Šum #10.2

Cryptocene

Bleakchain

PJ Ennis

Crypto-Current An Introduction to Bitcoin and Philosophy

Nick Land

Waveforms: Art and Revolutionary Transformation in the Age of Blockchain

Edmund Berger

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PJ Ennis

The following is source material drawn from *Tropical* by PJ Ennis, a novel about the collapse of a post-cryptocurrency society in the thirty-first century.

PJ (chi~. 8*6799c) would like to thank *LeenVV* for sponsoring his research and thoughts! All thoughts are his own through *LeenVV*'s patented Moka supplements. Buy MokaCoin at h.Agora today, just use referral code ~~[dangerous link]~~.

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Ross-RR's questions relayed through last known human-instantiation Rachel-Rose O'Leary (chi~. 8*6899b / records/nym varies? /).

The events described here reflect a reality parallel to this one. While the events occurred in the future they have been retroactively re-constructed using *LeenVV*'s Sipascript smart contract platform (repo activity: blekk [477], peep [144], dexf [12], nnik [4]).

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// 04-01-3055 PTE // Rose-RR, a reporter for the *Daily Coin*, was granted access to Xang-Jiapo Prison, Xang-Jiapo in the northeast of the Wuhan Protectorate Territories. Rose-RR interviewed three of the most notorious prisoners in "the Black Pool":

Barlowe, W.W. (case hash: 0x88704).
Conviction: intent to supply; possession; counter-economic activity; kingpin multiplier.
Sentence: life without the possibility of parole.

Jio-Jiing, X. (case hash: 1x13909 – privF).
Conviction: murder in the first degree; membership of a restricted organization [Mir-Taaki Liberation Front]; kidnapping; torture.
Sentence: life without the possibility of parole.

Alexei, Ž. (case hash: 0x99334).
Conviction: ransomware; unauthorised access to government servers; blackmail; perverting the court of justice; witness intimidation.
Sentence: 17 years.

ROSE-RR: For the benefit of our readers, what are your crimes and convictions? And, tell me, do you consider your sentences just?
ALEXEI: It depends, in Zikraine I would be just another worker, but to the Horba state or Wuhan I am a criminal. I suppose if you ask someone who lost their Ledger points to me they would say my sentence is just. But in my culture bad security is considered immoral. Of course, we don't have jails in Zikraine, those are *definitely* immoral. My crime, well that's well known, I disseminated the *Petri/notPetri* ransomware and was responsible for coordinating the *Wanakri* botnet. I may also have attempted to blackmail witnesses, but I don't talk about that. There is no evidence, but I had a public defender and she was basically retarded.
BARLOWE: I would stress that in my country we do not consider counter-economic activity to be illegal, we just see it as economic activity. That being said, I admit that house Agora did flout the laws of Horba, but only to feed the demand for narcotics that pervades your society. Your citizens believe in nothing, it's pitiful.
JIO-JIING: I was convicted in a show-trial undertaken by the illegitimate state of L3-Horba. I have been jailed, for ideological motivations I believe, for murder, kidnap, and torture. No prescription has been made for my status as a prisoner of war and I do not recognize my status as a petty or common criminal. I maintain no interest in the propaganda perpetuated by the *Daily Coin* and the media-industrial complex of the Horba-Wuhan alliance. I consider nothing existing just and am focused only on the eventual and inevitable construction of the Mir-Taaki nation.

ROSS-RR: OK, so, your stories are pretty much the main attraction every day at the *Daily Coin*, can you tell me why you think that is, what is so fascinating about a bunch of prisoners?
ALEXEI: They live boring lives in the city, trying to win Ledger points or score MDS5. They have to pass the time somehow. Crime sells, more than it pays, I guess.
BARLOWE: Many of them have never left Horba and think everything outside it more exciting than it is. We are exotic animals, trotted out to entertain every idiot in this city. I didn't even know I was famous until a backpacker from Hearn showed me a picture of myself in the *Daily Coin*. I want your readers to know, especially the women, that I am more handsome in person.
JIO-JIING: No comment.

ROSE-RR: What is it like to live in the Black Pool?
ALEXEI: Actually, it is kind of OK. If you have Ledger points or contraband you can afford a small fire in your cell. I am also a volunteer in with the "Wuhan BSec Rehabilitation Program (WBRP)", helping the state defend against, well, people like me. Last week I helped set up a firewall for a school in the local district. I don't care about the kids, but I have been told I can earn enough credits to earn early release. I even showed the guards how to pirate *NK eSports* shows. Now I am their best friend.

BARLOWE: It's tedious but I am pursuing a postgraduate degree in literature. It focuses on glitcheys as a form of neo-pagan spirituality in late twenty-fifth century Ethereal cultures. We even have glitcheys in the prison and I have noticed that they are drawn toward fires. I recently tried to befriend one, but for some reason they do not like to inhabit criminals. I am certain they toy with the guards from time to time. Sometimes you can hear them crying. Perhaps they are trapped here too.

JIO-JIING: No comment.

ROSE-RR: In all your trials the judges stressed that you are guilty of ideological crimes and the CEO of the prison insisted I talk to you three instead of common prisoners. Why do you think that is and what are your ideologies?

JIO-JIING: I believe it is to embarrass us, revealing how ineffectual our ideologies are. Perhaps also to warn off the youth. I am a Mir-Taaki nationalist. We follow a mutualist philosophy that promotes the communal ownership of the means of production and a restoration of the black metallist ecologism of our ancestors. I am influenced most by II-Burz-Iyam, the thirty-first century poet-warrior, but we have no hierarchy of ideas outside the core system. However, we have been at war for so long I am unsure what our current political philosophy is. I suppose you could call it endless black war. For now, our mission is deterritorial, to erase all the borders on the Block, and from the debris reconstruct this fallen world. My only regret is that I will not live to see its fruition and I must spend most of my life avoiding Barlowe's glitcheys.

ALEXEI: Most certainly he means to scare off the kids from dangerous ideas. A Wuhan company man knows only black and white. I don't have an ideology. I believe, however, the good life means to profit as much as possible, as fast as possible, and I cannot even imagine what else is worth pursuing. I think half the men in here are mad with ideas and they forget none of it matters in the end.

BARLOWE: I was raised Monerist by my father, but my mother leaned a little to heterodox UASF Satoshiism. They would discuss quite a lot about the time before the Fall and how

the only proper economic system was a deflationary one. They held to the old ideas about the sins of fiat currency and would never stop talking about how life was better under decentralization. Personally, I believe that agorism is a sounder system because it makes more sense to have a monetary pluralism, but I recognize that altcoin revivalism has made life more complicated. In my early teens I went through a tokenism phase, but I got burned too many times by the older speculators. I did read *The Wisdom of Satoshi* as a kid, but I find it hard to believe that one man brought down the system of the Ancients, I mean it sounds to me like they were on course to destroy everything anyway. And my father told me that for the first hundred years there were purer visions that got crowded out by the hardliner Satoshiism, so the truth is probably lost to history, assuming that there is any truth to life at all.

ROSE-RR: So, I can give you guys the last word, what do you want to tell the citizens of Ledger City?

ALEXEI: Never hack state infrastructure. Stick to non-political victims and you could retire to the South Sea islands and find a local girl.

JIO-JIING: We will slaughter your families, as the Emir, reward be upon Him, wills.

BARLOWE: Kill yourselves.

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Crypto-Current

An Introduction to Bitcoin and Philosophy

Nick Land

§0.0 — On November 1, 2008, "Satoshi Nakamoto" introduced his "Bitcoin P2P e-cash paper" in an email to The Cryptography Mailing List:[1]

I've been working on a new electronic cash system that's fully peer-to-peer, with no trusted third party.
The paper is available at: http://www.bitcoin.org/bitcoin.pdf
The main properties:
Double-spending is prevented with a peer-to-peer network.
No mint or other trusted parties.
Participants can be anonymous.
New coins are made from Hashcash style proof-of-work.
The proof-of-work for new coin generation also powers the network to prevent double-spending.

1 "Bitcoin P2P e-cash paper" (2008/11/01) https://www.mail-archive.com/cryptography@metzdowd.com/msg09959.html.

§0.1 — There is a future, perhaps even a probable one, in which this short text—of just 64 words—has the status of a Pre-Socratic fragment, *at least*, minutely examined by multiple philosophical schools, determined to extract every last micro-flicker of its significance. In this speculated culture to come, these words compose an intricate sign of what is about to arrive not only caught in the final moment *before the shift*, but self-identified as a spark—intimately linked to *the* spark—from which the shift came. It is trawled up from the other edge, where an accumulation of techno-cultural reaction mass is about to go nova. Caught at the very lip of the reaction pile, it is a piece of *critical code*.

§0.2 — Were the virtual catastrophe to be even greater than it imaginably could be, so that only the first sentence had survived—time-charred by the sheer magnitude of the event—it would still suffice as a compact summary of our entire topic, and as the germ of an intelligible retro-futural tradition. Just seventeen words now, and yet almost everything is still said, arranged in accordance with a distinct internal structure that divides neatly into three parts.

§0.3 — It begins in a virtual theater, where a complex play is opening. The topic of *identity* is itself concealed, as if wrapped in an invisible cloak. It is nothing technical, or even theoretical, but rather the narrative propeller that comes first. "I've been working ..." the hidden author tells us. The personal pronoun, we understand eventually—if not immediately—refers us to a mask, and to a drama that is yet to unfold. The great conceptual themes of *anonymity* and *singularity* first enter the stage, in casual clothes. (Extreme acuity would have been required to notice these themes already foreshadowed in the word "cash".) This miniature story about time and "work" means far more than it yet seems to.

§0.4 — After the play begins, space remains for a generic definition of Bitcoin—as a "new electronic cash system" or innovative techno-commercial (i.e. *techonomic*) synthesis, a "machine" in the rich, rather than the narrowly technical sense

(because it encompasses incentives)—and also for an initial (two-step) abstract specification of its operational principle as a "fully peer-to-peer" or *true network*, which is itself succinctly defined through subtraction, or independence from any kind of "trusted third party". The deletion of "third parties" or quasi-transcendent overseers—as revealed, retrospectively, in this artificial future—has been socio-historical process, and not mere conceptual speculation. Much has happened over the span of our hypothetical elapsed duration. Boundaries between the inside and the outside have been redrawn many times. What were once scarcely legible hints are "now" lucid indications of realized occurrences, accessible to public designation. Yet even back then—where we still are—it can only have seemed that a great deal was ready to be found. When these words were teased apart patiently, with the surgical tools of a philosophy that was itself—at that very moment—undergoing drastic revision, everything was already here, at least in conceptual embryo.

§0.5 — This short text is unmistakably a fragment about "Bitcoin". It is destined to be still more so. The retrospective concerns of what remain, at the time of writing, unconsolidated interests will insist upon that. Yet the term appears only once outside the heading, in the second sentence, and even there it is not nakedly deployed, but is instead embedded within a hyperlink (or URL). This is surely sufficient excuse for an early digression. The familiarity of Internet links, after what has been, even now, only a couple of decades of wide social dissemination, tends to deprive them—as a general semiotic phenomenon—of the attention they would otherwise command. They are rushed beyond the horizon of awareness by their own smooth utility. The same high-speed familiarization is characteristic of technological adoption in the electronic era, whose futuristic strangeness is thus self-concealing.

§0.6 — Every URL is a technical implementation of *rigid designation*, which is to say that it works not by *saying*, but by *pointing* to some definite thing. It is thus the demonstrative confirmation of a semantic theory, but operation-

alized to such a degree that its implicit claim is rendered superfluous, through transportation beyond all meaningful controversy. It would be entirely redundant to *argue* that URLs work. The proper name of that thing *meant* by any URL can be compressed and mangled to such a degree that its *signification* is obliterated, yet it works (when—in the case of an "unbroken" link—it does) as an effective *invocation*—by actually *calling up* that to which it refers. On the Internet, the conceptual problem of reference has been mechanized. To write using links is to participate in a literal machine. In multiple senses, therefore, it "represents" a death of metaphor.

§0.7 — The rest of the mail composes a separate systematic unit, devoted to introducing the Bitcoin protocol in (a little) more detail. It takes the form of a sub-headed five-point list, striking for its informality. What initially appears as a logical structure buckles significantly under analysis. The second point, for instance, is essentially a re-statement of the first, separated only by distinct emphasis, since the functional completeness of the P2P network and the absence of any need for trusted third parties constitute a single (or numerically identical) accomplishment. The third point, while approximately accurate, might be considered misleading in two ways. While *permitting* anonymity, the Bitcoin protocol does nothing to positively protect it. The *passive facilitation* of anonymity is both unremarkable and, from a technical perspective, notably weak (as would later become evident). Satoshi's two final points are also interconnected, although in this case the articulation reflects a real synthesis—or techonomic advance—rather than mere semiotic overspill or logical redundancy. The socio-technical Bitcoin *machine* validates itself in the same way it spreads.

§0.8 — Philosophers searching for the systematic order of the Bitcoin protocol in the logical architecture of a list such as this are looking in the wrong place—comically so, one might easily think. *The chat is not the code*. Yet, everything attending the arrival of Bitcoin is of such monumental philosophical importance that errors of over-reading can still

serve as a corrective to neglect. Much more is still being missed than over-interpreted where the Bitcoin phenomenon is concerned. The occurrence is outpacing its sense.

§0.9 — The problem is not that this fragment is being read at all, or with exaggerated attention, but that it is being read the wrong way, insofar as it is considered to be a logically-ordered list, or a table of categories, rather than the linguistic translation of a circuit diagram. Disorder—and ultimately paradox—is the positive attainment of a cybernetic statement.[2] It is especially notable that Satoshi's five-point list of Bitcoin "properties" explicitly describes a cycle, ending where it begins, in a return to the topic of double-spending and its effective prevention. This circular formulation, too, is a mark of technical functionality, rather than logical indiscipline. Bitcoin loops back, to close upon itself, because it works (and demonstrates that it works, through actual perpetuation of its existence). "Problems" of self-reference are an operational virtue, requiring positive achievement. The guiding principle is not conceptual comprehension, but machinic closure.

§1.0 — Strictly speaking, Bitcoin has to be unintelligible—or at least incompletely intelligible—because it necessarily delivers more than it signifies. What the word designates vastly over-spills its recuperable (human) meaning. This is a fatality already implicit in the basic conception of *distribution*, in the sense of systemic decentralization. To bring any such (intrinsically distributed) "object" *into focus*, as the

2 Fritjof Capra recalls a conversation with Gregory Bateson that captures the mutual entanglement of mechanical and logical circuitousness: *"... when you get circular trains of causation, as you always do in the living world, the use of logic will make you walk into paradoxes. Just take the thermostat, a simple sense organ, yes?"*
He looked at me, questioning whether I followed and, seeing that I did, he continued.
"If it's on, it's off; if it's off, it's on. If yes, then no; if no, then yes."
With that he stopped to let me puzzle about what he had said. His last sentence reminded me of the classical paradoxes of Aristotelian logic, which was, of course, intended. So I risked a jump.
"You mean, do thermostats lie?"
Bateson's eyes lit up: "Yes-no-yes-no-yes-no. You see, the cybernetic equivalent of logic is oscillation." http://shrinkrants.tumblr.com/post/32396927568/gregory-bateson-and-fritjof-capra-discuss-mind ...

target for concentrated, comprehensive attention, is impossible by definition. The attempt drives investigation diagonally, into abstraction. It might equally be said—in a manner conducive to the elaboration of critique—that *a network is inherently intractable to objectification*. As we shall see here, and elsewhere (even, eventually, everywhere else), the translation from epistemological challenge to political provocation takes only the smallest—and least avoidable—step.

§1.1 — The *cybernetic* consistency of the Bitcoin protocol is simultaneously technological and economic—we might (and shall) continue to say "techonomic". Its achievement is inseparable from an orchestration of cryptographic procedures and financial incentives, such that exploitation of its economic opportunities automatically reinforces its technical operation. The result—which is, once again, inextricable from the concrete fact of its historical existence—is an actual cycle of self-reinforcement, independent of external legitimating authorities. It implements the first commercial regime to be policed—spontaneously—at the level of production. Its "miners" or primary producers are also its final financial arbitrators. Nothing like it has ever been seen before.

§1.2 — There are no doubt innumerable "truths" *about* Bitcoin, of a kind familiar both to folk intuition and to disciplined traditions of knowledge acquisition—whether first-order (scientific) or second-order (epistemological, ontological, and metaphysical). Such moments of recognition will inevitably provision the discussion to follow. Yet there is more to the topic of *Bitcoin and Philosophy* than any of this. While Bitcoin is certainly another thing for philosophy to talk about, it is also an entirely other way of "talking" and of doing something that has been considered central to the philosophical enterprise since its inception—*the cultural production of truth*. Bitcoin establishes—and in fact ultimately *is*—an operational truth procedure. It is less a philosophical object, therefore, than a philosophical platform, and even a philosophical automatism.

§1.3 — Bitcoin is inextricable from a practical interrogation of *identity*, in its social and psychological sense (as "personal identity"), but also more fundamentally as *that which makes something such that it is not something else*. The specific engagement with this concern under the name of the *double-spending problem* need not distract from its extreme generality, and—beyond generality—its transcendental implication. Bitcoin realizes an experimental ontology and epistemology in the course of a technical re-foundation of transactions (upon the Internet), which involves an abstraction *of* (if not finally *beyond*) money. The practical problematics of money and identity, nudged together over the course of decades by cryptographic theorists, have arrived—in Bitcoin—at a stage of radical fusion. For anything "simply" to be certified as *that which it is* cannot any longer be confidently distinguished from a monetary phenomenon. The new "-coin" suffix operates amphibiously between these previously distinct registers, as the index of an economic-ontological machine. (Big-B) Bitcoin, *the system*, goes further still. If being able to verifiably *be itself* makes of anything a unit in a currency system, the system itself is the Being of such beings—the ultimate criterion of credible existence. In the end, the blockchain cannot be subordinated to any principle of reality (whatsoever) that it does not itself authorize.

§1.4 — Since money, even in its most primitive and concrete forms, is already an abstraction—from the general commodity—its further mathematical virtualization tends naturally, from the perspective of common intuition, to a certain opacity. To recognize the *reality* of the virtual stretches human cognitive capabilities into stressed—and often distressing—territory. In addition, money occupies a thematic cross-roads of such diversity and density that its tangents can appear overwhelming, touching upon everything of human relevance, even prior to the massive dilation of monetary generality that Bitcoin is currently driving, under the sign of the new techonomic "coin".

§1.5 — Perhaps the greatest obstacle to the lucid investigation of money, however, is presented by the fact that

it occupies a nexus of extreme sensitivity within evolved human psychology, lodged among our species' most emotionally-charged perceptions of social relations. Because money is inextricably entangled with questions of *reciprocity*, it is tied-up intimately with such provocations to outrage as injustice, cheating, exploitation, and unbounded inequality. Such sensitive moral trigger-zones pose a formidable inhibition to dispassionate analysis. Disciplined investigation of money threatens to arouse sentiments of social alienation, and even desecration. There is no theoretical conclusion about the nature of money so cold that it does not appear burdened with concrete socio-political implication. More specifically, the mere conceptualization of money is grasped—once again, with vivid archaic intuition—as inherently consequential with respect to the social distribution of wealth. There can be no valorization or devalorization of money in theory without an immediate adjustment of social balances, or at least the widespread perception of such. It is only natural, then, that the complement also holds. Even when constrained by a spirit of disinterested empiricism, the study of money is peculiarly vulnerable to ideological temptations. The suspicion that monetary theory is politics in disguise tends towards a self-fulfilling prophecy. Discussions of money drive social apes mad.

