Rethinking Human-Smartphone Interaction with Deleuze, Guattari, and Polanyi

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Abstract
An inbuilt theoretical deficiency of any cybernetic or phenomenological accounts of human-smartphone interaction is that their inherited frameworks suffer from lopsided explanatory proficiencies. Neither can explicate one ‘side’ of the interaction without inappropriately foisting those logics onto its dyadic counterpart. In this paper, both Michael Polanyi’s bio-philosophy and a Deleuzo-Guattarian philosophy of brain seek to remedy this conceptual deficit by positing a conceptual toolkit that incorporates pertinent cybernetic and phenomenological revelations while abjuring their dogmatizing propensities. This conjoined reading of Polanyi with Deleuze and Guattari asserts that temporary, bounded structures of interference between mind and machine – rooted in asymmetry, inertia, and labile planes of cognition – are the grounding dimension of human-smartphone interaction, which is itself taken as emblematic of our wider relations to smart technologies.

Keywords
boundaries, cybernetics, Deleuze, Guattari, phenomenology, Polanyi, smartphones

Impulses piled up in the head. Imp Plus had no skull. (McElroy, 1987: 5)

A smartphone cannot use itself. And if every person were exterminated, a smartphone notification would, at the terminus of human death, fail to notify. What does this grim hypothetical, readapted from an essay by Michael Polanyi (1968), reveal about the nature of the smartphone, that it cannot ping and buzz for itself, for nobody? It seems to indicate, foremost, a fundamental ‘human’ lack built by design into the upper boundaries of

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this technology. The smartphone is somehow ontologically incomplete, as if sliced in half, without its user. But is the obverse not also true? That is to say, is lacking not universally human, and its application to other objects but a narcissistic projection? Examining ourselves, we can surely identify abundant lacks, many algedonic, some psychological, and perhaps even ‘spiritual’, all of them ostensibly inchoate and persistently gnawing at the mind and body for satisfaction and relief by various means – through the checking of a smartphone notification, even. But already in this equalizing reformulation we are coming dangerously close to a Latourian paradigm wherein, to paraphrase Brassier, epistemic differences between things are subsumed by nominalist metaphors (Brassier, 2011: 52). Indeed, the slant of indebtedness here in question differs entirely from what Latour means when he says, speaking of the Berlin key, that ‘things do not exist without being full of people’ (Latour, 2000: 10). The claim here is more severe in its assessment and less microscopically anthropomorphic. It also does not concern itself with the afterlives of smartphones, which, despite their environmental consequences and geopolitical associations (Parikka, 2015), represent a deadened period of functional obsolescence beyond the purview of direct interaction. The question at hand is: how do we maintain a dedication to the inherent uselessness of the smartphone, that is to say its innately user-contingent functioning (even in its most passive ambient-sensorial states) without spiralling into lacklustre equivocations? The beach, lacking a bather, cannot swim itself, just as Hart Crane’s bells cannot but in verse ‘break down their tower’ and swing he knows not where: the smartphone is no different (Crane, 1946: 135). Fundamentally, this is a problem of philosophizing human-computer interaction at the site of compact information communication technologies. Two major schemas – the cybernetic and the phenomenological – already theorize this interaction, but both suffer from the same obfuscatory habit: compensating for explanatory deficits by dubiously draping one set of logics across human and computer alike, and through this coerced symmetry, erasing the non-negligible differences between human and computer that condition their interactions. This paper suggests a Polanyic-Deleuzo-Guattarian reimagining (derived from an essay by Michael Polanyi, and the joint philosophy of Gilles Deleuze and Felix Guattari) that rejects the dogmatizing tendencies often inherited from famous antecedent schemas. This combinatory re-reading – by championing Polanyic structural irreducibility, asymmetry, and inertia, alongside Deleuzo-Guattarian modal hiatuses, breakdowns, and nonobjectifiability – presents a new smartphone subject: a figure who is neither subservient to the effects of technocapitalism nor merely a node enmeshed in its cybernetic grids. Instead, this technical subject (who is the archetype of nearly all smart-technology users) is defined as a junctional brain standing in uneven relation to a machine, between which temporary structures of influence spring into existence that are localized in neither entity. As a result, a site of technopolitical (which is to say anti-technocapitalist) struggle – defined by spontaneous boundedness and interfering impulses – materializes in the dyadic cognitive space, or ‘thought-fields’, between human and smartphone.

