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Epimethean Education and the Student as Standing Reserve: Pragmatism, Technology, and Democracy in the United States

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ABSTRACT:

The dynamic model for public education laid out by John Dewey in the early 20th century has broadly established the terms by which democratic progressive education is evaluated in America. Since the publication of his work *Democracy and Education* (1917), there has been an unprecedented acceleration of technological innovation and global market restructuring that pose problems for Dewey's progressive program. The aim of this TFM is to analyze the viability of Dewey's program for progressive democratic education as it has been problematized by what 21st century philosopher Bernard Stiegler calls the hyper-industrial age, characterized by the merging of symbolic and industrial production which finds its apex in globalized digitization. Hyper-industrialization complicates the individuation and political engagement of citizens and intergenerational knowledge retention and transmission. This constitutes a threat to the promises of democracy and the possibilities of democratic pedagogy. I will employ a poststructuralist analysis of John Dewey's conception of education through the philosophy of technology as articulated by Bernard Stiegler. The frame myth of Prometheus and Epimetheus in his major work *Technics and Time* (1998) will guide an exploration of new prospects for the future of democratic education through an anthropology that takes technics as co-constituted with humanity. My goal is to model a critical assessment of the vulnerability of our informational and ecological environment through the acceleration of technology in the digital age which can maintain that the demand for public education rightly conceived is coeval with a democratic society.

KEYWORDS:

Dewey, Stiegler, education, technology, democracy, hyper-industrial age

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Introduction

a. The Project of Democratic Education as Envisioned by John Dewey

What is often called in reference to geopolitics the beginning of the “American Century” was felt within America as its “Progressive Era.” The territorial expansion, population and economic growth experienced by Americans at the end of the 19th century raised new questions about the role and challenges of the republic in the face of such accelerating prosperity. The many failures and disappointments of post-Civil War Reconstruction brought to light the vast distance between the promises of the American experiment and the continual deliberation and painfully wrought compromises that would be required to approach them. Indispensable to this time of growth and self reflection were unforetold advancements in mobility and communication through the technologies of railways, automobiles, and the advent of mass media distribution in the forms of radio and film. These technologies showed a capacity for the expansion of political and economic engagement of the individual citizen never before imagined. At the same time, the meaning and scope of citizenship was changing as well with the enfranchisement of Black Americans and women.

As one of the foundational figures of the Pragmatist philosophical movement, John Dewey has had an outsized impact on the thought of American progressive social politics and administration at this time of incredible change. Though he is virtually unknown by Americans today, in his peak period of production, Dewey was a public intellectual *par excellence* at home and abroad. He traveled the world on extensive speaking tours and had a huge impact on pre-Cultural Revolution China. Writing at a moment when many spheres of American intelligentsia in the realm of education were caught up in a wave of spiritualization of political concepts such as race and sex, exemplified by the popularity of Rudolph Steiner or the Theosophical Society, Dewey’s social politics retain a strikingly sober and contemporary quality. He practiced a model of careful attention to the unique psychological capacities and limitations of children which is still regarded as a gold standard of educational theory. His dedication to the inclusion of women and all races and backgrounds into his democratic vision, as well as his lucid concern for the unjust perpetuation of an elite capitalist leisure class mark him as a model of progressivism that still resonates in our own political discourse today as he most clearly laid out in his book, *The Public and Its Problems* (1927).

With neither nostalgia, nor utopianism, his mode of thought is suffused with a unique blend of serious urgency and radical patience in his appeals for a stepwise approach to political change, while maintaining a high bar for the potential of human excellence available to every individual. Dewey was hopeful, maybe even naive enough to think, that a vigilant and responsible educated populace could understand and delegate into practice solutions to their own problems in ways that took into account the needs of every stratum of society, from the federal, to the local, to the individual as an interrelated whole. Dewey believed that a scientifically inculcated and globally connected society could remake the world to its own purposes through the nexus of properly aligned education, democracy, and technology, as he outlined in his great work, *Democracy and Education* (1916).

b. The Problem of Technology as a Problem for Deweyan Pragmatism

Since his groundbreaking work theorizing the power of education and technology to ameliorate public problems and disunity, Dewey's own concerns about the abuse and misuse of education and technology have only proven to be worse for the prospects of democracy than he had expected. The US's post-WWII economic boom thrust the United States into the center-stage of world geopolitics, and the US became embedded as a key player in a new global order. However, the subsequent acceleration in technological capacities has only created new problems for the public unity, self-knowledge, and education. Televised mass media brought with it the hugely profitable directorial power in consumption through marketeering. Advances in psychology and psychoanalysis were realigned with the purposes of propaganda in the interests of controlling public opinion and suppressing discontent. Now with the advent of the digital age and the free access to an incalculable amount of information, adults seem somehow less capable of *being* educated or less interested in *becoming* educated than ever, which I will be examining the reasons for later.

The current state of public education in America would be for Dewey an absolute shame—with the primary emphasis being on and what Dewey (1917) called “traditional classroom instruction” which do little for the individuation of children, and the proliferation of charter, private, and home-schooling which perpetuate class disparities. Meanwhile higher education continues to be an institution which divides Americans more than it unites them, with its exorbitant debt-incurring costs and the ways that elite universities retain dynastic lines through legacy admissions. And as for the sciences, which Dewey had hoped would be

the ultimate boon for public welfare, they are more beholden to corporate interests over public interests than ever. This could not have been more evident than in the field of medicine in the US during the Covid-19 Pandemic (Heled et al. 2020).

With the advent of the atomic bomb, anthropogenic climate change, mass surveillance and disinformation over the course of the second half of the 20th century and into the 21st century, thinkers began to take more seriously the possibility that the prospects of human flourishing are inherently threatened by technological advancement in itself. The figures which have come to comprise the vast and varied Continental Philosophy: the Frankfurt School social critics and the subsequent Critical Theorists, Heideggerian existentialists, post-structuralists, etc. have tried to account for failures to fully progress, and even the apparent regress in many vital areas, in the light of such bountiful advancements in knowledge and application of science.

Larry Hickman, a preeminent contemporary Deweyan Pragmatist, has taken up many of these criticisms directly to hold them up to the standards of pragmatic inquiry set by Dewey, since Dewey is no longer with us to defend himself. Hickman supports the claim of neopragmatist Richard Rorty that the Pragmatists are “waiting at the end of the road” that the Postmodernists are traveling in his book *Pragmatism as Post-Postmodernism* (2019).

Heidegger, a contemporary of Dewey whom he never directly addresses, held a seemingly romantic or nostalgic view of a life prior to or without what he defined as modern technology according to Hickman. Modern technology in Heidegger’s view was thus essentialized as something exterior to humanity and therefore naively demanded a concerted retreat back to “stone bridges” (Hickman 96). Accordingly, modern neo-Heideggerian Albert Borgmann, Hickman goes on to say, humorously suggests we set the timeline forward a little further than Heidegger, “by going only part of the way back, to acoustical instruments and home cooking” (96). Jacques Ellul is therefore even more radical in suggesting that all *technique* is bad in itself, since for him, “technology is a thing: a debilitating, all-consuming, autonomous force” (82). But for Dewey, artifacts are not divorceable from the social-milieu in which they are found, and they offer no essential meaning outside of that milieu.

As for the Critical Theorists who are concerned with the Marxist lens on modern capitalism maintained a similarly essentialist conception of technology. As in the thought of Herbert Marcuse, they held that science and technology are inevitably *wielded* by the tainting logic of capitalism to dominate the natural world and humanity, and if we could only sever that link that, “science would arrive at essentially different concepts of nature and establish essentially different facts” (67). Even though Pragmatism admits a perspectival variability to

the scientific meanings derived from facts or the salience of which facts about which ought to be inquired, it does not allow for a difference in facts themselves to be dependent upon who arrives at them or the intentions which brought them into view. Marcuse's conception of "instrumental reason" which demands a rewrite of reason goes too far in its denigration of reason itself. In a tongue in cheek way, Hickman goes on to praise Marcuse's own student, Andrew Feenberg, for his progress away from his teacher towards a position more amenable to what Hickman terms *Pragmatechnics*. "This generation [of Critical Theorists] has turned its attention to problems of pluralism, multiculturalism, and globalization, and has tended to view problems of technoscience not as separate from, but as a part of social life" (80), which is to say that they have learned from their predecessors misapprehensions.

Further, he rehabilitates the thought of Jürgen Habermas, as largely consonant with Pragmatism in his theory of *Communicative Action* as an impoverished form of Deweyan *inquiry*, on account of Habermas's own essentializing view of technology. Dewey's robust conception of *inquiry* is based on "historical-cultural-existential situatedness of a human organism that adjusts by means of the experimental use of tools of many different sorts" (76) rather than an "untenable dualism" (76). Indeed, the problems for Pragmatists always pertain to how the scientific knowledge and technological capacities are employed:

The Deweyan Pragmatist would not deny that greed, class interest, and uncriticized tradition often work to prevent the enlargement of the meanings of human existence (a rough analogue of Habermas's "colonization of the lifeworld"). She would insist, however, that where meaning is diminished or eclipsed, scientific technology is not the culprit. In her view, if men and women are not free then it is not the fault of too much, but too little scientific technology (understanding scientific technology as the intelligent use of tools to solve perceived problems). And if there are problems in the public sphere, it is not the fault of too much, but too little democracy (understanding democracy as "belief in the ability of human experience to generate the aims and methods by which further experience will grow in ordered richness"). (76)

But if we take Dewey (1917) at his word that "Science is experience becoming rational" (245), what are we to call all these manifestations of technology that are experienced as such irrational outcomes for democracy and education if they are not science? Dewey does not allow such a reification of bad technology, *per se*. There are only bad, i.e. unscientific, applications of technology.

Pragmatism cannot countenance a technological horizon beyond which the will of democratically aligned humanity is powerless to direct according to its own ends. If every time an arrival of new technology is felt as a loss for humanity, Pragmatists say it was the

result of “not real technology, nor democracy,” (barring the insufficient defense that, “true Deweyan Pragmatism has never been tried”) for the purposes of this paper, most charitably, this amounts to an unfalsifiable hypothesis, and at worst, a “No True Scotsman” Fallacy.

c. The Epimethean Response to Pragmatechnics

Fifty years after the publication of *Democracy and Education* (1917), Ivan Illich identified the self-destructive, even suicidal applications of pragmatic education in the United States. In his collection of essays, *Deschooling Society* (1971), Illich recognized that the fixation on technoscientific progress really means reducing human activity to production and consumption that requires a school system molding students into producers and consumers. He related this impulse to the myth of Prometheus and our ignorance of the key element of the story which was his brother Epimetheus. Illich offers within this framework a way to reformulate humanity’s relationship to technology which does not retreat from technology, but a recommitment to responsibility to the earth and a hope that does not expect an end to human problems. However, what I will show warrants continued analysis through Bernard Stiegler, is the eventual failure of Illich’s suggestions for a practical implementation of a rebirth of the Epimethean man.

For Bernard Stiegler, then writing nearly a hundred years on from *Democracy and Education* (1917), and who is also absent from Hickman’s (2019) defense of Pragmatechnics, technology is neither essentialized nor inherently bad. In accordance with the work of his own advisor, post-structuralist Jacques Derrida, he takes a critical stance to the reification of an inherent badness in technology with neither a nostalgic call to retreat from technology nor utopianism. He avoids Hickman’s criticisms of his predecessors within Continental philosophy while offering a unique criticism of modern technology that does not reduce technology to a good/bad distinction. For Stiegler, in his primary work on the topic, *Technics and Time* (1998), technology is necessarily co-constitutive of humanity and the ordering of civilization. Stiegler (1998) appeals to Husserl’s phenomenological retentions to explain technology as a prosthesis of human memory as tools, and later machines. It is only through this external concretization, i.e. exosomatization, of memory that culture can persist diachronically. Technology is overdetermined in its potentiality, and human culture advances to meet this potentiality by assimilating it and transmitting that integration intergenerationally.

Thus far, his thought can be mostly accorded to the terminology of Dewey's (1917) own conception of technology's relation to human culture and education. However, it is critical for Stiegler that these advances in technology are not neutrally felt. In a return to Plato as instructive to the question concerning technology, Stiegler hangs his analysis symbolically upon the myth of Prometheus as laid out in Plato's *Protagoras*, which has long been recognized as the genesis in the Western history of the philosophy of technology. While Heidegger neglected the importance of Prometheus's brother, Epimetheus, Stiegler centers his analysis of technology on the dialectic between the two brothers as it plays out allegorically in the realm of human affairs as a perennial process. This dialectic results in the reception of the fire from the gods, but is felt as a fall, or a forgetting, which grants hope to humanity for its survival.

The problem for humanity is not within technology itself, but with the acceleration of dimensional-scales, in the sense of time and space, on which technology has come to operate on and within the globalized world. The overdeterminacy of the potential of global digital technology is no longer possible to be assimilated by human culture as it had before. In his book *Symbolic Misery* (2014), he describes how we are left in a state of "symbolic misery" due to an incapacity to properly individuate within such a globalized technical system. This ultimately redounds to the return of entropy, or a reverse of the "negentropy" long afforded by technology in humanity's ordering of its world. In effect, the prospect of education, by which is meant memory transmission, and therefore democracy, is in crisis. Stiegler eschews the demarcation of a shift from modernity into postmodernity, instead he claims that we have gone from a state of industrialization to *hyper-industrialization*. In his last published book, *Bifurcate: There Is No Alternative* (2021), he insists on the necessity of *bifurcation*, in the Whiteheadian sense, as a way to restore a right relationship to technology.

In Stiegler's analysis, therefore, Dewey witnessed the apex of a global jerk in the acceleration from industrialization to hyper-industrialization. Though Dewey could not have imagined the global digital technology the 21st century has wrought, Dewey and Stiegler would ultimately agree that today's problems require *inquiry* that is only possible today, after they have already appeared to us. Stiegler, therefore, problematizes and reaches past the Pragmatist mode of inquiry to offer a more robust means of analyzing modern technology which can be instructive for the project for human flourishing at the nexus of democracy, education, and technology.

In order to analyze the viability of Dewey's proposed approach to achieving democratic education in the US as it is problematized by hyper-industrialization, it will be

necessary to outline the core elements of how Dewey thought about technology neutrally as a key element to progressive growth of society. In *Part I*, I will critically examine the aspects of John Dewey's thought relevant to the topic of Pragmatism's theory of technology through his works *Democracy and Education* (1917), and *The Public and Its Problems* (1927). First, I will be introducing some historical background to the project of John Dewey and characterizing his process of inquiry. Then, I will delve into his conception of science's role in relation to nature as it will later be questioned. Through this, it will become evident what Dewey thought that technology is and what our power over it is able to do. This will lead me to examine Dewey's conception of individuation as it ought to be possible within the humane age he envisioned for scientifically guided democracy. And finally, I will set up the problems posed by modern technology according to Dewey's own concerns in the dawn of mass communication capacity for the project of pragmatism's conception of democracy and education.

In *Part II*, I will examine the criticisms of the institutionalization of public education in America through the lens of the work of Ivan Illich, *Deschooling Society* (1971), writing over a half century after the publication of Dewey's major treatise, *Democracy and Education* (1917). Illich will serve as an intermediary foil for Dewey in the development of the problems of technology as they pertain to the goals of democracy and education. He introduces the reevaluation of the pre-Socratic form of the myth of Prometheus (forethought) to advocate for a societal valorization of Epimetheus (afterthought). However, his practical suggestions ultimately fail on account of the complications of the digital age, which will be better explored through Stiegler's work.