§1.6 — If money, nevertheless, demands to be discussed, now more than ever, it is because something huge is happening. So, really, *how big is Bitcoin?* This question—however awkwardly stammered—sets a backdrop to every discussion of the topic. If it could be answered exactly and comprehensively, we would know everything—seriously, *everything*—at least up to the epistemological horizon of man. Since Gödel, we have known that whatever can be known at all is precisely detailed in some yet-unknown number. Because the blockchain is a transcendental reality criterion, its ultimate summation is necessarily ontologically exhaustive. Whatever it doesn't—in the end—include, can only be *nothing*. That is, however, to get ahead of ourselves.

§1.7 — The *size* of Bitcoin lends itself not to one question, but to several, and all tend to rapid complication. When posed as a vague query regarding Bitcoin's importance—or historical impact—the challenge posed is obviously daunting, in the way of all futurology. This does not, however, mean it can be long avoided. The question does not differ in principle from the kind of risk assessment speculative markets are continuously compelled to make (with mixed success, at best). It is, indeed, in large—and predominant—part a bet on the future, of exactly this type. If it is ineluctable, it is because the distribution of potential outcomes that it involves allows of no neutral position. Whatever happens to Bitcoin will matter to everything. Even the possibility that it might not matter much matters enormously. Shorting the Bitcoin future already offers enough space to thrive within—or in which to die.

§1.8 — A more highly-restricted—and (at least superficially) simplistically quantitative—version of the question is easier to answer with facile confidence. No more than 21 million bitcoins will ever exist. The scale of Bitcoin is therefore intrinsic to its identity, and inseparable from its value. To purchase a bitcoin is to acquire one 21-millionth (and in fact a little more) of some as-yet incompletely determined "X". On this basis, the immediate value of Bitcoin is *analytical*, which is to say, an exact re-statement of a quantity already given in its issuance. How much is a stock of 21,000,000 bitcoins worth? Of course, BTC 21,000,000. Naturally, a tautology this crude can at first only appear as nonsense, or—at best—as a semantic evasion. There is, however, nothing trivial about the disturbance it insinuates.

§1.9 — Instead, and especially in the early stages of the currency, a *synthetic* valuation is called for, as determined by exchange rates. Typically, this will reference the world's principal reserve currency, the US dollar, as a unit of account. At any point in time, therefore, the entire bitcoin stock has a determinate market value. Estimated in this way, the "scale" of bitcoin approached one hundred

billion dollars by early 2018. The complex equivalence between this—comparatively paltry—financial evaluation and the appeal of the Bitcoin business as a venture capital opportunity, let alone as the core technology of an industrial revolution, presents a challenge of commensuration for which no existing road-map is even approximately adequate. It is unprecedented for the principal infrastructural innovation of a techonomic long-wave to take the *immediate form* of an investment vehicle. Extraordinary nonlinearity results.

§2.0 — When viewed as an episode within a panoramic sweep, the history of Bitcoin almost writes itself. The crisis it inaugurates within political economy appears to have been dramatically predictable. Yet, when the Bitcoin protocol is examined more narrowly, its history—especially its early history—is notoriously puzzling. Fittingly, the story of Bitcoin—in its details—is profoundly cryptic. When scaled to tidal global processes, it appears to arise—as if inevitably—out of the Internet, which itself arose in conformity with the deepest trends of industrial capitalism. Upon finely-grained inspection, however, where the perturbations of contingency are most starkly evident, it emerged from the work of "Satoshi Nakamoto", about whom scarcely anything is known with confidence. The obscurity concentrated in this name cannot be considered coincidental.

§2.1 — While sweeping analogies reasonably invite suspicion, it is nevertheless tempting to compare Satoshi Nakamoto's place in the history of money to Gödel's in formal logic. In both cases a tradition accumulated over millennia through systematic consolidation and refinement of primitive intuition crosses a threshold of positive catastrophe, induced by a technical innovation that overthrows previously unquestioned assumptions. Once this passage has been made, what came before acquires the features of a prolonged childhood—an age of innocence and immaturity to which no return is possible. Logicians remained within an Aristotelian outer orbit, dreaming of an analytically grounded mathematics into the early 20th century, before

Gödel awakened them.[3] Prior to Bitcoin, the foundations of monetary theory remained similarly enmired in legacy conceptions, stemming from the concrete history of property representation.[4] Bitcoin produces credibility, rather than consuming it. In this way it departs radically from the entirety of previous monetary history—or *pre-history*—while completing it. The word "epoch" is available for the historical periods initiated by such decisive switch-points which—in Nietzsche's appropriately grandiloquent words—"break history in two halves". The discovery, or invention, of transcendental arithmetic (Gödel), asymmetric cryptography (PKC), and trustless money (Bitcoin) are all structurally comparable ruptures.

§2.2 — *Ruptures* are irreversibilities. They are thresholds from which there is *no going back*. Every rupture is thus a locking, a *lock in*, or trap-door. The secret of time finds in rupture its principle of integrity, or redundancy. There is no puzzle beyond this (which is merely transcendental philosophy restated).

§2.3 — Secrecy has been an under-developed topic in philosophy. The reasons for this are arguably indistinct from reason itself, as such, and in general. "As we shall see," we might add, insofar as humor is our object. In any case, a story

3 Gödelian incompleteness is logically isomorphic with the halting problem in the (Church-Turing) theory of computation, and thus translatable after rigorous transformation into the *uncomputable*. It establishes a basic principle of unbounded application within the electronic epoch. As a corrective to the extravagant conclusions sometimes drawn from this conceptual complex, in relation to the limits of machine intelligence, the work of Jürgen Schmidhuber is of special importance.

4 It should be noted, in clarification of this analogy, that the conceptual foundations of political economy (pre-Bitcoin) were far inferior to those of mathematical logic (pre-Gödel). The logicism of the Hilbert Program, and of primitive analytical philosophy, while ultimately untenable, at least provided an exact formal basis for its own theoretical elimination. The concept of property, in marked contrast, remains opaque to an almost comical degree. Its dependence upon a legal decision process invoking discretionary judgment *essentially* resistant to formalization, while convenient—almost by definition—to those wielding political influence, is a stark indication of its radical conceptual insufficiency. Property is reducible neither to legal title, or physical possession of precious substance. The former is a bad abstraction (to political dispensation), the latter an inadequate one (to a crudely naturalized relation). Another basic conception of property is now undergoing consolidation. *Property is crypto-security*. It consists of keys.

of at least minimal plausibility is not difficult to muster. Secrecy is that which, as a matter of internal necessity, can only ever be under-emphasized, but in the case of philosophy there is immediately more to say. Since its birth in ancient Greece, philosophy has been drawn to the public square, and—according to some historical constructions—even arose there. It tends, strongly and stubbornly, to identify itself as the most elevated form of *public reason*. Since it is by way of a departure from the Hermeticism of the ancient mysteries that philosophy originated, it is a discipline bound by primordial vocation to exotericism. This cultural ancestry resonates profoundly with the archaic Occidental apprehension of truth as *aletheia* (or "unconcealedness"), and thus as an emergence or extraction from secrecy. In the words of Herakleitos ("the dark")—invoking a primordial entanglement between what would become the cultural lineages of philosophy and cryptography—Φύσις κρύπτεσθαι φιλεῖ ("nature loves to hide").

§2.4 — Within the late-Enlightenment consolidation phase of modern philosophy, whose capstone is the Kantian critical system, the *public sphere* of intelligence is thematized as *objectivity*. This is the realm of common understanding, accessibly shared—as a matter of necessary principle—by all rational beings. For instance, there cannot, according to the Kantian construction, ever be a secret about space *as such*. Space understood transcendentally, as a pure form of objective intuition, rather than as an object itself, cannot contribute to the content of a private experience. A secret geometry is unthinkable, *in this sense*.[5]

5 There has been no cultural event more wounding to the persistence of a Kantian fundamentalism than the revolution in geometry attending the rigorous demotion of the Euclidean fifth (or "parallel") postulate, as privately envisaged in unpublished work by Gauss (1813) and Schweikart (1818), mathematically publicized by Bolyai and by Lobachevsky in subsequent decades, generalized to higher dimensions by Reimann (1854), and then cemented into place by its *empirical* application to the cosmo-physics of general relativity. Kant's conspicuous deference to Newtonian mechanics, understood as an *apodictic* (and essentially *mathematical*) intellectual revolution, sets the stage for the apparent vulnerability of his own position. The critical edifice seemed to have been built upon insecure "Euclidean" foundations. It is proposed here, however, that the retrospective attribution of embarrassment in this case is exaggerated, and follows from a profound misconception concerning the status of the Kantian transcendental aesthetic.

§2.5 — Bitcoin is an *open secret*. Despite belonging unambiguously to the history of cryptography, nothing at all about it is hidden (except what lies beyond it). Its basic innovation—the blockchain—is a (decentralized) *public* ledger, and this now widely accepted explanatory term is not remotely misleading. In any case, the crucial terminological decision preceded Bitcoin, and was settled decades earlier with the introduction of *public* key—or "asymmetric"—cryptography (PKC). It is, precisely, cryptographic sophistication that makes the public sharing of critical information (prudently) practicable. This is exemplified by the blockchain, in which the details of every transaction are open to general inspection. Furthermore, full exposure extends beyond the (empirical) *content* of the blockchain, to its (transcendental) *fabric*. The Bitcoin protocol is open-source software, its entire code unrestrictedly available for inspection. Such radical openness is only distinguished practically from a comprehensive annihilation of privacy because the access to accounts is securely crypto-restricted, enabling digital "wallets" to function as disguises. The paradoxical culmination—now exhibited—is a cryptographic system without secrets.

§2.6 — The basic current inherited by the Internet tends with irresistible momentum towards the open secret. The *system of disguises* is, ever increasingly, fully exposed. The Internet epoch, we learn, is the Golden Age of masks. Masks are not designed to be hidden, but rather the contrary. They are exceptionally conspicuous attire, meant for public exposure, to facilitate *hiding in plain sight*. Privacy turns out to be the reciprocal of an artificial face.

§2.7 — It is only in superficial appearance that publicity and privacy can be simply opposed, which is not at all to suggest that the distinction can be integrated, or that either pole is soluble within the other. *PKC definitively settles the relation*. The real bond—or synthetic principle—connecting

Newtonian space provides only an *occasion*, not a strict model. The Kantian formalization of sensible intuition is less descriptive than telic, or retrochronic. It is the draft for an engineering project. The Gibsonian Cyberspace "Matrix"—in its resilient (because synthetic) Euclideanism—corresponds to a more rigorously Kantian conception.

the public to the private is not a generic logical relation, but a cryptographic singularity. There is only privacy at all because this distinction is opaque to public reason. Philosophy—as it has traditionally understood itself—is asymmetrically related to cryptography, from which it is *locked out* by its (publically) unquestionable commitment to a principle of boundless publicity. The relation is poorly modeled by a tension between the public square and the inner circle—or between a commons, and a myriad vaults—and would still be even had it not been known since the late 19th century that squaring the circle is impossible.[6] Already in the Kantian formulation of the transcendental philosophy the *secret* was distinguished from any type of concealed object. Its redoubt is not to be found in a transcendent mystery. It is located, rather, in *the difference between the object and its principle*. The secret *of objectivity* is itself concealed by the feint that leads to its misidentification with a hidden thing.

§2.8 — The philosophy of secrecy fuses with definite practical realities. Bitcoin approaches the model of an *ideal agora*, at once commercially open and politically closed. It epitomizes the arena of "free trade" in all its innovative radicality and (from the perspective of the left) social aggression. Bitcoin is *closed* by its intrinsic protection against discretionary modification, and *opened* by its commercial function. Implicit in the circulation of bitcoins—or any other medium of exchange—is a process of *commercial synthesis*, latching the crypto-currency system on to something beyond itself. Anybody transferring bitcoins out of their own account, and therefore necessarily into someone else's, is presumably engaged in an exchange which—since it cannot be realistically imagined as economically tautological (directly swapping bitcoins for bitcoins)—has to swap bitcoins for an extraneous commercial object. Clearly, whatever is exchanged for bitcoins, is priced in bitcoins. When it operates as a cur-

6 From the mid-19th century, it was understood that the possibility of squaring the circle depended upon the nature of pi (π). The Lindemann-Weierstrass theorem (1882) proves that pi (π) is a transcendental number, confirming the insolubility of the problem. It can be seen from this example how serendipitous the name *transcendental number* turns out to be.

rency, Bitcoin is a synthesizer. It cannot propagate without connecting itself to a wider world. The cryptic principle of openness projects a diagonal line.

§2.9 — Since the origins of modernity, a specter has been haunting the world—that of the autonomous industrial economy. This is the same emergent order that has acquired the name "capitalism" in the abstract, tendential, or teleological sense of the word, and—still more importantly—in accordance with its usage as a *designation* for an always only partially-defined real individual, or terrestrial event. Its signature is a regenerative, or self-reinforcing, intensification of socio-economic disequilibrium, "governed"—or, more strictly, made radically ungovernable—by a fundamental positive-feedback dynamic. "Capitalism" then, as a singular (or "proper") rather than generic (or typological) name, designates the sovereign self-escalation of an innovative entity, defined only by the practical relation of auto-promotion it establishes with—and through—itself. What it is, in itself, is more than itself. Growth is its essence. This is easily said, but—as an irreducible logical anomaly—it is far less easily understood. This does not, however, obstruct its being named. Fernand Braudel writes of "the passionate disputes the explosive word *capitalism* always arouses."[7] Its would-be defenders, typically, are those least inclined to acknowledge its real (and thus autonomous) singularity. Business requires no such awkward admission. This, too, is a *crypsis*. By inevitable—if often awkward—irony, a species of "Marxism" tends to be regenerated in any systematic promotion of Capital. Even were this not the case, those who consider themselves befriended by Capital would rarely be motivated to pronounce upon the fact.

§3.0 — According to the crudest—and perhaps also most plausible—account of Bitcoin's inherent political philosophy, it implements a project of algorithmic governance that conforms to the deepest and most essential agenda of modernity, which is to say, of emergent capitalism, in its search for a definitive securitization of commerce against poli-

7 BRAUDEL, Fernand, *Civilization & Capitalism*, Volume I, p. 25.

tics. It thus expresses—in contemporary techno-libertarian or crypto-anarchist guise—the primal impulse of liberalism (in its classical sense). As already noted implicitly, it is something most easily seen from outside.

§3.1 — When captured at its zenith of abstraction and technical rigor, the defining proposition of the left is that *depoliticization is still politics* (and more specifically, *a politics*). This is not a proposition that can be limited to theoretical clarification. It is a *project*, and even a prophecy. The anti-political *will be* re-absorbed into the political, according to this fundamental formula. The whole of "class war" is contained within it. Its complement, on the side of capital, is an equally *practical*—and no less antagonistic—commitment to escape. The left thus recognizes its enemy, with striking realism, as an emergent—and intrinsically fractured—agent of *social dissolidarity*. A crucial asymmetry has to be immediately noted. The "struggle" here is not even imaginably *one-on-one*. Capital is essentially *capitals*, at war among themselves. It advances only through disintegration. If—not at all unreasonably—the basic vector of capital is identified with a tendency to social abandonment, what it abandons most originally is itself.[8] That is why the left finds itself so commonly locked in a fight to defend what capital *is* from what it threatens to become. Bitcoin tells us—more clearly

8 Marx is not blind to any of this, although he tends to complacently bracket it as a self-destructive contradiction. *The Communist Manifesto* is especially stark in this regard. Continuous auto-liquidation of the establishment is modernity's installed regulative idea. Recent history has only confirmed the insight. Capital revolutionizes harder, deeper, and faster than "the Revolution". Its lack of attachment to itself exceeds anything the left has been able to consistently match. Capital's scandalous immortality is derived solely from its inventiveness in ways to kill itself. There is no serious way in which it could die that is not more intensely effectuated as a functional innovation within itself. Revolutionary capital proceeds through *disintermediation*. It bypasses what it marks for extinction. Morgen E. Peck reports on a conversation with Ethereum entrepreneur Joseph Lubin: "'We will replace insurance companies. We will replace Wall Street,' he told me. [...] Then the list kept growing. Online movie distribution houses like Netflix and Hulu. Gaming platforms like Xbox and Sega Genesis. Messaging services like Twitter. Add to that retirement plans, currency exchanges, voting, intellectual-property managers, and trust-fund disbursers. According to Lubin, everything—really everything—we do on the Internet or via any kind of digital channel is about to undergo a radical change." http://spectrum.ieee.org/computing/networks/the-future-of-the-web-looks-a-lot-like-bitcoin

than any other innovation—what it is becoming next, by *escaping transcendent governance in principle*. Consistent "right wing-extremism",[9] automated governance, and unflinching critical philosophy are inter-translatable without significant discrepancy. The crypto-current is a nightmare for the left (rigorously conceived).[10] It is other things, but that is the main one. Philosophical phase change doesn't happen without a fight, least of all when attempting to route around one.

9 The coinage comes from David Golumbia: https://news.vcu.edu/article/VCU_professor_discusses_The_Politics_of_Bitcoin_Software_as_RightWing.

10 Bitcoin was invoked on Halloween (2008/10/31) in a research paper published under the cryptic name Satoshi Nakamoto. It had the time format of a horror story. This is not the place to follow the Gothic roads thus opened, however suggestive they initially appear. Most notable, at this point, are the shadow undercurrents to questions about whether Bitcoin can ever die (or be stopped). Upon intense examination, neither possibility seems to be coherently thinkable.

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Waveforms: Art and Revolutionary Transformation in the Age of Blockchain

Edmund Berger

1. Split Futures

"Crypto is libertarian, AI is communist" was the declaration uttered by venture capitalist and PayPal founder Peter in an early 2018 debate between him and LinkedIn founder Reid Hoffman. In this statement, Thiel mapped the two major fixations of Silicon Valley capitalism—cryptocurrencies and artificial intelligence—along a political axis stretching from the left to the right. He continued suggesting that crypto contains an inherently *decentralizing* tendency; after all, they are designed to escape the grasp of state management of monetary flows, and are capable of undergoing forks and other transformations as the designers and holders of the currencies see fit. Artificial intelligence by contrast, Thiel suggested, moved in a *centralizing* direction. AI is an affair of big data, itself a byproduct of all-pervasive surveillance technologies and techniques to capture imperceptible information flows. It is stored and analyzed by big corporations and big states, and allows them an unprecedented degree of control in any otherwise overly complex, rapidly changing environment. By using AI, a state planner could conceivably de-

termine and fix prices in accordance with accurate information of prevailing market conditions. Crypto, meanwhile, pries open escape valves and renders these planner's operations moot.

Is this an accurate picture of these two emergent technological forces? There can be no doubt that there is a reciprocal relationship between technics and politics, as illustrated by innumerable philosophers, theorists, and political economists. Many of these thinkers—including Karl Marx and Carlota Perez, two thinkers we will consider in depth—go further to suggest that the political is in fact produced by the relations that arise from technical relations and is thus conditioned by them. For Marx, this is the interaction of the class struggle with the development of productive forces, both internally to a stage of history (i.e. feudalism or capitalism) and externally as the force that drives movement from one stage to the next. With some augmentation, Perez's approach is compatible with Marx's theory;[1] for her, development is characterized by repetitive rhythms produced by the "shock" of a new radical innovation that transforms the whole of the economic system and, by extension, the entirety of social and political relations. From either of these points of view, Thiel's comments could be read this way: the inevitable political outcome of crypto, by want of both its intended and unintended logic, is libertarian, just as it is communist for AI. What appears at first glance as an ideologically loaded declaration is thus transposed into the productive matrix that seethes beneath ideology itself.