**Characterizing the Smartphone**

Midway through the first decade of this century, on the day following Apple’s now mythologized iPhone-reveal press conference, a New York Times article referred to these
peculiar technological composites – which act as consolidations of a camera, music player, web browser, email, telephone, flashlight, calculator, and world map, among other things – as ‘so-called smartphones’ (Markoff, 2007). Today, this designation is commonplace, and the devices have proliferated globally, with recent estimates placing the total number of smartphone users above 3 billion (Statista, 2019; GSMA, 2019). The smartphone is a unique tool in the history of technology not because of its global ubiquity, however, but because of its sheer variety of distinguishing characteristics: transportability (and thus mutable locality), a pervasive sensoriality that facilitates background surveillance (Hatuka and Toch, 2017; Zuboff, 2015), a variety of what Madianou (2014) calls ‘polymedial’ capacities, and its powerful ability as a device ‘connected’ with either Wi-Fi routers or cellular data towers to facilitate finding things out by searching the internet or communicating with other information-communication technology users – an expansive mediacy that Thompson (2020: 19) refers to as ‘multi-directionality’. Taken together, these features indicate genuine technological novelty. As Vincent and Haddon (2017: 189) succinctly summarize, ‘there are some smartphone uses that simply had no equivalent on the mobile phone’. The transportability, surveillant sensoriality, polymediality, and nearly gapless contention of internet communication also increase the significance of the aforementioned problem of agential or existential lack. This is precisely because the smartphone is only functionally sensorial (in both maliciously surveillant and benevolently communicative ways) when there is a user or subject to be sensed, and is likewise only transportable by, polymedial for, and always-connected in the service of, a user through whom it is focalized.

It is true that many of the characteristics just outlined are no longer wholly unique to the smartphone, which is why the smartphone will here operate less as the object of a case study and more as a vehicle for discussing larger themes in the philosophy of technology. This does not mean it was chosen arbitrarily: as forerunner of the recent terraforming of spaces by ‘smart’ technologies (Sadowski, 2020), the smartphone remains singularly emblematic of today’s vast catalogue of such digital objects and their manifold influences. Moreover, if it is indeed the case, as Wendy Chun claims in *Updating to Remain the Same* (2016: 1), that smartphones ‘no longer amaze, but [. . .] increasingly structure and monitor the lives of their so-called owners’, our earlier question comes urgently again to the fore: how do we conceptualize the mechanism of the smartphone’s supposedly life-structuring influence, particularly in light of its techno-existential lack? Put another way: how should we think about what is actually happening between a smartphone and its user during the seemingly border-breaching moment of organic-inorganic interaction?

**Cybernetics and Imposed Symmetry**

It is worth beginning with an appraisal of how first-order, systematized cybernetics approaches this question. The appropriateness of beginning with cybernetics lies in the naïve isomorphism that it would have us draw between the smartphone and the human brain as artificial and organic systems of inputs and outputs, respectively.

Norbert Wiener’s foundational cybernetic project, which dilates with deliberate interdisciplinarity, can nonetheless be summarized, like all great philosophies, in a single
terse dictum – found, in this case, in the chorus of a paper written alongside Arturo Rosenblueth and Julian Bigelow – where the trio state: ‘All purposeful behavior may be considered to require negative feedback’ (Rosenblueth et al., 1943: 19). The significance of this statement within its accompanying historical context cannot be overestimated. This subtle principle unleashed a potent system of logics that attained hegemonic influence for much of the 20th century by recasting human behaviour as a system entirely dependent upon recursive feedbacks (Halpern, 2015). Its potency, however, often overpowers.

By drawing parallels in Cybernetics: Or, Control and Communication in the Animal and the Machine (1961 [1948]) between the diagrammatic systems-level functioning of machines and body temperature regulation, osmotic pressurization of blood, waste matter excretion, leucocyte stocking, and calcium metabolising (i.e. ‘homeostasis’) within the human body, Wiener puts us in the uniquely cybernetic position of treating computerized machinery as functionally identical to – or at least isomorphic with – the human body (Wiener, 1961 [1948]: 114). The obvious significance of Wiener’s program for our present considerations is that, in its strongest form, human beings can be inhumanly reduced to nothing more than complex automatons. But this is not the only way to read Wiener’s thesis. In its weaker form, his outlook presupposes merely that human beings possess internal systems that interact with environments along the grooves of various biological feedbacks, thus rendering the human being permeable, sensitive to what he refers to as ‘affective tones’ of pleasure or pain, and, only if fully possessed by these internal systems, controllable according to those feedbacks (Wiener, 1961 [1948]: 129). This second, softer reading of Wiener’s philosophy escapes free-will debacles by allowing for some master agency, either inattentive or alert, residing within the ratiocinative regions of the human subject – some small wiggle room of biological indeterminism or underdetermination. This subject-preserving reading of Wiener’s human apparatus is similar to Whitehead’s universal people, who, as he wrote roughly a decade prior, ‘are driven by their thoughts as well as by the molecules in their bodies, by intelligence and by senseless forces’ (Whitehead, 1933: 53).

This reading is, alas, heterodoxy. Wiener’s text is not so partial. In fact, he expands the logic of body- and behaviour-as-feedback all the way to a cybernetic model of the Lockean brain, a brain of contiguity and gestalt which necessitates a new field of psychopathology based on the very plain assumption that ‘the brain and the computing machine have much in common’ (Wiener, 1961 [1948]: 141, 144).