In *Part III*, I will introduce the thought of Bernard Stiegler in more detail as it can problematize the modern concerns of technology for Pragmatism through a post-structuralist phenomenological approach. I will start by showing how Stiegler (1998) begins from a place where Dewey left off in his articulation of the role of the technical object in culture and progress. Next, I will draw links between Stiegler's (1998) anthropological reading of the history of technics to that of Dewey (1927). This is then made deeper by Stiegler's recovery of the insight afforded by the myth of Prometheus and Epimetheus as presented by Plato. I will show how Stiegler's thought diverges from that afforded by Dewey (1927) in his conception of hyper-industrialization as an incapacity of culture to catch up with technology. The articulation of "symbolic misery" (Stiegler 2014) will become evident as having a direct lineage back to those initial concerns of Dewey for the future of communication and

education. Finally, this will lead me to Stiegler's (2021) insistence on the need for *bifurcation* as a collective response to the disasters of hyper-industrialization.

In my conclusion, I will draw out some of the ramifications for this dialog between Stiegler and Dewey for the particular problems raised by contemporary theoreticians on the future of digital technology in the realm of artificial intelligence such as it portends to grant undemocratic power over the education of the public to tech corporations. I will explain how this discourse signals a tacit abandonment of Pragmatism within the American technocratic elite. The conclusion will attempt to validate Stiegler's (2021) call for an economic and political framework that recenters "negentropy," the reversal of informational and ecological disorder, for the perpetuation of modern civilization.

Part I: John Dewey: the nexus of education, democracy, and modern technology

a. Inquiry: the search for a public to educate

Now nobody would dispute that the education of the young requires the special attention of the lawgiver. Indeed the neglect of this in states is injurious to their constitutions; for education ought to be adapted to the particular form of constitution, since the particular character belonging to each constitution both guards the constitution generally and originally establishes it—for instance the democratic spirit promotes democracy and the oligarchic spirit oligarchy; and the best spirit always causes a better constitution... And inasmuch as the end for the whole state is one, it is manifest that education also must necessarily be one and the same for all and that the superintendence of this must be public, and not on private lines, in the way in which at present each man superintends the education of his own children, teaching them privately, and whatever special branch of knowledge he thinks fit.

~Aristotle, *Politics*, Book VIII

In accordance with Socrates' earlier discourse in the *Republic*, Aristotle places the education of the young as central to the constitution of a state. We ought to be immediately struck as moderns by the progressive implications of such an egalitarian program of public education until, of course, we remember whom he had meant by *all* in this statement: male, non-slave, future citizens of the *polis*. Conceptualizing an education system for a group of young men of a *polis* composed of, at the time, only ~100,000 inhabitants is no doubt a reasonably difficult enough task. However, the basic demands of a public education in a modern nation state like the United States is a herculean task to conceive and entails orders of magnitude greater challenges, not least of all the impossibility of ever forbidding elite private schooling or homeschooling. Indeed, as we have since come to expand the meaning of *all* across huge distances, across class, gender, race, and cultural lines, the challenges of formulating a coherent system of education constituting a democratic society only grow exponentially.

The elitist liberals of the nation's founding did not have such a broad conception of a free, rigorously defined and uniformly implemented public education which bears peculiar marks on the US to this day. The influential thinker of the American Revolution, Thomas Paine, is now seen as a prototypical champion of the "school voucher" movement for his suggestion in the popular *Rights of Man* (Paine 2023) pamphlet that funds ought to be given directly to poor families to make payments for their boys' schooling as they see fit. A direct implementation of education by the state, we are led to assume, would stifle the individual "natural genius" (Paine 2023) as they could hope to go on to apprentice in a trade. The free

market will most effectively, as in the Platonic sense of justice, allocate the individual to the task that best suits him.

Likewise, drawing from French anti-clerical enlightenment thought of Voltaire, they held that education ought to be wholly decentralized and divorced from religious institutions, a hard break from the hierarchical catechetical tradition established in Europe for centuries. At the foundation of University of Virginia, Thomas Jefferson's goal was to implement a public institution which dispensed with the dogmatic and undemocratic *enthusiasm* endemic of the even the Protestant churches, going so far as to refuse to hire a teacher of theology, apologetics, or scripture, which was quite heterodox for the time (Strehle 2018, 195). His vision of America was one composed of a public for which religion took much more of a backseat role, consigning the place of religion to the realm of the private sphere, as Robert Bellah noted, as concretized in the "establishment clause" of the US constitution (Bellah 1988, 99). But, this was all set in motion while the machinations of government were reserved for the purportedly dispassionate elite men of New England.

Indeed, what is considered religious *enthusiasm* at any given time in the realm of education has been a continuous source of pain for the American public. As early as the discontented post-Civil War era, many Americans wanted this pushed even further as in the case of the National Liberal League founded in 1866, who sought a more total separation of any religious vestiges from the mechanisms of government or institutions that receive public funding, especially in the realm of education:

Christianity...is averse to republicanism, [and so] the education of the masses out of [the] religion is an absolute necessity for the perpetuation of this Republic...Universal education is the only safeguard of universal liberty; no child in the republic should be permitted to grow up without at least a good common school education; the public school system cannot be sustained in equal justice to all except by confining it strictly to secular instruction. (Strehle 2018, 224)

The fever-dream of the Scopes trial, rightly lampooned as an atavism even for the majority of Americans at the time, came to symbolize the ever encroaching enemy to a secular democratic public education. Today, in the continuation of the American tradition of extreme political polarization, with endless news of school library book bannings, of football coaches praying with their team on campus, and denials to accommodate bathrooms for transgender students, we start to get a picture that seems confused as to what even still holds the nation together.

A corollary reading of Aristotle's principle of the correspondence between an education and the regime might lead us to ask, "what is the regime being promoted by the US system of education?" John Dewey, the foundational member of the Pragmatist school of thought and great systematizer of the early 20th century, made a statement in *The Public and Its Problems* (1927) that could easily be heard today:

The local conditions under which our institutions took shape is well indicated by our system, apparently so systemless, of public education. Any one who has tried to explain it to a European will understand what is meant. One is asked, say, what method of administration is followed, what is the course of study, and what the authorized methods of teaching. The American member to the dialogue replies that in this state, or more likely county, or town, or even some section of a town called a district, matters stand thus and thus; somewhere else, so and so. The participant from this side is perhaps thought by the foreigner to be engaged in concealing his ignorance; and it would certainly take a veritable cyclopedic knowledge to state the matter in its entirety. (112)

As it stood at his time, there was no top-down capacity of the US government, no Department of Education, to regulate the education of American children nationally. Nonetheless, this is where John Dewey took back up the mantle of Aristotle's principle to *inquire* as to the possibility of an education which promotes genuine democracy. But as to this democracy, our first challenge is to define what even is this *public* which is thus implied to rule by the word *demo*-cracy. As I had just recounted, this is a massive and broadly dispersed population whose relations have always been framed within a highly unregulated market system as sovereign individuals which share no fundamental *religio* in common.

But, this is a show of the courage of Dewey that this is not enough to abandon the project of a searching for "a public" where all that is to be seen is a contingency of accidents which located irreconcilable peoples within the same borders, for:

Accusing a democracy of a tendency to prefer mediocrity in its elected rulers, and admitting its exposure to gusts of passion and its openness to folly, [Alexis de Tocqueville] pointed out in effect that popular government is educative as other modes of political regulation are not. It forces a recognition that there are common interests, even though the recognition of *what* they are is confused; and the need it enforces of discussion and publicity brings about some clarification of what they are. The man who wears the shoe knows best that it pinches and where it pinches, even if the expert shoemaker is the best judge of how the trouble is to be remedied. Popular government has at least created public spirit even if its success in informing that spirit has not been great. (207)

The value or hope of democracy turns out to be that it makes the assertion that a public of common interests *must* be, that the *what* of their fate is shared or somehow transindividual. It

writes an I.O.U. for a public that ought to be listened for, or, to turn a Lacanian phrase, the public does not *exist*, it *insists*.

b. Growth and Experience: opposition to nature and outgrowing the past

John Dewey believed that the only way to secure a democratic public, what he calls the “Great Community,” which is able to inquire into and communicate its own common interests to its mechanisms of state, from out of the “Great Society” brought about by the technologies of industrialization requires a certain kind of education unlike any ever achieved before (Dewey 1917, 142). Dewey, in his characteristically dry and mirthless way of coinage, begins his primary treatise on the interdependence of democracy and education with an equation of life with growth, and growth with scientific advancement; that, “[c]ontinuity of life means continual readaptation of the environment to the needs of living organisms” (2). The environment is the only thing that actually educates a person, “We never educate directly, but indirectly by means of the environment. Whether we permit chance environments to do the work, or whether we design environments for the purpose makes a great difference. And any environment is a chance environment so far as its educative influence is concerned unless it has been deliberately regulated with reference to its educative effect” (19). Therefore, if you want to educate someone, be they child or adult citizen—since for him education is not *necessarily* limited to age, you must regulate the environment in which someone finds herself. There is no *terminus* for civilization, just as there is no *limit* to the amount of progress a society can achieve. Accordingly, “[s]ince in reality there is nothing to which growth is relative save more growth, there is nothing to which education is subordinate save more education” (51). The environment must therefore be limitlessly pliable in order to maintain a future for democracy which remains open.

Dewey construes “environment” incredibly broadly to include anything which instantiates experience, whether psychically, physiologically, or socially, “[t]hus the activities of the astronomer vary with the stars at which he gazes or about which he calculates. Of his immediate surroundings, his telescope is most intimately his environment” (11). For Dewey, it was the myopia of the prior societies that they thought the other way around, thinking of the project of the community as a continual readaptation of the needs of living organisms to the environment. The savage societies’ kind of adaptation “involves a maximum of accepting, tolerating, putting up with things as they are, a maximum of passive acquiescence, and a

minimum of active control, of subjection to use” (47), whereas the civilized man comes into an inhospitable environment and set himself *against* nature as the limit factor for the environment. Dewey’s position is ultimately that the Greeks, especially Plato, could not have possibly imagined the capacity for proximal betterment available to them in industrialized society, leading them to essentially make do with the forms of political arrangement which were immediately accessible to them.

According to Dewey, absolute knowledge, *noesis*, conceived as entirely disconnected from *experience* emerged because the state of their technological capacities and empirical science was not enough to consider remaking the environment. Plato’s prejudice against the contingent and incarnate sciences was constructed because only a total escape from the environment could offer reprieve from its challenges. Thus, “[i]t was natural for Plato to deprecate the learning of geometry and arithmetic for practical ends, because as matter of fact the practical uses to which they were put were few, lacking in content and mostly mercenary in quality. But as their social uses have increased and enlarged, their liberalizing or ‘intellectual’ value and their practical value approach the same limit” (259). Perhaps, if you could have shown Plato a modern actuarial program, maybe he would have given up on the whole project of pursuing the Form of the Good.

If that is the case, there is therefore really no need to look upward or inward for knowledge in its highest sense, it is all only available through the scientific method which grants predictive power over experience. However, Dewey’s ultimate dismissal of the continued relevance of Plato is partly due to his conflation of Platonism with the positions of Socrates, ignoring the dramaturgical nature of Plato’s project which is meant to engage the reader maieutically. But more importantly, it stems from his peculiar presentist bias which holds that only contemporary inquiry is relevant because there are no universal problems for humanity, only contingent problems for a temporally and locally situated populace. William Paringer argues in *John Dewey and the Paradox of Liberal Reform* (1990) that this is the core cyclical logic which underlies Dewey’s thought. The paradox is that the interests and aims of a democratic society are always contingent upon the biases, prejudices and misunderstandings of a society’s past, but that it nonetheless must somehow seek to exceed those inheritances through and in spite of them (Paringer 1990, 32). Richard Rorty, as a neopragmatist, will go on to face this paradox more openly in his formulation of the “ironist,” one who is self-aware of and unperturbed by her inability to get around the indispensability of her contingencies, while adopting a strict detachment from them (Rorty 1989, 73).

c. STEM: the abjuration of the contemplative life

Indeed, for Dewey, the project of supporting the higher contemplation of the few, i.e. philosopher kings, with the coerced labor of everyone else was founded entirely upon misunderstandings of the value of knowledge which ought always to be made useful by its being made public. In fact, private and useless knowledge is for him an oxymoron. Dewey rejected the possibility that an elite leisure class of thinkers could learn anything of real value from lazing about and engaging in *dialogos*. Further, the Greeks were simply uninterested in bettering their conditions by altering their environment,

If we take what the philosophers stood for in Greek life, rather than the details of what they say, we might summarize by saying that the Greeks were too much interested in free inquiry into natural fact and in the aesthetic enjoyment of nature, and were too deeply conscious of the extent in which society is rooted in nature and subject to its laws, to think of bringing man and nature into conflict. (278-79)

Greek thought also thereby misapprehends the innate plasticity of the capacities of every individual by placing them into such narrow sets of typologies (90). They limited themselves first, therefore, by coming up with rigid schema for the organization of society. Then they tried to fit the people into the schema, rather than dynamically suiting the schema according to the people as an actual Deweyan democracy would require.

This fundamental criticism of Greek thought is why Dewey said of Francis Bacon that he was “an almost perfect example of the union of naturalistic and humanistic interest” (282). Bacon is for Dewey a model of the *anticipatory* responsibility of scientific pursuits. Quoting Bacon, he says:

“Knowledge is power.” This aphorism meant that through science man is to control nature and turn her energies to the execution of his own ends... Through the new method of thought which was set forth in his new logic an era of expansive discoveries was to emerge, and these discoveries were to bear fruit in inventions for the service of man. Men were to give up their futile, never-finished effort to dominate one another to engage in the cooperative task of dominating nature in the interests of humanity. (282-83)

If a proposition cannot *anticipate* the results of some process, it is not scientific and therefore holds no power to remake the environment for human ends. Only in the concerted effort to remake the environment can peace among peoples be possible. Dewey locates in Bacon the

beginning of the rightly ordered optimism about science and technological progress as redirection of energies against each other towards their environment.

The coincidence of the ideal of progress with the advance of science is not a mere coincidence... Science is experience becoming rational. The effect of science is thus to change men's idea of the nature and inherent possibilities of experience. By the same token, it changes the idea and the operation of reason. Instead of being something beyond experience, remote, aloof, concerned with a sublime region that has nothing to do with the experienced facts of life, it is found indigenous in experience:— the factor by which past experiences are purified and rendered into tools for discovery and advance. (224-25)

However, despite his praise for Francis Bacon, the problem for Dewey was that this historical moment of insight was subsumed by a monarchical and feudalistic political system which could not actually manifest the promises latent within scientific reason because the mass of people were not at license to direct their own labor. He accepts the Aristotelian premise of slavery which can be said to be the case for anyone who does not know why they do the labor they do. However, slavery's opposite, freedom, is for Dewey more akin to that of another foundational empiricist thinker, John Locke, for whom freedom is "a question of (productive) power in the ontological sense (and, indeed, in the political sense), that is, more specifically, an ability to cause a change in something external to that power. According to this view, freedom is a transitive activity, an "acting on," a transfer of energy from a source (cause) to a recipient (effect)" (Schindler 2017, 132). It therefore took the arrival of the material conditions of the industrial revolution for technology to reach a point at which this project could receive broad enough attention to be feasible:

If this progress [of empirical science] has demonstrated anything, it is that there is no such thing as genuine knowledge and fruitful understanding except as the offspring of doing... This is the lesson of the laboratory method, and the lesson which all education has to learn. The laboratory is a discovery of the condition under which labor may become intellectually fruitful and not merely externally productive. (275)

The Athenian Academy has now *become obsolete* by the laboratory of modern science, technology, engineering and mathematics, i.e. S.T.E.M., in modern educational theory jargon. The term has become a commonplace in educational policy since it was coined by the National Science Foundation in 2001 (Brown and Lacquement 2020). 21st century education policy goals place primary emphasis on the "evidence-based" advancement in STEM, especially playing a major role during the Obama administration (Brown and Lacquement 2020). This emphasis on the capacity to *anticipate* is why Dewey later called his own strain

of Pragmatist philosophy “experimentalism” because every proposition for “intelligent action” ought to be productive in an “ontological sense,” by which he meant that actions ought to only be predicted and measured in materialist naturalist metrics. In a paradox highly endemic of the American way of thinking, Dewey somehow manages to be a champion of anti-elitism and the deferment to experts.

