysis when we are dealing with the dynamical interaction and feedback between the neurological level and the psychical affective level or social historical level (Panksepp, 2004).

However, psychoanalysis is in opposition to, or tension with, neuroscientific reductions insofar as the reductionist project theoretically undermines philosophical presuppositions *vis-à-vis* the nature, meaning and historicity of subjectivity *in-itself* on the level of phenomenological analysis (Hegel, 1807; Heidegger, 1962). This means that a true understanding of the “real” of subjectivity (the “in-itself”) requires an internal view of consciousness and language as an experiential and emotional expression which cannot be observed “from without” (externally) (Freud, 1916-17, p. 3131-2). Thus, in order to know and act in relation to this real in-itself, psychoanalysis operates from the metapsychological point of view of particularity and singularity of subjective discourse, and the truth of an object that is “for itself” (Lacan, 1966, p. 731) (meaning the “in-itself” that is the subject’s own object). This makes even the knowledge of the neuroscientific object (“‘the brain”), not a pure correlate of subjectivity, but a temporal moment in the becoming of the non-totalizable truth of subjectivity (Lacan, 1966, p. 736-7). In other words, and in a classical reversal, the materiality of the “in-itself” is produced “by-us”,

and is thus “for-us” from the perspective of subjectivity “in-itself” (Žižek, 2012a, p. 389). Consequently, there is no scientific language (i.e. neuroscience) that could totalize the truth of subjectivity. In terms of the symmetrical “two” (mind-body) of the “one” (reality) suggested in dual-aspect monism, this paper suggests that the “two” *does* have to be understood asymmetrically. This is necessary in the sense that even though psychoanalysis cannot reduce neuroscience as an important and necessary scientific practice, the reality of the psychoanalytic object in-itself, can in principle fully historicize neuroscience. The opposite is not true.

3. SUBJECTIVITY AND THE UNCONSCIOUS

When this subjective dimension of reality is taken seriously, what is discovered is not a link between subjectivity and the brain (“neuronal man”), but rather a link between subjectivity and the *un*-conscious (where the prefix “un” literally means “not”). One can immediately intuit why this knowledge would create a rift with modern neuroscience, since what is opened up is a “negative knowledge” (what is not), in contrast to neuroscience which focuses on a “positive knowledge” (i.e. “the brain”) (Žižek, 2012b, p. 652). From the Freudian perspective, the unconscious was defined and studied as a “wish-fulfillment” for something “other” than “what is” the present moment for conscious being (Freud, 1900a, p. 1038-9). However, this “wish fulfillment” was not transparent and clear to the conscious ego, but rather distorted and obscure, and could only be deciphered with complex discursive techniques that would likely provoke affective strife. Thus in this frame conscious identity can only be understood by internalizing a constitutive decentering related to self-knowledge that is in its nature traumatic (Lacan, 1954-55, p. 8). This traumatic nature is simply a product of the constitutive gap or “separation” of the ego from its truth.

The structure of this unconscious in its own dimension is studied in the work of dreams, visions and general virtual otherness in terms of how the subject’s own discourse authentically expresses its understanding of this otherness (Freud, 1916-17, p. 3131-2). In this study psychoanalysis discovered that subjectivity as a totality was far stranger than the representations of normative psychology originally suggested. To be specific the information contained on the level of the unconscious wish fulfillment was both *inadmissible* and *unfathomable* to egoic consciousness (Freud, 1900a, p. 1038). This meant that general egoic consciousness (or self-transparent consciousness), actively repressed or censored the unconscious in order to pragmatically function (what were termed “resistances”) (Freud, 1915d).

In entering dialogue with psychoanalytic knowledge it is important to use this precise technical definition linking the conscious to the unconscious as a non-existent wish-fulfillment actively censored by egoic consciousness (Freud, 1915e). Moreover, it is essential to link such a formal dimension of un-reality to the primordial emergence of subjectivity (i.e. that subjectivity is constitutively structured by this absence) (Lacan, 1954, p. 320), which becomes informed (filled with content) by the most intimate early links or relations that come to constitute the later formation of the ego and superego structures. These later formations are absolutely necessary appearances for the subject in navigating its pragmatic reality, but at the same time, they are mostly "frustrated" defences against the negativity of the non-existence of the wish-fulfillment (Lacan, 1953, p. 208). In other words, the very fact that the subject has to make compromises with the constraints of the world vis-a-vis the unconscious wish-fulfillment is both the reason why it is conscious, and the reason why the ego and superego structurally dominate the subject's conscious reality.

From this description of the unconscious we can clearly make the distinction between it and what are called the "subconscious" (in neuroscience) or even the "superconscious" (in theology) (Freud, 1900a, p. 1040). The "subconscious" is often times referring to a type of "cerebral", "neuronal", or even "bodily" conscious that represents an evolutionary-historical scaffolding producing instinctual pressures. This reality is of course an important determination for science and self-understanding since it provides the unconscious with content (consider Freud's joke about geese dreaming of maize containing "the whole theory that dreams are wish-fulfillments") (Freud, 1900a, p. 630). In contrast, the "superconscious" is often times referring to a type of "transcendental" or "spiritual" realm which could represent either some higher form of human consciousness, or even a supernatural realm of consciousness. Of course such visionary determinations are important for religion and many mystical traditions (James, 1902), but from the perspective of psychoanalysis, such realms are conceived of strictly in a negativist logic, on the order of non-existent wish-fulfillments (Freud, 1927c, p. 4442). The unconscious, in contrast to the subconscious genetically programmed instincts or superconscious transcendental ideas, is the location of a drive which is neither determined by past genetics nor eternal substance.