Minor concessions aside, this particular reimagining of the human brain as a statistically dynamic computational system makes many startling claims about the innate biological qualities of human beings and their minds (Wiener, 1961 [1948]: 107–8). The vector of this brain-body schematic continues its upward trajectory in our current decade, reaching its highest amplitude yet in neuroscientist Karl Friston’s unifying brain theory (Friston, 2010).

The advertent deficit in Wiener’s schema (as in Friston’s much later) is its neglect for, and tacit dismissal of, the tradition typically known as ‘philosophy of mind’. Despite flirting with the topic of Bergsonian time at the outset of his seminal text, Wiener removes considerations of ‘mind’ entirely from his final analysis, focusing instead on the human being as animal. And, like the title of his 1948 text indicates, an animal with internal
faculties generally analogous to those of a machine. But for brain-possessing humans, when faced with the question concerning the smartphone, this does not suffice. The issue here is one of imposed symmetry: Wiener’s crude isomorphism whelms human and non-human alike with a computerized logic of feedbacks. His cybernetic model undertakes an iterative invasion, metastasizing from proprioception to body movement to brain waves and eventually to the totality of human activity such that, in the situation of smartphone use, a purely cybernetic frame would offer an image of the human being as but one more coded node in the smartphone’s interplay of sensorial awareness, polymedial effects, wireless connections, and information relay. Meaning would of course be eliminated too, as all communicative activity is composted into the common denominator of mere information. Wiener carries out this informatic reduction in the same limpid manner, and with the same implied loss of agential capacities, as Bruno Latour when the latter performs the inverse ritual by universalizing the role of social actant (Latour, 2005). Thus, despite the cybernetic paradigm’s satisfying veridictions, it ultimately rests on a categorical error that is glaringly apparent when considering human-smartphone interaction. By purposely eradicating human-nonhuman asymmetries, cyberneticism conceptually computerizes our algedonic processes. Encoding (and thus reductively abstracting) human behaviour to input/output binaries or stochastic ranges of probability dissolves any difference in kind between the propensity-driving, activity-spurring lacks in humans and machines. This latent agential flaw in the Wienerian system is accompanied by an epistemological misstep that Longo (2019: 64) identifies as ‘[proposing] an image and a practice of absolute certainty’ via the imposition of discreteness and countability where there is continuity and uncountability. What Longo (2019: 66), adducing Riemann, calls the ‘interval in continua’ (emphasis original) is removed and replaced in the cybernetic system by the overdetermination of predictable, measurable feedback loops. This foisting of arithmetical absoluteness onto the ‘complex blend of continuous and discrete dynamics’ inherent to biological organisms is not only latent in the foundational text of cybernetics but actively endorsed by it (Longo, 2019: 70).

This grand unifying theory therefore ignores not only the aforementioned asymmetries, or differences in kind, between human and machine, but also makes a crucial assumption about control, privileging one of its manifestations – the measurable undercurrent of positive and negative feedbacks – over all others. In the jargon of Michael Polanyi, to whom we will now turn, the concepts undergirding the cybernetic project wrongly assume that either human beings or machines are reducible to the laws that govern their existence.

**Boundary Conditions of Humans and Machines**

In his 1968 essay ‘Life’s Irreducible Structure’, Michael Polanyi introduces the notion of ‘boundaries’, which may be understood as the hierarchic layers of ontogenetic parameters and affordances that internally condition the structures of both living things and machines (Polanyi, 1968). This nomenclature – arrogated and truncated from the ‘boundary conditions’ of physics – adumbrates a concept that is determined by our phenomenal awareness of it while simultaneously constituting the scaffolding of phenomenal awareness itself. To clarify: the type of ‘boundary’ we observe is expressed differently depending on how we
scrutinize (in Polanyi’s examples) a test tube, or a game of chess; with the test-tube, we focus less on its facilitating role in a demonstration of stoichiometric laws, and more on how those laws empirically verify themselves via the reactants sloshing around its transparent cylinder; conversely, with chess, the gradual constriction of possible moves and viable strategies after each turn is the ‘boundary’ we focus on, and not the laws governing royal or episcopal movement (Polanyi, 1968: 1308). It would be wrongheaded, however, to confuse the manner in which these boundaries seem to protract, shrink, or slip into lower and higher rungs, depending on one’s intentionality, with arbitrariness: these boundaries reflect emergent structures of life itself.

