Technics, Time and the Internation: Bernard Stiegler’s Thought – A Dialogue with Daniel Ross

Ryan Bishop and Daniel Ross

Ryan Bishop Introduction:

At the time of Bernard Stiegler’s death in August 2020, he and I were planning a special issue of *Theory, Culture & Society* engaging his emergent, multi-pronged, collaborative Internation Collective. This project had grown out of his writings, education projects and institutional collaborations. The Internation Collective speaks directly to the UN initiative to address the growing gaps between the goals of the Paris Agreement and actual greenhouse gas emission reductions, gaps resulting from a lack of political and collective will and increasing apathy toward or distrust of large-scale solutions. The Collective and its larger project initiated a multi-scaled and complexly developed set of related strategies and technics to address climate issues in ways that reconfigure political economies to constitute “wealth” as contributory rather than extractive, especially as wealth pertains to the Anthropocene and the *munus* (in terms of community, labor, knowledge, technology and the environment). “Threatened in totality as it is by the Anthropocene,” Stiegler argues, “wealth takes on a new meaning: we can no longer use ‘wealth’ to refer to anything except what will allow us to overcome the strictly eschatological limits of contemporary economic development”. Comprised of scientists, mathematicians, philosophers, artists, business leaders, designers, activists and doctors, the Internation Collective addresses the demands of climate crises through a macroeconomic model designed to combat entropy at various scales, from the bio-chemical to the planetary.

The special issue we planned intended to bring together networks of mutual interest to the Internation project to further its agenda and critically address multiple elements of it. After Bernard’s death, with the wonderful support from colleagues *at Theory Culture & Society* and more importantly from those in the Internation Collective whom I did not know, we decided collectively to continue with the issue. I am exceptionally grateful for their generosity and enthusiasm. The following interview foreshadows this special issue.

The interview that follows is with Daniel Ross, who has translated many of Stiegler’s works into English and a pivotal figure for the perpetuation of the Internation project and realizing this special issue in process. Ross is the author of *Violent Democracy*(Cambridge University Press, 2004) and *Psychopolitical Anaphylaxis: Steps Towards a Metacosmics* (Open Humanities Press, 2021), as well as co-director of *The Ister*, which premiered at the Rotterdam International Film Festival in 2004 and won awards in Marseilles and Montreal. He has translated eleven books by Bernard Stiegler, most recently *The Age of Disruption: Technology and Madness in Computational Capitalism* (Polity Press, 2019), *Nanjing Lectures 2016–2019*(Open Humanities Press, 2020), with a twelfth forthcoming next year, *The Immense Regression* (Open Humanities Press, 2021). He has taught at the University of Melbourne and Tongji University, among others, and has written extensively on Stiegler’s work. Through having translated dozens of lectures and many other chapters and articles for Stiegler, frequently at short notice and many of which were later refashioned into books, and working with him closely on numerous projects, Ross gained an intimate knowledge of the thinker’s process, involving a sustained collaborative effort in Stiegler’s struggle to both pursue a philosophical project and intervene in the torrent of events raining down with the consumerist and computational capitalism characteristic of what has come to be called the Anthropocene.

Relevant Keywords: Bernard Stiegler, Internation, protentions, entropy, climate crises, anthropocene, care, hope

**RB:** You have written that many philosophical readers of critical theory know Stiegler’s work from the *Technics and Time* volumes, while other scholars, for example in media studies, know only the work produced afterwards. Can you explain how the *Technics and Time* books and the period of writing that leads into the Internation project, both contain the seeds of this project? And how did the Internation prefigure the return to the planned but ultimately unfinished remaining volumes in *Technics and Time*?