4. THE UNCONSCIOUS OF NEUROSCIENCE

From this psychoanalytic perspective the link between subjectivity and the unconscious can be used to reflect on the nature of neuroscience as a historical community (e.g. Kandel et al., 2013). In other words, we are thinking "cultural neuroscience" (e.g. Han et al., 2013) from a "meta" perspective, and trying to think the way neuroscience itself is

a unique culture, whose belief systems and shared practices could have social consequences for the future brain. This inclusion of potential social consequences for the future brain necessitates that we make a further important distinction that will be essential to integrate in this paper. This distinction includes a small subsection of neuroscientists who consciously adopt a philosophical orientation of transhumanism (More & Vita-More 2013). Transhumanism adds the idea that neuroscientific knowledge will allow the transcendence of the brain and materiality itself for a state of digital immortality (e.g. Kurzweil 2012).

To be specific about the neuroscience community in general, we could say that for neuroscientists as professional identities the image of the brain as a mental system is not first-and-foremost a “material substrate” upon which our subjectivity emerges, but rather an unconscious wish fulfillment in the form of “what is not” (yet) fully understood about the brain (Žižek, 2003, p. 113). Of course, the primary function of this unconscious wish fulfillment is to produce a coherent discourse and an ideal mapping of the brain in order to resolve therapeutic issues for subjectivity arising from neurochemical dysfunction (e.g. Sporns et al., 2005). Moreover the first-order experience of neuroscientists could be said to occupy the emptiness where subjectivity lacks knowledge of the brain and attempts to fulfil the wish of a completely transparent brain (e.g. Sporns, 2011). Consequently, the “imaging fantasy” of the “completely mapped brain” is not merely something “not real” but rather a “real image” that opens the possibility for neuroscience as a historical phenomenon.

In the Freudian tradition one could even say that there is something “inadmissible” or “unfathomable” in the nature of this wish fulfillment as a type of “unconscious hypothesis” of the totality of the logical process. What appears in this unconscious hypothesis is the idea that if human beings could master the neurological material of the brain by completely simulating or reproducing it, then one could open a pathway to higher levels of subjective freedom (Dehaene, 2014, p. 266). In the most radical such visions of this unconscious hypothesis, often appearing in the self-conscious forms of transhumanists, there is the idea of completely free consciousness in an artificial brain or “whole brain emulation” (Sandberg & Bostrom, 2008). In a whole brain emulation it is often posited that consciousness would exist in a realm of its own ideals and its own self determination free of external nature or physical laws (Kurzweil, 2005). Thus, it is possible that such speculative images give us a clue as to the nature of subjectivity in-itself, although it is unclear to what extent they give us a clue as to the nature of the actual future.

In identifying the unconscious of neuroscience we can see that the mechanics of this unconscious are working with the two other aforementioned modes of consciousness that inform the ego, the subconscious and superconscious. The subconscious is explicitly used in the terms of an evolutionary history of the entire universe that is structured by the narrative principle of complexity in order to explain the appearance of human beings and civilization (Last, 2018). This subconscious is thus posited to possess a type of teleological tendency towards greater complexity when one takes a view of the process as a whole inclusive of physics, chemistry, biology, culture and technology (Last, 2018, p. 5). The superconscious, in contrast, is secularized towards a future emergent state space rendered possible by advanced technology. This superconscious is hypothesized to transcend the mental limits of human consciousness and possibly become populated by a diverse ecosystem of technologically mediated mind (Last, 2017).

On psychoanalytic terms we will at first defer on giving any precise determination on the possibility or impossibility of this vision in-itself (either sub or superconscious). Instead, and for immediate purposes, it is important to note that this vision exists empirically as an unconscious fantasy image. Furthermore, this image is motivating or mobilizing a particularly powerful scientific discourse with real ontological consequences. Thus we can use this empirical fact to demonstrate the unique and nuanced way in which psychoanalysis decouples subjectivity from reduction to “the brain”, and instead couples subjectivity to an unconscious. In this conceptual process there is no regression into any religious notions of a “transcendental substance” or even pseudo-scientific notions of a local “material seat” of consciousness (qua Descartes “pineal gland”). To restate what was introduced above, for psychoanalysis, what distinguishes general subjectivity proper (the in-itself of subjectivity) from brain states, is its relationship to something that does not exist, a lack or emptiness (the unconscious).

5. THE HARD PROBLEM OF CONSCIOUSNESS

Let us consider this idea in relationship to the concrete and well-known philosophical problem which causes much interdisciplinary disagreement: the “hard problem of consciousness” (Chalmers, 1995). According to this philosophical hypothesis there is an “explanatory gap” between “functions of the brain” and “experiences of the subject” which cannot be closed with reference to materiality (Chalmers, 1995, p. 204). However, for many neuroscientists there is a perception that this “hard problem” is really an “easy problem” and it only appears hard because neuroscience has yet to close this gap with advances in method and technology. Thus, in the future many neuroscientists presuppose that we will gain the ability to “track the patterns of neuronal activity that

occur only when conscious access happens" and demonstrate that "electrophysiological signatures have manifested the presence of conscious ignition" (Dehaene, 2014, p. 234-5).

The psychoanalytic perspective on this hard problem is neither to obfuscate the problem of consciousness in relationship to something magical or mysterious ("supernatural"), but neither is it to reduce consciousness to its neurological correlates (Žižek, 2012c, p. 551-2). For psychoanalysis the "hard problem" is that if one investigates the in-itself of subjectivity through language (the subject's own discourse) then one finds an "objective-other" in the form of a traumatic absence (i.e. lack or emptiness) which the subject's ego constantly wants to fill with images (Lacan, 1954, p. 320). Thus it is not so much that consciousness is caused by a mysterious substance or that it is correlated with particular brain states, but rather that it appears because of some form of lacking substance or existential emptiness. From this perspective one could even think a meta-level historical theory of psychoanalysis as the "hard problem of consciousness" since its therapeutic methods work this very empty-lack in discourse.