The role of the laboratory, as a place in which labor is done, Dewey sees as consonant with the directive of a proper educational program which holds exploration of personal interests as a primary mode of learning. The laboratory is a place where progress of knowledge is an end in itself, just as play is an end in itself for children and has the added value of learning. In fact, Dewey later founded a school to test out his ideas which he called the Laboratory School, which still has some daughter schools connected to the University of Chicago (Durst 2010). As another point of departure from Plato, he takes issue with the classical grouping of craftsmanship with the arts, “It is suggestive that among the Greeks, till the rise of conscious philosophy, the same word, τέχνη, was used for art and science” (195). It is an accident of etymological history that the English words derived from the Greek word τέχνη, such as technique and technology, have so many distinct meanings from those of closely related words of latin or nordic origins such as artisanry science and skill. Plato saw τέχνη, or *techne*—for the purposes of this paper, as having ends outside of themselves, and ἐπιστήμη, *episteme*, as a higher knowledge. For Dewey this *artificial* distinction has robbed humanity of much of the advancement that could have been afforded, and the two need to be collapsed into one.

d. From Savagery to Civilization: the meaning of the technical object

Dewey rejects the proposition that scientific knowledge, and therefore technology, can ever be inherently bad. As he put it, “The instrumentality becomes a master and works fatally as if possessed of a will of its own—not because it has a will but because man has not” (1927, 175). There are thus only misuses of science applied by a culture that has not properly formulated an aligned will for the aims that technology ought to accomplish:

There are those who lay the blame for all the evils of our lives on steam, electricity, and machinery. It is always convenient to have a devil as well as a savior to bear the responsibilities of humanity. In reality, the trouble springs rather from the ideas and absence

of ideas in connection with which technological factors operate. Mental and moral beliefs and ideals change more slowly than outward conditions. (141)

It is therefore incumbent upon the culture of a given time to change their “mental and moral beliefs” according to the ends afforded by particular time’s particular capacities. A society which has no will of its own conscious inculcation would inevitably be swayed by the affordances of new technology towards ineffectuality in accomplishing its own desires.

For Dewey, there are no universal ends to be pursued by such “intelligent action,” only contingent ends which relate to the state of a society in a particular environment, with different appliances—which he refers to alternately as tools, equipment, or machines—at their disposal. The capacities of appliances are the limit factor of progress of a society since experimental anticipation is necessary to the advance of genuine knowledge (296). However, these appliances do not inherently imply the advance of knowledge possible within their usage. They must be made socially contextualized to have any value for knowledge. If an entire society were to die all at once, the society would certainly cease to exist. But there is for each member of that society the certainty of an eventual death. Therefore, a society can only persist by a handing off of knowledge from one generation to the next. This process he broadly calls communication, and thus, “Society not only continues to exist *by* transmission, *by* communication, but it may fairly be said to exist *in* transmission, *in* communication” (4).

These appliances do not constitute the knowledge in which society persists, however they play an indispensable role:

A body of knowledge is transmitted, the legitimacy of which is guaranteed by the fact that the physical equipment in which it is incarnated leads to results that square with the other facts of nature. Thus these appliances of art supply a protection, perhaps our chief protection, against a recrudescence of these superstitious beliefs, those fanciful myths and infertile imaginings about nature in which so much of the best intellectual power of the past has been spent. If we add one other factor, namely, that such appliances be not only used, but *used in the interests of a truly shared or associated life*, then the appliances become the *positive* resources of civilization. (37)

Therefore, the progress of a given society is retained within the appliances if they are publicly shared and directed. The appliances must be, as the name implies, applied to a mediation of an understanding of nature. The accumulation of these appliances, if they continue to be used in this proper mode of scientific inquiry that brings man into conflict with nature, will keep us from wasting our time away, as the Greeks did, on all that unprovable nonsense those outmoded religions of the past were occupied with. Dewey himself abandoned the Christian

Congregationalist faith he had inherited from his devout parents sometime in his early professorial career as he came to the realization that it was incongruous with the prospect of progress he sought to model in his own life (Ryan 1995, 45).

Dewey is relatively progressive, even in our current usage of the term, in his insistence that the so-called “savage tribes” they would read about in history books were not so for any inherent quality of genetics or mental faculties, but for their lack of inheritance of an already progressed societal context, “We start not so much with superior capacities as with superior stimuli for evocation and direction of our capacities. The savage deals largely with crude stimuli; we have *weighted* stimuli” (1917, 36). It is hard for us now to imagine that this was a controversial statement, though it was at the time, that there was nothing particularly special or advanced about the Anglo-Saxon race, or to have been raised in the long lineage of North-Atlantic Latin Christendom, as Charles Taylor (2007) calls it. No, indeed, all that marks one out for the capacity of “getting up to speed,” as it were, is the availability of the tools necessary to communicate such progress to an individual and the people there to communicate it. So much is Dewey certain of technology’s role in cultural evolution, as a disagreement with Hegel, that he suggests we teach in school too much about politicians, generals, and diplomatists, the supposed great men of history. Instead, we ought to have our children learning about “the scientific discoverers and inventors who have put into man’s hands the instrumentalities of an expanding and controlled experience, and the artists and poets who have celebrated his struggles, triumphs, and defeats in such language, pictorial, plastic, or written, that their meaning is rendered universally accessible to others” (1917, 216). Indeed, for Dewey, human history is better understood as industrial and economic history than a history of thought and belief.

Society which can anticipate and thereby reshape their own environment therefore must employ appliances which are *idiomatic* as well, in the form of symbols: “Every step from savagery to civilization is dependent upon the invention of media which enlarge the range of purely immediate experience and give it deepened as well as wider meaning by connecting it with things which can only be signified or symbolized” (232). In “savage” societies, Dewey suggests, all that a child would need to participate in their society as an adult can be experienced directly as they work with the adults in their community to get up to speed with what they will be doing as an adult. In the context of education in general, but of institutionalized education of children especially, the complexity of an advanced society must be “stored in symbols” (8). At the same time, “there is always a danger that symbols will not be truly representative; danger that instead of really calling up the absent and remote in a way

to make it enter a present experience, the linguistic media of representation will become an end in themselves” (1927, 232). Dewey acknowledges a limit horizon when symbols can no longer substitute for the absence of a direct experience, a proposition which will be problematized later in the discussion of Derrida’s non-concept of *différance* as made salient to this discussion of technology by Stiegler.

e. From “The Great Society” to the “Great Community”: The annihilation of space and loss of symbolic community

When Dewey moved to the primary base of his career, Chicago, in 1894, “only one person in four had an American parent. In the country at large, there were hundreds of newspapers and magazines advocating the wildest possible politics in fifteen different languages. For many Americans ‘multiculturalism’ was not an aspiration but a widely regretted fact” (Ryan 1995, 24). Writing at a time when there was very little in the way of common history to bind Americans together, Dewey suggests that what has essentially kept the nation from crumbling under its own weight thus far was essentially an accident of the Industrial Revolution, “Our modern state unity is due to the consequences of technology employed so as to facilitate the rapid and easy circulation of opinions and information, and so as to generate constant and intricate interaction far beyond the limits of face-to-face communities.” (1917, 114). Dewey is not naive, however, to the fact that this advancement in commerce and communication technology is neither solely a boon to the public as community nor sufficient to maintain this unity of multiplicity: “The reception of new elements of population in large number from heterogeneous peoples, often hostile to one another at home, and the welding them into an outward show of unity is an extraordinary feat. In many respects, the consolidation has occurred so rapidly and ruthlessly that much of value has been lost which different peoples might have contributed” (115). Although in *Democracy and Education* (1917), Dewey praised the power of American institutional education for its necessary “assimilative force” (21), here the speed and the aggression of the assimilation into American culture is felt as collective violence. And this artificial commonality which has been hard won through such violence is of inferior quality to the difference which had defined them before:

The creation of political unity has also promoted social and intellectual uniformity, a standardization favorable to mediocrity. Opinion has been regimented as well as outward behavior. The temper and flavor of the pioneer have evaporated with extraordinary rapidity; their precipitate, as is often noted, is apparent only in the wild-west romance and the movie. What Bagehot called the cake of custom formed with increasing acceleration, and the cake is too often flat and soggy. Mass production is not confined to the factory. (1927, 115-16)

Rather than a similitude of political aims and engagement which are the necessary elements of a progressive democracy, it is a similitude of uninterest. Here, in the emphasis on the importance of film and mass media as means of “ruthless” cultural assimilation, we see already as early as pre-WWII America the inklings of what would later be called the “culture industry” by the Frankfurt School’s Horkheimer and Adorno in *Dialectic of Enlightenment* (1972) or the “control societies” of Deleuze (1992). Whatever was authentic about the primary American archetype of the pioneer which had previously offered symbolic force has already been re-produced to such a degree that its educative effect turns the people themselves into products.

Currently for him, it is still unclear how culture can accommodate having their localities nullified by the transportation technology, long-distance, even international trade, and information transmission through the burgeoning radio technologies, “It remains for the most part to secure the intellectual and emotional significance of this physical annihilation of space” (Dewey 1917, 87). This machine age in which his society finds itself offers the prospect of a totally self-revealing democracy, if only the machines could be directed for the purpose of effective communication to the public. This is the highest work of *inquiry* upon which the whole of his project lives or dies:

The highest and most difficult kind of inquiry and a subtle, delicate, vivid and responsive art of communication must take possession of the physical machinery of transmission and circulation and breathe life into it. When the machine age has thus perfected its machinery it will be a means of life and not its despotic master. Democracy will come into its own, for democracy is a name for a life of free and enriching communion. (Dewey 1927, 184)

Dewey’s hardline for the future of democracy is that humanity needs to release the technological industry and thereby the future of history from the binds of pre-industrial liberalism that rendered the state’s primary role as reifying and protecting private property, “...the simple fact is that technological industry has not operated with any great degree of freedom. It has been confined and deflected at every point; it has never taken its own course. The engineer has worked in subordination to the business manager whose primary concern is not with wealth but with the interests of property as worked out in the feudal and semi-feudal

period” (108). Once society can do away with this backwards holdover from feudalistic times of property rights, it can democratize technology in full force. However cautious he is about exactly what this untrammled technology will consist of, he is nonetheless certain that were it to happen, not only would material needs of food and shelter be guaranteed for all, it would also be a guarantee of the unleashing of the profoundest possibilities for personal individuation in community. It is then a matter of passing *through* the machine age into another,

If the technological age can provide mankind with a firm and general basis of material security, it will be absorbed in a humane age. It will take its place as an instrumentality of shared and communicated experience. But without passage through a machine age, mankind's hold upon what is needful as the precondition of a free, flexible and many-colored life is so precarious and inequitable that competitive scramble for acquisition and frenzied use of the results of acquisition for purposes of excitation and display will be perpetuated. (217)

Again, Dewey is certain that this “passage through” will be the inevitable results of decoupling laboratory science from the domain of profit-motivated businesses. This “material security” (217) is absolutely key to Dewey’s conception of personal individuation, or what he calls “acquiring a mind” of one’s own (1917, 295), which does not mean that it is an isolated possession of the self. Rather, “[t]hrough social intercourse, through sharing in the activities embodying beliefs, he gradually acquires a mind of his own... The self *achieves* mind in the degree in which knowledge of things is incarnate in the life about him; the self is not a separate mind building up knowledge anew on its own account” (295). This is an insightful paradox that in order for one to be a singularity, able to contribute originally to one’s society, one must be completely embedded in its already extant knowledge. How can one in such a massive and widespread nation be embedded in such knowledge incarnated around her when so much of modern life depends upon dealing in such disparate localities? How is achievement of mind, individuation, possible in such a dislocation from embodied knowledge?

Nonetheless, what remains to be discovered, by continued inquiry of course, is how communication of these tantalizing promises of democracy, which needs a full buy-in from the public, will be possible when communication is already in such dire straits. We are brought again to the problem of people’s attachment to the past, “[f]or the older symbols of ideal life still engage thought and command loyalty. Conditions have changed, but every aspect of life, from religion and education to property and trade, shows that nothing approaching a transformation has taken place in ideas and ideals. Symbols control sentiment

and thought, and the new age has no symbols consonant with its activities” (1927, 142). The symbols of religion and culture continue to be the thorn in the side of progress so long as they cling more to an outmoded set of propositions in lieu of real knowledge which has the capacity to anticipate and therefore the power to act. The shell of the pioneer, the wild-west romance, the movie, as was already mentioned above, these have not proven capable of engaging people politically, educating them scientifically, or opening their hearts to the as-yet contentless conception of the democratic life:

We have the physical tools of communication as never before. The thoughts and aspirations congruous with them are not communicated, and hence are not common. Without such communication the public will remain shadowy and formless, seeking spasmodically for itself, but seizing and holding its shadow rather than its substance. Till the Great Society is converted into a Great Community, the Public will remain in eclipse. Communication can alone create a great community. Our Babel is not one of tongues but of the signs and symbols without which shared experience is impossible. (142)

This Babel can only be broken down with *more* science and technology and thereby better communication in the right hands. But how can a process which has only ever denuded a society of its own signs and symbols for the communication of shared experience be expected to do its opposite, invent new signs and symbols? Technology, which has brought this society into a system of interrelations unlike humanity ever countenanced, how can it replace the need for a time and place of one’s own?

Part II: Ivan Illich: institutionalized education after John Dewey

a. Critique of Post-Industrial Education in America

What makes this country great is the creation of needs and desires, the creation of dissatisfaction with the old and outmoded.

~Vance Packard, *The Hidden Persuaders*, 1957

During the late 60's in America, in the decade just after the death of John Dewey, there was a sudden conflagration of every mode of thought or mode of operation perceived as institutional, systematized, or corporate. There was a feeling, though one could not say it was truly in the majority, that the old constructions of the ways of life that had dominated American society could really be rethought and recast in a new way (Bottomore 2010, 84). The glow of the 50's hegemonic mindset of endless growth and boundless unity was waning, just as American church membership hit its peak in 1954 during the "Red Scare" of Communism and has only declined ever since (Canipe 2003, 312). The university took on a primary role as the center of this reevaluation and saw within itself the power to really accomplish such a feat. International metropolitans like Herbert Marcuse, Michel Foucault, and Paulo Freire hurled ruthless critiques at a liberal capitalist world order increasingly set at odds with the Communist alternative in the Eastern hemisphere.

Among these social critics was Ivan Illich, who grew up in a Christian-converted Jewish family that fled the Nazis, lived all over Europe and finally wound up in the Americas as a Catholic missionary to Mexico and Puerto Rico among other places. He studied and worked under the advisement of Jacques Maritain, a key thinker in drafting the UN's Universal Declaration of Human Rights. Illich lived in New York during the 50's and 60's doing pastoral work. While there, he came to witness the strange ineffectuality of government institutions to ameliorate circumstances for the poor, what he calls modernized poverty in his collection of essays, *Deschooling Society* (1971) which he wrote fifty years after the publication of John Dewey's *Democracy and Education* (1917).

Unlike in the 3rd World countries, in which Illich had done missionary work, where your average rural farmer will spend most of his life with scarcely any access to the governing power of his country, modernized poverty has the effect of bringing the poor directly into contact with the extended arms of the institutions of their government on a near daily basis:

For instance, the U.S. poor can count on a truant officer to return their children to school until they reach seventeen, or on a doctor to assign them to a hospital bed which costs sixty dollars per day—the equivalent of three months' income for a majority of the people in the world. But such care only makes them dependent on more treatment, and renders them increasingly incapable of organizing their own lives around their own experiences and resources within their own communities. (Illich 1971, 4)

Though these institutions ostensibly exist to help the poor, what they end up producing is what Illich calls the “schooled society.” According to the soul-to-city homology laid out by Plato and further extrapolated by Aristotle through education in the *Politics* mentioned earlier, Illich is attempting to answer what kind of constitution America actually has based on the kind of education such people are receiving. He calls this the “hidden curriculum” of institutionalized school in itself, wherein, “School is the advertising agency which makes you believe you need society as it is” (113).