**DR:** *Technics and Time, 1* can be construed as arguing that, as we head into the twenty-first century, philosophy has no future if it cannot engage much more profoundly with science than it has in recent times, and especially with technology, which philosophy has repressed from the beginning. Today, science and technics have again become conjoined in the form of a powerful “technoscientific” dynamic driven by permanent innovation, and the question is to know what role something like philosophy has left to play that is not itself *reducible* to this dynamic. This is a serious question: “transhumanism”, “accelerationism” and the intensification of neoliberalism known as “disruption” can all be understood as technophilic ideologies premised on the denial that philosophy or thinking could any longer be the foundation for any viable counter-tendency to this prevailing dynamic. The problem is that none of these have any answer to the calamitous direction in which the so-called Anthropocene is headed (but nor does technophobia).

To that end, in his first book Stiegler picks up on something that Derrida says in *Of Grammatology*, but which had received little attention between 1967 and 1994: that différance *is* the “history of life.” What makes it possible for Derrida to say this? It is the fact that life maintains itself by deferring its own end, which it does through a process of constant differentiation – that is, by a diversification of organs and species that postpones the entropic deadline. This implies that we should see what Derrida names with this word, différance, as a process, one that, as Derrida says by relying on André Leroi-Gourhan, involves a history of keeping the past in the present that runs from the earliest forms of the genetic molecule to the most recent forms of computer technology.

What Stiegler argues is that we must therefore see différance as a process, in which the epochs and ages of différance matter, and thus that we have to pay attention to the specificities of this history. In that history, a major change occurs when this process of keeping the past in the present, that is, of retaining it as all kinds of order and memory, begins to operate *outside* of living organisms themselves, neither in their genes nor in their brains, but in their artefacts, involving what Leroi-Gourhan calls the process of exteriorization. This sets off a new dynamic in the course of evolution, no longer natural, but artificial, and where the basis of selection no longer lies at the level of the species but at the level of the ethnic or the idiomatic (until these specificities are dissolved back into the “global”). This is *different* from biological différance, and in fact a differentiation from it that postpones the drivers of endosomatic evolution (natural selection, instinct) – in this way, we can say that it is a différance of différance.

We might think that all of this still sounds like it is just applying “philosophical” terms to scientific concepts, and thus that it is still reducible to scientific understanding. But in the second half of *Technics and Time, 1*, Stiegler shows how this attention to the epochs of exteriorization transforms how we should see the questions Martin Heidegger asks in *Being and Time*, because it is our fundamental entanglement with artefacts that opens up Dasein’s access to a past that it has not lived and that in that way also opens up Dasein’s futural character. On the one hand, the relationship to the future that consists in determining it and calculating it through planning, and, on the other hand, the relationship that consists in existing with the incalculable knowledge of mortality – these two futural aspects of Dasein do not form an opposition, but a composition.

And in *Technics and Time, 2*, Stiegler shows through a critique of Husserl that our very intuition of sense data (and therefore our understanding and our reason) is fundamentally constituted through our relation to technical artefacts. If what Husserl called “primary retention” is in fact a *selection* from among possible givens, which we know because listening to the same record twice produces two different perceptions, and if the *criteria* for these selections lies in what Husserl called “secondary retention”, that is, in memory, then, *beyond* Husserl, what Stiegler adds is that “tertiary retentions” (retentional artefacts) introduce the possibility of *controlling* these selections. This is done in one way in processes of education (enabling us to return to a poem, for example, and therefore to interpret it, and more generally in cultivating the long-term aims of society) and in another way through the processes systematically pursued by the culture industry (to reinforce certain associations, and therefore behaviours, driven by the short-term aims of the market).