To be precise, if one studies the emergence of psychoanalytic therapy as a response to psychic neuroses, then we can think of the "hard problem" not as a gap between brain functions and inner experience (Chalmers, 1995), but the traumatic gap between conscious awareness and its own unconscious ideality (Freud, 1895c, p. 324). In the terms of our previous reflections on the relationship between the subconscious instincts and superconscious ideality, it may not be too surprising that psychoanalytic therapy of the unconscious identified both sexuality and existence itself as the negative symptomal site informing development (Freud, 1916-17, p. 3134-5). Incomplete sexuation is the most intimate reflective mediation of subconscious instinct, and mortal existence is the most intimate reflective mediation of superconscious ideality. In other words, what is absent ("traumatic gap-emptiness") is the complete immortal being that does not need an object-other since it is perfect in-itself. The seemingly irreducible reality of this sexual-existential absence produces a spectrum of identity symptoms in the form of hysterical and obsessive neuroses (Freud, 1893a, 1894a, 1895d). Freudo-Lacanian theory and practice operate in the very "hard problems" that appear in this absence and has come to think of its reflective mediation as co-extensive with the appearance of language and the subjective in-itself (Lacan, 1962-63, p. 132).

Thus the psychoanalytic hypothesis qua neuroscience would be that even if brain states were precisely correlated to conscious experience, and that such knowledge allowed for a fundamental transformation of our brain states, the gap between consciousness and its own unconscious ideality as a "hard problem", would remain as insoluble as ever.

Consequently, we could presuppose that a complete neuroscientific mapping of consciousness will shift, displace or transform this traumatic lack or emptiness “for-us” (first-person experience). Indeed, it is even possible that a complete neuroscientific mapping of consciousness will provoke totally different and more intense neurotic states. In the spirit of directly engaging the neuroscientific unconscious wish fulfillment: what forms of sexual-existential problems would a consciousness confront if it were capable of uploading its first-person experience into a whole brain emulation? Far from being an unproblematic transition, could there be anything more experientially and emotionally traumatic than confronting the possible actuality of an “infinite” “immortal” existence (from our finite-mortal human perspective)? In other words, what would be the experiential and emotional problems of consciousness reflectively mediating the completion of its sexuality and the end of its mortality?

6. METAPHYSICS OF ABSENCE

In this discussion of the “hard problem of consciousness” what is being isolated is a precise metaphysical difference between neuroscience and psychoanalysis. This difference is between neuroscience’s “ideal” relationship to brain states (i.e. structural-functional imaging) (Huettel et al., 2004), and psychoanalysis’s “material” (symbolic) relationship to the real of absence (Žižek, 2012d, p. 494-495). The philosophical essence of such a transition can be located in a fundamental shift away from a classical “metaphysics of presence” to a “metaphysics of absence” (Sartre, 1956). According to phenomenological and deconstructive theory, a metaphysics of presence grounds all philosophy and science in an non-reflective mediation of absence by language (Heidegger, 1962, p. 25-6). In such mediation discursivity always implicitly or explicitly presupposes a substantial “thing” (or being) beyond/behind the conceptualization process (Lacan, 1959-60, p. 120). Such a metaphysics, for example, underlies neuroscientific presuppositions in the relation between its discourse and the materiality of the brain. In terms of phenomenology such a tendency attempts to bind speech with immediate full pleasure of knowing a present being (something) (Derrida 1967, p. 280), as opposed to confronting the nihilation of being (nothing) (Heidegger, 1977, p. 103). In psychoanalytic terms the metaphysics of presence reinforces the ego’s imaginary world correlation to given being, and the metaphysics of absence reinforces the emergence of the unconscious wish-fulfillment.

In contrast to neuroscience’s foundation in a metaphysics of presence, psychoanalysis may already be considered to have moved towards an anti-ground in a metaphysics of absence. This metaphysics of absence may be articulated as what Freud discovered as a drive in the “beyond” of the pleasure principle (Freud, 1920g). The pleasure

principle was considered to be an erotic life force to bind with the other in a unity (e.g. higher self, sexual other, transcendent ideality), and had previously structured all analytic attention (Freud, 1920g, p. 3737). However, analytic experience recognized a compulsive drive "beyond" this pleasure principle which manifested itself in traumatic repetitions of *un*-pleasure where the subject found itself unbound from any organic substance (Freud, 1920g, p. 3738). The disturbing aspect of the death drive was that it seemed to underlie and override the life force and its progressive desires for pleasure due to the fact that the subject's "origin" was in the absence or separation from organic substance and not in its unity (ibid, p. 3740). Thus the death drive pointed towards the possibility that there was a deeper drive internal to life to "return" to a non-organic state, provoking reference to a type of Platonic inversion of primordial ideality (Freud, 1920g, p. 3758). Freud's work pointed analysis away from any relation to Plato's divine idea of eternal perfection (contrasted with the worldly appearances or "cave shadows"). Instead he started to orient analysis in the absence "in-between" the discursive attempts to bind speech in immediate pleasure with being (presence).