In a partial and massively insufficient way, this is a direct result of the thinking of John Dewey on the role of the school as an isolated microcosm of the “real world” which ought to be redirected by laboratory methods, and out of which the student can become a productive member of society which is remade by its incoming cohort. “These pacified in society are well described by Dewey, who wants us to ‘make each one of our schools an embryonic community life, active with types of occupations that reflect the life of the larger society, and *permeate* it with the *spirit* of art, history and science” (66). This artificial segregation of the young by the mature, according to Illich, amounts to a pacification of the next generation into the vision of a future occupation within a disciplined specialization as a producer and consumer.

It must be conceded that what Illich was witnessing was ultimately a bastardization of Dewey’s program, but it was suffused with the underlying premises of Dewey’s thought for the purposes of education. Illich goes so far as to say that this is America’s greatest missionary export as, “[s]chool has become the world religion of a modernized proletariat, and makes futile promises of salvation to the poor of the technological age” (10). This religion is complete with its own totalizing initiation ritual in the form of the university, but among the rest of the world’s rites, ours is “the first which has needed such a dull, protracted, destructive, and expensive initiation into its myth” (38).

b. The Core Tenets of the Religion of Progress: production vs virtue

Endemic of this mode of thought, or religion as Illich believes it to be, is the denigration and ultimate obsolescence of any kind of knowledge which can be garnered in direct engagement with the immediate needs of one's community. This is for Illich the fundamental issue with having an institution that artificially delimits a separate stage of pre-adulthood in which young people are expected to be divorced from the activities of broader society and then suddenly be expected to know how to meaningfully connect with that society once they have been schooled. As he puts it, "Incidental education cannot any longer return to the forms which learning took in the village or the medieval town. Traditional society was more like a set of concentric circles of meaningful structures, while modern man must learn how to find meaning in many structures to which he is only marginally related" (22). The means of education in what Dewey had called "savage" societies, where they could integrate their young directly into the occupations of the mature, is no longer viable in a system that has no center that offers a structure of meaning to the adjoining activities. There are only tangential spheres of production and consumption through which children ought to receive their "getting up to speed" separately and isolated from each other. For Illich, this bureaucratic institutionalization renders schools as a tool of the political "right," which is to maintain a top-down management on the development of individuals, and thereby, "children became a natural resource to be molded by the schools and fed into the industrial machine" (66), as opposed to Illich's conception of tools of the "left" which mold the activities of governance from the bottom-up.

The other form of knowledge which has not only lost all value but also finds no place within "schooled societies" is practical, as opposed to technical knowledge. Drawing from Aristotle's *Nicomachean Ethics*, Illich brings up the classical distinction between acting and making, "For neither is acting a way of making-nor making a way of truly acting. Architecture [techne] is a way of making...of bringing something into being whose origin is in the maker and not in the thing. Making has always an end other than itself, action not; for good action itself is its end. Perfection in making is an art, perfection in acting is a virtue" (62). And thus advances in modern technology have, "increased the ability of man to relinquish the "making" of things to machines, and his potential time for "acting" has increased" (62).

However, a society which only frames values in terms of production and product consumption can confer no value to a knowledge of doing, i.e. *praxis*, it can only confer

value to a knowledge of making, i.e. *poesis*. Excess waste, for example, is framed as a problem of, “what is to be *made* of all this recyclable material?”, and carbon emissions are framed as a problem of, “what car should I buy to produce less emissions?”. Therefore, discretionary time is a burden which is given the name “unemployment,” or “underemployment.” Thus, “Unemployment is the result of this modernization: it is the idleness of a man for whom there is nothing to “make” and who does not know what to “do”—that is, how to “act” (63). Discretionary time has come to be equated with a failure to produce, to implement some *technique*, a source of personal shame, rather than the joyful and contemplative leisure our ancestors would have dreamed of.

Josef Pieper in *Leisure, the Basis of Culture* (1998) pointed to the nationalization of Labor Day as a perfect example of this, where, rather than the classic conception of leisure that held festival days as a rightful possession of the gods, the state institutionalization of rest is a concession necessary only for the purposes of higher productivity (70). This is just as Dewey had suggested that the goal of education ought to offer ever-willing self-employment which, “makes leisure a reward of accepting responsibility for service, rather than a state of exemption from it” (1917, 261). Lack of productivity becomes a problem that demands a solution which can only be solved by stimulating consumption. This implies the equation of “development” (in Dewey’s words, progress) with the cycles of production and consumption (Illich 1971, 63). Likewise, in *A Secular Age* (2007), for Charles Taylor, this loss of symbolically higher times represents a change in “time-consciousness” wherein “secular time,” which is no longer punctuated by complex time of ritualistic return or epochal consecration, in the words of Walter Benjamin has become, “homogenous, empty time,” such that every moment in the linear succession of days is mutually interchangeable (Taylor 2007, 58). As we will therefore discuss later, the discovery here is that secular time is the story of technics’ becoming.

c. The Epimethean Alternative: the marriage to Pandora

Illich’s philosophical recasting of the challenge of “schooled society” is quite compelling. In the final essay of the collection, “Rebirth of Epimethean Man” (1971), Illich appeals to the pre-Socratic depiction of the Greek myth of the Titan brothers Prometheus (literally meaning *forethought*) & Epimetheus (*afterthought*). The myth offers a framework for rethinking the self-destructive mode of thought that places expectation—or, for our

broader purposes, anticipation—above hope (*elpis*). Hope throughout the trials of existence finds its source in the care of an agentic other; the gods, the community, or a friend, whereas expectation finds its resource in the capacities of the self to plan problems out of existence. Expectation, the Promethean impulse, was employed in the primitive world that was:

governed by fate, fact, and necessity. By stealing fire from the gods, Prometheus turned facts into problems, called necessity into question, and defied fate...[Classical man] was aware that he could defy fate-nature-environment, but only at his own risk. Contemporary man goes further; he attempts to create the world in his own image, to build a totally man-made environment, and then discovers that he can do so only on the condition of constantly remaking himself to fit it. We now must face the fact that man himself is at stake. (107)

In a society that views all authority with suspicion, Prometheus has come to be the mascot of technoscience who freed humanity from the selfish and uncaring gods, akin to the popular reappraisal of Satan as the most sympathetic character in Milton's *Paradise Lost*, mistaking characteristic complexity for admirability. However, "In classical antiquity, man had discovered that the world could be made according to man's plans, and with this insight he perceived that it was inherently precarious, dramatic and comical" (110). Prometheus's punishment by Zeus was not evidence of a revolutionary defiance for the sake of humanity, rather it was just desserts for a mistake that can only be redeemed by "afterthought," the brother of Prometheus.

Pandora, the "all-giver," was sent to earth by Zeus with a jar containing all the facts-become-problems that plague man's existence, and at the bottom was hope. Not heeding the warnings of his brother, Epimetheus marries Pandora. Then, the son of Prometheus, Deucalion, "outrode the Flood to become the father of a new mankind which he made from the earth with Pyrrha, the daughter of Epimetheus and Pandora" (115). For Illich, the symbolic meaning and application of the myth has been occluded by shifts in cultural sensibilities; there is a subtle misogyny in the later denigration of Pandora and the linguistic narrowing of "afterthought" to connote stupidity. Instead, Illich urges, "Hopeful trust and classical irony (*eironeia*) must conspire to expose the Promethean fallacy" (114), that is, a trust in the fruits of a marriage, or commitment to, the fragile earth as the only means of the continuation of life after the tragedies wrought by hubris.

This is a recovery of a kind of *praxis* which assumes a posture of modesty. It implies a commitment to a form of life that would otherwise be considered unambitious: "Not to go where one can go would be subversive. It would unmask as folly the assumption that every satisfied demand entails the discovery of an even greater unsatisfied one. Such insight would

stop progress” (108). It would be perceived as too risky to relent of the obsessive planning and managerial correction, as in the absurdity of the accepted nuclear military logic wherein, “Modern weapons can defend freedom, civilization, and life only by annihilating them. Security in military language means the ability to do away with Earth” (109). It would not be a retreat into an ideal past, but as with the guidance of the son of Prometheus, a collective taking account of what has already been wrought by humanity and redirecting those capacities towards restoration and right relationship to nature.

d. Anticipating the Digital Age: the failure of learning webs

What is not so compelling is Illich’s actual suggestions for what a “deschooled society” would entail. This is largely due to the fact that, in hindsight—or we might say, on second thought, Illich's proposed system of liberating education to the self direction of the interests of individuals turns out to have been perfectly anticipating, back in 1971, the powers of the internet. “The most radical alternative to school would be a network or service which gave each man the same opportunity to share his current concern with others motivated by the same concern” (19). His idea was that we could use a decentralized system of peer-matching, what he called “learning webs,” that could get learners in direct contact with experts willing to share their knowledge for free and at the learner’s own pace. He even describes what we would come to call instant messaging and email, “In its most rudimentary form, communication between client and computer could be established by return mail. In big cities typewriter terminals could provide instantaneous responses” (93). Hardly anyone would need to be hired or fired, and there would need to be very little staff at all:

The professional personnel needed for this network would be much more like custodians, museum guides, or reference librarians than like teachers. From the corner biology store, they could refer their clients to the shell collection in the museum or indicate the next showing of biology videotapes in a certain viewing booth. They could furnish guides for pest control, diet, and other kinds of preventive medicine. They could refer those who needed advice to "elders" who could provide it. (84)

It would employ an interconnection of phone lines, perhaps run through a library, and could involve the use of access to recorded media: audio and visual tapes. There would be no admissions office gatekeeping access to an elite few, and there would be no top-down review board ensuring the marketability of skill acquisition.

This all sounds initially like quite a boon for the problems raised by Illich earlier. If the problem was the institution, circumventing the institution ought to solve the problem. If the problem was the church, cutting off the heads of the priests, i.e. teachers, would end the tyranny. However, today, with even the most basic of cell-phones and a free public wi-fi, nearly any person—in most countries—can access an unimaginable amount of free information on any topic one is interested in. One can connect with experts in any field; carpenters and poets list their emails or social media contacts for anyone to see and send them a question about their work without paying postage. I do not need to belabor what is abundantly known by everyone at this point about the wonders of Google and Wikipedia.

However, what has become unequivocally yet inexplicably banal is how this revelation of technology has made us *feel* less connected, less informed, less educated, and less free. One only needs to spend 20 minutes on your average special interest (peer-matching) forum to experience the level of vitriol elicited over the most pedantic fineries of certain brands of HDMI cables, for example. And further, the *laissez-faire* custodial attitude that Illich envisioned for this network has been blown way beyond the levels of local library staffing, considering the grueling and endless job of Facebook and YouTube moderators, for example, who are constantly exposed to the most heinous sounds and images that can be recorded.

Ivan Illich later expressed some regret about the more inflammatory claims of the book which he felt distracted from what he was trying to say, and that as for the emphasis on school itself, he was “largely barking up the wrong tree” (Bartlett and Schugurensky 2020, 76). Illich did not live long enough to appreciate the dramatic irony, on the level of Greek tragedy, of how his solutions to a hyper-Promethean schooled society turned out to be anticipating one of the most Promethean events of all human history, the globalized internet age. Bartlett and Schugurensky (2020) attempted to analyze the lasting viability of Illich’s proposals 50 years later, during the peak of the Covid-19 Pandemic school closures. It could have been the ideal proving ground for the learning web model, however, the forced move to decentralize learning through online resources has proven to only further entrench the problems of schooling, largely only favoring those who already had a privileged place in US society. Accordingly, Illich’s legacy seems to really only have purchase in the libertarian wing of the schooling-critical discourse.

Nonetheless, it still is not answered why the internet fails to be a democratizing force for education. Why did Dewey’s dream of a passage through the machine age into a humane age of “free communion” not come to fruition with the unfettered license to communicate

afforded by the internet age? It turns out that the problem was not actually the accessibility of information after all.

Part III: Bernard Stiegler: the Fault of Epimetheus and the crisis of the digital age

a. A Return to Anthropology: the co-constitution of humanity and technics

While Dewey's concern for the applications of technoscience were primarily sociological, i.e. how a public can be instrumentally mobilized via technology towards the achievement of the desires of a society, he was not concerned, as Illich was, by the possibility of the loss of man's own nature by setting man against nature. For Dewey there is no static human nature to corrupt, the identity of any individual human is fluidly determined by her own interests and environment at any given time (Dewey 1917, 352). The 21st century French philosopher, Bernard Stiegler (1998), accepts Dewey's naturalist constructivist formulation up to point, and with some fundamental caveats.

The problem posed by Bernard Stiegler is ultimately phenomenological and therefore existential: what happens once the individuals of a society lose their own interests that constitute them as individuals? What becomes of our potential for a Great Community once anticipation becomes anticipation of an environment that is entirely mediated by technology? For Stiegler in his primary project, *Technics and Time* (1998), to approach this problem requires an analysis going all the way back through the story of what has governed anthropogeny, that is a deconstruction of the history of the coming to be of humanity.

For Stiegler, every pre-historical anthropogeny proves to be metaphysics, in the sense decried by Heidegger, because all projections of the limit case of prehuman existence always implies a leap away from the aporias endemic to being itself. Starting with an analysis of Rousseau's thought experiment about the state of nature in his *Discourse on Inequality* (2004), Stiegler draws the observation that Rousseau's state of nature turns out to reveal a human existence pre-technics, or pre-*techne*. Technics, in a way I have already spoken about, include any transformation of some material through skill into a secondary matter (93). These are all things which make life possible in human civilization, but they are all necessarily not what constitutes the humanity of any individual (94). In the course of Rousseau's speculation on the state of nature, he encounters an insurmountable hurdle in his discourse: how does man who has no skills, only instincts, no fire or tools or language, only his arms and legs, and no awareness of death, come upon any one of these piecemeal without all of them appearing to him at once? Since there was no language, there was no way to educate the young. Since there was no consciousness of death there was no desire to survive, or possibility of change

or individual difference, including sexual difference (175). The classic understanding of the state of nature necessitates a break which could only occur, impossibly, all at once as a “fall”:

This whole discourse is enigmatic and old, as old as metaphysics. As for the enigma of the origin, it has traditionally been untied by a thought of origin *qua* fall. This is the case from Plato to Rousseau and beyond. If “the discourse of the fall” means the discourse of the fall into the sublunary world, this always means also and at the same time, essentially, a fall into technics. This is certainly not explicitly the way Plato speaks, but it is more clearly the case with Rousseau. (96)

Man fallen from the state of nature feels a loss of something essential, his own nature is experienced as a default of his own nature. There is left only a remnant of a nature which is only known once it is missed, in fact this knowledge of the loss is the loss itself, or fall in the Christian terminology Rousseau was operating within: “Paradoxically, one does not spontaneously remember the voice of the origin's principle, “the voice of nature,” which, notwithstanding, speaks to us immediately; the immediate is not there immediately, at hand; access to it is *après coup*” (108-09). The presence of nature is felt in its disappearing after the fact.

Proceeding likewise, Stiegler demonstrates how the French archeologist André Leroi-Gourhan comes upon a similarly insurmountable hurdle in his own attempts to account for the evolutionary coming to be of “symbolic language” from a prior “concrete language.” Since at this point in his account of the evolution of mankind, tool usage is already presupposed, this acquisition of the “spirituality” of language is for Leroi-Gourhan what constitutes the jump from *homo faber* (man the maker) to *homo sapiens* (the wise/discerning man). But this, too, is an impossibility since it is a contradiction to say that there could have been a pre-symbolic language, since all mutually intelligible signs are symbolic abstractions of that to which they refer. This “second origin” proves to collapse into the first one imagined by Rousseau, just as impossible and just as much a retreat into the metaphysical. If man is already capable of tool-making but not symbolic language, man’s tool making is only ever a response to the direct affordances of his biological capacities and his environment, and thus everything made by him is for him something already determined, or predestined:

If there is no consciousness in the sense of “creative consciousness,” nor then in the sense of what is ordinarily called consciousness, if there can only be a technical consciousness that is nevertheless not the simple automatic or programmatic-genetic behavior of a fabricating animal, then there must be anticipation. “Technical consciousness” means anticipation without creative consciousness. Anticipation means the realization of a possibility that is not determined by a biological program. (151)

Any anticipation which is predetermined by genetics would necessarily be the same across the human species, but since we do witness such differences across the human species in their particular tool-making and linguistic variability, how is it possible? Thus the ability of anticipation becomes a problem that must be accounted for. This is where Stiegler finds it necessary to propose a new concept of epiphylogenesis from the Darwinian evolutionary term phylogenesis, as in that which comes after the coming to be of biological species: “*the pursuit of the evolution of the living by other means than life*—which is what the history of technics consists in, from the first flaked pebbles to today, a history that is also the history of humanity” (135). Despite Dewey’s disinterest in the aporia of deep anthropogeny, the role of technics and thus tool-making as the best metric of the history of humanity is to a limited degree, as will be seen, a common ground between Dewey and Stiegler.