This idea of using tertiary retentions to reinforce or undermine secondary retentions and through that to influence behaviour is premised on the idea that behaviour is future-directed activity operating on the basis of what Husserl called “protentions”, or in other words, by beliefs, expectations, hopes, fears, wishes, dreams and desires, but also motives and *reasons* (in every sense): all the ways of *anticipating* what is yet to come in order to decide how to face it. In *Technics and Time, 3*, Stiegler shows in another way how this is reducible neither to physics nor to biology: if we are bored on the kind of gloomy Sunday morning about which both Billie Holiday and Kris Kristofferson sang, we may find ourselves going to the movies, and if by some good luck it happens to be a *good* movie, then we may exit the theatre feeling like our batteries have been “recharged”, with *more* “energy” that when we went in. This energetic feeling is something real, in the sense that it can produce real behavioural change, and yet surely we can only have lost physical energy in the process of paying attention to what is on the screen, popcorn consumption notwithstanding. This suggests, firstly, that what “energy” means is something complicated, something that is somehow *generated* through psychosocial interactions with the tertiary retentions emanating from the projector and reflected from the screen and into our eyes, interactions that produces processes of *imagination*; it suggests, secondly, according to Stiegler, that the *age* of cinema and the cinematic imagination may amount to a different epoch of exteriorization than what came before, in the age of printing, say, and therefore that to reflect on the problems of this age may require specific analysis of the techniques by which *cinematic* tertiary retentions allow control to be taken over primary and secondary retention, and therefore over protention.

After these three volumes of *Technics and Time*, Stiegler takes these insights in a slightly different direction. As Derrida already highlighted strongly, the term that Socrates uses for writing, *pharmakon*, has two different and opposing meanings: it applies to something that may be either toxic or curative, like a drug. More particularly, writing can either help or hinder the work of memory, and this also means that it affects the ability or inability to know what one is talking about. The *pharmakon* is both the condition of possibility of knowledge and the condition of its impossibility, so to speak. The exteriorization of knowledge in writing turns it into information, which we may either (1) turn *back* into knowledge by re-interiorizing it or (2) rely on as a crutch, which is to say *automatically*, effectively *destroying* knowledge.

What Stiegler recognizes is that the same characteristics apply not just to writing, but to Jacquard’s loom and factory machines in general: just as writing is a spatialization of the temporal process of speaking, so too the machine is a spatialization of the temporal process of the worker’s gestures. The knowledge of the worker, which firstly concerns the use of hands equipped with instruments, is analysed, broken down into discrete elements, in order for it to be programmed into a device that does automatically what the worker did autonomously. The worker thereby finds himself deprived of his or her knowledge – proletarianized – and in this way Socrates can be considered, as Stiegler puts it, the “first thinker of proletarianization”. This happens again, in another way, with the invention of radio and cinema, but the knowledge that is analysed and destroyed is no longer that of workers but of consumers. And digital and network technologies lead to other forms of proletarianization, including in the sciences themselves, as shown for example by “Lancetgate”, which made clear how scientists can fall prey to illusions of knowledge because of their unthinking reliance on the information provided by the same “big data” methods employed by the major social networks of algorithmic platform capitalism.

In short, in this second phase of Stiegler’s work, the phase best known by media theorists and so on, he emphasizes firstly that philosophy must again take up political and economic questions, secondly that these questions are always also technological questions, especially concerning “retentional” technologies, and thirdly that this means that the *battleground* of political and economic struggle is inherently *aesthetic*, not in Jacques Rancière’s sense, but in the sense that the struggles to control desire and influence behaviour, and the struggles to maintain or transform knowledge against systematic proletarianization, are conducted via retentional and protentional instruments. In series like *Symbolic Misery* and *Disbelief and Discredit*, he shows that desire itself is something we must understand “organologically”, rather than organically, because it arises when an exosomatic species evolves whose behaviour can no longer be instinctual because it must be capable of being attached to the detachable organs that are exosomatic tools.

In this gap from the instincts of animals to the detachable drives that underlie our own behaviour, there enters the possibility of reattaching these drives to ends that do not exist, that are infinite: not just to hunger, but to the cultivation of good taste; not just to reproduction, but to love; not just to survival or to law, but to justice. Such a detachment from finite aims to infinite ones is a process of the dis-automatization of the relationship to the future, and it equally coincides with the advent of that form of différance that we can call symbolization, and shows how all knowledge has the structure of a promise. Furthermore, this reattachment to what does not exist yet consists, which operates through all kinds of instances of what Donald Winnicott called “transitional objects”, amounts to the creation of protentional circuits running through “the outside”, that is, psychosocial circuits mediated by technical instruments and processes of identification with others, and the libidinal energy that circulates through these libidinal circuits is the psycho*social* energy of desire, including the energy that is gained by attending the cinema on that gloomy Sunday.