From the introduction of the death drive as a type of metaphysics of absence, Freudian psychoanalysis explicitly became a dualistic metaphysical theory (Freud, 1920g, p. 3754). This was stated to be in opposition with Jungian psychoanalysis which proposes a monistic metaphysics of individuation, since it only recognizes eros and its transcendental reification in the collective unconscious archetypes (Freud, 1920g, p. 3754). Thus, instead of aligning individual identity with a transcendent presence in the collective unconscious, Freud's dualism identified a conflict or tension between presence (binding) and absence (unbinding) which pointed towards mysterious psychical territory (Freud, 1920g, p. 3762). This strange dimension of psychic life is difficult to emotionally internalize because in order to know it, and harness its power, one must accept and traverse over an aggressive feeling of anxiety that is often identified as "better left sleeping" (Freud, 1920g, p. 3738). However, psychoanalysis may have ultimately discovered this dimension because its knowledge is an explicit transformation of non-reflective mediation of absence by language, towards a reflective mediation of absence by language in the analytic session (a knowledge process that is often markedly unpleasurable, like a surgical removal of a parasitic virtual identity) (Freud, 1916-17, p. 3129).

From this transition the most important presence of the subject's drive shifts from the presupposed substantial beyond/behind identified by egoic discourse (e.g. neuroscience's brain, Plato's Idea, Jung's Archetypes, etc.); and instead becomes an absence where the subject, via discourse, creates *ex nihilo* via desire to manifest the true object-other of its unconscious fantasy (Lacan, 1972-73, p. 103). Thus we reach

an object-other in psychoanalysis where the subject's own creative agency is directly implicated in the becoming of objectivity, bringing presence into being from absence as opposed to merely reflecting it (i.e. "brain states" "eternal ideas"). What is crucial in this knowledge is an underlying metaphysical approach towards understanding the truth of the subject in-itself and its link to the unconscious as a non-existent wish-fulfillment. Here we can state more explicitly the ontological point of a psychoanalysis: to help the subject overcome identification with a pre-given fantasmatic beyond produced by historical discourse, and align with its own creative core in unconscious self-processing.

7. PHILOSOPHY OF AN ABSENTIAL SCIENCE

In recent years scientific attention has been brought to the metaphysical dimension of absence with the concept of "absential" (Deacon, 2011, p. 3). Absential specifically describes "a something-that-is-not-a-thing" having "physical consequences" (Deacon, 2011, p. 2) or denoting "phenomena whose existence is determined with respect to an essential absence" (Deacon, 2011, p. 3). To specifically situate absential in the field of neuroscience, we would understand the idea of having control of or extending the potential of the material substrate of the brain as an "absential" (i.e. "a something-that-is-not-a-thing" having "physical consequences"). Such inquiry immediately positions science in the Freudian field where "non-existent wish fulfillments" as absentials structure phenomenal dispositions. The starting point for a "science of absence" can here be situated specifically in relation to the subtraction or removal of matter ("something less"), over the positive addition of matter or some supernatural material, and focuses on the absence in-between speech acts ("the holes") (Deacon, 2011, p. 36). In striking parallel to the metaphysics of the death drive, which seems to upset the spontaneous intuition of Platonic memory, the science of absence also points towards solutions to the "age-old riddles of teleology" as it relates to meaning and purpose of human existence, in repetition of absence (Deacon, 2011, p. 36).

This precise framing of absence as a serious scientific problem within the materialist universe contributes to, and may point towards an approaching scientific transition away from the metaphysics of presence. Consequently, such a transition could signal or anticipate the preparation of scientific action for a "de-substantialization" or "de-essentialization" of reality itself. In the context of psychoanalyzing neuroscience this would mean "unbinding" neuroscience from the brain as an object, and move more towards an understanding of neuroscience as a processual nihilation of the brain (i.e. transforming the brains pre-given by evolutionary history into something other). We could here invoke the idea that neuroscientific binding to the brain is a type of pleasure principle, whereas the absence of the perfect understanding of the brain represents the

death drive where it could ultimate become nihilated from being itself. Thus, “a something-that-is-not-a-thing”, an absential in the anti-form of a complete understanding of the brain, has “physical consequences”; a “presential” in the form of neuroscientific discourse. Here we can situate the emergence of an “immortal image” (conscious uploading) in the inherent tension of neuroscience’s life and death drives.

From this perspective the concept of absential appears well situated to ground “meta-scientific” analysis that the “hard problem of consciousness” is actually the experience of the *existence of nothing as real* and the *mediation of this nothing in signification* (Lacan, 1953, p. 206). Although this has been the ground of psychoanalysis from the beginning, the intellect has always spontaneously rebelled against this possibility. The very first advanced philosophical activities of humankind could even be framed as rational conscious defense mechanisms against nothingness with notions of absolute being (Parmenides) or ideas (Plato) (Dolar, 2013, p. 11). The founding scientific principle: self-transparent cognition (Descartes); and founding scientific ontology: absolute spacetime (Newton); could ultimately be egoic images to historically mediate this nothingness. In the case of philosophical notions, intellectual appreciation of absolute being and ideas only became capable of incorporating underlying negativity and temporality with the modern turn in Kant and Hegel. In the case of scientific notions, intellectual appreciation of self-transparent cognition and absolute spacetime only became capable of incorporating the unconscious and relativity with the modern turn in Freud and Einstein.

Consequently, there could ultimately be no bigger scientific project then the project of clearing away the positivity of the material world as a foundational starting point for “reality” (e.g. solar systems, brains), and instead bringing the tools of empirical observation and repetitive testing to the phenomenal level of the inner void as a reality of its own. If psychoanalysis mobilized this void via unconscious speech processes in order to read the singularity and particularity of each subject’s inaccessible non-existent wish fulfillment, perhaps a science should attempt to investigate if there are any universal and general mechanics of this void once it has been reflectively mediated? Is there a way to understand the truth of “absent features” which appear to overdetermine our problematic experience? Is there a way to understand the truth of “unrealized potentials” in the context of working through these experiences? In this science we focus on the “hole dimension” in-between material presences where virtual meanings and purposes start to emerge, and both frame and transform materiality.