Anticipation, however, becomes a phenomenological problem that Dewey himself never reckons with and which he accepts uncritically in the mode first epitomized by Francis Bacon as seen above. In a lecture he gave during his tour in China, Dewey portrays his own view as consistent with that of his contemporary Henri Bergson on man as *homo faber* (man the maker) in distinction to the position of Greek idealism which calls man *homo sapiens* (wise/discerning man) (Hickman 2019, 233). For Bergson and thereby Dewey, man is on a continuous spectrum with the lower animals, of which man only differs by matter of degree, not quality, on account of his use of tool-making:

First, and most important, animals operate upon life by means of instincts. Human beings compensate for their lack of instincts by adopting something much more chancy, something much more open to failure, to wit, intelligence. Second, humans are able to make tools that are separate from themselves. Their tools are among the ways that they supplement their instincts by using intelligence. Third, whereas the lower animals are at a disadvantage because they cannot use intelligence, human beings are at a disadvantage because they have not been able to develop their instincts. The active cooperation in human life of instinct and intelligence would overcome this debility. (Hickman 2019, 232)

Dewey includes within this set of tools sign-making, i.e. language (235). This linguistic kind of tool making is of a higher order of complexity, yes, but not any kind of essential rupture within Darwinian natural selection. Max Scheler, Larry Hickman argues, was a critic of Dewey in favor of what he called an emergent “spirit” within evolution that allows mankind to transcend his instincts. For Hickman, this turns out to be a distinction without a difference since this spirit has no ontological substance either and can be resolved as Dewey’s more succinct category of human “mind” being of simply higher complexity than the capabilities

of lower animals (236). Stiegler enters this discourse by problematizing Leroi-Gourhan's depiction of *homo faber's* jump through technical language into symbolic, that is spiritual, language. Eschewing the *homo faber/sapiens* binary, Stiegler (1998) threads a very narrow needle that suggests a deeper meaning to the tool making than is previously implied in *homo faber*.

b. The Problem of Anticipation: breaking with Heidegger and Dewey

Drawing from Husserl's concept of the different types of phenomenological memory retention, Stiegler posits that epiphylogenesis ought to be considered as a tertiary memory retention. However, his most succinct explanation of this is in his later work, *Symbolic Misery* (Stiegler 2014). Using the example of listening to musical melody, the primary retention would be in the "now" of the melody wherein the current note, in being anything other than a random sound to sense perception, retains "the preceding note and that in the preceding note the note that preceded it is still present, which retains in turn the preceding note" (34). The secondary retention is the re-production of the melody which takes place internally in imagination. The tertiary retention is as a prosthetic, in a sense that goes beyond that of an artificial limb which simply allows one to restore capacities that have been lost. This is what anticipation in the non-biological way really means for Stiegler:

*Because it is affected with anticipation, because it is nothing but anticipation, a gesture is a gesture; and there can be no gesture without tools and artificial memory, prosthetic, outside of the body, and constitutive of its world. There is no anticipation, no time outside of this passage outside, of this putting-outside-of-self and of this alienation of the human and its memory that "exteriorization" is...A "prosthesis" does not supplement something, does not replace what would have been there before it and would have been lost: it is added. By prosthesis, we understand (1) set in front, or spatialization (de-severance [*é-loignement*]); (2) set in advance, already there (past) and anticipation (foresight), that is, temporalization. (1998, 152)*

Stiegler here is implicating the theory of individuation put forward by Gilbert Simondon which, rather than privileging the classical dichotomy within idealism and existentialism of being *or* becoming, frames the primarily salient characteristic of existence in terms of individuating. Speaking of Simondon and his successor Claude Shannon, one of the principal translators of Simondon's work, Cecile Malaspina put it thus in her book *An Epistemology of Noise* (2018): "Shannon and Simondon both operate a Copernican revolution, replacing the

individual (being or message), traditionally at the center of the attention, with a careful attention to the co-evolution of both individuation and its context or milieu” (46). Something is individuated by the process which delimits an interior from an exterior. Stiegler accordingly discusses three kinds of individuation of memory: the genetic (biological and congenital) and the epigenetic (psychological and physiological), and the epiphylogenetic, which is techno-logical in that includes language and technics (Stiegler 1998, 177).

The techno-logical memory is the kind that lies exterior to any human body, an organization of inorganic matter or prosthetic memory as in the case of a photograph or letter is “a new state of matter” (177). For Stiegler, these memory prostheses actually create the possibility of a future,

The temporality of the human, which marks it off from other living beings, presupposes exteriorization and prosthetics: there is time only because memory is ‘artificial,’ becoming constituted as already-there *since* [from the point of: *depuis*] its ‘having been placed outside of the species.’ And this since must be taken literally: inheriting the name ‘human’ is inheriting the entire past already there, everything that has taken place, since the ‘appallingly ancient.’ (172-72)

The premises underlying *homo faber* therefore take on added weight, since, through technics organizing inorganic matter, man actually is in a process of organizing, individuating, himself. For Socrates, however, in the *Phaedrus* dialogue, the invention of writing is a net loss for humanity’s access to absolute knowledge, since it places the locus of that access external to the human mind. Stiegler goes on to break with Plato indirectly when he says,

That Plato conceived the exteriorization of memory (*in the Phaedrus*) as a loss of *anamnesis*—that is, of knowledge—in favor of a *hypomnesis* that would be its contradiction does not oblige us to reason as he did. The *Phaedrus* is indeed the dialogue in which writing is presented as an exteriorization of the memory that signifies its death, memory truly being that of the soul, which is to say, of living memory. In reality, Plato ignores here precisely that the condition of memory lives in such a way that it can project itself outside of itself in order *to exceed its retentional finitude*, which also makes possible, in particular, transmission of memory between generations. (Stiegler and Arthur 2014, 72)

Rather than re-collection being an unfolding, as of an already written scroll of all events or predestination, it is un-limited extension of what is possible within any one individual, as a trans-individuation of memory within time. The caveat, as will become relevant later, is that this is only true so long as these technical objects are functionally overdetermined and indeterminate. Just as for Rousseau, there was no intergenerational transmission before the fall into technics, education is only possible with epiphylogenesis: “Epiphylogenesis, time

spaced and space temporalized, is the sedimentary store of events among which we live without knowing it. It is a memory that is transmitted down the generations (which haunt and *spiritualize* each other). Being spatialized it is exteriorized and retained *in the facticity of the non-living* - protected from the *fragility* of the living” (Stiegler 1998, 33). There is time, there is a human destiny which is not a predestination, only because memory is artificial (172). This is consonant with the goals of Dewey’s overall project in that he was critical of any static teleology inherent to many other systems of social organization. Education from Dewey’s perspective ought to be a means of opening the future through dynamic means, but his articulation of what could make that possible in a Darwinian and mechanistic worldview was highly limited and ultimately leaves us with the closing of the future which we will see later.

Nonetheless, the case which Stiegler is making in this context is meant to draw a fine distinction from the Heideggerian analysis of *techne* mentioned earlier largely referring to his landmark essay, “The Question Concerning Technology” (2008). For Heidegger, it is peculiar of modern technology that it estranges man from the natural dialectic which Dewey also accepts between nature, man and his tools, each holding sway over the other. The rupture that occurs for Heidegger, in distinction to Dewey, is one of “enframing,” wherein all of his efforts to gain technical mastery over nature, eliminates nature from the dialectic. “Thus when man, investigating, observing, pursues nature as an area of his own conceiving, he has already been claimed by a way of revealing that challenges him to approach nature as an object of research, until even the object disappears into the objectlessness of standing-reserve” (Heidegger 2008, 299). Nature is marshaled in a way not unlike that of an army general gathering his troops, implying an inherent and inevitable violence endemic of modern technology:

But enframing does not simply endanger man in his relationship to himself and to everything that is. As a destining, it banishes man into the kind of revealing that is an ordering. Where this ordering holds sway, it drives out every other possibility of revealing... The threat to man does not come in the first instance from the potentially lethal machines and apparatus of technology. The actual threat has already afflicted man in his essence. (309)

Modern civilization, therefore, throws man into *Gestell* (enframing), a state of alienation from the revealing that is proper to *Dasein* (that being which we are) in relation to being. As was criticized by Hickman in the introduction, this implies a need for retreat away from modern technology, even if his mockery is not warranted. However, for Stiegler, the rupture

is ontically prior to history: the invention of the steam engine and the Industrial Revolution are not a break in a process inherent to humanity, but an acceleration which destabilizes the process of individuation which has always constituted the human relationship to technology: “What is more important is the relationship between technics and time. This is especially so if it is true that individuation and ‘intersubjectivization’ are what is at stake in language. For what is given in speech is time, which is, as Heidegger says, ‘the true principle of individuation.’” (Stiegler 1998, 13). Stiegler is attempting to point out an untenable distinction of Heidegger not so different from the metaphysical leap that Leroi-Gourhan had made in order to differentiate concrete and symbolic words, which is to say that there is something ontologically different between speech and instrumental technics that does not hold up to scrutiny. This is how calling Heidegger’s analysis “metaphysical” is a criticism, since Heidegger himself was critical of the flight into metaphysics predominant in so much philosophy since Plato. Heidegger was concerned that inauthenticity, or loss of an authentic time proper to *Dasein*, is due to a kind of technicity which is somehow different from that employed in speech. However, this would be to ignore the grammatization of language which is indissociably constitutive of Heidegger’s project.

Stiegler’s description given above of epiphylogenesis as “time spaced and space temporalized” (Stiegler 2014, 33), is a reference to his own teacher Derrida’s description of the “non-concept” of what he calls in *Margins of Philosophy* (1982) *différance*, whereby language has a dual dynamic of differing and deferring:

Différer in this sense is to temporize, to take recourse, consciously or unconsciously, in the temporal and temporizing mediation of a detour that suspends the accomplishment or fulfillment of "desire" . . . this temporization is also temporalization and spacing, the becoming time of space and the becoming-space of time. . . . The other sense of différer is the more common and identifiable one: to be not identical, to be other, discernible, etc. (Derrida 7-8)

Derrida’s proposition of *différance* is essentially a more fundamental subversion of Heidegger’s project of remembering the history of Being. Derrida’s subversion is implied by pointing out the inescapable mediation of Being, the ground of all beings which we are (*Dasein*), through language, or the text, as he will say later. *Différance* is then the non-conceptual ground of all concepts, by which concepts are differed and deferred from each other in time and space. Stiegler is thus broadening the scope of the investigation of *différance* to include all exteriorizations as technics and language within the category of epiphylogenesis. Holding to Heidegger’s own aim of preserving *aporia* by not fleeing into

metaphysics by insisting on a *deus ex machina* for the origin of tools, Stiegler's goal is to "pursue a process engaged long before the rupture yet nevertheless constitute a rupture—a new organization of *différance*, a *différance* of *différance*" (Stiegler 1998, 178). In order to articulate such an unwieldy claim as the "*différance* of *différance*", Stiegler will offer a symbolic reading of the story of the Greek Titans, Prometheus and Epimetheus, as retold by Plato in the *Protagoras*.

c. Prometheia and Epimetheia: the *différance* of *différance*

Just like Ivan Illich, Bernard Stiegler finds it imperative to recover Epimetheus's role in the story to correct for something lost within our conception of technics relation to humanity. However, Illich's takeaway from the myth being the suggestion of a rebirth of an Epimethean man is actually an overcorrection for what he rightly saw as a total forgetting of *epimetheia* (afterthought). His rejection of unbridled and promethean technoscience championed by successors in the thought of Dewey, which manifests ultimately as institutionalized proletarianization, is in dire need of a response which remembers the epimethean marriage.

Andreas Beinsteiner (2020) has also noted the intriguing connection between the insights of Stiegler and Illich on the role of technology in social individuation. In Illich's book published soon after *Deschooling Society* (1971), *Tools for Conviviality* (1973), Illich calls for a concerted societal effort in "self-limitation" from technical objects which constitute too high a level of complexity to maintain a certain level of common living, conviviality, that is not proletarianizing (Illich 1973). However, Beinsteiner argues that Illich's suggestion is ultimately untenable since it draws a line between convivial tools and proletarianizing tools which requires some arbitrarily defined limits. Further, Beinsteiner argues, "Illich's acknowledgement of the reciprocal constitution of the human and the technological sphere some-times seems to get suspended, resulting in an analysis that boils down to a rather simplistic master-slave-dialectics that is all about an unilateral relation of domination or control: Either the user actively masters the tools he/she uses, or he/she is dominated by them" (135). In a move not too far off from Jacques Ellul criticized by Hickman earlier, Illich ultimately makes the complex technological tool itself the source of the proletarianization.

This is why *epimetheia* cannot be recovered by a rejection of *prometheia* without devolving into idiocy, by which I mean to evoke the original sense of the word, “idiot,” one who is relegated to the outside of the demands of the *res publica*, the *polis*, in a disengaged privacy. The reading of Stiegler offers a fuller picture which will become relevant to this discourse even though he frames it primarily as an attempt to correct for the misapprehension of Heidegger:

The absence of these figures in the existential analytic of Heidegger is both striking and rigorously necessary. For, on the one hand, the intertwining of the two figures of *prometheia* and *epimetheia* yields the major elements of the structure of temporality, described as being-toward-the-end, while, on the other hand, the originary, irreducible rooting of this relation in technicity, which the two figures taken together signify, undermines any possibility of placing in opposition authentic time and the time of calculation and concern. (186-87)

A better reading of the Platonic account will therefore grant a clearer understanding of the relation between technics and time that does not reify modern technology as something other than it always was, as well as the proper role of technics in the constitution of the *polis*.

In the Platonic version in the *Protagoras* dialog (187), in distinction to that of Hesiod, Prometheus makes the primary error, or fault, by granting Epimetheus permission to do the task he was originally given by the gods: the distribution of powers to all the living creatures. But Epimetheus makes the second fault when he forgets to save a power to mankind for their survival. So, Prometheus steals the fire from Hephaestus and Athena, the gift of skill in the arts (*techné*) and the gods’ fire, with which the humans themselves were made, and without which it is impossible to do anything with the skills he gave them. But he did not give them *sophia*, political wisdom which is only possessed by Zeus. Zeus is afraid that humans will destroy themselves with just fire and skills without wisdom, so he sends Hermes to distribute equally the *techné* of *aido*—“modesty, respect, shame; perhaps today one might say the feeling of finitude” (200)—and *dike* (a sense of justice).