Polanyi’s concept relies on the fact that as we ascend the ladder of boundaries, the laws which govern the lower bounds cease to influence the upper bounds despite their material dependence upon them. In his example, human beings depend on their DNA for morphogenesis, but our everyday behaviour, conscious states of mind, senses of ‘responsible choice’, duty, trust, and so on are not reducible to our genetic material any more than they are reducible to our musculature, or our ‘vegetative’ low-level organ functioning, or the laws of chemistry that explain the double-helixed encoding of our DNA to begin with (Polanyi, 1968: 1311). Yet each of these levels – DNA, passive organ function, active musculature, behaviour, belief – harnesses and relies upon the functioning of each of the lower rungs, all the way down to an inanimate base where the laws of chemistry and physics are determinate. This bi-directional gradient of dependence is what Polanyi refers to as ‘dual control’ (Polanyi, 1968: 1310). Each level has both ‘control in accordance with the laws that apply to its elements in themselves’ as well as ‘control in accordance with the laws of the powers that control the comprehensive entity formed by these elements’ (Polanyi, 1968: 1311). The sophisticated biological structure of the human being is thus irreducible, or non-collapsible, to the material conditions and processes that constitute them. A ‘boundary’, which epistemologically and functionally separates the internal structures of life, can be understood as always ‘extraneous to the process which it delimits’ (Polanyi, 1968: 1309). This pristine outsideness ensures in most cases the comprehensiveness of a boundary’s restrictive delimitations. Polanyi acknowledges a hierarchic semblance between humans and machines in his closing summary where he states: ‘Mechanisms, whether man-made or morphological, are boundary conditions harnessing the laws of inanimate nature, being themselves irreducible to those laws’ (Polanyi, 1968: 1312). Far from being a Wienerian capitulation, this statement exposes the asymmetrical entanglement that occurs, for instance, between a smartphone and its user.

Asymmetry and Boundary: How Smartphones Are Both Intimate and Inert

We can see that the boundary conditions of human beings extend just as low as those of a machine (both harness sub-atomic forces), but a machine’s upper boundaries do not extend to the same altitudes as those of human beings, who, after motor function and problem-solving, ascend into agential realms that firmly establish an anti-cybernetic asymmetry between human and machine.
Keeping in mind our initial musings on ‘lack’, this agential capacity now recasts itself as a supervening boundary. In the moment of human-smartphone interaction, the boundary level of the human mind harnesses the smartphone through its willed interactions without forfeiting teleological control; it restricts the smartphone’s utility just as one, knowing their own musculature, harnesses its affordances in an erratic, spontaneous manner that is not reducible or prescribed in those affordances alone. No chain of causality – that is to say feedbacking – can refute this harnessing, because the human subject’s boundary over the smartphone need not be beholden to chicken-or-egg incipience: the moment when a human being is prompted by a smartphone notification, rather than engaging with the device solely of ‘their own volition’, proves only the impotence of the smartphone in that the device cannot interact with the active attention of a conscious subject on its own terms and without their consent. That is to say, organic-inorganic interaction is not already given. The smartphone obeys and pleads; we command and permit. This asymmetry defines the human-smartphone moment. The human subject’s diverse neurological and psychological lacks are far shallower, in fact, than its dyadic counterpart: the smartphone’s programmatic eyeball- and thumb- and scroll-lacks imbue it with a profound techno-existential incompleteness, especially when they function as implements of extractive, surveillant capitalism.

There is, however, one proviso: the human boundary condition is not infallible. That is, it does not comprehensively restrict in the same manner that organoids comprehensively restrict their cells when harnessing them for mitotic healing. Polanyi at one point says, ‘the principles governing the isolated particulars of a lower level leave indeterminate conditions to be controlled by a higher principle’ (Polanyi, 1968: 1311), which reveals that machines, at some level of their teleological functioning,1 lack the upward openness of a final indeterminacy. Humans, embodying this behavioural indeterminacy par excellence, never restrict their next-lowest bounds completely – this is evident in that our conscious states remain open to suggestion, persuasion, indoctrination through the senses: quite the opposite of an obdurate machine, which, as frustrated smart-device users know from experience, may not be compelled. This uniquely human incomprehensive restrictiveness is the cause of the slipperiness, of the tides of counterinfluence involved in machine-human interaction. It is also why adopting the principles of Wienerian feedbacks – though not their domineering master philosophy – is in fact crucial for any conceptualization of human-smartphone interaction. The impressive array of adverse cognitive effects caused by the smartphone – inhibited communicativeness, anxiety, loneliness, temporarily impaired cognitive control, diminished socioemotional functioning, impaired facial recognition, compulsive behaviours, and worrying dopaminergic feedbacks (Chun et al., 2017; Gao et al., 2016; Jiang et al., 2018; Kim, 2017; Lin et al., 2014, 2016; Mahapatra, 2019; Noë et al., 2019) – reinforce the need to retain and rehabilitate Wiener’s feedbacks. The non-comprehensive restrictiveness of Polanyi’s uppermost human boundary offers this transformative rehabilitation in terms of asymmetries and boundaries.

This immediately leads, in the case of the smartphone, to a reorientation. We must now think of the smartphone as possessing an intimate inertia, wherein the moment its upper computational boundary engages with the intellective-muscular boundaries of a human subject, it brightens and loops in response to thumbed and vocalized inputs,
returning them as auditory, tactile, and photic outputs, thus sharing part of its superstructure as a *sub-structural component*, or artificial lower bound, of the conscious human ‘apparatus’. The smartphone has ‘inertia’ simply because its primary movements depend upon this moment of encounter wherein potential outputs are released as stimuli, initiating a semi-cybernetic loop that carries signals right up to the organic-inorganic border.