In a response to Thiel's comments, Benjamin Bratton has offered the counterpoint that the connection between crypto and libertarianism on the one hand, and AI and communism on the other, is not nearly as straightforward as the venture capitalist would like them to be. Bratton moves from the crypto itself (in this case, the example of Bitcoin) to the technological system that upholds it, that is, the blockchain, a distributed, digitized public ledger system that allows the direct exchange of different kinds of value between different parties, freed from mediation by some sort of third party mechanism. While this seems to immediately signal inherently libertarian affin-

1 For an attempt to read Marx and Perez together, see my book *Uncertain Futures: An Assessment of the Conditions of the Present* (London: Zero Books, 2016).

ities—one can quickly see how the direct exchange without mediation conforms to the vision of smooth, frictionless market activity—Bratton hints that the outcome of this contemporary technological innovation might cut in a different direction, and fall closer to what is expected from AI (which, ironically, might be veering in a more decentralizating direction). Taking communism to mean "something like the centralized management of a holistically owned commons, structured teleologically [and] without transactional profit as the animating force" and libertarian as "something like 'the whole is the emergent result of the self-interested interplay of monadic, individuated units in which full sovereignty resides'", Bratton argues:

> *As thought experiment I would argue that we can just as easily argue that AI is libertarian [...] in that [...] many of the technical trends in AI are moving away from centralized, cloud-based models and more towards on-device AI by which we have lots of little things that are sensing and making sense of the world in a lot of different kinds of ways. AI becomes less of a big brain in the sky, [and now] we think of it more as a kind of generalized cognitive matter [...] The blockchain is libertarian seems almost like a self-affirming proposition, both as a pronouncement of its validity and as an accusation [...] The converse argument is equally plausible to consider, that blockchain is communist [...] blockchains allow for the possibility of de facto, if not de jure economic actors that are not Lockean individuals, but which are other value-producing, storing, or circulating entities in the world. They imply forms, whether they are simply ideas like the 'social wallet', of social plurality of agencies that may suggest something more like a commons of value rather than a kind of reified monadic hoarding.*[2]

He continues to add that this left–right axis itself may be ill-equipped to handle the complexity of the world that is coming into view, a statement in line with his observation elsewhere that a new "understanding of the political and economic philosophy of platforms demands its own Hobbes,

2 BRATTON, Benjamin, "(In)Humanism Rising", talk given to trust.video, https://trust.video/.

Marx, Hayek, and Keynes".[3] As long as communist currents maintain an analysis locked in at the level of the development in the 1890s and the broader left is swept up in nostalgia for the 1950s dream (not to mention the flattened, ahistorical position adopted by so many of the right), Bratton's comments here are undoubtedly true. Just as the advent of 'monopoly capitalism' and the later arrival of so-called 'post-industrialization' required a retooling of Marxist theory, the emergence of a 'platform capitalism' and the dual development of super-fast, liquid, autonomy-producing systems alongside widening capacities for absolute command-and-control calls for a theory and practice adequate to it. That said, the what better way to approach the onslaught of a truly alien futurity than with Marx and Engels' powerful provocation concerning the position of communism within history: "Communism for us is not a state of affairs which is to be established, an ideal to which reality will have to adjust itself. We call communism the real movement which abolishes the present state of things. The conditions of this movement result from the premise now in existence".[4] We could say that measured against the conditions of the present, communism itself embodies the most alien of all possible futures.

What this paper will argue is not that blockchain is intrinsically communist rather than libertarian, but that there is a proliferation of potential futures that stretch out from our contemporary historical moment, which itself is characterized by an all-pervasive *decadence*. This is not decadence understood first and foremost as a moral stagnation or reactionary theory of civilizational decay, nor as any sort of absolute law; instead, decadence is a kind of aberrant moment in which the development of productive forces is tossed out of joint from the creative turbulence that typifies the long-range evolution of industrial systems.[5] This manifests politically, culturally, and economically as the loss of any sort of positive future, the settling-in of a foggy blanket of gloom that veers from quietist despair ("things are always going to be like this") to a sour apocalypticism ("there is no choice but doom"). As Mark Fisher has posited in his meditations on "designer communism", the rekindling of the ability to articulate potential futures is intrinsic to the communist project. This is a proposition that is in no way contradictory to Marx's argument that communism is not an ideal towards which history must be steered. Thinking possible futures is not something that emerges in a void; it begins from the prevalent material conditions—the organization of industry, the composition of classes, the infrastructures that uphold these things, the various technical systems and the logic they carry with them, on and on—and proceeds out from there.

Here, we will argue that this thinking, while being an essential political task, is approached through the aesthetic dimension, particularly where the experimentation with beauty and form intersects design-thinking concerned with contemporary techno-scientific objects and systems. What this calls for is the opening of a dialogue between aesthetic expression and techno-economic development, to show how the former seizes upon the latter to explore a wider possibility space than that which seems economically possible. This isn't to put the aesthetic ahead of the political, or a suggestion that the aesthetic operates at the same level as the political; it posits, following Herbert Marcuse, an undeniable relationship between the two, a recursivity that is not founded on a formal equality.

To put this in proper context, however, we must first begin with an analysis of the structure of techno-economic development across the span of the development of capitalist production, in order to best identify periods of sweeping transformation with corresponding aesthetic and design experimentation. The respective work of and intersections between Marx and Perez become instructive on this point, with the mutually reinforcing emphasis on socio-technical systems that operate above and beyond the flat ontology of the reified market. Diving into the interstices between their positions unveils the architecture of history itself: a rhythmic, pulsing development drive that oscillates through constant revolutions haunted by the fanged specter of crisis. It is to this architecture that we now turn.

3 BRATTON, Benjamin, *The Stack*, Cambridge: MIT Press, 2015, p. 528.

4 MARX, Karl, ENGELS, Friedrich, *The German Ideology*, New York: Progress Publishers, 1968, https://www.marxists.org/archive/marx/works/download/Marx_The_German_Ideology.pdf.

5 This definition of decadence is based on the theories of Georges Sorel. For Sorel, decadence constituted an entropic phase in industrial development that broke with the theories of orthodox Marxism. Because development was deviating from its course, the anticipated outcome of the real movement—communism—was a fading possibility. A return to the capitalism that Marx had analyzed was thus the key revolutionary task. See SOREL, Georges, *Reflections on Violence*, Cambridge: Cambridge University Press, 1999.

2. The Structure of Development

2.1. PARADIGMS AND WAVES

Carlota Perez's work on the techno-economic draws on a host of different theories of economic and technological change. Two names that stand out in particular are those of Joseph Schumpeter, the Austrian-born theorist of creative destruction, and Christopher Freeman, a leading light in the field of industrial economics. Besides these two, however, as the ones that we are going to focus on here, there are the Soviet economist Nikolai Kondratiev (whose theories were popularized, albeit in modified form, by Schumpeter and later adopted by Freeman), and Giovanni Dosi, a specialist in innovation economics and industrial organization theory. From Dosi comes the nature of development's rhythm, its rises and falls through innovative breaks and the totalizing nature of these phases, and from Kondratiev a quasi-Marxist structure of how these rhythms unfold.

Kondratiev's career in economics, which ended tragically before a firing squad during the Stalinist purges, began under the tutelage of Mikhail Tugan-Baranovsky, who had been a leading proponent of the now largely forgotten Russian movement known as "Legal Marxism". Taking aim at the populist narodniks, who advocated a form of socialism based on the Russian peasant commune, the Legal Marxists advocated the development of capitalism as a precondition to realizing a communist society. Before ultimately abandoning Marxism altogether, the Legal Marxists were widely influential on a number of anti-Tsarist revolutionaries, including a young Vladimir Lenin, who adopted many of their positions when carrying out his own critique of the narodniks and other "economic romanticists".[6] It is unsurprising, then, that when Lenin introduced "state capitalism" into post-revolutionary Russia through the New Economic Policy, Kondratiev was one of the largest supporters of the program, and carried out much work in developing industrial strategies that balanced the demands of state planning with the growth of semi-autonomous markets.

6 See LENIN, Vladimir, *A Characterization of Economic Romanticism*, 1897, https://www.marxists.org/archive/lenin/works/1897/econroman/index.htm.

At the same time that he was working on developing five-year plans, Kondratiev was studying the phenomenon of long-term economic cycles that could be found when studying the movement of empirical data across decades. He was by no means the first to perceive these cycles: the writings of the classical economists, as well as those of Marx and Engels, were peppered with cycles and recurrent patterns that rolled through the time of development. These tended to be smaller business cycles and inventory whose patterns and turnings generally took around a decade to shake out; where Kondratiev differed, by contrast, was the duration of the cycles he was finding. Rummaging through dense reams of statistical data on commodity prices, interest rate movement, wage fluctuation, trade volumes, heavy industrial output and other aggregates, he found that there appeared to be multiple "waves", roughly forty to seventy years in duration, based on alternating periods of prosperity and growth followed by stagnation and slowdown. Even within these alternations, however, internal cycles—or "intermediate cycles"—of growth and decline could be found:

> *The long waves really belong to the same complex dynamic process in which the intermediate cycles of the capitalistic economy with their principal phases of upswing and depression run their course. These intermediate cycles, however, secure a certain stamp from the very existence of the long waves. Our investigation demonstrates that during the rise of the long waves years of prosperity are more numerous, whereas years of depression predominate during the downswing.*[7]

Importantly, for Kondratiev, innovation played a fundamental role, though he did not necessarily view it as the primary causal factor in driving the rise, peak, and fall of the wave. Such a perspective was picked and emphasized later by Schumpeter, though even for this economist it was the turbulence of investment behavior that served as the motive force for the half-century plus cycling. To fully appreciate the nature of the Kondratiev wave, however, the role played by the innovation

7 KONDRATIEV, N. D., "The Long Waves in Economic Life", in: *The Review of Economics and Statistics*, Vol. 17, No. 6, November, 1935, pp. 105–-15.

must be foregrounded. This is where the work of Giovanni Dosi becomes vitally important, which in the hands of Perez will recast the nature of the wave as the temporal frame of the *technological paradigm*.

For Dosi, the concept of the *technological paradigm* was intended to resolve the issue of "continuous change and discontinuous technological innovation", or, in other words, the apparent paradox between long-range development of productive forces on the one hand, and the historical repetition of hard breaks that characterize the inner nature of this development. A resolution, Dosi reasoned, required the overcoming of two contradictory theories—demand-pull and technological-push—of how technological development under capitalism occurs. The first of these, demand-pull, is first and foremost a theory of market-driven innovation, in which the introduction of new technologies and techniques occurs as a result of rising demand in the marketplace. Technological-push, on the other hand, places ahead of consumer demand the question of "scientific inputs in the production process" and the "increased complexity of R&D activities".[8] In light of these factors, technology is not to be seen as something that is produced by aggregate demand, but should be viewed as a force that rips markets along in their wake. If the former approach, demand-pull, points towards the privileging of self-organizing processes governing economic behavior—thus making it amendable to so-called "neoliberal" discourses surrounding economic development—the latter technological-push model points towards the importance of long-term planning on behalf of firms and governments.

Dosi critiques the demand-pull model on the grounds that it can only ever produce an overly mechanical and ultimately crude account of innovation, unable to account for "why and when certain technological changes vis-à-vis market conditions" occur.[9] Flattening reality into the ontology of the marketplace, it exhibits a "neglect of changes over time in the inventive capability which does not bear any direct relationship

8 DOSI, Giovanni, "Technological Paradigms and Technological Trajectories: A Suggested Interpretation of the Determinants and Directions of Technical Change", in: *Research Policy*, Vol. 11, Issue 3, 1982, p. 151.
9 Ibid.

with changing market conditions".[10] This isn't to say, however, that technological-push gets the final word in either (though it is clear that of the two, Dosi leans more towards this second position): with its heavy focus on what J. K. Galbraith once described as the industrial "technostructure"—the technocratic and bureaucratic elements within the corporation that had allegedly superseded the figure of the entrepreneur[11]—technological-push fails to account precisely for the elements that demand-pull highlights. Between the two, we can glimpse lines running towards the major ideological impasses of both demand-side economics, as privileged by those such as Galbraith, Keynes, Stiglitz and others, and supply-side economics, that of the Chicago school and other neoliberal factions. Dosi, by contrast, is seeking the diagonal that evades the captures that both sides bring with them.

The solution to this problem, the *technological paradigm*, is rooted in Thomas Kuhn's concept of the *scientific paradigm*. These paradigms are bundles, existing in specific frames of time, that consist of a "disciplinary matrix" and a variety of elements that compose it: value-systems, "symbolic generalizations", particular modeling formats, and practices that correspond with these.[12] The scientific paradigm, in other words, serves as a machine of sorts that produces not only methodological frameworks governing scientific processes, but the manner in which the products of these methodologies are articulated—in short, it fashions both the epistemic and ontological lenses through which reality is viewed, assessed, and molded. The technological paradigm, likewise, constitutes a temporally-specific (that is, bound to a particular "location" in historical time) generative matrix. Dosi:

> *As "normal science" is the "actualization of a promise" contained in a scientific paradigm, so is "technical progress" defined by a certain "technological paradigm" [...] if the hypothesis of technological paradigm is to be of some use, one must be able to assess also in the field of technology the existence of something similar*

10 Ibid., p. 150.
11 See GALBRAITH, J. K., *The New Industrial State*, Boston: Houston Mifflin Company, 1967.
12 DOSI, "Technological Paradigms and Technology Trajectories", pp. 152–153.

> *to a "positive heuristic" and a "negative heuristic". In other words a technological paradigm (or research programme) embodies strong prescriptions on the directions of technical change to pursue and those to neglect. Given some generic technological tasks (one could call them generic "needs") such as, for example, those of transporting commodities and passengers, producing chemical compounds with certain properties or switching and amplifying electrical signals, certain specific technologies emerged, with their own "solutions" to those problems and the exclusion of other notionally possible ones: in our three examples, historically these technologies were the internal combustion engine, petrochemical processes and semiconductors, respectively. Technological paradigms have a powerful exclusion effect: the efforts and the technological imagination of engineers and of the organizations they are in are focused in rather precise directions while they are, so to speak, "blind" with respect to other technological possibilities. At the same time, technological paradigms define also some idea of "progress".*

The direction of technological change—the "idea of progress"—constitutes the *technological trajectory*, which in turn dictates the manner in which "problem-solving" processes are executed. It is here that we can begin to glimpse how this model escapes both the demand-pull and technological-push models: the bottom-up meshwork of market activity persists in playing a vital role in eking out solutions to both locally-bound and macro-scale problems, driving innovation through competitive pressures, and exacting both punishments and rewards on populations, governments, so on and so forth. At the same time, the market cannot be considered an autonomous entity in its own right, but something regulated, both formally and informally, by a ground composed of institutions public and private. These institutions, however, are themselves neither organic nor autonomous, but are subjected, much like the market, to a great composition of forces—the "big bang" that sets off a given technological paradigm. This evolutionary spin on institutional economics provided by Dosi, his predecessors like Christopher Freeman, and those that followed in his wake is thus reminiscent of Marx's staunch critique of the liberal economists who held that it was the mode of distribution—the market—that was the primary character-

istic of capitalist societies. Just as these later scholars looked instead to the evolution of paradigms, Marx insisted that it was the mode of production, as a technologically advanced, industrial that produced idiosyncratic relations adjacent to it, that took precedence.

Perez runs Dosi's technological paradigm together with the curve of Kondratiev's wave, thus making the ups and downs of the technological trajectory account for the different runs and twists that each wave seems to exhibit. This, as she points out, alters both Kondratiev and Schumpeter's interpretation of the wave. For these two predecessors, the emphasis on the movement of economic growth, charted through the rise and fall and rise again of GDP or whatever other economic metric is being used. In the unification of the technological paradigm with the K-Wave—henceforth to be referred to as a techno-economic paradigm—the movement of these sorts of aggregates can only be considered as an outward expression of this internal "rhythm" of development. In this rhythm, Perez identifies two primary movements that compose the majority of the wave's duration: the *installation phase*, which composes roughly the first half of the wave, and the *deployment period*, the latter half. The installation phase and the deployment period are in turn separated by a *turning point*, which is typified by an economic crisis and its subsequent resolution.

Within this architecture, however, one finds additional movements. The installation period begins, in fact, during the downswing of the deployment period of the preceding wave; as the deployment period begins to slow down, investment capital begins to flow towards a cluster of accumulating innovations. With the realization of a *lead technology*, the big bang: the installation period sweeps up a wild eruption, as capital abandons the old systems and objects and floods this new, dynamic possibility space. The eruption soon becomes a frenzy. A veritable euphoria moves across the business world, as mini-booms and busts oscillate. Wealth expands and investment opportunities multiply. Underneath it all, a great bubble builds. To quote Perez at length:

> *It seems astonishing that people could believe that such extreme acceleration in the number of companies entering the race, counting on equally exaggerated growth in market value could be any-*

> *thing but a process of overinvestment and a bubble destined to collapse. Yet every time the notion of a "new economy" seems to take hold, to spread and be held by serious people. This is, in a sense, understandable because technological revolutions do revive the economy across the board (after years of stagnation) and give a sense of new power for modernising production and life as well as for fantastic profit making. In addition, they all seem to experience significant mini-booms, which are alarming at the time. However, since the recovery after these sorts of "precursor bubbles" is relatively swift, the experience actually serves to strengthen confidence for when the real bubble builds up.*[13]

As with all bubbles, a burst will sooner or later occur. The business euphoria has become detached entirely from the conditions of the real economy, which exists out of joint from the true potentials and institutional demands of the new paradigm. Yet the crisis that explodes from the bursting of the bubble is not solely destructive. It liquidates capital that has been poorly invested and forces the movement of it towards productive ends while also highlighting the various institutional contradictions, taking place across not only the private and public sectors, but in civil society as well, that had been neglected in the build-up. Resolution of the crisis is not only dependent upon the reconstruction of capital flows and investment patterns, but on an *institutional recomposition* that spans firm organization, class composition, governmental regulation and structure, as well as all sorts of formal and informal practices, norms, and protocols unique to the demands of the paradigm in question.

If successfully carried out, the institutional recomposition or adaptation heralds the coming of the deployment period, as the rebound from the crisis sets into *synergetic* moment typified by stable growth, increased employment, and an overall vibrancy in the economy—the dawning of an all-too-temporary *golden age*. And after synergy, maturity, is "reached when the innovative possibilities of the whole system begin to wane and

13 PEREZ, Carlota, "The Double Bubble at the Turns of the Century: Technological Roots and Structural Implications", in: *Cambridge Journal of Economics*, Vol. 33, 2009, p. 784.

the corresponding markets to saturate".[14] The accelerating returns and prosperity of the synergetic phase begins to slow down and decline, and the deployment period as a whole moves out of its golden age into a period of stagnation. The limits and inflexibilities of the institutional recomposition begin to exhibit themselves, holding the entirety of society in its fragile sway. Somewhere, far below, the movement of innovations swirls about, and ever so gradually capital begins to trickle down to them. The next installation phase then rises on the horizon.