However, as retribution for mankind’s improper acquisition of technics and fire, Zeus sends the first woman, Pandora, to Epimetheus who marries her, which in turn produces in humanity sexual difference: “The sending of difference is the sending of a being covered in artifice and resplendent, deceptive finery, what is also called *kosmos*, still spoken of and seen in cosmetics, a decorous set of ornaments worked on by the handicapped god Hephaestus. This difference, more than any other, places the *andres* in a calamitous state, outside themselves, left exhausted” (195). Then, as was already discussed, Pandora releases from her jar all the ills known to humanity and *elpis* (hope) left at the bottom: “the meaning of the jar

is *elpis*: anticipation, time. In other words, temporality is thought here not only in terms of mortality but also in terms of birth qua sexual differentiation” (196). Prometheus himself is punished by being chained to the rock where his liver is eaten every day by birds and then regrown at night. It is imperative that this is the liver because:

It is an organic mirror in which divinatory hermeneutics is practiced, in which, during the sacrifice, divine messages are interpreted. And it is Hermes who, in Aeschylus, announces to Prometheus his punishment... the liver is also, as a mirror of ceaseless mortality—which never occurs—of the body and the heart, the mirage of the spirit (*Gemüt*). A clock, its vesicle conceals those stones [*calculs*] that secrete black bile, *melas kholie*. (203)

For Stiegler, there is within this story taken altogether all the elements in symbolic relation to one another to offer a structure to this elusive relationship between technics and time, and thereby mortality, language, difference, and anticipation as in *being-towards-death*.

Prometheus, as he presents himself in *Prometheus Bound*, ironically understands his gift to humanity as stopping mortals from foreseeing death by giving them “blind hopes.” *Elpis* turns out to be an ambiguous gift. With *elpis*, humans have foresight of the precarity of their own lives, the inevitability of their own death, but their efforts in technicity (*prometheia*), in the community of those whose nature is in de-fault (flawed), delay their own death. *Epimetheia* is the forgetting that allows for prosthesis to be effective, to become the form of memory retention that is epiphylogenesis:

There is nothing but prostheses: my glasses, my shoes, the pen, the diary, or the money in my pocket; and because they are frightening, their visibility is reduced. There are all kinds of strategies—blind ones, moreover—to do so. And yet, from the beginning there is a constitutive blindness and forgetting that is the mark of Epimetheus—that is, of *différance* in the fact of being technical, as doubling-up (deferred *différance*). (199)

Its prosthetic quality is therefore how *epimetheia* comes to adopt facticity, that is, in the Heideggerian sense, what is always already-there for the individual, one’s own past wherein one “arrives too late, inheriting all the faults of his or her ancestry, starting with the originary de-fault of origin” (199). Prostheticity is also what grants a putting in front of that is a projection into the future, actually creating the possibility of future. However, these factual elements harbor the dangerous ambiguity of *eris* (spirit of competition, jealousy, quarrelsomeness) which man in society incurs as a result of this relation to the gods: “Complexity duplicity will also come to form the irreducible characteristics of politics, in which conflict qua competition forms the dynamic factor of the community: emulation as

much as the imminence of destruction, which speech will defer” (191-192). Complexity is therefore endemic to technicity.

It is therefore only in the arrival of the hermetic arts, again, as if from outside, that those who are in de-fault of origin become citizens of a *polis*, this is how technics becomes techno-logical, which is to say, “in common language, expression and elocution, translation and interpretation” (201), what constitutes *hermeneia*:

To have to partake of or share in *dike* or *aido*, in knowledge of the de-fault, is not an “ought” and can only have meaning for those for whom one has to [*il faut*] decide, immersed as they are in activity. Each time, in every situation of decision, in every position of necessity [*falloir*] that opens up at the same time a flaw [*faillie*], one has to invent their meaning in *hermeneia*—which is made up unquestionably of *promêtheia* and *epimêtheia*. (201)

Dike (modesty) and *aido* (justice) therefore have dynamic meaning which nonetheless have bearing on the relationship of the individual to the *polis*. This relationship between the revealing and concealing that is peculiar to *promêtheia* and *epimêtheia* constituting *hermeneia* has important ramifications for what can rightly be called the individual, how individuation is possible in the sense spoken of by Simondon earlier: “This ‘individual’ is less a subject than an instantiated idiomatic difference—seized, of course, in a *logos*, that is, firstly, in a *relation* (which means also an idiom), which is necessarily common, not different relative to those it gathers into their *différance*, and which should be understood in terms of the *community of a de-fault*. This need is being-toward-the-end qua facticity” (230). Idiosyncrasy, the idiocy of idiom, which differentiates the individual while deferring mortality is the meaning of anticipation because it is what within facticity grants temporality to the individual and thereby epochality from out of tradition: “Every epoch is characterized by the technical conditions of actual access to the already-there that constitute it as an epoch, as both suspension and continuation, and that harbor its particular possibilities of ‘differentiation’ and individuation” (236). This is Stiegler’s reaffirmation of what Simondon calls trans-individuation, which is accordingly a process with two necessary pulls that constitute a “metastability.” In the words of Malaspina, “*Metastability* is the dynamical suspension of a system between two forms of equilibrium, between entropic dispersion and structural inertia” (*The Epistemology of Noise*, 73).

What this all amounts to, in reference to Stiegler’s core problem with Heidegger, is a disagreement of when ontically individuation occurs:

One is individuated sooner than when the individual à la Heidegger falls into the publicity and chitchat of the One; "authentic temporality" always comes too late (it is always already "inauthentic," factual): this is *êpimêtheia*. No mortality is originally absolutely alone: it is only alone *with* others. When Heidegger says that the clock is the time of the with-one-another, he means that technological time is public time. Now, it is in this common, public time, according to its possibilities, which are each time unique, that a time is constituted that is not "private" but *deferring and differing* [*différant*]. The calculation of time is thus not a falling away from primordial time, because calculation, *qua* the letter-number, also *actually* gives access in the history of being to any *différance*. (237)

For Heidegger, who presupposed a fundamental difference between technicity and language, becoming individual, or what is often translated as authenticity (*Eigentlichkeit*) for *Dasein* is only possible outside the time of the clock of calculation, outside of the technological. Whereas, what is revealed in the anticipation which is only possible via *promêtheia* and *epimêtheia* constituting *hermeneia*, is that all technics which are exteriorization of memory retention are what grants time authentically as already too late, in de-fault. This prosthetic projection into the future which is also reaching through the past of facticity is how the individual constitutes historicity that is an epoch, an individuating historicity that is not predestined. Now that it is established what technics is, how it affords anticipation and therefore temporality, it becomes possible to describe the problems of the current state of affairs in technology according to Stiegler.

d. Hyperindustrialization: the speed of technology against the incapacity of culture

So far everything that has been presented accounts for only a gloss of the phenomenology of humanity's relationship technics. There has been no account of the way in which technology is manifested within human history up to the relevant era for this study which finds its epicenter in the Industrial Revolution and leading into our own time. Despite the disagreement with Heidegger which bears out to show that technology is actually constitutive of the revealing that is authentic to *Dasein*, the question still stands as to whether something else is going on in our relationship to technology. If it is not an ontological difference which distinguishes modern technology, alienating man in *Gestell*, then what can account for the obvious shift which has occurred worldwide? Stiegler begins in his book which attempts to cover this topic, *Symbolic Misery* (2014), where both Dewey and Illich point as a primary change of epoch: "The nineteenth century saw the birth of large-scale

industry which systematically exploited natural resources to develop an industry of material goods for consumption. The twentieth century was the century of Hollywood, of large-scale mass-media, of artificial intelligence, of information industries - or the *development of an industry which made consciousness and spirit its 'raw materials'*” (16). The new age which has no symbols consonant with its activities, as Dewey had lamented (1927, 142), has still not yet passed into a humane age (217). In fact, it has only proven to be an acceleration of the already extant aspects of the industrial age. This is why Stiegler eschews the denomination of postmodernity proposed by Jean-François Lyotard for what he calls the hyperindustrial age: “I argue to the contrary that we have not left modernity because more than ever we are experiencing the industrialization of all things. It is clearly possible to put forward another definition of modernity where it is not seen simply as the becoming-industrial of society” (2014, 47). This industrialization of society is primarily a problem for individuation, the threat of dis-individuation, which ultimately reverses the negation of entropy, or negentropy, that our relationship with technology had previously afforded us.

Individuation, as was spoken about above, is a process that requires a metastability of the dynamic equilibrium “between entropic dispersion and structural inertia” (Malaspina 2018, 73), characterized by the concealing and revealing of the promethean and the epimethean taken together. This characterization is where Stiegler ultimately breaks with Simondon; what Stiegler calls the coming to be of the *I*'s of individuation is therefore constitutive of a *we*:

The *I* and the *we* are bound in individuation by the *pre-individual milieu*, with its positive conditions of effectiveness coming from what I have called retentional apparatuses. These apparatuses are supported by the technical milieu which is the condition for the encounter of the *I* and the *we*: the individuation of the *I* and the *we* is, in this sense, also the individuation of a *technical system* (something Simondon strangely didn't see). (Stiegler 2014, 51)

This process of psychic and collective individuation is negentropic—meaning it reverses informational entropy—is possible due to grammatization, what was called hermeneia earlier, which is the formalization of externalized tertiary retentions, the techno-logical, or, for the purposes going forward, mnemotechnologies. A shovel, for example, though it is constitutive of a technical system, is not a mnemotechnology in itself. This grammatization of mnemotechnology is “the organizational tool of power” (7), within which individuation and thereby epochality can occur, which has for most of human history meant primarily the written word. This affirms at higher resolution what Dewey had said earlier that “Every step

from savagery to civilization is dependent upon the invention of media which enlarge the range of purely immediate experience and give it deepened as well as wider meaning by connecting it with things which can only be signified or symbolized” (1917, 232). In the past, punctuated losses of individuation were endemic to grammatization as a trans-individuation in the *we*, but “The loss of individuation characteristic of the hyper-industrial age would thus be a limit-case” (Stiegler 2014, 50).

However, what actually constitutes this rupture within the industrial-becoming-hyperindustrial age of the 19th century, is that, “[a]t this time a fusion of the mnemotechnical system of retentional apparatuses with the technical system of production of industrial goods in general takes place” (59). This is a story in which the United States plays a key role on account of its unique development of integrated transmission industries in which technologies of production fuse with mnemotechnologies, that is, in the terminology of Husserl, the technologies which order memory external to the body, as he puts it in *Cinematic Time and the Question of Malaise* (2010):

The United States is the country leading the industrial synthesis in its guise as the coordinated implementation of analog, digital, and soon biological syntheses, all converging in a single, unique retentional industrial system and constructing the global mnemotechnical system along with systems for the technical production of consumer goods, since machines, robots, biological sequencers, nanotechnological prostheses, and other automata of production have themselves become digital. (209-210)

If individuation requires the constant delimiting of exteriority through technics, or exosomatization, this proves to be a problem as technology at an accelerating rate and in diverse ways results in direct penetration of the individual body, making this process impossible. While symbols in the sense of the written word were once the only mnemotechnologies liable to grammatization, “today bodies as well, with the temporal sequences of gestures (including the voice) and movements (in the first place as cinemato-graphy), are subject to grammatization through sound and image” (Stiegler 2014, 54). What were once only made salient to sense perception as primary retentions such as the image and sound are now progressively discretized as tertiary retentions in the forms of recording technology. This is then what “captures attention” (65) and is monetized in what we call now an attention economy.

At the same time as this fusion of mnemotechnology with industrial production is also qualitative change in the speed of technology as well, a breaking of the “time barrier” (Stiegler 1998, 15), wherein “humanity is not fast enough to control the processes of

informational change” (2014, 86), as in the case of stock exchange algorithms which trade at a speed and capacity far exceeding any individual or team of humans which in turn necessitates their usage by competition, the instantiation of *eris* which cannot be quelled by natural human speech.

e. Symbolic Misery: desire captured and destroyed

I've read about many historical periods but not one in which, the way you can talk to young people at the college level today, and find out that they believe nothing, want nothing, hope nothing, expect nothing, dream nothing, desire nothing. Push them far enough they'll say, "yeah, I've got to get a job, I've spent a lot of money at Duke," that's not what I'm talking about here. They hope nothing, expect nothing, dream nothing, desire nothing. And it is a fair question to ask whether a society that produces this reaction in its young is worthy of existence at all.

~Rick Roderick, *The Self Under Siege: Philosophy in the 20th Century*, 1993

This discretization of one's time consciousness by these industrial “temporal objects” is a problem for individuation in the formulation of the *prometheia/epimetheia* dynamic constitutive of a time of one's own, the Heideggerian authenticity: *Eigenlichkeit*. This constitutes a loss of symbolic participation, as the symbol was once a product of collective and psychic individuation. “Symbols here being as much the fruits of intellectual life (concepts, ideas, theorems, knowledge) as of sensible life (arts, know-how, mores). And I believe that the present state of generalized loss of individuation can only lead to a symbolic collapse, or the collapse of desire - in other words to the decomposition of the social as such: to total war” (Stiegler 2014, 10). Desire was previously a “circuit” (9) that involved the constituent *I's* to project into a *we* (60).

The epimethean mode of adopting facticity, the already-there of tradition, is impossible in a technical system which is no longer dialectical with the constituent individuating members. This leads to a unidirectional production of the symbolic in which consumption of “incessant novelties” (9) is the only mode available. The resulting effect for the prospects of individuation seriously blocked constitutes a mass proletarianization the likes of which Marx could not have imagined, as he discusses in his essay, “The Digital, Education, and Cosmopolitanism” (2016):

We give the word “proletarianization” an expanded meaning. For us, proletarianization signifies the *reduction of knowledge* through the computational expansion of factory models. This begins with the workers, who lose their embodied knowledge [*savoir-faire*], and continues with the consumers, who lose their life wisdom [*savoir-vivre*], and so on until

today, when even designers are losing their ability to conceptualize and theorize [*savoirconceptualiser et theoriser*], and decision makers, their power to decide. (159)

This is the “religion of the proletariat” the Illich was attempting to identify despite “barking up the wrong tree” of institutionalized education as such. The loss of *praxis* that Illich spoke of has progressed to an even more pervasive loss of *poesis*. The capacity of consumption even loses its power as desire itself is captured and thereby dissolved. “The resulting symbolic misery is also a libidinal and affective misery, which leads to the *loss* of what I call *primordial narcissism*, whereby individuals are stripped of their ability to form aesthetic attachments to singularities or singular objects” (Stiegler 2014, 5). Stiegler was shocked into thought on this topic by the Nanterre Massacre in 2002 by Richard Durn, about which he wrote in the book *Acting Out* (2009). For Stiegler, Durn epitomizes the incapacity to individuate in hyperindustrial society: “Richard Durn did not exist: at least, this is what he wrote in his diary. No narcissism, no self-love, and therefore no respect for anyone else. And yet he experienced the *irrepressible need to exist*, which is to say the need to ‘have that feeling’, as he wrote” (2014, 61). Furthermore, in the United States, mass shootings in schools have been totally banalized in the course of their constant succession and seeming ubiquity by the deterritorialization of mass-media.

This general state of ill-being, as Stiegler calls it, more accurately should be said to accompany a “displacement” of individuation (62), since what continues to maintain metastable collective individuation based on “brands,” “but which nevertheless produce processes of individuation of an extreme fragility (the adoption organized and controlled by marketing) which come to substitute themselves for the psychic and collective individuation of the state” (63). This is consistent with what might be called the personal brand, according to the formulation by Hans-Georg Moeller and Paul D’Ambrosio of a novelty in the psychotechnology of identity construction they call “prolificity,” wherein Walter Benjamin’s concept of “exhibition value” is applied to prolific accumulation in order to gain recognition from a second order observer, or “general peer,” (Moeller and D’Ambrosio 2019, 593). These brands and platforms which reproduce the consumer in place of a citizen, also decouple the individual from the political.

This is made all the more possible by the overdetermination of the capacities of the digital revolution of the internet as he discusses in his last book published before his death, *Bifurcate: “There Is No Alternative”* (2021): “Digital or platform capitalism is characterized by the permanent and planetary interconnection of individuals, whose activities are

systemically traced and processed by the intensive computation of algorithms, allowing them to be controlled by exospheric giants for the purpose of value extraction” (72-73).