The ‘intimacy’ of this inertial encounter occurs because, as with any data-storing information-communication technology, there is an element of what Bernard Stiegler calls ‘hypomnemesis’, or the technical externalization of memories and intimacies of thought (Stiegler, 2009: 15). The inertia of the device is thus implicitly linked to the hypomnemetic moment of lingual, photographic, or geo-positional (that is, polymedial) preservation of memories and thoughts – etch marks of *becomings* – in datafied form. The intimate inertia of this fleeting dyadic integration occurs only because the smartphone is at once more than a mere environmental feature, due to its by-design anthropocentrism, and less than a protractive prosthetic, due to its vulnerable detachment and techno-existential lack. The smartphone is not reducible to its inanimate elements any more than the human apparatus is – *but the smartphone is reducible to its animate complementary*, the human, without which it becomes nothing other than plastic, metal, and a fading battery. Indeed, once disassociated from a user, the smartphone is non-functional, a piece of waste material fit for recycling.

Now that the dominant cybernetic model has been whittled away to a lesser component in a more fulsome and differentiated Polanyic structure of human-smartphone interaction, we can briefly contrast this with the traditional phenomenological alternative.

**Phenomenology of Smartphone Use**

The contours of the phenomenological approach to understanding human-computer interaction may be surmised quite simply by mirroring my criticisms of the cybernetic project and substituting its first principles for the contrastive tenets of Husserlian and post-Husserlian phenomenology. A brief and recent example may be useful to illustrate this point. Wheeler (2019) analyses, in overview, the Heideggerian and Merleau-Pontian influence on current thought concerning technological engagement, especially the concepts of ‘transparency’ and ‘extended cognition’ (Wheeler, 2019: 857). The brunt of the argument is that technological action involves a cyborgian communion wherein a piece of technology becomes part of one’s ‘psychological machinery’ by disappearing from its users’ ‘conscious apprehension’ (Wheeler, 2019: 858–9). The problems with neo-phenomenological metaphors of transparency and extension are evident when one looks closely at either concept in application. In a significant split from Heidegger, regardless of their proclaimed affiliation, the wielders of these metaphors functionally parse transparency and extension into either a neuro-centrist reduction, as seen in Clark’s notion of ‘biological memory’ (supported entirely by the suspiciously cybernetic concept of ‘bio-feedback’), or, they commit the standard phenomenological biunivocalization: that all tools evoke in all humankind the same mode of Being, that there is no ontic difference between the hammer and the smart-device, when in truth the lounging blacksmith, refreshing an email app on their iPhone, would surely be the first to voice their disagreement (Clark, 2015: 3762; Wheeler, 2019: 862) Besides misleadingly stoking
fears of future cognitive ‘surrogacy’, this approach seeks to cheaply negate the organic-inorganic distinction by abandoning the search for an underling logic in favour of the imposition of a pre-existing one (Wheeler, 2019: 864). In this sense, both cyberneticians and phenomenologists overcode: one through a deterministic remapping, the other through an opaque genericity.

The ‘interfacial’ nomenclature of technology (we engage with a smartphone screen ‘interface’ and so on) can sometimes fool us into adopting this full-bore phenomenology, but we would do well to avoid its simplifying sway (Sloterdijk, 2011: 189–90). We must remember that the internal operational independence of the smartphone, as well as its entropic brittleness (it cannot self-repair after physical damage), and lastly its machinic dumbness (a teleological emptiness because of total reliance on exterior agents to sustain feedbacks), mean it does not exert meaningful pressure onto the world. That is to say, it neither has its own phenomenal world – contrary to epistemic break offered by object-oriented ontology (Harman, 2018), which will, for the scope of this investigation, be dismissed as an unscrupulous plenitude – nor does it persist entirely in the phenomenal world of its user (which would require a convoluted reduction of all experience to mere aesthesis): the smartphone, not being another beaming face, has properties not explainable by, and fundamentally irreducible to, our mere apperception of its artifactual existence. Yet these same properties are easily explainable in the jargon of cybernetics – a systematic logic that, despite subtending many technological design principles (Eyal, 2014), inaptly describes our own potentialities, which is where we will now return.

Structure and Modality in Human-Smartphone Interaction

As we have seen, a Wienerian cybernetic schema can address the operational logics of smartphones, and the algedonic propensities of dopaminophilic smartphone users, but it has shortcomings beyond its obvious application in the commercial fields of human-computer interaction, software engineering, or perhaps neuropharmacology. This is because it does not account for the user’s conscious will or premeditation, which is to say our bounded intellective superposition over the smartphone. Likewise, a broadly phenomenological approach can adequately theorize only the experience of the subject, their motives and their affectual states, but it cannot account for the inversely directed impulses emitted from the smartphone – those that trigger afferent and efferent neurological signals – without hypostatizing intentionality itself through the biunivocalizing metaphors of extensionality and transparency, which it drapes over all tool-use.