8. OPERATING ABSENCE

This brings us to the question of whether “science as such,” which has always been so philosophically aligned with a type of “objective materiality,” can include subjectivity as an operator of absentials in the void of unrealized potentials. In the history of science the general desire of scientific language has been to close empty lack in-itself with some known substance as an internalized object (Lacan, 1962-63, p. 145). From this perspective it could be quite comedic to think the relation between science and religion, with science always “filling gaps” (in our knowledge of the world), and religion always obfuscating explanatory gaps with “God” (as absolute knowledge). Of course, such a comedy plays itself out in the present of neuroscience where science desires to correlate subjectivity with neurophysiology (Dehaene, 2014, p. 277-8) and computer simulations (Kurzweil, 2012, chp. 6), and where religion would still posit some divine substance (e.g. God, heaven, etc.) as the ultimate ethical and ontic correlate of subjectivity (James, 1902, p. 27). In contrast to both approaches, a science of absence should meditate on the gap as the place where the self as such brings forth the new from its own void.

The conscious meditation on such a void has matured epistemologically in both the foundations of modern philosophy and science. From the philosophical angle a science of absence starts to operate in historical dialectics and phenomenology where negativity always overrides any positive substance (Žižek, 2012d, p. 492-3). Consider the foundation of Hegel’s work where the path of emergent potential from the void occurs via the mechanics of idealization and its mediation of absolute negativity (i.e. death) (Hegel, 1807, p. 49 (77.)). In this path there is no “final formula” for the truth of subjectivity (as a “complete” “closure”), but the subject can still achieve “absolute knowing” by including this negativity as a positive feature (Lacan, 1960, p. 675). From the scientific angle a science of absence already starts to operate in quantum mechanics and modern mathematics where uncertainty and incompleteness are a feature of all positive substances (“atoms”). Consider Heisenberg’s uncertainty principle (1927), where the momentum (movement) of any particular substance can never coincide with position (thus moving substance is inherently uncertain about its “being” as such). Or consider also Gödel’s incompleteness theorem (1931), where complete formulaic description of any substance must include self-referential paradoxes. Both of these developments point towards the impossibility of substantive certainty or complete description. Such impossibilities open us into a science of “absence” and “potentials” where subjectivity becomes the operator of incomplete and uncertain substance riddled with negativity.

In this direction we could suggest that psychoanalysis is already the first seed of the science of operating absence and potential. In psychoanalysis “working negativity” in

incompletion and uncertainty is fundamental (e.g. positivity of negativity, anxiety of uncertainty, incompletion of self-knowing, etc.). Indeed, the ground of much Lacanian psychoanalysis is an attempt to put the Cartesian cogito (i.e. self-transparent cognition which is complete and closed in-itself) into a historical dialectic as the vision and voice of the unconscious wish fulfillment (Lacan, 1966, p. 727). Thus, instead of filling gaps in natural substance or obfuscating gaps with supernatural substance, psychoanalytic method openly attempts to better understand gaps (absences) operated by cognition over a type of premature closure in ego images (Freud, 1916-17; 1937c). Such understanding is necessarily anxiety provoking, and emotionally difficult, since it involves transforming initial fears of absence into joys of absence, as truthful self-processing. From a scientific perspective we may think the in-itself of this realm of void-potentials as the dimension of cognition that is internally missing, unthinkable, obscure, and the way in which this dimension warps or curves experience by certain impossible forms (Žižek, 2012b, p. 651). What thus takes center stage in analysis is self-referential images populating one's own unconscious, not as a higher substantial truth, but as giving us clues as to what needs to be self-processed in order for future ethical determination ("absential operation").

Consequently, in order to open the space of subjective operations, absential science must also invert our intuition thinking on forms and content in order to prevent a reinstantiation of a pleasure principle aligned with known substance. This inversion involves unconscious cognition and impossible forms insofar as it recognizes that any content informing cognition is not a priori, but a relation to how the subject is playing out its existential social drama (i.e. managing libidinal energy, compromising with finitude, etc.). In other words, any given content is to be measured in terms of how it is processing the formal impossibility of its state space. The more this formal impossibility is raised into consciousness (understanding internal repressions, resistances, etc.), the better the subject should become at operating or working with this form in content or method. For example, in our current analysis of neuroscience, we can say "the brain" as content is secondary to the formal appearance of the problematic experience that it presents to the contemporary spirit of consciousness, as the manifestation of neurophysiological dysfunctions and inadequacies. Thus, we may hypothesize that once these dysfunctions and inadequacies are resolved, we will not receive the perfect form of subjectivity, but rather, the form in which subjectivity manages libidinal energy, and compromises with finitude, will itself be transformed. Consequently, ground-zero content for self-processing impossible form may actually involve processes of sexuation with the other(s) (i.e. managing libidinal energy), and also processes of creation with the other as death (i.e. compromising with finitude).

9. NEUROPSYCHOANALYSIS TO THE RESCUE?

We started this work by isolating a key analytic difference between neuroscience and psychoanalysis that can be found in linking subjectivity with the brain or the unconscious. This analytic difference led us to inquire as to neuroscience's own unconscious and the metaphysical presuppositions involving consciousness that may force us to question whether or not subjectivity can indeed be reduced to the presence of the brain and its neurological constitution, as is commonly presupposed (Bear et al., 2007; Platek et al. 2007; Dehaene, 2014). If we are now convinced that subjectivity must find its relation to an absential in the form of an unconscious wish fulfillment, as originally proposed by Freud (1900a), we may now return to neuroscience as a neuropsychoanalysis (e.g. Solms & Turnbull, 2010). In this field we have to think of a productive dialogue between the materiality of the brain, and the problematic experience clearly identified in the psychoanalytic experience (Yovell et al., 2017). Here we may in fact find more room for future discourse than presupposed at the recent psychoanalytic conference "The Unconscious and the Brain: Nothing in Common" (PIPOL 9, 2019). Neuroscience may in fact be conceivable as a tool to explore and enhance potentials "sensed" by unconscious absential relations. When it comes to sexual otherness or creative death drive, our very cognitive apparatus constrains our ability to explore libidinal spaces. Through certain technological interventions the constraints of these spaces could be transformed, and what are currently perceived as obstacles and antagonisms could become totally other (Last, 2017). The nuanced question would be what new constraints would emerge? And what new obstacles and antagonisms would represent the other? In other words, if the brain is now the main constraint and object-other, will future technological modification be the next constraint and object-other? (ibid)