This anticipatory capacity is endemic of what Stiegler comes to account for in “The Analogy of the Anthill,” which, following on Deleuze, posits a becoming-arthropod in place of individuation: the total replaceability of every node of the social network of employed consumers, like “*perfectly synchronous* organizations of what we call social insects” (2014, 78). This is just like how ants will substitute in for another ant upon its death to fulfill their role without any top-down direction. Rather than a trans-individuation of citizens of a *polis*, these are, according to Deleuze and Guatarri, “dividuals,” inherently and seamlessly divisible from the whole without ramification for the function of the whole system (60).

f. Loss of Negentropy and the Closure of the Future

From there, the stakes of the analysis take on an existential (in the more common usage of the term) dimension. He connects this loss of individuation through technics’ exosomatization and disengagement from the production of symbols through which one would trans-individuate to the ecological threats of human activity caused climate change: “Exosomatic productions are the fruits of economic activity, and their evolution, which in the beginning is undetectable, does not become obvious until the sudden acceleration of technical evolution brought by the industrial revolution gives rise to so-called historical consciousness and constitutes the Anthropocene era” (Stiegler 2021, 56). The Anthropocene era is a turning point when there is a reversal of the negation of entropy, or negentropy, according to the formulation originally posited by Erwin Schrödinger in 1944 (53), the process afforded by human technics to continuously order their world: “A living organism produces entropy by transforming energy, it maintains its anti-entropy by constantly creating and renewing its organization, and it produces anti-entropy by generating organizational novelty...Not only are such innovations unpredictable, but their very nature cannot be predicted. As a result, probability theory is insufficient for describing life and its evolution” (55). Entropy is an ambiguous polysemic concept since it has nearly opposite meanings depending on the field in which it is being employed. In information theory developed from the work of Claude Shannon in the mid-20th century, entropy corresponds to the unpredictability of a received message, as in an infinite string of all the same number, such that the lowest entropy would mean the message is the most predictable. However, in the field of physics, the higher

entropy is, the more predictable the closed system is. This is exemplified in the case of a glass of water that one drops food dye into: at first, a random sampling of locations within the glass would yield highly diverse concentrations of food dye, but after it is sufficiently stirred, the localized extractions would all yield the same concentration. Therefore, the glass would have the maximum possible physical entropy and a minimum of informational entropy.

However, Stiegler points out the absurdity of a situation where the information becomes minimally informative by becoming maximally predictable (48). Without novelty or creativity, without *différance*, there is nothing to in-form the world. The possibility of a future, which is necessarily one of change, requires a reversal of the second law of thermodynamics towards maximal predictability: a singularity of all states across all space and for all subsequent duration. He therefore suggests that the physics usage of entropy is more relevant to what he is trying to convey about the era in the “Age of the World Picture,” as Heidegger (2008) had put it, when humanity has become aware of its frame-shift in cosmic relation to the physical Earth, such that its activities can have disruptive ecological consequences.

The return of entropy is for Stiegler also coeval, as was discussed above, with the loss of individuation caused by the merging of industrial production with symbolic production of culture. This “becoming arthropod” discussed in the “Analogy of the Anthill,” in which there is a trend towards maximal predictability in social systems and production, is directly correlated to the decrease in stability of the climate and other ecological systems. Along with a play on words which really only works in French, he therefore draws the correlation between the need to restore negentropy and neg-anthropology (2021, 27), as in a reversal in the trends of the Anthropocene. Stiegler retains the polysemy of entropy in the informational sense by connecting the maximal predictability of a physically entropic system with the breakdown in “knowledge”:

all knowledge, of whatever kind – empirical, parental, artistic, sporting, scientific, academic or social, in all of the senses that can be given to this last adjective – *knows* something of the world in that it *adds* something to this world: it knows that this world is *unfinished*, and that we must continue to make it unfold towards a future, to create the advent of something new. This adding something, through which *the world happens through knowledge*, contributes to human worlds in a way that is neganthropic. (27)

Therefore, the knowledge constituted by *techne*, as it becomes technology, values only that which is calculable, i.e. liable to grammatization. The “incalculable” in the realm of knowledge, including those of domestic necessity, cannot be accounted for by global markets

governed by computation and thereby dispossess them from most of the population, “This loss of knowledge is the essential element of a more general process that we here refer to as denoetization, that is, the loss of the ability to think (*noesis*)” (46).

g. Digital Pharmacology: the loss of locality

With the reference to economic activity referred to above, he more precisely wishes to evoke the etymological valence meaning “management of the household” or “domestic maintenance.” This is because he wants to suggest further that these are also ramifications of the loss of locality. Just like the “physical annihilation of space” caused by industrial communication and commerce technologies that Dewey was concerned would yield unprecedented intellectual and emotional consequences (1927, 87), which also resonates with the language used by Heidegger in “The Question Concerning Technology” (2008), Stiegler turns his attention to what a proper posture towards locality would need to be to in order reverse negentropy. There are innumerable delineations of locality: nation, state, city, neighborhood, building, but, locality itself can become toxic: “Locality then tends to withdraw and to close in upon itself – that is, to fall into decline... Locality then becomes the fantasized projection of a given identity, and not the process of a perpetually open identification, one that is still to come and adoptive, that is, metabolizing its alterity” (2021, 38). Stiegler is once again drawing on his Derridean roots in multiple ways here calling locality a *pharmakon*. This usage of the Greek word *pharmakon*, from which we get words such as “pharmaceutical,” is referring to the famous essay of Derrida titled “Plato’s Pharmacy” (1972). In it, Derrida discusses how the *techne* of writing is a *pharmakon*, that is, as was discussed in *Technics and Time* (1998), it is bivalent in that it has a curative property for human memory and a poisonous property which cannot be resolved as one or the other. Stiegler also wants to implicate the value of dosage in which too little or too much of a pharmaceutical can be poisonous or ineffective respectively.

The danger of too high a dosage is a closed and tyrannical locality, as in the case of Heidegger’s instructively disastrous support for the fuhrer. It ceases to produce hospitality, the posture with which the stranger is acknowledged and willingly received into a locality. For Derrida, “Hospitality is culture itself and not simply one ethic amongst others” (Still 2010, 7). Instead of a closure and retreat from alterity, which would again be “idiocy” in the sense spoken of earlier, restoration of trans-individuation requires a continuous transduction

at the margins of the limits of a locality: “Conceived in this way, locality is the engine of difference itself: it is not constituted by its identity (it does not have one: it arises from the originary default that strikes exosomatization – and strikes it as mystery), but by its potential for differentiation” (Stiegler 2021, 38). Bifurcation, the strictly human capacity according to Alfred North Whitehead, would be a sole recourse to reterritorialize diversity at every stratum of the *internation*, a concept proposed by Marcel Mauss in 1920 (12). A politics that places “locality” at the center of inquiry would therefore necessitate a method of inquiry into the potentials latent or even suppressed within localities and would be an effort of massive scale, “In this regard, the method mobilized by John Dewey is both valuable and insufficient” (104).

Again we have a reconvergence with the thought of Dewey at a higher articulation. Dewey himself had hoped that the “humane age” on the other side of the industrial age would restore face-to-face community within locality:

No one knows how much of the frothy excitement of life, of mania for motion, of fretful discontent, of need for artificial stimulation, is the expression of frantic search for something to fill the void caused by the loosening of the bonds which hold persons together in immediate community of experience. If there is anything in human psychology to be counted upon, it may be urged that when man is satiated with restless seeking for the remote which yields no enduring satisfaction, the human spirit will return to seek calm and order within itself. This, we repeat, can be found only in the vital, steady, and deep relationships which are present only in an immediate community. (1927, 214)

However, this belief that the “inertia” (214) of the human spirit has an inherent tendency towards return from ever more extended exosomatization proves to be insufficient optimism with the advent of digital technology. The prospect of restoration of diversity in locality has proven to be especially problematic in the internet age since its capacity for grammatizing the calculable is on orders of magnitude higher scale and speed than was possible in the late industrial age, “up to two thirds of the speed of light in the centralized memories of so-called ‘intensive’ computing, which extracts patterns that are called ‘big data’” (Stiegler 2021, 126-27). Digital technology, like locality and all technics, are *pharmakon*:

Digital technologies represent a new stage of the process of exosomatization based on hypomnesic tertiary retentions, which have become thoroughly computational. It is not just a matter of a change of system or technology as occurred in the past... it is a mutation in the very nature of exosomatization, including its direction, its conditions of solvency and durability, and so on. (131)

This durability is a reference to Hannah Arendt's own analysis of *homo faber* in *The Human Condition* (1998), wherein the core distinction between the work of an animal and the work that is uniquely human is its retention of "durability" in the face of human fragility (98).

h. The Digital Republic and the Return of Deweyan Education

Despite its inherent fragility as a completely electronically mediated mnemotechnology, Stiegler suggests that the digital age is akin to the era of the invention of the printing press that had spurred such an immense amount of output in the 15th century constituting a republic of letters with some key differences. Further, in his essay "The Digital, Education, and Cosmopolitanism" (2016), Stiegler draws this connection back to the roots of publicity itself, "The process of digitalization gives birth to a new republic [*chose publique*], a new public temporality, a new public space, in the sense that what is *put into circulation* [*publié*] becomes "public." The Latin *res publica* translates what in the Greek *politeia* is the "republic" [*chose publique*] inscribed on marble in Greek and Roman cities" (157). The posture is important here considering the violence and irreparable upheaval of the Protestant Reformation and subsequent 30 Years War which had followed the paradigm shift of the republic of letters: "The situation is so serious that it is essential and extremely urgent that so-called intellectuals must *seize this intellectual technology, and seize it as such—that is, as technology*" (158). It is not a rejection or retreat away from technology but an attempt to get out in front of the entropic capacities of this technology through institutions. Stiegler here primarily means the continued need for public academic institutions like the university: "Universities must take over the digital, for it is a matter of their survival. The university will be the promulgator of knowledge; it will not be simply the dispenser of education. Put another way, it will become digital or it will no longer exist" (162). Stiegler is suggesting that there be a fundamentally new form of humanities that the university will be the vanguard of: digital humanities (163). However, as things stands, it has become a banality to bemoan American discourse about the devaluing of liberal arts humanities education. The work of Wendy Brown on Neoliberalism has told the tale through an economic lens of how marketization of every sphere of public life has compressed university attention to liberal arts education to a minimum, firstly, to save on exorbitant public university tuition costs (Brown 2015, 23), and secondly because this kind of education does not fit into a neoliberal reason that frames every desirable personal trait in terms of its market value. Accordingly,

Many professions today—from law to engineering to medicine—require analytical capacities, communications skills, multilingualism, artistic creativity, inventiveness, even close reading abilities. However, knowledge is not sought for purposes apart from capital enhancement, whether that capital is human, corporate, or financial... Rather, it is sought for “positive ROI”—return on investment—one of the leading metrics the Obama administration proposes to use in rating colleges for would-be consumers of higher education. (177-78)

Brown locates a social shift during the Obama administration that accepts the terms set by the market to restructure the aims of public education around capital enhancement. Because every sphere of life is being marketized and thereby being marketized digitally, the university will be subsumed into the cycles of production and consumption of personal brand, i.e. profile construction, in the sense spoken of earlier by Moeller and D’Ambrosio (2019).

Nevertheless, Steigler is insistent that only institutions can do this integrating work. This addresses the naivete and endemic anti-institutionalist “idiocy” of Illich’s “Rebirth of Epimethean Man” (1971): the promethean and the epimethean are indissociable to knowledge as the source of individuation. Negentropy, or neg-anthrop, can only be the flood voyage of Deucalion through the *pharmakon* of the boat, which is hypomnesic institutionality or technicity grammatized. The invaluable caveat for humanity of this epoch is, again in reference to Derrida’s critique of Plato, that, “The digital is a *pharmakon* that relies, like all medicines, on a treatment plan that cannot be entrusted to the pharmaceutical manufacturer” (Stiegler 160). Humanity cannot expect such a powerful drug’s proprietors, whose interests are so vampiric upon its users by reducing them to predictable calculability, to *educate* humanity on its usage.

Educative institutions are technics constitutive of the individuation of the *polis* itself, “through which individuals take care of their environment, constituting their commons, and learn to live together by sharing common retentions and protentions – through the memory of a singular past and the projection of an unforeseeable future” (2021, 125). The metastability of trans-individuation is a bivalent process, which, left to its own inertia, produces only entropy in the sense which closes the future. Instead, institutions which can bifurcate need to restore experimental inquiry on a global scale: “Such an experimental, theoretical and contributory research practice requires instruments of deliberation, cooperation and exchange, for which new practices of computer design and engineering are required” (36). Necessarily included within this are educational institutions:

Here, an immense educational project opens up, whose terms and stakes are profoundly new, and which cannot wait for the reformation of educational institutions (which find themselves in an increasingly parlous state), but must on the contrary foster social dynamics of civil society that nourish and transform educational institutions. And the latter once again raises the question of what was developed in the twentieth century under the banner of popular education, and of the relationships between democracy and education in John Dewey's sense. (27)

In order to *remember* the project of a democratic education first proposed by John Dewey, rearticulation of the stakes must be at the center. Steigler later evokes the example of the short lived Deweyan school, Black Mountain College, as an example of an anti-anthropocentric institution in the pre-digital era of the later 20th century (131).

However, despite having lived through the World Wars, Dewey was ignorant of just how much more psychically disruptive technology could become. There is no humane age on the other side of the industrial age, only a hyperindustrial age in which knowledge which affords individuation is even more tenuous. Stiegler attempted in the last years of his life to exemplify what he understood to be the role of a public intellectual by trying to bring the digital into the institutionalized educational sphere. The *polis*, public institutions, including the school as technics, is endemic of the default of origin, the fall into technicity, but it is nonetheless the sole recourse in the deferral of death, *elpis*. If children, students within an environment incapable of rest, are ever to be anything other than “standing reserve,” as Heidegger (2008) had said of the river's energy being violently harvested by hydro-electric dams, we must restore the knowledge of the world as unfinished.

Discussion: A post-growth education or a post-human education?

a. AI and the Alignment Problem

Recently, in a 4th grade Arizona public school classroom, my wife was leading a history lesson on the invention of chocolate by the Mayans of Central America. The banal discussion question she posed to the class was, “Chocolate has been one of the most popular candies of the last 500 years. Do you think that it will still be popular 500 years from now?” The children looked at her with mild bemusement, replying in complete agreement that the question is absurd and irrelevant. With a humorless detachment they assured her: humanity will not exist in 500 years.

The analysis of Stiegler would lend explanatory power to a link between these American children's lack of concern that their world is going to end and the recent slew of book bannings across the United States: in Texas, Florida, Missouri and South Carolina. Most ironically, in Utah, one school district's recent attempt to ban “pornographic or indecent” books from schools, mostly aimed at books pertaining to sexual orientation, gender, or racial identity, led to the King James Bible being banned for “vulgarity and violence” (Matza 2023). This is all the more baffling considering that roughly a quarter of American adults claim they have not read a book in any form in the past year (Gelles-Watnick and Perrin 2021). So why are they so concerned about the power of books to corrupt their children, when what is evident from their actions is that books hold no developmental sway over the public at all? They recognize and are helpless witnesses to the capture and suffocation of their children's desire for reopening the future, but they do not realize that, “We never educate directly, but indirectly by means of the environment” (Dewey 1917, 19). The surrogate activity of banning inappropriate books from schools is the last gasp of a generation of parents who are unable to countenance that the education of their children is no longer in their hands, nor in the hands of the institutions purportedly able to foster an environment that can afford the trans-individuation of their children.

Eric Drott makes this point with the rise of internet media streaming services, particularly in access to unlimited choice in music, that, “By removing barriers to the immediate satisfaction of musical desire, streaming platforms inadvertently transmute a potential source of gratification into its antithesis. In a way, streaming services risk ending up as victims of their own rhetorical success, as their promise of saturating musical desire has

the unintended effect of suffocating it instead” (Drott 2018). Beyond this, as the paralysis of infinite access sets in, he claims that the industry turn towards algorithmic song curation in internet radio or playlists produces a fixation on *nextness*: “In order to unpack the significance of the claim that ‘the next song matters’, we might begin by considering its unstated corollary: that the present song in some sense *does not*” (Drott 2018). In the terminology of Stiegler following on Husserl, this capture of attention is a disorientation of protension. Again, the primary retention of a melody retains “the preceding note and that in the preceding note the note that preceded it is still present, which retains in turn the preceding note” (Stiegler 2014, 34). What is held in empty protension, in contentless anticipation, is that the next song is already guaranteed to be desirable. The present moment of the melody is not held in primary retention, an authentic temporality is eclipsed, in favor of a melody that only persists within the temporal object of the streaming app.