Disembarrassing ourselves of these inadequate explanatory models reveals that the point of collision between the smartphone and its user calls for a reconceptualization that fits within Polanyi’s bio-philosophy. This entails the following principles: first, that the smartphone is both an intimate and inert technology, as established earlier: intimate because of its devout itinerancy and hypomnesic capacity for personal data storage, or what Stiegler (2009: 25) refers to as ‘tertiary retentions’, inert because of its technoeexistential lacks and the cascading effects of their fulfilment. Second, that the smartphone has demonstrated measurable cognitive-emotional effects, some temporarily debilitating, on its users, who themselves also make profound use of the device itself. Rather than going down rabbit holes of reciprocity – where a willed decision cannot be
distinguished from an induced compulsion – this phenomenon can be incorporated into the clarifying, asymmetrical structure of Polanyi’s emergent life-boundaries. The reason this asymmetry is so pronounced in the smartphone, I contend, is because more than any other globally ubiquitous smart-device it is deliberately designed to attempt to overcome it by alluring – or, in the vocabulary of Sampson (2017), ‘entraining’ – its users. The principle of inertia articulated above may be common to other (or in fact most) information-communication devices, but the smartphone exemplifies it at a point of intimate and habitual intensity.

Polanyi’s paradigm provides a rich alternative to cybernetic and phenomenalistic accounts partly because it only seeks to demonstrate the bounded *structure* of human-machine interaction, but not the actual *modality* of such interactions. That is, Polanyi’s structure does not itself explain the *mechanism* of human-machine interaction, only their conditions and positionality. To fill this modal omission, a turn is required to two thinkers who similarly spurn totalizing (phenomenalistic and cybernetic) accounts of the human agent but are amenable to the proposed asymmetry. A Deleuzo-Guattarian cognitive topography, I argue, can help us postulate this intimate and asymmetrical tension residing between smartphone and user, and draw together in one stereoscopic image both the structure and modality of human-smartphone interaction.

**Deleuzo-Guattarian Brains**

When Deleuze and Guattari utter the word ‘brain’ instead of ‘mind’ in the final chapter of *What Is Philosophy?* (1994 [1991]), they are not announcing sacrilegious allegiance to the scientist, nor are they partaking in a fallacious reification. Instead, they invert the conflicts plaguing philosophy of mind – which in its long history sees eager combatants, as in the case of Bishop Berkeley’s Irish immaterialism, strive for pyrrhic victory – by reconfiguring the neurobiological brain through Bergsonian metaphorics. In bending neuroscientific signifiers into the shape of an umbrella, they undermine the purely representational aspects of science that coat its final reports, opening the door for what we may call a ‘critical neurocentrism’.

The Deleuzo-Guattarian brain is a ‘junction’ – not a ‘unity’ – of three intersecting planes, three *Chaoids*, or daughters of chaos, as they so lovingly name them (Deleuze and Guattari, 1994 [1991]: 208). The three planes – located in the brain – cut across chaos and record on their surfaces what they encounter: science its variables; art its sensations; philosophy its variations as concepts (Deleuze and Guattari, 1994 [1991]: 208–9). This meta-cognitive sorority develops into the following thesis: ‘It is the brain that thinks and not man, the latter being only a cerebral crystallization’ (Deleuze and Guattari, 1994 [1991]: 209–10). They speak of ‘man’ as ‘absent from, but completely within’ the brain, just as man is absent from yet completely within Cezanne’s engrossing landscapes – a formulation that, with its vanishing centre, deliberately flouts many psychoanalytic, hermeneutic, and phenomenological notions of mind (Deleuze and Guattari, 1994 [1991]: 210).

The most important aspect of this nearly tautological brain-thought premise is that the Deleuzo-Guattarian brain now becomes divided into two components: the objectified (or neurological), which holds mental objects, and the non-objectified, which holds the
aspects of philosophy, art, and science, and ‘under which the brain becomes subject, Thought-brain’ (Deleuze and Guattari, 1994 [1991]: 209, 210). The contents comprising this second, subjectivizing category, the ‘vital ideas’, are thus not neuronally bound, and if ever they are materially realized are temporarily hosted ‘in the deepest of the synaptic fissures, in the hiatures, intervals, and meintimes of a nonobjectifiable brain, in a place where to go in search of them will be to create’ (Deleuze and Guattari, 1994 [1991]: 209). The Deleuzo-Guattarian notion in Anti-Oedipus (2009 [1972]: 31, 42) that breakdowns (‘breaks in the process’) are productive – which originates in Marx’s notion of the transmission of value, during production, from deteriorating machines to their refined products – is reflected in this insistence on profoundly productive hiatures, intervals, and meintimes. The Thought-brain is therefore also searching (for both vital and quotidian ideas), and thus operates above its neurochemical limitations such that it is not exhausted by their train-tracked wirings yet is still influenced by something resembling Wienerian feedback loops. These feedbacks shuttle inputs into the brain not in the phenomenalist form of intentional matter feeding a transcendental ego, nor as cybernetic levers with fixed mental responses, but by what we may loosely term environmental disturbances, internal and external collisions, or interferences in the field of possibilities that the non-objectifiable brains roam, during which, ‘what comes before has not yet disappeared when what follows appears’ (Husserl, 2013 [1913]: 19; Deleuze and Guattari, 1994 [1991]: 211). We may call these fields of possibility, wherein a Bergsonian durée joins the cognitive past and present, thought-fields (Deleuze, 1988 [1966]).