Through this model, we can glimpse how certain technological systems stand apart from others in that they act not as auxiliary or components to some abstract economic machinery, but "activate" the clusters of innovations so as to transform the entirety of economic, political, and social life. "History", in a sense, is produced through the technologies, or more properly in the interactions between agents in an environment set and conditioned by the objects and systems that impart the paradigm shift. In Perez's work, five major waves or paradigms are identified, each centered on a radical innovation. Across these five unfolds modernity, understood as the development of the capitalist mode of production since the explosion of the industrial revolution. This revolution, kicking off in the early 1770s and ending in the 1820s, experienced its turning point in the crisis of the mid-1790s, while the successor wave, organized around the steam power, began in the 1820s, experienced a crisis in 1848, and wound down in the mid-1870s.

The K-Wave based on electrification picked up in the 1870s and persisted until the 1920s, with a kind of long and turbulent crisis beginning in the late 1890s and ending in the early 1900s. The following wave, that of mass production—which we might also call the Fordist era, as we will address shortly—began rather early in the downswing of the previous way, picking up around 1910. This wave would go into stagnation in the late 1960s and formally breakdown in the long-term crisis of the 1970s, but it experienced the intense turning point of the Great Depression as well as the concurrent Second World War.

14 PEREZ, Carlota, "Technological Revolutions and Techno-Economic Paradigms", in: *Cambridge Journal of Economics*, Vol. 34, 2009.

The current K-Wave, put into motion by information communication technology, can be equated with the "post-Fordist" epoch (the ideological packages of "neoliberalism" are also unique to this time). While some date the beginning of this wave in the early 1970s, given that computers and other cybernetic technologies began to accumulate during the Second World War, it is best understood as only having begun after the stagnation period of the 1970s, in the midst of the Reaganite and Thatcherite 1980s. This adds a variable time element to dating this wave, adding to what appears to be a generalized "wobble" in the predictability of these functions (something we will return to in the final section of this paper, when discussing the relation of the blockchain to this schematism). Another instance of this is the presence of not one but two crises that have destabilized this wave. The first of these was the bursting of the dot-com bubble, which lasted between March of 2000 and October 2002 after having escalated for some five years of euphoric growth. The second, meanwhile, was the Great Recession, which erupted in 2007 and formally ended in 2009, though long-range stagnation and general instability seem to have been the result of what may have been a failure to undergo institutional recomposition.

Laid out, the history of the capitalist mode of production in terms of the K-Wave model appears as follows:

Techno-Economic Paradigm	*Installation Phase*	*Crisis/Turning Point*	*Deployment Phase*
Industrial Revolution	Early 1770s–1790s	1793–1797	1798–1820s
Age of Steam Power	1829–1840s	1848–1856	1857–1874
Age of Electricity	1875–mid-1890s	mid-1890s–1902	1903–1920
Age of Mass Production (Fordism)	1910–late 1920s	1930s–early 1940s	1945–1968/74
Age of Information Communication Technology	1980s–2000	2001, 2008	x

2.2. SYMPTOMS OF PASSAGE

The movement upwards through the oscillations of the K-Waves is a passage through the spinal column of modernity, which refracts through two different—yet interwoven to the point of inseparability—trendlines: 1) the approaching planterization of a shared techno-economic macrostructure; and 2) the increasing mechanization of productive forces that engenders a series of radiating effects (speeding up pace of production, modulation of the human labor relations adjacent to production, advancing magnitudes of productive output, so on and so forth). In the wave, these two lines deepen and widen. From the marshaling of the labor-force in the steam-powered plant in the wake of the industrial revolution to the augmentation of this labor through the gradual introduction of time- and energy-saving techniques to the full mobilization of the population under the logic of the assembly line and beyond, an escalating process can be glimpsed: the elusive notion of *progress* as a march, fraught with contradictions and shot-through with factors both repressive (the subordination of labor and the looming specter of immiseration) and liberatory (freedom from toil, the just-out-of-reach realization of true abundance).

The nature of these lines and the ambiguous, dialectical character of this advance can be analyzed by pulling to-

gether, in the manner of Carlo Vercellone and Paulo Virno,[15] Marx's theory of the passage from *formal subsumption* to *real subsumption* (as detailed in the first volume of *Capital* and elsewhere) with his theory of the *general intellect* (treated briefly in the famed "Fragment on Machines" in the *Grundrisse*). For both Vercellone and Virno, the general intellect—the social development of technical and scientific knowledge —is a dynamic, yet problematic, element in Marxian theory. On the one hand, it constitutes a rupture with the process of real subsumption by emerging from within it while opening up a space beyond domination by the capitalist mode of production, but on the other hand the most contemporary developmental trends (namely: the reformatting of productive forces and social relations by information communication technology) illustrate how capitalism can come to dominate this space. To get a handle on how these series of maneuvers unfold between Marx's theory and recent appraisals of it, we must first turn to the question of formal and real subsumption.

Progress between stages of social development is typified, wrote Marcuse, by "'determinate negation' of the proceeding stage—that is, the new stage is determined by the social structure which prevailed as the preceding age".[16] This phenomenon can clearly be glimpsed in Marx's discussion of the "lower" and "higher" stages of communism in his *Critique of the Gotha Program*. The lower stage will continue to exhibit distinctive traits of the capitalist mode of production, imprinted so by having "emerged after prolonged birth pains capitalist society".[17] Yet this dynamic is not solely a developmental characteristic of a post-capitalist civilization; it is also at play within the historical emergence of capitalist production and labor relations. Hence the necessity of formal subsumption, which indexes the way in which the early stages of capitalism exhibited every-

15 The following discussion of these two Autonomous Marxists is heavily influenced by Tony Smith's discussion in his "The 'General Intellect' in the *Grundrisse* and Beyond", in: BELLOFIORE, Riccardo, STAROSTA, Guido, THOMAS, Peter D. (ed.), *In Marx'sLaboratory: Critical Interpretations of the* Grundrisse, Boston: Brill Academic Publishers, 2013, pp. 213–232.

16 MARCUSE, Herbert, *Soviet Marxism: A Critical Analysis,* New York: Columbia University Press, 1958, p. 19.

17 MARX, Karl, *Critique of the Gotha Program*, 1875, https://www.marxists.org/archive/marx/works/1875/gotha/.

where traces and reminders of the dominance of craft production in the pre-capitalist epoch. In this primary phase, workers generally commanded their own labor as autonomous agents operating on the market, while the capitalist, who made use of this labor, was detached from the production process. He commanded the capital at his disposal, buying and selling in accordance with his needs, while the laborer commanded production through his expenditure of energy and usage of tools.

On the surface this appears as the flat, utopic rendering of the market economy praised by the classical liberal economists and the various bourgeois ideologues that followed in their wake. It is, however, anything but; piercing the veil of image and looking at it from the position of systems unfolding in time, formal subsumption is a point in the longer march of capital's valorization. Before labor is reshaped, it is seized, and formal subsumption is that seizure. It thus implies the resultant movement, the phase of real subsumption, in which capital remaps—or, in the parlance of Deleuze and Guattari, "overcodes"—labor, production, and even class relations. The residue of craft production and its logical processes are expunged and a profound transformation of agency is exacted as capital moves from its position as a means to an end to an end in itself. This subordinates the capitalist to capital and dispossesses him, reducing him to a competitive node in an immense web of economic relations that exist beyond his control. For the laborer, this mastery of the tool is undercut through the increasingly *economized* nature of production, which not only comes to directly and indirectly regulate it (e.g. management and the pace of production), but opens up the possibility for domination by the machine—and it is this domination that takes central focus on the "Fragment on Machines" in the *Grundrisse*.

When formal subsumption was inaugurated in the shell of the old society, "the compulsion to perform surplus labor, and to create leisure time necessary for development independent of material production" became a sweeping, social force. It is this phantasm of *free time*, time apart from but upheld by the progressive development of productivity, that Marx and Engels beheld in the spectral outline of communism. While the movement to the higher stage of real subsumption marked the

annihilation of particular forms of political agency and possible expressions of resistance to this system, the potentialities that laced leisure time constituted the arrival of a new possibility space in which the class struggle could insert itself. In the "Fragment", this Janus face is displayed in full and attached to the mechanical mutations that shape labor relations within the sphere of production. "Once adapted into the production processes of capital", Marx writes, "the means of labor passes through different metamorphoses, whose culmination is the machine, or rather, an automatic system of machinery [...] set in motion by an automaton, a moving power that moves itself."[18] He goes on:

> *The worker's activity, reduced to a mere abstraction of activity, is determined and regulated on all sides by the movement of machinery, and not the opposite. The science which compels inanimate limbs of the machinery, by their construction, to act purposefully, as an automaton, does not exist in the worker's consciousness, but rather acts upon him through the machine as an alien power, as the power of the machine itself [...] Labor appears [...] merely as a conscious organ, scattered among the individual living workers at numerous points of the mechanical system; subsumed under the total process of machinery itself, as itself only as a link of the system, whose unity exists not in the living workers, but rather in the living (active) machinery, which confronts his individual, insignificant doings as a mighty organism.*[19]

The "science which compels" this process, acting upon the worker as an "alien power", is the germ of the general intellect, an understanding of the forward-advance of techno-science as a sort of distributed, *emergent force* not reducible to any one point or node in the grand machinic organism. This historical ascent of Reason confronts the human agent at every moment with a forked path. In one direction, the leveling of the worker, its body bent, shifted, sped up and slowed down in accordance with the pace of the machinery that comes to surround the entirety of the body. As the penetration of all industrial processes by scientific advancement soars, the dispossession of the laborer's traditional agency reaches its climax: robbed of the tool, stripped of free movement. In the other direction, meanwhile, a new space opens up, that of a free time that stands apart from the time of production and perpetual dispossession—and it is here that the aforementioned germ flourishes, the general intellect rising issuing forth from the "development of the general powers of the human head", and thus compelling this entire mechanism to higher heights.[20]

Writing as he was in the 1850s, Marx's anticipations here were of a future disjunction in the evolution of the capitalist mode of production—and it was in the dialectical nature of this forking path that the ultimate overcoming of capital could be glimpsed:

> *Capital itself is moving contradiction, [in] that it presses to reduce labor time to a minimum, while it posits labor time, on the other side, as sole measure and source of wealth. Hence it diminishes labor time in the necessary form so as to increase it in the superfluous form; hence posits the superfluous in growing measure as condition—question of life or death—for the necessary. On the one side, then, it calls to life all the powers of science and nature, as of social combination and of social intercourse, in order to make the creation of wealth independently (relatively) of the labor time employed on it. On the other side, it wants to use labor time as the measuring rod for the gigantic social forces thereby created, and to confine them within the limits required to maintain the already created value as value. Forces production and social relations—two different sides of the development of the social individual—appear to capital as mere means, and are merely means for it to produce on its limited foundation. In fact, however, they are the material conditions to blow this foundation sky-high.*[21]

Marx concludes this paragraph by citing from *The Source and the Remedy of the National Difficulties,* an anonymously authored 1821 economic pamphlet that argued that, left to its own devic-

18 MARX, Karl, *Grundrisse: Foundations of the Critique of Political Economy (Rough Draft)*, London: Penguin Books, 1973, p. 692.
19 Ibid.
20 Ibid, p. 705.
21 Ibid., p. 706.

es (that is, without interference from the moneyed class), the natural course of increasingly mechanized industrial production was towards a shortening of the working day: "'Wealth is not command over surplus labor' (real wealth), 'but rather, disposable time outside that needed in direct production, for every individual and the whole society'".[22] So as machinic systems, semi-autonomous in character, come to bear on production, not only does this wealth (at odds with the common, bourgeois understanding of wealth) increase; the degree to which "general social knowledge has become a direct force of production". The two are, in fact, faces of one and the same movement. The imploding horizon of capitalism, rolling across the landscape in the wake an inexorable industrial march, is the specter of a social order based around creativity, open association and free development, organized via the higher order of philosophical reason and scientific rationality.

For Vercellone, the tendencies outlined by Marx in the "Fragment" reached an intensive peak in the Fordist epoch. The various tendencies put forward—"the progressive separation of intellectual and manual labor, the separation of conceptual and material tasks, and the polarization of knowledges and the parcelization of labor", so on and so forth—produced a series of managerial programs, perhaps most notably Taylorist scientific management, with its sensitive, all-encompassing effort to bring the motion of the body laboring in time into alignment with the motion and time of the machine.[23] While Ford's techniques are not the direct successor to Taylor's in any straightforward sense, Fordism nonetheless constituted the expansion of Taylorist principles to society as a whole—a testament to the manner in which technical systems and techniques cannot be attributed solely to the activities of individuals, but to the social machine in which they are embedded. It is no surprise, then, that the Fordist pop imaginary was haunted by the now retro-futurist dream of unbridled automation and unlimited free time.

22 Ibid., p. 707.
23 VERCELLONE, Carlo, "From Formal Subsumption to General Intellect: Elements for a Marxist Reading of the Thesis of Cognitive Capitalism", in: *Historical Materialism*, Boston: Brill Academic Publishers, 2007, p. 23.

In the 1950s, the peak of the "golden age" of the Fordist K-Wave, the coming world of information communication technology was presented as the culmination of Fordist utopia—yet what arrived in its stead, the post-Fordist long wave, was anything but. The challenge posed by this sudden mutation to Marx's theories, particularly those sketched in the "Fragment", is immense: instead of being a signal of liberation, the freed general intellect becomes the locus of domination itself. The laboring body might be released from the bondage of the industrial machine (it has not disappeared, but moved out of sight), but the development of intellectual and creative faculties is immediately captured within post-industrialization. As Virno writes:

> *In Postfordism, the tendency described by Marx is actually realized but surprisingly with no revolutionary or even conflictual implication. Rather than a plethora of crises, the disproportion between the role of knowledge objectified in machines and the decreasing relevance of labor time gave rise to new and stable forms of domination. Disposable time, a potential wealth, is manifested as poverty: forced redundancy, early retirement, structural unemployment, and the proliferation of hierarchies. The radical metamorphosis of the concept of production itself is still tied down to the idea of working for a boss [...] In Postfordism, conceptual and logical schema play a decisive role and cannot be reduced to fixed capital in so far as they are inseparable from the interaction of a plurality of living subjects. The "general intellect" includes formal and informal knowledge, imagination, ethical tendencies, mentalities and "language games". Thoughts and discourses function in themselves as productive "machines" in contemporary labor and do not need to take on a mechanical body or an electronic soul.*[24]

The post-Fordist condition therefore presents not simply a challenge to Marxist theory, but to the very capacity of a politics that seeks to go beyond the historical confines of the capitalist mode of production. If free time, automation and scientific progress

24 VIRNO, Paolo, "General Intellect", translated by Arianna Bove, originally published in: ZANINI, Adelino Zad FADINI, Ubaldo, *Lessico Postfordista*, Milan: Feltrinelli, 2001, http://www.generation-online.org/p/fpvirno10.htm.

are the cornerstones of a post-capitalist society, then the absolute capture of the things by capitalism dims, if not outright liquidates, the revolutionary possibilities that Marx had anticipated. This crisis of the left finds its compliment in the failure of capitalism itself to achieve its projected future: leisure time has been eliminated outright, and what remains is colonized by the frantic pace of the 'attention economy', constantly advancing automation has done little to alleviate the degradation of labor (much less shorten the working week and working day), and scientific progress appears to be compounding these conditions instead of illuminating alternative pathways.

In the face of this breakdown, what is the adequate response? It is the contention here that despite the apparent impossibility of escaping the shambolic state of the global post-Fordist economy, the technologies, tools, and techniques coming into view perhaps hold the possibility to overcome this phase of apparent decadence. The problem, however, is that these innovations—which either present the possibility of an entirely new K-Wave opening up, or the delayed arrival of the means to an institutional recomposition—are firmly locked in to a performance *principle* promoted by and imperceptibly reinforced by the capitalist mode of production. The alternative uses of these things must be explored and grand visions of infrastructures for a new earth must be engendered. We now turn to one of the means through which this speculative exploration can take place: the aesthetic dimension.

3. The Aesthetic Dimension

3.1. THE REALITY PRINCIPLE AND ITS DISCONTENTS

While developing outside the critical tradition that Vercellone and Virno call their home, the analysis and diagnosis of the historical situation carried out by Herbert Marcuse both deepens and expands both of their perspectives. In many regards, the pessimistic assessment (Marcuse was a member of the Frankfurt School of critical theory, after all) offered in books like *One Dimensional Man* seemed to anticipate the crisis engendered by post-Fordist capitalism—despite the fact this work was a child of the 1960s, and thus was written in the midst of the downswing

phase of the Fordist K-Wave. For Marcuse, the historical movement that was supposed to make possible the abolition of capitalism had seemingly stalled out under the domination of a new industrial rationality that encompassed capitalist and socialist societies alike. Having not yet entered the world of flexible organizations, hyper-mobile networks and dizzying informatic flux, Marcuse's portrait is one of the Fordist society at its peak, as he recounts in the work's opening paragraph:

> *A comfortable, smooth, reasonable, democratic unfreedom prevails in advanced industrial civilization, a token of technical progress. Indeed, what could be more rational than the suppression of individuality in the mechanization of socially necessary but painful performances; the concentration of individual enterprises in more effective, more productive corporations; the regulation of free competition among unequally equipped economic subjects; the curtailing of prerogatives and national sovereignties which impede the international organization of resources.*[25]

In this moment of stasis, where historical progress builds while also hanging suspended in a vertigo-less vacuum, capitalist domination advances through the apparent niceties of the consumer society. "The people recognize themselves in their commodities," writes Marcuse. He continues: "They find their soul in their automobile, hi-fi set, split level home, kitchen equipment. The very mechanism which ties the individual to his society has changed, and social control is anchored in the new needs it has produced."[26] Such is the pinnacle of industrial development: a pleasant, comfortable society to obscure the continuity of exploitation roaring beneath, the careful management of contradictions by way of the most advanced scientific tools, and the bringing of the working class itself into the logic of capitalist power by way of a labor union system that compliments, rather than antagonizes, the leadership of the capitalist class.

25 MARCUSE, Herbert, *One Dimensional Man: Studies in the Ideology of Advanced Industrial Society*, Boston: Beacon Press, 1994, p. 1.
26 Ibid., p. 9.

At the same time, however, there is another side to Marcuse, one that can be felt most strongly in his earlier work *Eros and Civilization: A Philosophical Inquiry Into Freud*.[27] This is a Marcuse who critically apprehends the infrastructures of the capitalist world and sees in them the possibility for something else. As we will see shortly, Marcuse's central concern in this work is the question of how the "toil and trouble" of labor (be it the self-exploitation of the independent worker or the organizational domination of the industrial proletariat) can be translated into the joy of free association and open, unending creation—or, in other words, the alchemical transmutation of the means of despotism into the means of freedom, which, as indicated by the whole of the Marxist tradition, cannot be understood ideally. It must take place through the mediation and mutation of the existing structures of the world, the "huge industrial apparatus" that draws together the masses into an involuntary cooperation and channels libidinal energy to its own ends.