The starting point to explore these questions must at least start with an engagement with the future technological mediation presupposed by neuroscience. These mediations could involve "consciousness uploading" into "whole brain emulations" (Sandberg & Bostrom, 2008), or these mediations could involve "neurological implants" which connect us more directly and intimately with "artificial intelligence" (Kurzweil, 2012). In either case, or whatever the technological apparatus, these mediations would likely involve a fundamental transformation in terms of the background for the play of libidinal attachments and existential dramas (Last & Ezan, 2020). In other words, the very impossible form by which content is processed by subjectivity will become other, and thus the logic of libidinal management and the compromise with finitude will become other. According to the spontaneous imaginary of transhumanists, there is a prediction of unrepressed expansion of sexual expression (Kurzweil, 2005, p. 214) and

an essentially new form of immortal being (Kurzweil, 2005, p. 217). Thus the unconscious wish fulfillment assumes a total absence of constraint on sexual expression (in virtual mediation), and a total absence of obstacles and antagonisms in regards to the other as a death limit. In other words, technological mediation is presupposed to ultimately resolve issues of both sex and death as the most fundamental lacking other, as opposed to shifting constraint and the object-other.

However, in our focus on building the ground on an absential science (e.g. Deacon 2011) we must become more aware of how absence (and consequently our "discontent" in civilization), may shift, transform or even become intensified with the introduction of new technology (Freud 1930a). Consider that when new technologies emerged in the 20th century related to resolving certain sexual problems (i.e. contraceptives), or mortality problems (i.e. antibiotics) the problem of sex and death as absences did not disappear, but rather had their constraints and obstacles become organized differently. In the broadest possible context of transformation of sexuality in the 20th century, problems of unwanted pregnancy and sexually transmitted diseases as irreducible problems leading to repression, have been replaced with irreducible emotional and social problems leading to repression (Perel, 2006). In the broadest possible context of transformation of death in the 20th century, irreducible problems of infant mortality, scarcity and poverty leading to repression, have been replaced with irreducible problems of degenerative diseases leading to repression (de Grey, 2007). In both cases, the unconscious wish fulfillment of unrepressed sexual desire (i.e. resolving the gordian knot of emotional-social problems) and transcendent immortal being (i.e. resolving degeneration of the body), emerges in visions of a scientifically informed subject as an imminent possibility.

Nonetheless, as stated, the unconscious wish fulfillment is indestructible, even if inadmissible to consciousness. The emotional and social sexual obstacles to unrepressed sexuality, and the degenerative aging death obstacles to unrepressed life energy, could be transformed through the introduction of neuroscientific technologies (Kurzweil, 2012). Future cognition may have less difficulty building extended libidinal bonds with networks of human others in a landscape mediated by whole brain emulation or neurological links (Cozolino, 2014). Future cognition may also have less difficulty preventing biological degeneration and processes of aging in a landscape mediated by such interventions. In this context, the aforementioned psychoanalytic problem of sublimation of libidinal energy towards a new death drive in creative cultural processes, could become less fragile and more robust. In other words, when libidinal energy is under processes of sublimation towards biological ends (i.e. opposite sexes, reproduction of children), it has the advantage of having a somewhat stable and

evolutionarily pre-given material substrate (the other human, reproductive function etc.). When libidinal energy is under processes of sublimation towards cultural ends, it is disadvantaged insofar as there is a more direct engagement with absence (Who is the other? What is being reproduced?). This points towards a central hypothesis in the philosophy of psychoanalysis that the mystery of sexuality has nothing to do with its biological origins, but rather has everything to do with the way it manifests and expresses itself in thought and language itself. Although ultimately beyond the scope of this paper, this topic is receiving more and more attention in the generative intersection between philosophy and psychoanalysis (Zupančič, 2017).

10. CONCLUSION: SOMETHING IN COMMON?

This paper has attempted to put to work the hypothesis of a recent psychoanalytic conference titled “The Unconscious and the Brain: Nothing in Common” (PIPOL 9, 2019) informed by Freudian and Lacanian theory and experience. The central hypothesis of the conference was that the theoretical and practical dimensions of neuroscience and psychoanalysis were fundamentally and irreconcilably different. In this analysis we first attempted to identify the difference in neuroscience’s external view and psychoanalysis’s internal view of subjectivity. The external view links subjectivity to the brain, whereas the internal view links subjectivity to the unconscious. In analyzing the unconscious link we could ground neuroscience itself in relation to its own unconscious wish fulfillment as transcending the human condition in consciousness uploading. Such speculations can be situated as part of a psychoanalytic approach to the general hard problem of consciousness as problematic experience as such. This hard problem can receive a metaphysical ground in the phenomenal experience of nothingness, which in turn can receive a scientific ground in observing and repetitively testing the dimension of absentials. In targeting the experience of nothingness, and the dimension of absentials we invite reflection on the most fundamental problematics of psychoanalytic experience as it relates to sexual otherness and the death drive. In this targeting there is the possibility for future dialogue between neuroscience and psychoanalysis about the way in which future brain technology could transform our relationship to these empty-lacks. From that perspective, the unconscious and the brain may have “something in common”, considering that transformation of the brain could lead to a transformation of wish fulfillment.