The notion of ‘thought-fields’ becomes more intuitive when we remind ourselves that the Deleuzo-Guattarian brain is not secretly a ‘brain behind the brain’, but rather, as they say, ‘the brain is the mind itself’, it is the subject, the Whiteheadian ‘superject’ (Deleuze and Guattari, 1994 [1991]: 210–11). This means that despite the endorsement of its classical cerebral abode, the Deleuzo-Guattarian thought-brain is ‘not the same brain as the brain of connections and secondary integrations’, because it is as nonobjectifiable as it is objectifiable (Deleuze and Guattari, 1994 [1991]: 211). This entire view is best captured in the neologism ‘brain-subject’. Here at last we have an immanent neuro-processual subject – influenced by Gilbert Simondon’s phasal individuation (Grosz, 2007: 297; Simondon, 2011 [1958]: 407–8) – that is compatible with the monoamines dancing up our mesolimbic highway.

The Deleuzo-Guattarian Brain-Subject: A Bergsonian Irrigation

The spatial metaphors utilized by the authors amount to both a reaffirmation and transfiguration of Hume’s treatment of sensation in An Enquiry Concerning Human Understanding (1993 [1748]), but with a characteristic Bergsonian twist – viz., Deleuze and Guattari assert that the silent contemplation of the brain is in fact a ‘contraction’ of sensation (Deleuze and Guattari, 1994 [1991]: 213–14). They repeat this verb almost rhythmically, pertaining to Humean categories of causality, association, and integration, and even echo Wiener by speaking of ‘oscillating molecules’ that contribute to a deterministic chaos of what may appropriately be called the chaos-brain (Deleuze and Guattari, 1994 [1991]: 216; Wiener, 1961 [1948]: 108–10). The true significance of this
‘contraction’ however is that all contemplation is recast as an *activity*, much like in Bergson’s notion of ‘translation-contraction’, where the process of moving from recollection to perception through memory, in a response to the ‘appeal’ of the present and its *res extensa*, determines the actualizations of our thought (which happens in conjunction with ‘rotation-orientation’) (Deleuze, 1988 [1966]: 63). In the words of Deleuze, recollections ‘[enter] into a “coalescence” with the present’ by way of contractions – they are the mechanism by which experience is catalogued and digested by a mind with a memory, and the way in which planes of consciousness interact’ (Deleuze, 1988 [1966]: 65).

This stratification of consciousness shows definitively that while the Deleuzo-Guattarian brain-subject supervenes on neurological activity, it is not determined by it. The active neurological agitations leading up to a contraction form a field – precisely our aforementioned *thought-fields* – and not a path. These ‘thought-fields’ offer a nuanced, neuro-centric frame for conceptualizing the mechanism of smartphone-user interaction as they maintain the consistency of cranial and somatic cybernetic feedback, upon which our understanding of internal smartphone functioning depends, without then conjuring an artificial, idealist univocity by overextending the realm of chaos-brain contraction. Finally, the Deleuzo-Guattarian brain of ‘thought-fields’ complements and completes, as we will now explore, Polanyi’s structure of asymmetrical boundaries.

The Polanyic-Deleuzo-Guattarian Subject: Impulses and Thought-Fields

Merging Polanyi’s account of human-machine interaction with a Deleuzo-Guattarian philosophy of brain yields a Polanyic-Deleuzo-Guattarian toolkit, as follows: the human subject’s non-comprehensive restriction over its lower boundaries requires that when a technology such as the smartphone is bounded by us, the stimuli it produces can influence or interfere with the plane of thought-fields, over which our cognition contracts. Thought-fields are thus extraneous and responsive to the processes (of technological stimuli) that they transiently delimit.

Already the breathing room is enormous. This combinatory reading allows us to analyse the smartphone – and any other rampantly popular technologies designed for high-volume, surveillant, discrete-repetitive, intimate, and polymedial engagement – in a way that accounts for, and in fact treats as essential, the volatility of both the tool itself and its habitual user without erroneously collapsing dyads into monads.

The technopolitical upshot of this structural and modal reconceptualization is found in a peculiar vector of these thought-fields that is activated when the smartphone-bounding human enters into a temporary state of skewed reciprocity: impulses.