Marcuse draws this out with reference to Fourier:

> *The transformation of labor into pleasure is the central idea Fourier's giant socialist utopia [...] Fourier insists that this transformation requires a complete change in social institutions: distribution of social product according to need, assignment of functions according to individual faculties and inclinations, constant mutation of functions, short work periods and so on. But the possibility of "attractive labor" (travail attrayant) derives above all from the release of libidinal forces. Fourier assumes the existence of an attraction industrielle which makes for pleasurable co-operation. It is based on the attraction passionnée in the nature of man, which persists despite the opposition of reason, duty, prejudice. This attraction passionnée tends toward three principal objectives: the creation of "luxury, or the pleasure of the five senses"; the formation of libidinal groups (of friendship and love); and the establishment of a harmonious order, organizing these groups for work*

27 MARCUSE, Herbert, *Eros and Civilization: A Philosophical Inquiry Into Freud*, Boston: Beacon Press, 1966.

> *in accordance with the development of the individual "passions" (internal and external "play" of faculties).*[28]

Marxist thinkers have often disparaged the fantastical landscapes offered by the likes of Fourier, following in the footsteps of Marx and Engels themselves in their critique of the so-called utopian socialists. Indeed, much like the Owenists, to whom they were closely related, Fourierists were committed to active experimentation to bring about their ideal social formation—and, as to be expected, these experiments more often than not ended in the dissolution of the communities in question. Nevertheless, Marcuse, as the above illustrates, found utility in the writings of Fourier and other utopians like the proto-technocrat and Christian socialist Henri de Saint-Simon. This interest long predated the libidinal visions brought into relief by *Eros and Civilization,* with the earliest iteration being found in Marcuse's 1922 doctoral dissertation on the German novel, which contains within it the seed of the various philosophies of radical art that he would deploy. At the core of all of these is, on the one hand, the position of art within a historical context, and the liberatory possibilities contained in art on the other.

Even in the dissertation, however, art is not depicted as equivalent to the revolution itself, or as something that exhibits an inherently revolutionary quality. While art—even the classic, bourgeois form—had been liberating in an earlier epoch, this capacity was damped through the further development of capitalism. Whereas the bourgeoisie had, in the words of the *Communist Manifesto,* played a most revolutionary role in history, tearing apart the old feudal world and putting into motion a world of speed, discovery and progress, so too had they settled into the inevitable position of reaction. "At a certain stage," Harold Rosenberg wrote, "the revolution caused the bourgeoisie to cease to be Romans, and to 'beget' themselves."[29] The masks that they had donned during their overturning of the old world, fashioned in the manner of revolutionaries dead since antiquity, fell away—"these heroes were not Roman, but disguised

28 Ibid., p. 218.
29 ROSENBERG, Harold, *The Tradition of the New,* New York: McGraw-Hill, 1960, p. 158.

businessmen."[30] If the mythic function collapsed into the daily rhythms of the market and the heavy industry, art tracked a different path into the deeper recesses of idealism, which manifested itself in two modes. The first of these was the flight inwards in the celebration of the solitary, bourgeois subject, whose experience of the world was mediated through passive contemplation, while the second was an external flight towards the heroic figure, the master of forces and, quite frequently, the emblem of the nation.

Even if the slippage into idealism, captured at its peak by Romanticism, constituted the reactionary turn, the radical flame could not be wholly extinguished. The paradoxical nature of art, the different sides of which Marcuse privileged at different points of his life, is that it is at once autonomous from its time (without such a capacity, there would never be an *avant-garde*), but it cannot truly supersede its time; there is no absolute break or cleavage in which the escape to a future can be found through the artistic object alone. Despite this, orientation, which derives the capacity for autonomy, matters: the Romantic flight is a pivot that turns towards the past, while the liberatory art turns to the future. It would be unfair to attribute to Marcuse this specific set of temporal maneuvers; in his late work, for example, he defends the classic form from the destructive impulses of anti-art on the grounds that, unlike those who wish to dispense with aesthetic categorization in full, the beauty of form presents an opening unto a world yet to be realized. Is this not precisely the orientation to the future? From this ground, two vital lessons emerge. The first is that even forms of art that are ostensibly reactionary can hold a revolutionary line that must be extracted from them. The second, which emerges from this first and in turn conditions the application of that principle, is that art cannot take precedence over the political in terms of articulating revolutionary potential.

The future-oriented, revolutionary art is described in *Eros and Civilization* as an art that serves as the "negation of unfreedom" by embodying the "Great Refusal", Marcuse's term for the sort of absolute revolution necessary to abolish the capitalist mode of production and actualize a different world. He quotes

30 Ibid.

Whitehead here, invoking the "protest against unnecessary repression, the struggle for the ultimate form of freedom, 'to live without anxiety'."[31] Such a life is one in which the restraints that subjugate lived experience and desire to some external, transcendent factor are exploded. For Marcuse, following Freud, these blocks and stoppages compose the order of the *reality principle*. In Freud's taxonomy of the psychic apparatus and the drives, the reality principle, which works to defer the immediate realization of pleasure, is lorded over by the ego; the target of this apparatus, in turn, is the id, driven as it is by the *pleasure principle*. The id "is the dark, inaccessible part of our personality [...] It is filled with an energy reaching it from the instincts, but it has no organization, produces no collective will, but only a striving to bring about the satisfaction of the instinctual needs subject to observance of the pleasure principle."[32] Liberation is precisely the releasing of this libidinal charge from its repression, and it is by way of this unshackling of the pleasure principle that the despotism of the reality principle comes to be abolished.

The nature of this despotism is what Marcuse describes as the *performance principle*, that is, the instantiation of the reality principle under the capitalist mode of production. Thus, in stark anticipation of the later works of Deleuze and Guattari, Marcuse navigates the pitfalls of the Marx-Freud encounter by slotting the categorizations of the latter into the historic framework of the former. Civilization, Freud argues, exists insofar as the reality principle is to inflect itself, with the repression the primal energetics of the id being precisely the "civilizing force" that makes dominant social organization possible. Under capitalism, this proceeds through the enforced competitiveness of the members composing the social body, through the progressive rationalization of this body's organizational as the macrosocial scale, and by way of the increasingly mechanized character of the productive forces that constitute both the alpha and omega of this mode of civilization. The result is alienation: the individual is choked off from itself, the split between the

31 MARCUSE, *Eros and Civilization*, pp. 149–-10.
32 FREUD, Sigmund, *New Introductory Letters on Psychoanalysis*, New York: Norton & Norton Company, 1965, p. 92.

performative nature of the reality principle and the wild drift of the pleasure principle reverberating through the divisions of the capitalist world and the so-called solutions it gives to the social problem.

At this point Marcuse's discussion seems posed to lend itself to the sort of praxis lauded by the neo-anarchists, with their appeals to the immediacy of desire and the swift flight from the world—and indeed, the language of a "Great Refusal" capable of subverting the most hallowed mores and mechanical and grim of capitalist machinations is something that, at first blush, lends itself to this read. Marcuse's argument, however, is anything but, appealing instead to the proper Marxian treatment of historical development. The escalation of alienation is tracked through the widening industrial logic and leveling of the laborer, folded into the inexorable pull of the great machinic organism towards its tipping point and irreconcilable contradictions. That which produces alienation, in other works, is also which pries open that possibility space for historical escape. Marcuse, sounding more than a little like the Marx of the "Fragment of Machines", writes:

> *No matter how justly and rationally the material production may be organized, it can never be a realm of freedom and gratification; but it can release time and energy for the free play of human faculties outside the realm of alienated labor. The more complete the alienation of labor, the greater the potential of freedom: total automation would be the optimum. It is the sphere outside labor which defines freedom and fulfillment, and it is the definition of the human existence in terms of this sphere which constitutes the negation of the performance principle. This negation cancels the rationality of domination and consciously "de-realizes" the world shaped by the rationality of gratification.*[33]

This sentiment was further reiterated by Marx in his exchange with Raya Dunayevskaya, where he explicitly invoked the *Grundrisse* to argue that "arrested, restricted automation saves the capitalist system, while consummated automation would explode it [...] [The] humanization of labor, its connection with

33 MARCUSE, *Eros and Civilization*, p. 156.

life etc. is only possible through complete automation, because such humanization is correctly relegated by Marx to the realm of freedom beyond the realm of necessity, i.e. beyond the entire realm of socially necessary labor in the material production. Total de-humanization of the latter is the prerequisite."[34] By drawing this out, Marcuse slips outside the usual historical taxonomy of Marx's intellectual trajectory; from this foundation, one can no longer speak of the outlook of the older, "scientific" Marx as a criteria for rejecting the younger, humanist Marx—it is the deeply *inhuman* elements in the latter that provide the causal scaffolding towards the realization of the former's dreams. It follows, then, that the contemporary split between what we may call the "political Marx" and "accelerationist Marx" is unfounded from either direction, and that one not must think both—and their respective positions on praxis—together, but *beyond* the turbulence engendered by this fragile unity.

The question of the aesthetic returns on this point. The internal pulsions and contradictions of developmental pathways carries with them the seeds of a future world governed by a different sort of psychologizing principle, one that reconciles the domination of reality with the freedom sought by the drive to maximize pleasures. Yet it is precisely due to the domination of the reality principle that we will always continue to fail, as the utopians always did, to both articulate this future world in accordance with a plan and to execute it as such. The processes that bloom into the new earth find themselves at work in empirical reality, but a wall closes the would-be agent from seizing it directly. The advancement of alienation is at once the advance of reason; under the sway of capital, reason can only appear as repression. That which is beyond capital must, therefore, must present itself outside of reason, which for Marcuse is the realm of *phantasy*, that is, imagination—and the vantage point from which to explore this domain is through aesthetic registers. Marcuse privileges in particular the great works of the surrealists, suggesting that they found the spirit of the Great Refusal by recognizing "the revolutionary implications of Freud's discoveries: 'Imagination is perhaps about to re-

34 MARCUSE, Herbert, KELLNER, Douglas (ed.), *Towards a Critical Theory of Society: Collected Papers of Herbert Marcuse Volume 2*, London: Routledge, 2001, p. 26.

claim its rights.' But when they asked, 'Cannot the dream also be applied to the solution of the fundamental problems of life?' they went beyond psychoanalysis in demanding that the dream be made into reality without compromising its content."[35]

The real movement now passes in its ascent by way of the Kantian account of the imagination and the way that it connects to the broader question of cognition and the more specific case of creativity. We thus begin with *sensibility*, which for Kant is one of two powers of cognition (the other being understanding, or *intelligence*). While sensibility for pre-Kantian thinkers such as Leibniz was folded within the capacity for intelligence, Kant posited that the faculty produced sensory or *intuitive* representations that it grappled within through two fundamental, yet differing, powers: that of *sense* and that of *imagination*. "The first," wrote Kant, "is the faculty of intuition in the presence of an object, the second is intuition even without the presence of an object." What this means is that imagination can manifest itself in a productive mode, which is to say that it produces an "original presentation of the object", or a reproductive mode, as in a reiterative presentation of the object. Together these form the "transcendental function of the imagination", which allows the imagination to plays its role in the process of cognition: it comes to mediate between sensibility and understanding through, on the one hand, the production of representations, and on the other by drawing together multiple representations as a means of actively processing the experience of the world in order to understand and operate within it.

Imagination also unfolds through the capacity for creativity, which as Marcuse highlights is bound to what he describes as the Kantian *aesthetic dimension*. This is the space that "occupies the central position between sensuousness [i.e. passive or receptive sensory experience] and morality—the two poles of human existence."[36] He continues:

> *As imagination, the aesthetic perception is both sensuousness and at the same time more than sensuousness (the "third" basic faculty): it gives pleasure and is therefore essentially subjective; but*

35 MARCUSE, *Eros and Civilization*, p. 149.
36 Ibid., p. 176.

> *insofar as this pleasure is constituted by the pure form of the object itself, it accompanies the aesthetic perception universally and necessarily—for any perceiving subject. Although sensuous and therefore receptive, the aesthetic imagination is creative: in a free synthesis of its own, it constitutes beauty. In the aesthetic imagination, sensuousness generates universally valid principles for an objective order.*[37]

These "universally valid principles", says Marcuse, are "purposiveness without purpose" and "lawfulness without law". These "circumscribe, beyond the Kantian context, the essence of a truly non-repressive order. The first defines the structure of beauty, the second that of freedom; their common character is gratification in the free play of the released potentialities of man and nature."[38] Marcuse here moves from Kant, for whom this system denotes internal, cognitive function, to Schiller, who takes this structure and finds it the blueprint for a truly freedom organization of society. "Schiller's *Letters on Aesthetic Education on the Aesthetic Education of Man* (1795), written largely under the influence of the *Critique of Judgment*, aim at remaking civilization by virtue of liberating the force of the aesthetic function: it is envisaged as containing the possibility of a new reality principle."[39] In other words, moving beyond the performance principle, to the realignment of the libido with expenditure and reason with flourishing, instinctively elevates civilization into the aesthetic dimension. The role of technical systems is clear as well: how could one hope to realize, without abandoning oneself the idle masturbation of idealism, a "purposiveness without purpose" and a "lawfulness without law" without finding optimal state of "total automation"?

The problem of articulating the nature of this transformation, or how to begin to approach this possibility of considering this transformation, still remains, serving as a large blind spot within the pages of *Eros and Civilization* —a blind spot that grows into the pessimistic vision laid forth in *One Dimensional Man*. Similarly, when Marcuse returns to the question of the

37 Ibid., p. 177.
38 Ibid.
39 Ibid., p. 180.

aesthetic dimension in the 1970s, his tone has changed more than a little, emphasizing the importance of not mistaking art as revolutionary-in-itself, and insisting on the preservation of classical artist values in the face of late capitalist nihilism. By the same token, however, he would also insist that his views were in continuity, and that his work of the 1970s was an extension, and not a repudiation, of his earlier explorations in this strange realm. Either way, what is missing from the account in *Eros and Civilization* is the problem diagnostic implements and tools for hacking the structures of the reality principle. To try and solve this impasse, we turn now to the intersection of Gilles Deleuze and Mark Fisher, where, as we will see, the outline of this future reason, a *psychedelic reason*, can already be glimpsed.

3.2. AGAINST NIHILISM

Deleuze's account of art, which spans nearly the entirety of his five-decade-long oeuvre, is at the core a profoundly Nietzschean account. Its powers draw not from the path of the negative, as with the Hegelian trajectory of Marx and Marcuse—it instead partakes the voyage of affirmation. One affirms, says *yes* to the things that exist and occur in the great flux of becoming, but it is by no means a blind affirmation or passive acceptance of everything that is, as so many critics of Deleuze so messily charge. Such an affirmation is the "yes of the ass", and as such is nothing more than a "caricature of affirmation" that ultimately only serves to affirm the condition of nihilism.[40] Against this is the real affirmation, the "Dionysian yes", that "knows how to say no": a "pure affirmation" that has "conquered nihilism and divested all negation of autonomous power."[41] If the negative is no longer autonomous, it is because its direction has undergone an immense reorientation. It no longer stands in relation to nihilism, as Nietzsche and Deleuze initially find it. It is now a force of affirmation unto itself.

The annihilation of the yes of the ass by the Dionysian yes and the transformation of the negative into a power of affirmation constitutes, Deleuze argues, the nature of *critique*. I no longer passively absorb that which is all around me, I deploy the combined forces of the affirmative and the negative to extract something from these forces while halting others: I have thus carried out a critique, and in doing so *produced the new*. Positive or Dionysian affirmation, critique, these things are intimately bound together; in their unity, one traces out the act of *creation*. If it is to be said this process constitutes the overcoming of nihilism, it is because the successful passage from critique to creation steps from evaluation of values to the active *transvaluation of values*.

Nietzsche famously described the overmen, those who emerge in the overcoming of nihilism, as "artist-tyrants", whose rule is characterized by the blossoming of a new, vibrant culture—and by extension the ascent of great and powerful philosophies. The artist-tyrant is himself a philosopher; art, for Nietzsche, is therefore intimately connected to the practice of philosophy, as Deleuze draws out by noting that the philosopher "integrates within philosophy two means of expression, the aphorism and the poem. These forms imply a new conception of philosophy, a new image of the thinker and of thought."[42] Both of these means, in turn, reflect distinct operations: "The aphorism is capable of articulating sense, the aphorism is interpretation and the art of interpreting. In the same way the poem is evaluation and the art of evaluating, it articulates values [...] The poem and aphorism are, themselves, objects of interpretation, an evaluation."[43] It is the through introduction of philosophy at this point that this interpretation evaluation is raised to a higher power:

> *From the pluralist standpoint a sense is referred to the differential element from which its significance is derived, just as values are referred to the differential element from which their value is derived. This element which is always present, but also always implicit and hidden in the poem or aphorism is like the second dimension of sense and values. It is by developing this element and by developing itself in it that philosophy in its essential relation with the*

40 DELEUZE, Gilles, *Nietzsche and Philosophy*, New York: Columbia University Press, 2006, p. 185.
41 Ibid.
42 BOGUE, Ronald, *Deleuze on Literature*, New York: Routledge, 2003, p. 14.
43 DELEUZE, *Nietzsche and Philosophy*, p. 31.

> *poem and the aphorism constitutes complete interpretation and evaluation, that is to say, the art of thinking, faculty of thought or "faculty of rumination".*[44]

A culture that is held under the sway of nihilism is a culture moored in sickness, while the culture that is marked by the overman or the artist-tyrant is full of health. There is a direct correlation between the vitality of culture and the overcoming of sickness; likewise, the deployment of the affirmative and the negative together in the Dionysian yes constitutes something of a cure. Interpretation and evaluation, art and philosophy, these things now become something of a diagnostic apparatus that recognizes the problem, and in doing so illuminates the proper solution. That which is isn't just the complex interplay of forces and drives—it is also a grand tableau in which the diagnostician goes to work. "A phenomenon," Deleuze writes, "is not an appearance or even an apparition but a sign, a symptom which finds its meaning in an existing force. The whole of philosophy is a symptomatology, and a semeiology. The sciences are a symptomatological and semeiological system." The philosopher-artist is also, then, a philosopher-physician, tasked with delivering the cure to civilization.

There is, Deleuze argues, a connection between the clinical, understood in a medical sense of the word, and the critical, as articulated by the loops between art and philosophy. Like the artist and philosopher, the clinician interprets and evaluates arrays of symptom-signs in order to deduct from them a cure. This allows Deleuze to read critique as a clinical process, a diagnostic machine that operates in a medicinal mode. Such is the nature of his famous case studies of the writings of de Sade and Sacher-Masoch, from whose writings—and very names—the taxonomies of sadism and masochism are drawn. "Artists are clinicians," says Deleuze in an exquisitely Nietzschean passage in *The Logic of Sense*, "not of their individual cases nor even of a case in general, but clinicians of civilization. In this regard we cannot follow those who think that de Sade has nothing to say about sadism, or Masoch about masochism."[45] This artistic-clinical approach begins primarily in the domain of phantasy (it may be prudent here to recall the discussion of phantasy in relation to the revolutionary role of the creative imagination in Marcuse's work), for it is in this realm that both "literary creation and the constitution of [psychological] symptoms" emerges; it, in other words, emits the symptom-signs that then must be interpreted and evaluated prior to the posing of the cure. Deleuze:

> *Psychoanalytic diagnoses [...] have very little interest, and it is well known that the encounter between psychoanalysis and the work of art (or the literary-speculative work) cannot be achieved in this manner. It is not achieved certainly by treating authors, through their work, as possible or real patients, even if they are accorded the benefit of sublimation; it is not achieved by "psychoanalyzing" the work. For authors, if they are great, are more like doctors than patients. We mean that they are themselves astonishing diagnosticians or symptomatologists. There is always a great deal of art involved in the grouping of symptoms, in the organization of a table where the particular symptom is dissociated from another, juxtaposed to a third, and forms the new figure of a disorder or illness.*[46]

As we saw in Marcuse, the aesthetic dimension emerges from the sensuous arena of phantasy to open a lense through which the future world beyond capital, in which the paradox between reality and pleasure is resolved in a new mode of reason and experience. For Deleuze, the interactions of the phantastic and creativity open up a diagnostic plane in which problems are posed through the interpretation of symptom-signs. At the first instance, this may seem like a paradox in itself, a thrusting together of two contradictory philosophies (and indeed, one would be hard-pressed to reconcile Marcuse and Deleuze in their totality). Yet for Deleuze this clinical operation, by want of the nature of critique—which, as the philosopher is always ready to remind us, may have been "completed" in the work

44 Ibid.

45 DELEUZE, Gilles, *The Logic of Sense*, New York: Columbia University Press, 1990, p. 237.
46 Ibid.

of Nietzsche, but was started by Kant—also opens its way to the future. It is clear that Deleuze's reflections on art, philosophy, critique and the clinic immediately presaged his work with Guattari, which pursued the *revolutionary cure* in the form of schizoanalysis and proposed an ethics in the figure of the plateau. This, too, is paralleled in Marcuse's own work, taking as it does the cognitive structure cultivated by Kant to deploy in a way to grapple with the real movement.