REFERENCES

Bear, M.F., Connors, C.W. & Paradiso, M.A. (Eds.). (2007). *Neuroscience*. Lippincott Williams & Wilkins.

Bennett, M.R. & Hacker, P.M.S. (2003). *Philosophical Foundations of Neuroscience.* Vol. 79. Oxford: Blackwell.

Boothby, R. (2001). *Freud as Philosopher: Metapsychology After Lacan*. Routledge.

Chalmers, D. (1995). Facing up to the problem of consciousness. *Journal of Consciousness Studies*, 2(3): 200-219.

Changeux, J-P. (1997). *Neuronal Man: The biology of mind*. Princeton University Press.

Cozolino, L. (2014). *The Neuroscience of Human Relationships: Attachment and the developing social brain*. W.W. Norton & Company.

De Grey, A. (2007). *Ending Aging: The rejuvenation breakthroughs that could reverse human aging in our lifetime*. St. Martin's Press.

Deacon, T. (2011). *Incomplete Nature: How mind emerged from matter.* New York: W.W. Norton.

Dehaene, S. (2014). *Consciousness and the Brain: Deciphering How the Brain Codes Our Thoughts*. Viking.

Derrida, J. (1967). *Of Grammatology*. G.C. Spivak (Trans.). Baltimore: The John Hopkins University Press.

Dolar, M. (2013). The Atom and the Void. *Filozofski vestnik*, XXXIV, p. 11-26.

Freud, S. (1893a). On the Psychical Mechanism of Hysterical Phenomena: A Lecture. In: *Freud - Complete Works* (2011). p. 285-298. Ivan Smith.

Freud, S. (1894a). The Neuro-Psychoses of Defence. In: *Freud - Complete Works* (2011). p. 299-314.

Freud, S. (1895c). Obsessions and Phobias: Their Psychical Mechanism and Their Aetiology. In: *Freud - Complete Works* (2011). p. 315-324. Ivan Smith.

Freud, S. (1895d). Studies on Hysteria. In: *Freud - Complete Works* (2011). p. 1-269. Ivan Smith.

Freud, S. (1900a). The Interpretation of Dreams. In: *Freud - Complete Works* (2011). p. 507-1048. Ivan Smith.

Freud, S. (1915d). Repression. In: *Freud - Complete Works* (2011). p. 2977-2988. Ivan Smith.

Freud, S. (1915e). The Unconscious. In: *Freud - Complete Works* (2011). p. 2991-3024. Ivan Smith.

Freud, S. (1916-17). Introductory Lectures on Psycho-Analysis. In: *Freud - Complete Works* (2011). p. 3124-3501. Ivan Smith.

Freud, S. (1920g). Beyond the Pleasure Principle. In: *Freud - Complete Works* (2011). p. 3713-3762. Ivan Smith.

Freud, S. (1927c). The Future of an Illusion. In: *Freud - Complete Works* (2011). p. 4415-4461.

Freud, S. (1930a). Civilization and its Discontents. In: *Freud - Complete Works* (2011). p. 4462-4532.

Freud, S. (1937c). Analysis Terminable and Interminable. In: *Freud - Complete Works* (2011). p. 5012-5046. Ivan Smith.

Gödel, K. (1931). Über formal unentscheidbare Sätze der Principia Mathematica und verwandter Systeme, I. *Monatshefte für Mathematik und Physik*, 38(1): 173-198.

Han, S., Northoff, G., Vogeley, K., Wexler, B.E., Kitayama, S., & Varnum, M.E.W. (2013). A Cultural Neuroscience Approach to the Biosocial Nature of the Human Brain. *Annual Review of Psychology*, 64: 335-359.

Hegel, G.W.F. (1807). *Phenomenology of Spirit*. A.V. Miller (Trans.), J.N. Findlay (Ed.). Oxford: Oxford University Press (1977).

Heidegger, M. (1962). *Being and Time*. J. Macquarrie & E. Robinson (Trans). Oxford: Blackwell.

Heidegger, M. (1977). What is Metaphysics? *Basic Writings*. Farrell, D. (Ed.). New York: Harper and Row.

Heisenberg, W. (1927). Über den anschaulichen Inhalt der quantentheoretischen Kinematik und Mechanik. *Zeitschrift für Physik*, 43(3-4): 172-198.

Huettel, S.A., Song, A.W. & McCarthy, G. (2004). *Functional magnetic resonance imaging*. Sunderland, M: Sinauer Associates.

Izhikevich, E.M. (2007). *Dynamical Systems in Neuroscience*. MIT Press.

James, W. (1902). *The Varieties of Religious Experience: A Study in Human Nature*. eBooks@Adelaide (2009).

Kandel, E.R., Markham, H., Matthews, P.M., Yuste, R., & Koch, C. (2013). Neuroscience thinks big (and collaboratively). *Nature Reviews Neuroscience*, 14: 659-664.

Kurzweil, R. (2005). *The Singularity is Near: When Humans Transcend Biology*. New York: Penguin.

Kurzweil, R. (2012). *How to Create a Mind: The Secret of Human Thought Revealed*. New York: Penguin.

Lacan, J. (1953). The Function and Field of Speech and Language in Psychoanalysis. In: *Écrits: The First Complete Edition in English*. p. 197-268. New York: W.W. Norton & Company.

Lacan, J. (1954). Response to Jean Hyppolite's Commentary on Freud's "Verneinung". In: *Écrits: The First Complete Edition in English*. p. 318-333. New York: W.W. Norton & Company.