An ‘impulse’, in Polanyi’s context, may be described as that which speedily transcends boundary conditions. Flying from the womb of a digital pulse, the impulse *impels*, rushes up against, pressures, incites. In other words, it is that which transduces mere sensa emanating from the smartphone – photons moving at red-wavelength, say – into a conscious awareness of what it is that is red that is being displayed. Thus, the impulse is a kind of privileged Hermes ascending our somatic borderlands by force. Across the non-comprehensive restriction of our uppermost boundary, and into the Deleuzo-Guattarian
chaos-brain, an impulse warps and disturbs the field of supervenience. That is, neuronal thought-fields respond to the upwardly open flux of their lower bounds (sensory apparatuses) when unevenly colliding with the smartphone. This ‘persuasive’ asymmetry is borne of the smartphone’s obduracy: it can coax us, through injections of sensa that flood our thought-fields, in a unique manner that we cannot reciprocate. This relationship of obdurate, one-sided persuasion, which is also what enables ‘control’ in the Deleuzian (1992) sense, is entirely separate from the agential capacities of our commanding subjectivity: they do not share a spectrum.

As we can see, these kinds of overlapping discrepancies in qualities of force describe human-smartphone interaction (and doubtless other human-computer interactions) with a higher degree of sensitivity than appeals to the totalizing moulds of cybernetics or phenomenology which inadvertently dogmatize this complex interaction. The technopolitical aspect of this model is now quite obvious. There is a possibility that the attritional repetition of impulses according to a hypercapitalist agenda (Sadowski, 2020; Sampson, 2017) may deform and slant the conditions of one’s thought-fields in such a way as to establish new centres of cognitive gravity, and thereby increase the frequency of a desired set of consumptive behaviours. This historical contingency of the smartphone is crucial: data collection and the processes of ‘surveillance capitalism’ (Zuboff, 2015), in the largest sense of that euphemism, cannot function smoothly at the site of the smartphone without periodically sustaining victory, via interfering impulses, over the thought-fields of the human apparatus as it communes with the lower boundary condition of the device. The constant promotion of user-engagement, and of sustaining the velocity of said engagement once attention is achieved (Vivrekar, 2018), symbolizes neither a phenomenalistic, nor cybernetic, but neurocentric effort on behalf of the smartphone to gain moment-by-moment leverage over the thought-field plane through its alluring sensa. The smartphone, insofar as it can be characterized as a non-existential, inert portal of capital, represents the intimate invitation to ‘tilt one’s brain’ and implicate our neurology in a re-bounding over its glitzy, urging screen.

The brain then becomes a site of political struggle in the purest sense: not because it may be brainwashed, but because this sensitive smart-device wages a continuous neuronal tug-of-war, instigated through the repetition of impulses, over the course of a smartphone user’s days. Our thought-fields, implicated at the moment of smartphone-boundedness, are the arena of this struggle between ‘the body of capital’ and our minds (Deleuze and Guattari, 2009 [1972]: 237).

**Conclusion: Bounded Interference**

This paper proposes and explores two human-machinic asymmetries at the heart of smartphone interaction: the smartphone **obdurately persuades** the human, while the human **impressingly commands or ignores** the smartphone. Both of these asymmetries collide in visible ways (when a smartphone is unresponsive or defective, for example) but ultimately exist in clean contradistinction. Both of them also favour, as Michael Polanyi’s concept of life-boundaries revealed, the agency of human subjects. These subjects, though identical to the machine in their irreducibility to the inanimate laws and complex affordances that they harness, maintain an agential super-position over their
counterparts in technological dyads: they are also never functionally reducible to their inanimate complementary, while the obverse is true of the smartphone, which is always functionally (that is to say, existentially) reducible to its animate complementary, regardless of secondary connections to other machinic systems. The second of these two asymmetries, by asserting the existential independence of the human subject (notably during smartphone use itself), squirms away from the symmetrizing frameworks of traditional phenomenology and first-order cybernetics. Lastly, the junctional, non-totalized Deleuzo-Guattarian brain of thought-fields, as an account of the mechanism of human-smartphone interaction, accommodates the intimacy of smartphones as hypomnesic composites, and their foundational and functional inertia – consequences of the two noted asymmetries that define human-smartphone dyads.

Synthesizing the structure of Polanyi’s boundaries with the modality of Deleuze and Guattari’s philosophy of brain thus provides a toolkit for reimagining human-smartphone interaction as grounded in the dimension of transient structures of affordance and interference that occur between human and device at the moment of their coming-together. The importance of this conceptual toolkit – and its valorization of asymmetry, inertia, and boundedness in conjunction with the neuronal negotiation of thought-fields – is that the brain itself becomes the location of a quotidian and non-deterministic struggle between the deliberate interferences of technocapitalism and those inner particles which think beyond its reach.

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**Notes**

1. The phrase ‘teleological functioning’ rests on the assumption that one cannot readily eat cereal with a machine gun, which is to say: each tool is tethered to a telos.
2. Deleuze and Guattari almost seem to suggest a dialectically productive synaptic disunity within the brain.
3. This near oxymoron best conveys the field of possibility that a chaos brain traverses in the moments leading up to a thought-forming contraction.

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