There is no doubt on the relationship between the capitalist mode of production and nihilism is understood not as a specific, individual condition, but as a historical process. One needs to look no further than two points, one to be found in Marx, the other in Nietzsche. The first is the dazzling, breathless description in the *Communist Manifesto* of the effects of bourgeois civilization: "*All that is holy is profaned, and man is at last compelled to face with sober senses his real conditions of life and his real relations with his kind.*" As Marshall Berman summarizes: "All the anarchic, measureless, explosive drives that a later generation will baptize in the name of 'nihilism'—drives that Nietzsche and his followers will ascribe to such cosmic traumas as the Death of God—are located by Marx in the seemingly banal everyday working of the market economy. He unveils the modern bourgeoisie as consummate nihilists on a far vaster scale than modern intellectuals can conceive."[47] Likewise, however, Nietzsche carries out the same operation. Does the following fragment, with its depiction of nihilism as a process of "leveling", not form the counterpart to Marx's statements in the "Fragment on Machines" in *Grundrisse*?

> *On that first road* [the spread of industrial civilization], *which can now be completely surveyed, arise adaptation, leveling, higher Chinadom, modesty in instincts satisfaction in the dwarfing of mankind—a kind of stationary level of mankind. Once we possess that common economic management of earth will soon be inevitable, mankind will be able to find its best meaning as a machine in service of this economy—as a tremendous clockwork, composed of ever smaller, ever more subtly "adapted" gears;*

47 BERMAN, Marshall, *All That is Solid Melts Into Air: The Experience of Modernity*, New York: Simon & Schuster, 1982, p.100.

> *as an ever-growing superfluity of all dominating and commanding elements, as a whole of tremendous force, whose individual factors represent minimal forces, minimal values.*[48]

Just as the reduction of the laborer in the increasingly "autonomous" character of industrial systems brings to the surface the elements vital to a post-capitalist civilization, so too does this leveling engender the conditions for the overman, that which overcomes nihilism. "A reverse movement is needed—the production of a synthetic, summarizing, justifying man for whose existence this transformation of mankind into a machine is a precondition."[49] The unhealthiness of this nihilism becomes rapidly apparent, as "man is diminished", "no one knows what aim this tremendous process has served"—and thus the importance of interpretation and evaluation, and indeed of a new direction, is foregrounded. "An aim? A new aim?—that is what humanity needs." The artist-tyrant, the philosopher-physician, collides with the revolutionary force, but here we must refrain from going too far and take heed of Marx and Marcuse: philosopher and art, while in need holding a revolutionary potential, cannot be revolutionary in and of themselves. They are but (vital) aspects of the revolutionary machine, but are not capable of being equated to it outright.

This dynamic can be explored deeper by stepping from Deleuze's Nietzschean philosophy to the Spinozist *psychedelic reason* posited by Mark Fisher. There is no reason to find the sudden arrival of Spinoza on this scene strange or out of place; after all, Deleuze found in Spinoza a direct anticipation of the Nietzschean critical apparatus, and it is in Deleuze that Fisher finds many of the cues guiding his own system ("Deleuze [...] produced what is one of the strangest landmarks in psychedelic reason, *The Logic of Sense*," wrote Fisher).[50] What constitutes psychedelic reason, and what differentiates it from other forms of reason? "The psychedelia of reason gives you greater control

48 NIETZSCHE, Friedrich, KAUFMANN, William (ed.), *The Will to Power*, New York: Vintage Books, 1968, p. 463.
49 Ibid., p. 464.
50 FISHER, Mark, "Portmeirion: An Ideal For Living (What I Did On My Holiday, Part 2)", in: *K-Punk*, 13/08/2004, http://k-punk.abstractdynamics.org/archives/004048.html.

over your body and your brain (it is an instruction kit for how to use both better)."[51] This would be, then, a form of reason that splits from the reason that dominates, that is, the reason that is dominated by the performance principle.

Like Deleuze, Fisher finds in the artist an excellent clinician. In this case, it is William Burroughs, who diagnoses the fundamental condition of the human through the exploration of his own lifelong struggles with addiction. These "gave him insight into 'artificial need' as the basic motor of the Human Operating System. With Spinoza, Burroughs recognized that the human organism has a marked [...] tendency to seek out and identify itself with parasites that debilitate but never quite destroy it."[52] The fundamental condition of the human actor is to toil in a profound unfreedom, and it is for this reason that the flight of reason through the capitalist mode of production is continually deferred into the consolidation of exploitative, dominating structures. To be held under the sway of an alien force, Fisher insists, is by no means a metaphorical occupation—and this had stark implications for any professed inflection of autonomy or freedom on behalf on the human within the current world. Simply put, *there can be no real autonomy or freedom until the constraints placed on the human subject are annihilated*. Fisher:

> *Human freedom consists in first of all enumerating and then eliminating these forces (i.e. in dealing with the causes of human servitude). Being free is not in the first instance about doing what you "want" to do, since the human organism's defaults tend towards repetitious-compulsive controlled hedonic circuits (the penny arcade picture show). For [William S. Burroughs], most sex was indistinguishable from pornography, and both were induced in the organism by Control (here Burroughs converges not only with Spinoza, but with Foucault [...])*.[53]

51 FISHER, Mark, "Psychedelic Fascism", in: *K-Punk*, 20/08/2004, http://k-punk.org/psychedelic-fascism/.
52 FISHER, Mark, "Why Burroughs Is A Cold Rationalist"', in: *K-Punk*, 29/08/2004, http://k-punk.abstractdynamics.org/archives/004035.html.
53 Ibid.

In the section of *The Logic of Sense* titled "Porcelain and Volcano", Deleuze offers what he calls an "homage to psychedelia". The content of this homage is a reflection on how to get out from within the subject, which foregrounds the natural impulse towards self-destruction. Drugs and alcohol here function as key examples of tools that accelerate this impulse, yet at the same time carry with the promise of something else, which Deleuze describes, in a return to his Nietzschean clinical model, a "grand health" that is achieved by "taking risks and endur[ing] for the longest time".[54] Just as with art, Deleuze finds nothing intrinsically revolutionary in the altered states that are given by drugs and alcohol; as Fisher will later write, "drugs are like an escape kit without an instruction manual [...] using ecstasy will always fuck up in the end because the Human [Operating System] has not been taken out and dismantled."[55] Similarly, Deleuze suggests that under the conditions of the current world (or reality principle, in Freudo-Marcusean parlance), drugs and alcohol become "techniques of social alienation"—but he holds out hope that perhaps the altered states of consciousness, indicative as they are of the impulse to dismantle the reality principle (the death drive is just as creative as it is destructive) and the will to active experimentation, can be "reversed into revolutionary means of exploration". Only then can the future health, a health beyond nihilism, be realized. Presaging Fisher, he writes:

> *Burroughs wrote some strange pages on this point which attest to this quest for the great Health—our own manner of being pious: "Imagine that everything that can be achieved by chemical means is accessible by other paths [...]" A strafing of the surface in order to transmute the stabbing of bodies, oh psychedelia*.[56]

Getting out from the subject, Fisher realizes, following Spinoza, entails the forging of a path that leaves the human itself behind, understood as a unified, organic, whole Thing (that recognizes itself as an I, that is, a subject-position with an ego). "Accord-

54 DELEUZE, *The Logic of Sense*, p. 161.
55 FISHER, Mark, "Psychedelic Reason", in: *K-Punk*, 19/08/2004, http://k-punk.abstractdynamics.org/archives/003926.html.
56 DELEUZE, *The Logic of Sense*, p. 161.

ing to Spinoza, to be free is to act according to reason. To act according to reason is to act according to your own interests. Finally, we have to recognize that, on Spinoza's account, the best interests of the human species coincide with becoming inhuman."[57] For Fisher, this constitutes the ability to go to work on the very infrastructure that produces the human subject: the architecture of the neural system, with all of its faults, mind-boggling complexity, and, mostly importantly, its plasticity. Instead of bringing to bear the certainty of wholeness, contemporary understandings of this system bring the uncertainty of the eternally incomplete, or, in the words of Fisher, the "cybernetics of organic disassembly".

The relationship between this "neuropunk" neo-Spinozism and Deleuze's homage to psychedelia is quite clear. Both situate themselves in a drive to coming-apart, and both are an affair of things that dismantle the identitarian fabric of the consciously-constituted subject, but most importantly they both deviate from the apparatuses and instrumentalization of "social alienation" by looking for a continuity that stretches through and beyond this dismantling, one that uses this dismantling in accordance with a logic—a new reason—that builds a scaffolding to the new world. Perhaps the clinical here becomes near-literal, or perhaps it is the clinic that is exploded through this line of thought, but either way the unfolding of evaluation, interpretation, diagnosis and critique is elevated here from the aesthetic categories to explicitly political ones. In a later essay, Fisher will draw upon the Autonomous Marxists by suggesting that while the technologies that let us go to work upon the plastic architecture that produces the Thing we call the "I" are in the clutches of capital, they can at some point be appropriated and used as the lodestar for the organization of a future society: "Whether neuroscience's practical will do more than reinforce capital's domination will ultimately depend on how far the institutions of techno-science can be liberated from corporate control. Certainly, there are no a priori reasons why [Catherine] Malabou's question 'what should we do with our brain?'

57 FISHER, Mark, "Spinoza, K-Punk, Neuropunk", in: *K-Punk*, 13/05/2004, http://k-punk.org/spinoza-k-punk-neuropunk/.

should not be answered collectively, by a General Intellect free to experiment upon itself."[58]

It is worth saying a few more words on Burroughs, as his work spans Deleuze and Fisher's work and does much to connect them together, while also conforming to the Deleuzian-Nietzschean picture of the artist-clinician. Burroughs executes this role by advancing, as Fisher argues, a Spinozist diagnosis of the human condition, as something held captive by external forces that prevent it from truly acting in accordance with its own interests, and thus is incapable of exercising real freedom and autonomy. At the same, however, Burroughs is also a creature of his time, having weaved this picture—and the potential escape path from its condition—by way of the technologies, techniques, methodological practices, and avenues of scientific research that were then being introduced. Take the importance of the audiotape for Burroughs, which provided him with both an understanding of the human subject (as recording apparatus) and a means of dismantling control (tape manipulation, cut-ups etc). "The period when audiotape played an important role in US and European consumer culture may well be limited to the four decades of 1950–1990," writes N. Katherine Hayles.[59] "Writing his cybernetic trilogy—*The Ticket That Exploded*, *The Soft Machine*, and *The Nova Express*—in the late 1950s and early 1960s, William Burroughs was close enough to the beginnings of audiotape to regard it as a technology of revolutionary power."

Burroughs "took seriously the possibilities for the metonymic equation between tape recorder and body. He reasoned that if the body can become a tape recorder, the voice can be understood not as a naturalized union of voice and presence but as a mechanical production with the frightening ability to appropriate the body's vocal apparatus and use it for ends alien to the self."[60] The human body becomes a sort of "inscribing surface", upon which external recordings are bound. Natural plasticity serves as the zone in which conditioning goes to work,

58 FISHER, Mark, "A Critique of Practical Nihilism: Agency in Scott Bakker's *Neuropath*", in: *Incognitum Hactenus*, Vol. 2, March 2012, p. 11, https://incognitumhactenus.files.wordpress.com/2012/03/incognitumhactenus-vol2.pdf.
59 HAYLES, N. Katherine, "*How We Became Posthuman: Virtual Bodies in Cybernetics, Literature, and Informatics*, Chicago: University of Chicago Press, 1999, p. 208.
60 Ibid., p. 211.

but also the place where that conditioning can be broken: through grappling with the tools that produce recordings, one can return to the plastic (hence Burroughs brief, yet enthusiastic, acceptance of Scientology). The word may be a virus, but the antidote is to cut the virus and scramble its functioning. In this we can detect another influence moving under the surface: that of William Grey Walter, the British neurophysiologist and cybernetician whose research on the human brain—and early robots, as tools to assist in this research—was recorded in his 1953 book *The Living Brain*. Burroughs enthusiastically read this book some time after it was published, and there is every indication that it had an intense impact on the author: not only did references to Walter's work begin to filter through to his own writings, but he attended the doctor's lectures and actively sought him out for conversations on brain research, communication studies, and the emergent interzone between technological development and the penetration of the deeper recesses of the human mind.[61]

With this in mind, perhaps it is important to take the theory of aesthetics offered by Marcuse (that the aesthetic dimension allows a grappling with a future that cannot be approached directly) and Deleuze's schema connecting the philosopher, the artist, and the clinician and slot their respective frameworks in a historical space-time—that is, to bring them more in line with a Marxist analysis of how a given level of techno-economic development frames the execution of the artist's work. A somewhat paradoxical picture: by opening unto the future, the aesthetic dimension exercises a degree of autonomy, but by being embedded in this space-time, it is an autonomy in chains. From a more positive direction, this supports the Deleuzian circuitry between clinique and critique, as the clinical arena becomes the historical space-time itself, and the critique that is carried out entails putting into play a reworking of this space-time with the tools and techniques that it already holds. Burroughs, as we've just seen, does precisely this; he transforms the conditions of his present into a *possibility space* that is wider than the actually prevailing conditions.

61 This is discussed at length in Andrew Pickering's excellent *The Cybernetic Brain: Sketches of Another Future* (Chicago: university of Chicago Press, 2010).

3.3. ART AND SCIENTIFIC MANAGEMENT IN THE SOVIET UNION

Before exploring some of the different ways in which artists and designers sought to leverage the new technologies and techniques of early Fordist industrialization, it is worth very briefly summarizing the general structure governing the arts in the earliest phase of the Bolshevik experiment. Just as there were different factions not only among the revolutionaries but within the Bolsheviks themselves, so too were there different perspectives on how art and design related to the revolution and to the communist future. One pathway, for example, was that offered by the nascent proletkult, or "proletarian culture" movement spearheaded by Alexander Bogdanov, a rival to Lenin with ties to the left-wing of the Bolsheviks. Proletkult placed a heavy emphasis on proletarian autonomy; while Bogdanov and others, as we will see shortly, supported the utilization of managerial techniques developed within the capitalist mode of production, the goal was to provide a dynamic infrastructure that allowed for the flourishing of the common laborer. This would require, in term, as little obstruction or top-down guidance from the Party itself.

Nonetheless, within a few years of its founding in 1917, proletkult lost its status as an independent body and was partially brought under the stewardship of Narkompros, or the People's Commissariat of Enlightenment—the Soviet administrative bureau tasked with handling matters relating to the management and funding of educational and cultural affairs. Narkompros was led by Anatoloy Lunacharksy, who was himself a close ally with Bogdanov, having organized a cultural education school for proletarians with him and Maxim Gorky in 1909; despite the early insistence on autonomy promoted by Bogdanov and his fellow travels, the overall goal of Narkompros and its initial phase of operations closely aligned with the ideals that they had set forth.

In the early 1920s, two different art and design institutes were established under the supervision of Narkompros. The first of these was INKhUK, the Institute of Artistic Cultures, formed at the directive of Lunarcharsky and led by the painter and theorist Wassily Kandinsky. The second, meanwhile, was VkhUTEMAS, the Higher Arts and Technical Studios. Established by official decree from Lenin, it was something of the

Soviet counterpart to Bauhaus (with which the aforementioned Kandinsky had been associated) and counted among its faculty members Kazimir Malevich (of Suprematism fame) and his protege El Lissitzky. Between these two institutes, the seeds of the early Soviet avant-garde were sewn—namely, the development of constructivism. This development was refracted through the emergence of two rival schools of thought that cut across both INKhUK and VkhUTEMAS: ASNOVA, the Association of New Architects founded by Nikolai Ladovsky, and OSA, the Organization of Contemporary Architects, established by VkhUTEMAS's Moise Ginzburg. Despite there being extensive commonalities between the architectural output of both groups (there's a quip that, despite all their feuding, their respective buildings are indistinguishable from one another), the divide in philosophy and overall intent was stark. ASNOVA is best understood as taking a formalist approach, which sought to impinge upon the individual at the affective of the individual through the encounter with alien shapes and immense scales, while OSA was functionalist, looking to architecture—and later, urban design—as a tool to transform the entirety of social life. Most interestingly, for our purposes here, at least, each adopted a different sort of managerial tool from the capitalist developmental toolkit. For ASNOVA, it was psychotechnics, and for OSA, Taylorism.

Ironically, in the capitalist world these two managerial perspectives were not considered to be at odds with one another. Whereas Taylorist techniques sought to manage the human body through the regimentation of its operations in accordance with the rhythm of the machine in order to optimize the use of time and energy, psychotechnics attempted precisely this for the general behavior through the leveraging of various psychological tools and techniques. It was the foundation of the then-nascent field of industrial and organizational psychology, and while in the longest run it would be this discipline that would win out over Taylorism (finding its descendant in human resources practices and the like), the two marched in lockstep across the early Fordist period.

Regardless, it's impossible to address the division between the two Soviet art movements without commenting first on yet another organization that was deeply intertwined with both

the world of the artists and designers and that of the planners and technicians: the Central Institute of Labor (also known by the far more unwieldy "Institute for the Scientific Organization of Work and the Mechanization of Man", founded in 1921 by poet-turned-engineer Alexei Gastev. Gastev, who prior to establishing the Central Institute had been affiliated with proletkult and had served within Narkompros, was one of the foremost proponents of Taylorism in the revolutionary Russia. The importing of these techniques had a long pedigree in Bolshevik thought. In 1914, for example, Lenin had published an article titled "The Taylor System—Man's Enslavement by the Machine"; decrying scientific management as a device transformed by "the domination of capital" into an "instrument for the further exploitation of workers", he anticipated (just as Marx had in the "Fragment on Machines") a period in which this would set the stage for the proletarian seizure of "all social production".[62] In "The Immediate Tasks of the Soviet Government", drafted sometime in the spring of 1918, Lenin reiterated this position by positing that "the Soviet Republic must at all costs adopt all that is valuable in the achievements of science and technology in this field [scientific management]. The possibility of building socialism depends exactly upon our success in combining the Soviet power and the Soviet organization of administration with up-to-date achievements of capitalism. We must organize in Russia the study and teachings of the Taylor system and systematically try it out and adapt it to our own ends."[63]

Gastev readily adopted this position, and argued in essays such as "Marx and Ford" that the unification of Taylorist scientific management and Fordist industrial organization constituted the culmination of the Marxist system. Like the avant-gardes with which he was closely associated, Gastev's goal was the production of a New Man—and this New Man would itself be a production of an immense industrial system that had a logic and agency all of its own.