Lacan, J. (1954-55). I - Psychology and metapsychology. In: *Book II: The Seminar of Jacques Lacan: The Ego in Freud's Theory and in the Technique of Psychoanalysis 1954-55*. p. 3-12. New York: W.W. Norton & Company.

Lacan, J. (1959-60). On creation *ex nihilo*. In: *The Seminar of Jacques Lacan Book VII: The Ethics of Psychoanalysis*. p. 115-127. New York: W.W. Norton.

Lacan, J. (1960). The Subversion of the Subject and the Dialectic of Desire in the Freudian Unconscious. In: *Écrits: The First Complete Edition in English*. p. 671-702. New York: W.W. Norton & Company.

Lacan, J. (1962-63). On a Lack that is Irreducible to the Signifier. In: *Anxiety: The Seminar of Jacques Lacan Book X*. p. 131-146. Cambridge: Polity Press.

Lacan, J. (1966). Science and Truth. In: *Écrits: The First Complete Edition in English*. p. 726-745. New York: W.W. Norton & Company.

Lacan, J. (1972-73). Knowledge and truth. In: *Book XX The Seminar of Jacques Lacan: On Feminine Sexuality, The Limits of Love and Knowledge*. p. 90-103. New York: W.W. Norton.

Last, C. (2017). Big Historical Foundations for Deep Future Speculations: Cosmic Evolution, Atechnogenesis, and Technocultural Civilization. *Foundations of Science*, 22(1): 39-124. DOI: 10.1007/s10699-015-9434-y.

Last, C. (2018). Cosmic Evolutionary Philosophy and a Dialectical Approach to Technological Singularity. *Information*, 9(4): 78. DOI: 10.3390/info9040078.

Last, C. & Ezan, P. (2020). Self Development with Dialectics: Nature of the One and the Other. In: *The Practice of Thinking: Cultivating the Extraordinary*. Lenartowicz, M. & Weinbaum, D.W. (Eds). Academic Press.

Malabou, C. (2004). *What Should We Do With Our Brain?* Fordham University Press.

More, M. & Vita-More, N. (2013). *The Transhumanist Reader: Classical and contemporary essays on the science, technology, and philosophy of the future human*. John Wiley & Sons.

Panksepp, J. (2004). *Affective neuroscience: The foundations of human and animal emotions*. Oxford University Press.

Perel, E. (2006). *Mating in Captivity: Reconciling the Erotic + the Domestic*. HarperCollins e-books.

PIPOL 9. (2019). The Unconscious and the Brain: Nothing in Common. 5th European Congress of Psychoanalysis. July 13th-14th 2019. Square Brussels Meeting Centre, Mont des Arts, 1000 Brussels. http://iclo-nls.org/?page_id=398 (accessed: Sept 16 2019).

Platek, S., Keenan, J., & Shackelford, T. (Eds.). (2007). *Evolutionary Cognitive Neuroscience*. MIT Press.

Sandberg, A. & Bostrom, N. (2008). *Whole Brain Emulation: A Roadmap*. Technical Report #2008-3, Future of Humanity Institute, Oxford University. www.fhi.ox.ac.uk/reports/2008−3.pdf (accessed: Sept 16 2019).

Sartre, J-P. (1956). *Being and Nothingness: An Essay on Phenomenological Ontology*. Routledge.

Solms, M. & Turnbull, O. (2010). *Brain and the inner world: An introduction to the neuroscience of subjective experience*. Other Press.

Solms, M. & Turnbull, O.H. (2014). What Is Neuropsychoanalysis? *Neuropsychoanalysis*, 13(2): 133-145.

Sporns, O., Tononi, G. & Kötter, R. (2005). The human connectome: a structural description of the human brain. *PLoS Computational Blology*, 1(4): e42.

Sporns, O. (2011). The human connectome: A complex network. Annals of the New York Academy of Sciences, 1224: p. 109-125.

Yovell, Y., Solms, M. & Fotopoulou, A. (2017). The case for neuropsychoanalysis: Why a dialogue with neuroscience is necessary but not sufficient for psychoanalysis. *The International Journal of Psychoanalysis*, 96(6): 1515-1553.

Žižek, S. (2003). Chapter 1: Science: Cognitivism with Freud. In: *Organs without Bodies: Deleuze and Consequences*. p. 111-148. New York: Routledge.

Žižek, S. (2012a). Chapter 6: Not Only as Substance, But Also as Subject. In: *Less Than Nothing: Hegel and the Shadow of Dialectical Materialism*. p. 359-416. London: Verso.

Žižek, S. (2012b). Chapter 10: Objects, Objects Everywhere. In: *Less Than Nothing: Hegel and the Shadow of Dialectical Materialism*. p. 649-713. London: Verso.

Žižek, S. (2012c). Chapter 8: Lacan as a Reader of Hegel. In: *Less Than Nothing: Hegel and the Shadow of Dialectical Materialism*. p. 507-555. London: Verso.

Žižek, S. (2012d). Chapter 7: The Limits of Hegel. In: *Less Than Nothing: Hegel and the Shadow of Dialectical Materialism*. p. 494-495. London: Verso.

Žižek, S. (2012e). Chapter 14: The Ontology of Quantum Physics. In: *Less Than Nothing: Hegel and the Shadow of Dialectical Materialism*. p. 905-961. London: Verso.

Žižek, S. (2012f). Chapter 4: Is It Still Possible to be a Hegelian Today? In: *Less Than Nothing: Hegel and the Shadow of Dialectical Materialism*. p. 193-240. London: Verso.

Žižek, S. (2012g). Interlude 6: Cognitivism and the Loop of Self-Positing. In: *Less Than Nothing: Hegel and the Shadow of Dialectical Materialism*. p. 715-737. London: Verso.

Zupančič, A. (2017). What Is Sex? MIT Press.