Likewise, President Biden’s threats and the ultimate passing of a bill to ban TikTok in Montana are framed as a victory in war against Chinese Communist Party influence over the minds and privacy of children. But they neglect the damage already being and continuing to be done by US companies, Facebook, Twitter, Google et al., which have far more integration and access into the lives of their children. This is especially evident and concerning in those many cases, anecdotal as they may be, when an advertisement for a very particular product someone else had just mentioned in conversation the day before inexplicably appears in one’s social media feed the next day. Mark Zuckerberg has testified under oath that Meta is not listening through the cell phone microphone to conversations for the use of advertisers, despite the growing belief that they are (Hunter 2021). Rather, it is actually more troubling to consider that these companies are able to so effectively algorithmically *anticipate* what topics will come up in face-to-face conversation with what seems to be such a paucity of data, such as our location, proximity to other users and past consumption, implying that we are ourselves becoming *more predictable* without them even needing the auditory data of our conversations.

Stiegler did not live to see the discourse on artificial intelligence hit the mainstream with the public release of ChatGPT in 2022. Though, from this analysis so far, I think he would have pointed out how those who have most economic interest in its fatalistic acceptance by the public, are already those corporate entities who have been integral to the proletarianization of every stratum of society. One only needs to see how grotesquely incapable these algorithms are at producing images of human hands to see just how far the promises are from the delivery.

This is not to say that highly complex programs or machine learning, the underlying technology for the prospect of genuine AI, do not pose legitimate problems for the efforts of deproletarianizing ways of life. Stiegler was an outspoken proponent of open source programs which allow users to see the code of their programs directly allowing for accountability. However, there is also the emergent “interpretability problem”, the issue of “black box” algorithms which operate neural networks on such a scale that even the creators are unable to decode back into information interpretable by a human (Beinsteiner 2020, 140). Nonetheless, Stiegler was confident that even in the bivalent potential of the digital for proletarianization, it also offers “the possibility of a new process of transindividuation opening onto an unprecedented politico-economic perspective” (139).

The topic popular among thinkers such as Yuval Harari and Nick Bostrom about AI, the “alignment problem”, suggests that once one presses execute on the program containing general artificial intelligence, we ought to be absolutely certain that it will produce the kinds of results consonant with the desires and aims of mankind. Otherwise, like the Monkey’s Paw, they believe, it will grant wishes with cataclysmic consequences. One needs to know beforehand that the program *cares* about the same things that humanity *cares* about. However, the framing of the problem is liable to the same critiques John Dewey levied at Idealism, in fact, it is a resurgence of Idealism masquerading as hard-nosed rationalism. It presupposes that there can be a method of determining and pursuing aims which can be preset, and not require constant reevaluation in constant reference to particular aims afforded by the community of a particular time and environment. Despite what this technology will actually prove capable of tomorrow, AI as it is popularly conceived is just another source of anthropogenic entropy, a closure of the future. Just like any *pharmakon*, such as it is according to Stiegler, those who desire a restoration of negentropy must, “*seize this intellectual technology, and seize it as such—that is, as technology*” (2016, 158). It cannot be left up to drug (*pharmakon*) makers to decide how and how much to take their drug: despite what Elon Musk and Sam Altman said about the democratization of AI through the company they co-founded, OpenAI, “There is nothing specifically ‘open’ about the company’s agenda – ‘Facebook, Microsoft, and many other IT companies basically have the same agenda’... All those big players are mainly interested in the improvement of existing technology and in the acceleration of AI research” (Beinsteiner 2020, 141).

Accordingly, it is necessary to publicize that the fear mongering about the coming of general artificial intelligence is really a PR campaign for a regime that is already in power. The prime example is the continued popularity of the Israeli philosopher, Yuval Harari,

among Silicon Valley tech CEO's. Harari has been warning about the "Godlike abilities" that future AI will grant to some humans for years. In a *New York Times* piece on Harari's sold out conference talks across Silicon Valley, journalist Nellie Bowles muses about why they might be interested to hear someone with such a bleak outlook for the frail human psyche encountering such machines:

Part of the reason might be that Silicon Valley, at a certain level, is not optimistic on the future of democracy. The more of a mess Washington becomes, the more interested the tech world is in creating something else, and it might not look like elected representation... Mark Zuckerberg, who has recommended Mr. Harari to his book club, acknowledged a fixation with the autocrat Caesar Augustus. "Basically," Mr. Zuckerberg told *The New Yorker*, "through a really harsh approach, he established 200 years of world peace." (Bowles 2018)

In other words, Harari and Zuckerberg are reassuring us that the future is already closed, public education has ceased to be viable, and humanity ought to be grateful for the strong hand on the tiller offered by such philanthropic CEOs as we happen to already have.

b. The Perpetual Childhood of the United States

The United States has always been a highly amnesiac nation, she forgets her victories and her failures alike. The words of the Egyptian to Solon taken from Plato's *Timaeus* retain a resonance for our own time:

O Solon, Solon, you Hellenes are never anything but children, and there is not an old man among you... there is no old opinion handed down among you by ancient tradition, nor any science which is hoary with age. And I will tell you why. There have been, and will be again, many destructions of mankind arising out of many causes; the greatest have been brought about by the agencies of fire and water, and other lesser ones by innumerable other causes. (Stiegler 1998, 223)

The global panic about overpopulation and starvation in the period after the World Wars was resolved by the inventions of Nobel Prize winning American agriculturalist, Norman Borlaug, "the father of the Green Revolution," for his leadership in developing dwarf wheat which allowed for the feeding of over a billion people on the Indian subcontinent ("Norman Borlaug – Biographical" 2023). Most Americans have never heard the name or even know that there was such a globally significant event. Then concerns flipped, there was suddenly an overabundance of carbohydrate dense processed foods leading to the non-contagious global

pandemic of obesity. However, this year, with the reapplication of the diabetes drug, Ozempic, there is a promising cure for obesity, all that is needed is a simple weekly injection (Wilding et al. 2021). Though it is too soon to say, the low-fat, dieting and self-starving trends held over from the 80's might be another embarrassing period of growing pains.

Likewise, the depletion of the ozone layer, I was told in middle school, was a foregone conclusion. I recall one of my teachers told us there would be a global flood within our lifetimes when the polar ice caps melt. Nonetheless, the swift international actions of the Montreal Protocol to eliminate the use of Ozone Depleting Substances has led to an unforeseen path towards restoration of the ozone layer, but this has received little fanfare (Underferth 2023). Technology and technical programming have proven capable of allaying disaster and granting us forgetting of our past troubles without so much as celebration or acknowledgement as will last into the next generation.

If the trends in the anthropogenic entropy faced by our century are to be reversed: if carbon capture proves to be effective at reducing green-house gasses, if thorium molten salt reactors prove to provide sufficient safe energy, if factory farming can be replaced with lab-grown meat, if plastic waste can be retrieved from blocking the sun at the ocean's surface, if biodiversity and rainforests can be restored, etc., these only turn out to be pyrrhic victories if they are accomplished in spite of the continued degradation in the possibilities of trans-individuation, if the next generation has even less desire for the continuation of the human race than our own. Further, Stiegler suggests that these cannot happen apart, they cannot be separate goals if entropy of human knowledge continues: "We should stress here that decarbonization, like deproletarianization, does not just concern work and employment activities in production or services: the challenge is also the detoxification of consumers, that is, the deproletarianization of ways of life" (2021, 27).

c. Technics and Rest

One aspect of Illich's critique of his industrial age that is left insufficiently answered by Dewey and Stiegler is the problem of what *ought* one be able to do in all their discretionary time the modern age continues to afford. In a deproletarianized way of life, in Stiegler's words, what practices ought to be available in a society that has restored negentropic knowledge? What is one to do, to practice, on a Saturday off of work that is not

already marketized within the cycles of production and consumption, in an era when even listening to music can be psychically exploitative?

Dewey imagined that in the ideal society, nobody ought to be granted exemption from the productive labor of society. For him, the perseverance of a leisure class in previous societies was only possible as the result of the exploitation of a labor class. Regardless, Dewey believed that there is nothing of instrumental value that can be gained from the leisure class since all that is worth inquiry is that which can be deployed to enhance experience, hence Dewey's elevation of the laboratory over the Academy of Athens. However, framing leisure as the rewards for productivity is to reduce leisure to be only an intermittent un-productivity, rather than productivity as intermittent un-leisure. This is endemic of our secular age from which no one is exempt, of our "disenchantment" spoken of by Max Weber, with regards to time consciousness (Taylor 2007, 58).

In the same line of thinking, Stiegler describes what he calls the loss of the noetic on account of proletarianization. However, I think his usage is reductive of the much deeper conception of *nous* which in Greek thought is what is receptive in contemplation. To use a consciously technological metaphor, the Platonic *nous* is the antenna which is tuned to the extant frequencies in the air that would otherwise pass right through solid bodies. Attunement is an effort which is unproductive, it is not a transformation of matter into a secondary substance as *techne*. This is completely missed by the Western corporate world's sudden fascination with purportedly "Eastern" mindfulness *techniques*. Absent the religious substrate which provides their symbolic capacity, they transform kenotic mantras and meditation practice into a resource of enhanced productivity. Likewise, there is the resurgence of once contemplative practice of astrology, which has been demythologized as a means of planning the effective use of one's week. And further, as the physiological benefits of restricting one's diet have been studied, intermittent fasting has become another tool for fitness, wherein even the body can become a product.

Fasting, in a religious context, is primarily done communally, as in Ramadan. Fasting is the least productive, least consumptive practice possible: if one were to strictly follow the fasting calendar of the Christian Orthodox Church, she would be eating vegan effectively half of the year. For Americans, this would effectively be a fifty percent reduction in meat consumption, since many Americans eat meat in nearly every meal. But such practices are only sustainable if they are recognized and done communally, and they can only become so if they are done for reasons which are outside of the cycle of production and consumption.

More than just the revalorization of knowledge producing labor, deproletarianization of the ways of life ought to include deproletarianization of the calendar, too. It is quite instructive to this discussion that the Genesis myth of the origin of technics sets the wickedness of the city, with its musical instruments and its weapons alike, against the rescue that comes through rest. The arrival of technics comes through the children of the first murderer and first human to ask his creator a question, Cain, who goes on to found the city. However, it is only through the line of Cain's younger brother, Seth, that Noah, in the typology of Deucalion and whose name means "rest," will rebirth mankind by building (*techne*) the ark. The digital age "has no symbols consonant with its activities" (Dewey 1927, 142), but I suggest that somehow these symbols will someday renew our forgotten reasons to rest.

Conclusion:

Surpassing 100 years after its publication, John Dewey's attempt to offer a guiding method for the sustenance of democracy, *Democracy and Education*, retains resonant force and a profound challenge in current day America. Dewey managed to popularize a belief in a form of education that had never existed before, one that was consonant with the aims of, and thereby constitutive of, a democratic society. His vision valued the fostering of individual development over any outside any preconceived notion of what that student's role in society ought to be based on her birth or class. He imagined a humanizing democratic society in which every individual was invested and engaged in the aims of her society as it was in her own time, meeting challenges that arise with confidence in the experts that can prove themselves to be trustworthy in every sphere. Her own labor and expertise would likewise be consciously engaged with and validating to the aims of her community: her city, her state, and her nation.

Education would extend beyond the classroom, there would be a congruence that is self-evident to children between the activities and pursuits of the classroom and the activities and pursuits of the adults of their society. All of this would be constitutive of the environment into which children could likewise be integrated into the whole with awareness of their own desires, capacity and needs by pursuing their own ever-developing interests. However, because modern life is so complex already, children need a separate place, the school, in which they will be able to get up to speed with the rest of their society when their time comes.

At the same time, Dewey's astute concerns for the already prevalent failures of such a rapidly advancing society to integrate these capacities into a culture that can become a community remain true. His warnings about the continued entrenchment of liberal property rights creating a systemic bent towards market capture of media industries proved to play an integral part in the rest of the 20th century. His awareness of the necessity of the continual advancement of technoscience to the growth of such society was prescient, but ultimately naive to the unforeseeable advances that would take place in the latter half of the 20th century.

Dewey nonetheless had faith in the ultimate self-evidence of the ways to control technology would eventually lead to another side of the current problems posed by unintegrated technological capacity. Despite the incredible capacity for communication

afforded by industrial communication technologies, the culture just has yet to figure out how to use it properly. The future enrichment of the lives of individuals would therefore necessitate focusing primary attention on the advancement of technology and scientific understanding.

By the time of the writing of Ivan Illich in the 70's, children's education had become highly congruous with greater American society, the problem was that American society itself had become dehumanizing: technologically micro-managed by agents of the state. School had become a place that instilled neurotic guilt over unproductivity in children. There was no longer any diversity in the intersecting social spheres of alignments which made up the meaningful investment proper to community, only a dissociation of individuals who do not know what to do with their time outside of their unfulfilling and disconnected employment. There was no longer any way to engage with society that was not mediated by markets and schools were effectively training children into docility in their own exploitation. The natural environment was already showing the irremediable wear of human excess and the threat of ecological collapse, which Dewey could not have accounted for just 50 years earlier, was already on the horizon.

Illich therefore suggested a total opt-out of the system, that it was the institutionalization itself that bore with it a logic that led to this outcome. He believed this to be the inevitable dead-end of a society that had entirely bought into the Promethean myth that more technology, more management, more deferral of the problems that have plagued society perennially, is ultimately suicidal. Therefore, only a recovery of the opposing force to Prometheanism, privacy, humility, and dedication to one's immediate environment and community can restore man's relationship to nature.

Regardless, his idea for a deschooled society actually bore a lot of resemblance with the original goal of Dewey's vision, that children would be able to pursue their own interests, on their own time, and in accordance with their own local community. Illich's suggestion of "learning webs" bears also striking resemblance to what would characterize the internet which would arrive in full global force around 25 years later. Illich imagined that this could be a self-sustaining, low-maintenance system with enough buy-in from the public. However, what has proven true about the internet, is that it is anything but self-sustaining and low-maintenance, and has had disastrous and unwieldy results for the development of children and their environment.

According to Bernard Stiegler, this cycle of optimism and grief due to modern technology is endemic to humanity's relationship to technology at a phenomenological level,

even for Dewey's savage societies. Technology is bivalent, and like a drug, can be a cure and a poison at the same time. Rather than picking the side of Prometheus or Epimetheus, Stiegler insists that the only way to understand the two indissociable aspects of the way technics exosomatize memory, incurring a kind of forgetting, of which language and therefore writing are a part. This allows for a relationship to time that is an opening of the future. There is no communication, no society, no education, not even music without technics, for it is what makes possible individuation, a person's becoming individual, and therefore trans-individuation of the community because it is how humanity orders its world.

However, this individuation is disrupted by the industrial age, because it alienates individuals from the memory retaining properties of the objects they make through technics, technology. Memory, and therefore the ordering capacity of technics is reversed, disrupting trans-individuation of localities and making man an agent of disorder in the world, also called entropy. This combined with the merging of industrial production with symbolic production of the audiovisual media technologies of the early 20th century are disruptive of personal individuation, since the continuous production of symbols are what mediate one's relation to their world, and they are no longer involved in the process of symbolic production. Disindividuation leads to a suffocation of desire and a depoliticization of citizens and a closure of the future.

Thus, in the wake of the digital revolution of the late 20th century, all of this is accelerated and more tenuous than before. The digital is a completely new form of memory retention, on the scale of the advent of writing in prehistoric times. In order to reopen the future, and restore the ordering capacity of human technics, a concerted effort is required to integrate, not retreat from, the digital into the locality of individuals. Otherwise, education and democracy become impossible and the future will remain closed to disintegration and disindividuation.

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