62 LENIN, Vladimir, "The Taylor System: Man's Enslavement by the Machine", in: *Put Pravdy*, No. 35, 13/03/ 1914), https://www.marxists.org/archive/lenin/works/1914/mar/13.htm.
63 LENIN, Vladimir, "The Immediate Tasks of the Soviet Government", March–April 1918, https://www.marxists.org/archive/lenin/works/1918/mar/x03.htm.

The modern machine [...] possesses its own laws of pulsation, functioning, and relaxation—laws that do not stand in conformity with the rhythm of the human organism. The world of the machine, the world of mechanical equipment [oborudovaniia] and urbanized labor [trudnogo urbanizma] produces specially connected collectives, begets certain types of people. There are people we must accept, just as we accept the machine, though we must not smash their head on its gears. We must bring some kind of equalizing coefficient into the machine's iron disciplinary pressure, though history insistently demands we pose these not as petty problems of the social protection of the individual personality [lichnosti], but rather the bold engineering [proektirovaniia] of human psychology according to such a historical factor as machinism.[64]

Techniques like Taylorism and psychotechnics were not, for Gastev, merely instruments cultivated by the capitalists and the managerial strata of the division of labor—they were the natural conditions set by the direction of industrial development itself. The "bold engineering of human psychology" spoke on above was the bringing into alignment the human figure with an inevitable world. It was the success of this alignment that would determine whether or not the form of this world was of a socialist character. Gastev, singing a hymn to Fordism: "The metallurgy of this new world, the motor car and the aeroplane factories of America, and finally the arms industry of the whole world ... Whether we live in the age of super-imperialism or of world socialism, the structure of the new industry will, in essence, be one and the same."[65]

Perhaps unsurprisingly, Gastev's rather technocratic vision—which culminated in the forecasting of "proletarian psychology" becoming so homogeneous as to "[permit] the classification of an individual proletarian unit as A, B, C, or 325, 0'075, 0, and so on"—gained detractors.[66] Among these was Bogdanov, who assaulted Gastev's enthusiasm at the loss of individuality and

64 Quoted in WOLFE, Ross, "The ultra-Taylorist Soviet Utopianism of Aleksei Gastev", in: *Charnel House*, 12/12/2011, https://thecharnelhouse.org/2011/12/07/the-ultra-taylorist-soviet-utopianism-of-aleksei-gastev-including-gastevs-landmark-book-how-to-work.
65 BAILES, Kendall E., "Alexei Gastev and the Soviet Controversy Over Taylorism, 1918–-124", in: *Soviet Studies*, Vol. 39, No. 3, July, 1977, p. 377.
66 Ibid., p. 378.

creativity. Gastev's socialism was a bit akin to Nietzsche's industrial leveling spoken of in the previous section: creativity, expression, autonomy in action were all to be extinguished through standardization, scientific management and regimentation. If there was a creativity, it was the creativity of the machine itself, which could only be understood externally as the "functions of planning and regulation". Against this barracks communism, Bogdanov's proletarian future saw the balance of human and machinic systems as being closer to Nietzsche's Overman, the Strong of the Future. With Gastev, he "agreed that work in industry would tend to become more and more of a single type", but against the conclusions he suggested that "industrialism was producing ever more workers of the highest type: the creative machinist who shares in the planning, regulating, and fulfilling functions of industry".[67] The future of the worker was not the worker-number or the worker-automaton; it was the worker-artist, the worker-scientist, the worker-engineer.

In time, a split grew within the Central Institute between those that advocated Taylorism (centered around Gastev) and those that saw psychotechnics as the way forward—meanwhile, of course, advocates of each in America and Europe saw no contradiction between the two systems. While debates would eventually win out in favor of Gastev, the psychotechnical faction would soon come to establish its own institutional base in Moscow's Psychological Institute, where a Laboratory of Industrial Psychotechnics was erected. The driftwork of the avant-garde didn't map itself directly onto this divide, but took cues from each as they imported the time-motion studies, standardization techniques, and related explorations from the work of the Institute. Despite this, however, both ASNOVA and OSA took their respective corners in the debate, as mentioned earlier. Ladovsky, the chief organizer behind ASNOVA, set up a Psychotechnical Laboratory of Architecture within VkhUTEMAS, and brought it in close alignment with the art association. "Psychotechnics cannot create artists," he declared, "but it can give them all a solid starting point from which they can achieve the aims to which they aspire to the most by the most scientifically

67 Ibid., pp. 379–380.

correct means."[68] The goal? "Instilling millions of shockworkers of socialist construction with revolutionary enthusiasm."[69]

OSA, positioned closer to the Taylorist side of the debate, viciously attacked the formalism of ASNOVA for what it perceived as a lapse towards a romantic and metaphysical past, as opposed to a scientific future: "[The formalist's] pathetic ejaculations about art are reminiscent of antediluvian searches for a god; for we believe that what is needed is not the invention of an art [...] but work on the organization of architecture, proceeding from the data of economics, science, and technology."[70] The ANSOVA line would, eventually, come to greatly influence the idiosyncratic architecture and so-called socialist-realist art of the Stalinist period, but it would be the functionalists in OSA—who would claim the title of "constructivist" for themselves—that would provide that indelible stamp on the futuristic, alien bent of Soviet experimentalism. It also maintained deep connections with the avant-garde circles beyond the Soviet Union by way of its institution membership in the Congres Internationaux d'Architecture Moderne (the International Congress of Modern Architecture, or CIAM); several OSA members were members of CIAM's primary organizing body.

As the aesthetic reinterpretation of Taylorist and Fordist principles as a means to actualize the production of the new socialist self and society expanded within the small bases like OSA, its influence trickled across the governing structures of the Soviet Union. Of particular interest here was how it was received by Gosplan, the agency that was tasked with developing and administering central planning. The constructivists came to speak of the "social condenser", which was to be a "new perspective" to govern Soviet architecture and urban design. Promethean in scoop, the social condenser would marshal the cutting edge of productive technology, managerial techniques, and rational planning to execute a grand vision that would transform the conditions of communal life by annihilating individualized, atomist experience of things. Indeed, even the term

68 GUILLEN, Mauro, *Taylorized Beauty of the Mechanical: Scientific Management and the Rise of Modernist Architecture*, Princeton: Princeton University Press, 2006, p. 26.
69 HUDSON, Hugh D., *Blueprints and Blood: The Stalinization of Soviet Architecture, 1917–1937*, Princeton: Princeton University Press, 1994, p. 78.
70 GUILLEN, *Taylorized Beauty of the Mechanical*, p. 77.

"condenser" was a reference to the technology that was sweeping across and irreversibly mutating the landscape. To quote Anatole Koppe: "Like electrical condensers that transform the nature of current, the architects' proposed 'social condensers' were to turn the self-centered individual of capitalist society into a whole man, the informed militant of socialist society in which the interests of each merged with the interests of all."[71]

Referencing the motion of the body in laboring mode, Gastev declared that "the perfect mastery of a given movement implies the maximum degree of automacity. If this maximum increases [...] nervous energy would be freed for a new initiating stimuli, and the power of an individual would grow indefinitely."[72] The social condenser worked in a similar manner, maximizing the rational management of a system—in this case, the social tapestry and its architecture contours—to produce a baseline for the realization of a hitherto untapped energy. This reached its fantastical peak in the grand, near-delirious vision proffered by L. M. Sabsovich, an economist and planner at Gosplan, who was more than just a little influenced by the spectacular socialist projects described by Bogdanov in his science-fiction novels. In his mind, the industrial systems realized in the Fordist epoch constituted the key to the actualization of utopia. One can feel the same spirit that fueled Marcuse's *Eros and Civilization* guiding Sabsovich, as Richard Stites describes:

> ***Building on the whole tradition of socialist dreams of household collectivisim, Sabsovich imagined the coordination of all food producing operations in order to transform raw food products into complete meals, deliverable to the population in urban cafeterias, communal dining rooms, and the workplace in ready-to-eat form by means of thermos containers. No food shopping, no cooking, no home meals, no kitchens. Similar industrialization of laundering, tailoring, repair, and even house cleaning (with electrical appliances) would allow each person a sleeping-living room, free of all maintenance cares. Russia would in fact become a vast***

71 MURAWSKI, Michal, "Revolution and the Social Condenser: How Soviet Architects Sought a Radical New Society", in: *Strelka*, 29/09/2017, https://strelka.com/en/magazine/2017/09/26/architecture-revolution-social.
72 GEROVICH, Slava, "Love-Hate for Man-Machine Metaphors: From Pavlov to 'Pysiological Cybernetics'", in: *Science in Context*, No. 15, 2002, p. 344.

> *free-of-charge hotel chain. In his cities of 50,000–70,000, Sabsovich suggested that 25–50 large residence buildings would accommodate the entire population—meaning 1,400–2,000 persons per building (children being housed nearby)—or about the size of Fourier's phalanstery (1,700).*[73]

It may seem odd to compare the work carried out by utopian visionaries like Gastev, Bogdanov, Sabsovich and others to far more individualized experimentation of Burroughs, but there are certain commonalities that make this juxtaposition instructive. While separated by time, space, and ideology, both the Soviets and Burroughs tap into something beyond their political conditions and social settings, and draw from it a means to transform these conditions and settings in a real and powerful way. What is tapped into is the possibility space of the K-Wave. For the Soviets, the actual machines of the mass production systems and the rationalized mode of labor that was produced by them held the elements vital for building the infrastructure of an entirely new mode of social life and of being; for Burroughs, the emergent cybernetic technologies and systems thinking allowed the individual experimental means of "unzipping" themselves from the reality system that governed them. Each set, in other words, bridged the gap between the aesthetic dimension and their historical conditions to widen the possibility space of operations.

Now, having traveled a winding road through K-Waves, Marx's machine fragments, the aesthetic theories of Marcuse, Deleuze, and Fisher, and finally into the materialist manifestation of these theories within the historically-bound conditions produced by distinct techno-economic paradigms, we arrive once again where we set out from: the blockchain. We now have two different perspectives with which to approach the technology: a techno-economic approach and an aesthetico-political approach. By want of the terrain that has just been traced, we know that these are one and the same. Nonetheless, they must be dealt with in successive order.

73 STITES, Richard, *Revolutionary Dreams: Utopian Vision and Experimental Life in the Russian Revolution*, Oxford: Oxford University Press, 1989, p. 12.

4. Forked

4.1. THE POLITICAL ECONOMY OF BLOCKHAIN

Where is the blockchain positioned in relation to the K-Wave model? Within the blockchain community proper, its most enthusiast proponents see this technology as the evidence of an entirely new paradigm, and thus something that is in itself subjected to the curves and oscillations that run through each iteration of a passing paradigm. John Saddington, for instance, declared in December of 2017 that "we're deep in the Perez Technological Surge and it's freaking awesome!"[74] He continued by suggesting that "specifically, we're deep within zone #2, the 'Frenzy' stage, where a ton of interest (and money) is flooding the market and industry and people are getting excited about all of the possibilities." Two years prior, Fred Wilson of Union Square Ventures wrote that if bitcoin and blockchain constituted a Perezian technological revolution, "then we are going to move from the installation phase to the deployment phase at some point and there will be a major financial break point that happens along the way."[75] Come 2017, Wilson reiterated this point, but with a bit more restraint that Saddington: if blockchain technology and applications are the start of a new techno-economic paradigm, we're not even in the overspeculation phase yet. Nevertheless, he still holds it as imminent: "By the end of this decade [...] we should start to see native blockchain applications receiving massive adoption."[76]

If people like Saddington and Wilson are correct, then we are witnessing a massive shift in the temporal ordering of the K-Wave model. The great financial crisis, as illustrated earlier, constituted the "turning point" of the K-Wave organized around information communication technologies; if we're well into roll-out phase of an emergent new paradigm, then the "deployment" phase of the ICT wave was severely truncated—

74 SADDINGTON, John, "Bitcoin and Blockchain: We're Deep Within the Frenzy Stage Folks", in: *John Saddington Blog*, 31/12/2017, https://john.do/bitcoin-frenzy/.
75 WILSON, Fred, "The Carlota Perez Framework", in: *AVC*, February 2015, https://avc.com/2015/02/the-carlota-perez-framework/.
76 CHENG, Evelyn, "Fred Wilson throws a little cold water on Bitcoin enthusiasts", in: *CNBC*, 25/05/2017, https://www.cnbc.com/2017/05/25/bitcoin-blockchain-token-summit-union-square-ventures-fred-wilson.html.

or, as perhaps indicated by incredibly long recovery from the crisis, it simply didn't happen. Assuming that the blockchain is indeed as important as its proponents present it, there are two potential solutions to the conundrum. The first possibility is that the rate of technological change is compressing the duration of installation and deployment phases, while the second possibility is that blockchain, while important, *is not* going to mark the introduction of a new wave.

This first possibility, which we might call the *temporal compression hypothesis*, would itself be rather uncontroversial. Nailing down periodizations of K-Waves is an incredibly hazy affair, and even in the schema that has been presented here the dates operate as loose frameworks. As such, there is variation internal to each paradigm: sometimes installation and deployment phases are longer and sometimes they are shorter, while entire waves might stretch out beyond the length of both their predecessor and successor waves. In would be questionable, in fact, to assume that as technological development progressed into faster, more integrated systems, the waves didn't compress, given the reoccurring tendency for certain developmental trendlines to, by way of increasing returns, lock into accelerating rates of change and collapsing time horizons. By the same token, as the infamous example of the so-called Moore's Law illustrates, these trendlines cannot be counted on as exhibiting any sort of absolute character. Just because an exponential sequence can be glimpsed at one point, there is no guarantee that this will be achieved in the future. Through this sort of variation, the reason for the elastic timescales of the K-Wave can be properly contextualized, and for this reason the potential arrival of a new paradigm in the current moment does not intrinsically break the Perezian model.

The second possibility can be described as the *delayed deployment hypothesis*. Here, the blockchain is still an ultimate, paradigm-shifting technology, but instead of serving as the inauguration of a new wave, it poses solutions to the regulation crisis that was brought to bear on the entirety of the system by the turning point and crisis. *Delayed deployment* alludes to the rather long time period that persisted between the crisis and the growing popularity and usage of blockchain, though one must consider the way that blockchain emerged not only

immediately following the crisis, but perhaps because of it. If this hypothesis is correct, then blockchain can be read as the (temporary) resolution of the various contradictions eating at the heart of the ICT K-Wave. It follows, by extension, that if this hypothesis is true, then failure to adopt blockchain technology will have catastrophic consequences in the very near future.

Both hypotheses encompass economic and political concerns and raise important questions over the nature of future governance. In the case of the delayed deployment hypothesis, it could very well be that blockchain, or some blockchain successor technology, will become the governmental tool par excellence, allowing the state to standardize and automate a host of administrative functions or open new forms of democratic experience. It is the temporal compression hypothesis, however, that serves as the location for the far more common understanding of blockchain as the ideal weapon for those of a libertarian and/or anarcho-capitalist inclination. Blockchain here still serves as a tool of governance and perhaps would still be a key infrastructure in an administrative body; the difference, however, is that it would engender a great crack—or series of cracks—in the world, a widening rift through which fragmentation freely flows as people gain the ability to choose *exit* over *voice*.

In the most elaborate—and thus most interesting—iteration of this perspective, bitcoin and blockchain are the initial shock of a truly multipolar globe where the world-system is tossed into a continual flux through the unending proliferation of trustless peer-to-peer networks, decentralized autonomous organizations (DAOs), and self-sufficient, independent corporate city states. This latter element is the line picked and pursued by the various post-libertarian, post-anarcho-capitalist thinkers in the neoreactionary camp, mostly notable Mencius Moldbug (the nom de plume of computer scientist Curtis Yarvin) and the philosopher Nick Land. Both Moldbug and Land contextualize the coming change as the creation of a global *patchwork* of competitive sovereign units, organized along neocameralist lines—that is, a sort of mercantile joint-stock corporate structure that collapses together the economic and the political. To quote Moldbug, by way of Land:

> *Let's start with my ideal world—the world of thousands, preferably even tens of thousands, of neocameralist city-states and ministates, or neostates. The organizations which own and operate these neostates are for-profit sovereign corporations, or sovcorps. For the moment, let's assume a one-to-one mapping between sovcorp and neostate. [...] Let's pin down the neocameralist dramatis personae by identifying the people who work for a sovcorp as its agents, the people or organizations which collectively own it as its subscribers, and the people who live in its neostate as its residents [...] Every patch of land on the planet has a primary owner, which is its sovcorp. Typically, these owners will be large, impersonal corporations. We call them sovcorps because they're sovereign. You are sovereign if you have the power to render any plausible attack on your primary property, by any other sovereign power, unprofitable. In other words, you maintain general deterrence. [...] (Sovereignty is a flat, peer-to-peer relationship by definition. The concept of hierarchical sovereignty is a contradiction in terms.)*[77]

Despite the post-libertarian drift of Land's thought, his neoreactionary philosophy has a kind of crypto-Marxist flavor to it that Moldbug's perspective lacks.[78] If the patchwork future is something of an inevitability for Land, it is because fragmentation is the inherent tendency of modernity, and is produced by capital's ability to constantly expand regardless of political, cultural, or ideological boundaries. At the limit, even these progressively atomized political units are themselves destined to undo, as the "human security system" will find itself "outmatched and defeated" by an Entity—"capitalism 'in-itself'" or "the ultimate enemy"—"that will never know or need political representation".[79] The occulted telos of capital is one of constant escape; while in the future this may take the form of some sort of absolute escape, a capital becoming some sort of synthetic life form, closer to the present this manifests through the introduction

77 LAND, Nick, "Neocameralism", in: *Xenosystems*, 29/06/2016, http://www.xenosystems.net/neocameralism-1/.
78 See Land's various comments in his interview with Justin Murphy, "Ideology, Intelligence, and Capital", in: *Vast Abrupt*, 15/08/2018, https://vastabrupt.com/2018/08/15/ideology-intelligence-and-capital-nick-land/.
79 LAND, Nick, "Dark Techno-Commercialism", in: *Xenosystems*, 13/10/2013, http://www.xenosystems.net/dark-techno-commercialism/.

of blockchain. "If capital is escaping," writes Land, "the emergence of blockchain is an inevitable escalation of modernity, with consequences too profound for easy summary. If it isn't, then macroeconomics might work."[80]

The logic of the multipolar patchwork world, Land suggests, can be glimpsed through the diagonalization in the following grid:

High Connectivity	High Integration
Low Connectivity	Low Integration

Connectivity denotes the sorts of flows that move across the sovereign units: flows of capital, flows of people, flows of information, so on and so forth. Integration, meanwhile, designates the degree to which the sovereign is related to wider institutional bodies that might exert some sort of restraint, however formal or informal. Land suggests that technologies like blockchain, which allow the elimination of third party figures, the creation of alternative currencies, so on and so forth, make possible the diagonal line of *high connectivity, low integration*. A given sovereign unit would thus be open to trade, the movement of people (dependent, of course, on the policies of the unit or patch in question), and the flow of information, while also being autonomous from and unaffiliated with larger, multinational bodies. One might call this a kind of "globalization without neoliberalism", if we take globalization to be the integration of trade, supply, and labor chains at the world-system level, and neoliberalism to constitute a transnational political orders based on shared institutions and the imposition of common norms.

A common counterpoint to theories of fragmentation and atomization such as these is that while, yes, the latter is palpable on the individualized and affective level, overall the tendency is towards centralization and conglomeration and not the reverse. One could point, for example, to the continuity of some monopoly capitalism across time, or to the emergence of a "platform capitalism" as a successor stage to this. Capital itself may

80 LAND, Nick, "Capital Escapes", in: *Xenosystems*, 21/11/2014, http://www.xenosystems.net/capital-escapes/.

be autonomous from the nation state, but money too is held by a progressively smaller number of individuals. And while the leading lights of "empire"—the United States and the European Union—are threatened both internally (runaway polarization in the case of each, the active threat of secession and euroscepticism in the latter) and externally (the rise of Russia and China, respectively), transnational institutions like NATO and mechanisms such as multinational free trade agreements seem capable of weathering various storms.

A full treatment of this question is far beyond the scope of the present essay, but it is vitally important to discussing the role of blockchain in any kind of future governance, and thus a few additional comments are in order. To start, a word of caution: we should not expect the trend towards centralization and concentration to be universal, or to serve as the primary drift of historical development. The existence of fragmentation is something that must be reckoned with, not only because of the clear relationship between it and political polarization (as illustrated brilliantly by Peter Turchin), but on account of mounting knowledge problems and coordination issues that are produced by rising complexity. Yet, by the same token, this fragmentation must also not be taken as a universal inevitability or even the key characteristic of the long arc of development—the benefits of fragmentation collide messily with the advantages of scale, the necessity of bureaucracy, and the importance of administration. For every form of connectivity, there must be common protocols and infrastructures for the connected to carry out their exchanges and their circulations—and how does the need for these protocols and infrastructures manifest, if not by forms of integration? It could very well be that integration and connectivity are not elements to be arranged into an oppositional grid. Higher degrees of integration might be the requirement for connectivity, which is a relationship that has no truck with the number of potentially connected sovereign units. Furthermore, it could be that forms of integration are the requirement *for* the relative autonomy and self-sufficient stability of a given unit. From this point of view, a flattened, two-dimensional picture such as patchwork begins to fray at the seams. Something at once more abstract and

more concrete, deeper in line with emergent alien topologies, is what is required.

Concerns of a similar sort have been raised in a recent essay by Ash Milton on the topic of experimental government. While his topic focuses on charter cities, it is easily applicable to the discussion of patchwork and other proposed DAO systems. This is because, after all, all these things are mingled at the genetic level; the charter city, as its original proponent Paul Romer described it, is a "StartUp city" in which one "can propose something entirely new and let people choose whether they want to live under its rules, as embodied in the charter, the document that specifies its founding principles. People who want to try to reform can go there, and people who don't … don't have to. With a startup, you can have reform without coercion" (or, in other words, *exit* over *voice*).[81] One of Romer's chief examples is Deng Xiaoping's transformation of Shenzhen into a special economic zone, but as Milton points out, proponents of political decentralization have little to gain from relying on this and other related examples:

> *This interest is counterintuitive when considering the inspirations for charter cities. The strategic roles of Hong Kong, Macau, and the SEZs for testing reforms are ultimately directed by the Chinese Communist Party. The United Arab Emirates is a federation of Islamic monarchies. In this light, the tie between the charter city idea and decentralized market liberalism is not at all obvious. A major feature in the success of each of these projects is the backing by a single established host government, able to guarantee institutions and reap the strategic benefits of the project.*
> *This should be significant for anyone thinking about global development. What if the control of these projects by strong host governments is an essential feature of their success, not just a historical accident that can be abstracted out in the future? If so, this would present a contradiction between the libertarian ideals of many charter city advocates and the state power actually driving this wave of city and economic zone construction. Charter cities would*

81 Quoted in FULLER, Brandon, "Romer on Urbanization, Charter Cities, and Growth Theory", in: *Marron Institute of Urban Management*, 30/04/2015, https://marroninstitute.nyu.edu/blog/romer-on-urbanization-charter-cities-and-growth-theory.

> *not weaken and decentralize nation-state governments, but in fact secure and strengthen them. Charter cities and similar projects provide platforms for policy and economic innovation with low political risk, among other benefits. This being so, it seems likely that these projects will only be undertaken in cases where the controlling state interest expects the project to strengthen its position.*[82]

Considering the potential trajectory of blockchain technologies in light of this brings us closer to the territory of the delayed deployment hypothesis, in which blockchain, along with the decentralizing possibilities inherent in it, is actualized in pursuit of an optimal mode of regulation. Further evidence for this can be gleamed from the fact that while there are plenty of divergent uses being developed for blockchain technology (from the aforementioned DAOs to more left-wing experiments such as Ethereum's proposed "liquid democracy"), many of the practical applications are being explored by currently existing statist and corporate governing bodies.

Estonia, for example, is making blockchain a central figure in its transformation into a "digital republican" in which the lionshare of "normal services that the government is involved in—legislation, voting, education, justice, healthcare, banking, taxes, policing, and so on—have been digitally linked across one platform, wiring up the nation."[83] In a 2017 post on Medium, Kaspar Korjus describes how distributed ledger technology is woven into this impressive complex as a means of empowering not only the state, but the citizenry:

> *Take the Healthcare Registry as just one example. Few people in the world are able to say exactly where their medical records are located and who has looked at them. Estonians can log into their own records using their digital identities and then see exactly which medical professionals have done the same and when. Any government official who accessed your data without a good reason can be challenged and prosecuted.*

82 MILTON, Ash, "Why Charter Cities Won't Lead to Decentralized Government", in: *Palladium Magazine,* 08/10/2018, https://palladiummag.com/2018/10/08/why-charter-cities-wont-lead-to-decentralized-government/.
83 HELLER, Nathan, "Estonia: The Digital Republic", in: *The New Atlantic,* 18 & 25/12/2017, https://www.newyorker.com/magazine/2017/12/18/estonia-the-digital-republic.

The Healthcare Registry is by no means the only administrative function that has been augmented through blockchain technologies; the KSI Blockchain also "protects Estonian e-services such as the [...] e-Prescription database, e-Law and e-Court systems, e-Police data, e-Banking, e-Business Register, and the e-Land registry." The blockchain thus holds a central position within Estonia's exciting experiment in digital governance, serving as a necessary tool in upholding and securing the integrity of these various governmental functions. It's telling that the KSI Blockchain isn't limited to Estonia alone, with a white paper bragging that it is also used by "the NATO Cooperative Cyber Defense Centre of Excellence, European Union IT Agency, US Defense Department, and also by Lockheed Martin, Ericsson, and others."

A recent study by the US Treasury Department's Bureau of Fiscal Service determined that blockchain technology could be a key asset in the event that what is needed is a "structured central repository of information", multiple parties accessing the database in the scenario of "less than total trust", and the capacity for the automation of functions so as to eliminate unnecessary figures in a given process (i.e. the introduction of self-executing mechanisms to replace manual execution).[84] These insights arose from the introduction of two projects that utilized the technology to assist both the private and public sector; overseen by the Bureau's Office of Financial Innovation and Transformation, the goal is to be able to successfully track both financial and physical assets in real time in order to streamline and better control various processes. This is similar, in turn, to the growing interest in blockchain by the field of supply chain management. According to Reid Williams of the design firm IDEO, blockchain stands to become a "new supply chain operating system" due to its ability to render visible the entirety of the chain—a problem that, despite the incredible advancements in logistical technology, has continued to persist: "As a shared, secured record

84 "Five Quick Takeaways on Blockchain", in: *US Treasury Bureau of Fiscal Services*, no date given, https://fiscal.treasury.gov/fsservices/gov/fit/blockchain.htm.

of exchange, blockchains can track what went into a product and who handled it along the way, breaking supply chain data out of silos, and revealing the provenance of a product to everyone involved from originator to end user."[85]

There are countless other examples that could be put forth in addition to the above: the transformation of Dubai into a "blockchain city" as part of the UAE government's "Emirates Blockchain Strategy 2021; the studies of blockchain called for by the Chinese Communist Party, Slovenia's drive to become the global "blockchain capital", so on and so forth. In each of these instances we might glimpse a bit of the libertarian impulse: the general intent of the governmental blockchain experiments is to empower various actors in the networks and to promote stabilized growth while also eliminating unnecessary actors and structures. At the same time, however, it is clear that they are also being used to support the state as an administrative machine, and what is more is that it is removing the human element from the state. In unity with other emergent technics—namely, artificial intelligence and other modes of algorithmic governmentality—we could very well be seeing a new state-form, one finally in alignment with the demands of the current K-Wave, coming into view.

4.2. RETURN OF THE ARTIST-ENGINEER

In his essay "Post-Capitalist Desire", Mark Fisher draws upon two figures we've already discussed over the course of this essay: Nick Land and L. M. Sabsovich. Land, Fisher argues, might present a vision totally contrary to the goals and ambitions of the political left, but it is also a vision that this left must engage with if it wants to stake any claim on the world-system-to-come. "Land's texts are worth reckoning with," writes Fisher, "because they assume a terrain that politics now operates on, or must operate on, if it is to be effective —a terrain in which technology is embedded in everyday life and the body; design and PR are ubiquitous; financial abstraction enjoys dominion over government; life and culture are subsumed into

85 WILLIAMS, Reid, "How Bitcoin'sTechnology Could Make Supply Chains More Transparent", in: *Supply Chain 24/7*, 31/05/2015, http://www.supplychain247.com/article/how_bitcoins_technology_could_make_supply_chains_more_transparent.

cyberspace; and data-hacking consequently assumes increasing importance."[86] A gauntlet is thrown down:

> *Land's texts [...] expose an uncomfortable contradiction between the radical left's official commitment to revolution, and its actual tendency towards political and formal-aesthetic conservatism [...] Where is the left that can speak as confidently in the name of an alien future, that can openly celebrate, rather than mourn, the disintegration of existing socialities and territorialities?*[87]

In the great social condenser conceived by Sabsovich and his cohort, Fisher finds the embodiment of a positive, left-wing approach to alien futurity. He finds in common things that haunt the landscape of capitalist postmodernity a sort of perversion of Soviet modernity's wildest ambitions: in place of the great, anonymous cafeterias that replace individualized kitchens and dining rooms, there are fast food restaurants, and instead of huge, free-of-charge dwelling places there are innumerable for-profit hotel chains. In lieu of Gosplan, we have the advanced, cybernetic control system deployed by Wal-Mart (Fisher, however, cites Jameson's famous reflection that perhaps the evolution of Wal-Mart presents the sort of revolutionary opportunity that the dialectical analysis of capitalism seeks to reveal), or what Benjamin Bratton has cheekily called the "Google Gosplan", or "the convergence of planned and market economies into computational platforms that share ideal and practical characteristics."[88] At any rate, just because the Soviet experiment was ultimately doomed to fail does not indicate the poverty of their historical gambit. Fisher continues:

> *The Soviet system could not achieve this vision, but perhaps its realization still lies ahead of us, provided we accept that what we are fighting for is not a "return" to the essentially reactionary conditions of face-to-face interaction, "a line of racially-pure peasants digging the same patch of earth for eternity" [...] [but] rather the*

86 FISHER, Mark, "Post-Capitalist Desire", in: CAMPAGNA, Federico, CAMPIGLIO, Emanuele (ed.), *What We Are Fighting For: A Radical Collective Manifesto*, London: Pluto Press, 2012, p. 180.
87 Ibid.
88 BRATTON, *The Stack*, p. 372.

> ***construction of an alternative modernity, in which technology, mass production, and impersonal systems of management are deployed as part of a refurbished public sphere.***[89]

What is called for, in other words, is an approach to the current rule of life by abstraction, impersonal systems, and apparently runaway techno-economic development the same way that the various avant-gardes approached the technologies of Fordism and even the nascent infrastructures of post-Fordism. This would entail, on the one hand, the abandonment of anti-art pretenses, and a return to a form and content seething with future-oriented intensity, as well as the sifting through the systems that govern the current world-system and the extraction of elements that be pushed in new, divergent directions. That the outcome may be different from the intention is by no means a reason to reject acting in this manner at all; instead, the flux and reversals of means and ends, of goal and reality, and of sensuous rending and physical outcome must be understood as the intrinsic—and necessary—hazards that accompany experimental forms of development.

In his description of the Google Gosplan, Bratton suggests that the "future evolution of Cloud platforms that absorb traditional functions of the state (such as Google, to a degree) may realize forms of effective governance that are recognizable as both minimal state and maximal state at once."[90] What Bratton is referring to here is, of course, two-state forms posed by the philosopher Robert Nozick.[91] The maximal state is the sort of state-form crafted in the Soviet Union and elsewhere (in the United States during the New Deal era, to a much lesser degree, for instance): it is large and all-encompassing, a "just state" that provides an infrastructure for negative freedom, that is *freedom from* external and internal restraints that prevent one from fulfilling their goals. The minimal state, meanwhile, is a minarchist or "night-watchman" state whose primary purpose is to provide an infrastructure for positive freedom, the *freedom to* act as one sees fit in the world. The minimal state is the

89 Ibid., p. 189.
90 Ibid., p. 372.
91 See NOZICK, Robert, *Anarchy, State, and Utopia*, New York: Basic Books, 1974.

libertarian state-form, and indeed is frequently invoked by those who advocate charter cities, sovereign "patch" units, and other forms of DAOs. By suggesting that future governance might combine and eclipse both the minimal and maximal state at once, Bratton converges with what we posited in the previous section: that the trends of decentralization and fragmentation can easily co-exist alongside trends towards centralization and integration, and that these two directions may very well be contingent upon one another.

This apparent paradox can be glimpsed even in the social condenser model: liberated from grueling work (due to the end of the capitalist division of labor), freed from clutches of private property through the collectivization of domesticity, and liberated from material want, the individual is not truly liquidated, but opened up to a world of drift. An alternative model was posed by the disurbanists, whose dreams are temporarily infected by the Gosplan technocrats. For them, the urban form was to be eliminated, and the key institutions—factories, the cafeterias and social centers etc.—were to be distributed across the landscape alongside lengthy roads. Like the social condenser, material necessity would be provided through this institutional infrastructure, yet private homes persisted in the form of mobile, nomadic dwelling places. As with models like Constant's notorious New Babylon, the urban social condenser and the high-tech caravan life of the disurbanists illustrated that far from rendering difference obsolete, the opportunities provided by standardization, rationalization, mechanization, so on and so forth, created the baseline for a true difference to emerge—a movement from the material reality of Fordism to a world of difference-in-itself, where transformation and flourishing is no longer mediated by the universalist exchange of the general equivalence.

Nick Srnicek and Alex Williams refer to this paradigm as neither positive nor negative freedom, but a to-be-constructed *synthetic freedom*, a "maximal provision of basic resources needed for a meaningful life: things like income, time, health, and education. Without these resources, most people are left formally, but not really free."[92] The stag-

92 SRNICEK, Nick, WILLIAMS, Alex, *Inventing the Future: Postcapitalism and A World Without Work*, London: Verso Books, 2015.

gering prometheanism of this goal, which truly entails nothing less than the revolutionary transformation of everyday life in all of its dimensions, appears at first to be doomed, ultimately slated for being dashed apart upon the rocks of complexity. A counterpoint arises, however, in a shift in the way that engagement with complexity is carried out. As James Scott and others have described, traditional state-forms are reliant upon *seeing*: to carry out administrative tasks, for good or for ill, is dependent upon the ability to visualize the entirety of the territory in question in order to understand it and to intervene within it.[93] Scott finds this logic at work in early modern approaches to forestry and farming and in the industrial factory, and Foucault's "panopticon", so characteristic of his disciplinary society, marks its ascendancy. The problems tackled by Taylor through his time-and-motion studies, likewise, are an expression of the needs to see in order to inflect command—but in many respects this is all over today. In a period of compounding abstraction, speed, and complexification, governance by way of visualization falls by the wayside as the territory itself becomes an intense fog.

This isn't to say that administration declines. Instead, it reboots: the disciplinary society passes into the control society, and visualization passes into a regime of *haptic* capture. State and corporate governance now not only see, but *feel* by way of the integration of sensor networks, linked to databases (analyzed and managed by algorithmic systems), into the totality of an environment that is no longer treated as series of divided spaces (molds), but understood as a modular, self-transforming continuum. This stands to fundamentally change the very architecture of governance itself, as Bratton points out: "The work of contemporary governance is transformed toward the management of multiple, irregular, asymmetric layers of Cloud platforms, and as the 'eyes' of the state evolve, its bones and blood will follow."[94] Such systems are precisely what makes Wal-Mart or the "Google Gosplan" possible, and if there is a possibility for the production of a synthetic freedom, it too will require

93 SCOTT, James C., *Seeing Like A State: How Certain Schemes to Improve the Human Condition Have Failed*, New Haven: Yale University Press, 1998.
94 BRATTON, *The Stack*, p. 120.

the rigorous engagement with these technologies, as well as the technologies-to-come (such as the widespread use of blockchain and blockchain successor technologies) and the ways in which these forces will both compliment and clash with one another.

It is in the gap between the real present and the possible (near-)future that a revival of the *artist-engineer*, the *worker-artist*, the *artist-scientist* must insert itself. This entails the rejection of design as a laboratory for the commodity, and an abandonment of so-called "political" art's position as a medium for piecemeal "critique" and commentary (a disastrous reflection of the liberal ideal if there ever was one). It calls for the rigorous engagement with the study of technical systems, economic flux, administrative organization, and various patterns that link into one another across the various scales of our turbulent world-system. It also means to not outright reject certain technical objects or systems for their perceived ideological basis, for these things can never be reduced to what their most stalwart proponents have in store for them. They have a productive logic of their own, and the law of unintended consequences is only the tip of that iceberg.

To bring this a little more down to earth and more immediately to our purposes here, it is the blockchain that stands as the excellent example of just this sort of technical object. Maligned by the left as a libertarian tool, praised by the anarcho-capitalists as the means of progressing towards the minimal state, or to perhaps even more atomized forms of politico-economic behavior, the blockchain appears as something that has no place in the sort of future that is being discussed here (the remarkable and destructive arrogance of thinking one can pick and pose technical systems for the future is a discussion point for another time). Yet, as we've just seen, the blockchain is not only the subject of inquiry by the libertarians and the anarcho-capitalists; it has presented an array of options to the state as well, from the automation of daily functions to the organization of welfare systems to advanced record-keeping. Likewise, the blockchain has also attracted the eye of those looking to optimize sensor systems, that largely imperceptible tool of twenty-first century governance. One example of this is Nokia's recent proposal for a blockchain-powered Internet of Things system that will monetize the analysis of date

pulled from urban sensor networks, while another might be the usage of smart sensors and blockchain to effectively manage decentralized, green energy power grids in an urban environment.

The difficulty is to avoid either pitfall, of either the libertarian or anarcho-capitalist—or, even further, the neoreactionary—positions, or of the left-liberal, social-democratic-like solutions to the developmental question, all of which sequester themselves under the rubric of the performance principle. The real question: what could something like Nokia's proposed system do if freed from the impulse to monetize data? How could blockchain assist managing decentralized power systems in a situation in which the difference between town and country has been torn asunder? Can the automation of state administration, industrial processes, and logistical systems be deployed to bring us into alignment with an unavoidable alien future? The questions are, ultimately, of a political nature, and can in no way be reduced to the figure of the blockchain, for they are embedded in the matrices of centuries-long development, one that weighs on the ability for us to act—but there is also an aesthetic component here, as we have seen. It is the component that tries to articulate in advance a political vision that it can never capture, but in doing so produces something essential for the struggle to realize that vision: the reclamation of modernity, the opening-up of an *alternative modernity* that executes the vital task of breaking with the past with the goal of realizing a New Reality Principle, a New Reason.

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