Stiegler had always planned to write three more volumes of *Technics and Time*, but the advent of the Internation Collective came after the start of a third phase in his thinking, which he then felt necessitated a new fourth volume of the series, prior to what would then become the fifth, sixth and seventh volumes. He lays this out in a new preface and afterword to the French republication of the first three books as a single volume (an earlier version of this afterword was published in English in *Qui Parle* under the title “The New Conflict of the Faculties and Functions”), stating that the fourth volume will be entitled “The Ordeal of Truth in the Era of Post-Truth”, thus aiming to take account of a mutation of the technical system in the twenty-first century that has brought with it vast consequences for the very relationship to knowledge and truth. But the fundamental starting point for this third phase goes back to the insight discussed in *Technics and Time, 1*, that différance is the history of life: if this is the case, it is because what life defers through processes of differentiation is entropy.

Entropy, and what Erwin Schrödinger called “negative entropy”, or negentropy to designate life as the struggle against the second law of thermodynamics, is a very complicated business, firstly because the understanding of the second law is a subject of debate for physicists themselves, secondly because there is the strange and suggestive phenomenon of an identical mathematical formula for what is also called entropy in information theory, and thirdly because whether and how it is possible to refer to a scientific concept of *neg*entropy is itself scientifically controversial. Nevertheless, I think that Stiegler is right to say that all of his previous work, and all of philosophy in general, is susceptible to and indeed must be reinterpreted in terms of entropic and counter-entropic tendencies, even if this is a very difficult theoretical question. What that firstly means is recognizing that, as an *irreversible* tendency, entropy always accumulates, and those tendencies that run counter to it, which are always “spatializations” of time in the form of organized systems made possible by forms of retention (whether genetic, nervous or technical), always themselves *also* produce *more* entropy: these spatializations are thus always localizations that may conserve themselves negentropically through the local and temporary production of différance “here” and “now”, but they always also contribute to the overall increase of entropy and always end, sooner or later, by succumbing to the so-called “arrow of time”.

The problem with applying these terms, entropy and negentropy, to human life, that is, technical life, is, again, that it gives the appearance that such phenomena are *reducible* to scientific or biological processes, and thus risks erasing that these phenomena are not *just* a question of *vital* différance, but of a différance from différance. For example, the unorthodox economist Nicholas Georgescu-Roegen insisted that the conservation and dynamism of economic life must be understood in terms of the struggle to keep entropy low, and that economics, as a matter of *artificial* selection, is the form of this knowledgeable struggle that *replaces* the biological struggle seen in plants and animals and operating through natural selection, but, at the same time, his bio-economics makes it seem as if it is a question of taking economics *back* to biology, as if biology was *sufficient* to think the economic processes of technical life. To avoid the risk of such an appearance, Stiegler insists on the fundamental importance of Alfred Lotka (who was, admittedly, already an important reference point for Georgescu-Roegen), who made it clear that we must distinguish endosomatic processes operating through biological organogenesis and *exosomatic* processes that fundamentally depend on the non-biological organogenesis of technical prostheses. Furthermore, the “entropic” risks associated with exosomatic life are not just thermodynamic or biological, but also informational (in the sense of the reduction of incalculable knowledge to calculable information) and psychosocial (in the sense of the regression from desire to drive, from maturity to immaturity, from wisdom to stupidity, intelligence to madness, and so on), and for this reason Stiegler doubles the terms “entropy”, “negentropy” and “anti-entropy” with “anthropy”, “neganthropy” and “anti-anthropy”.

In other words, if we consider entropy as the thermodynamic tendency for the probable to prevail over the improbable, amounting in this way to a tendency against the *retention* of the past (eventually the sand castle becomes indistinguishable from the beach), then, in the case of exosomatic life, new forms of retention arise, giving rise to new forms of improbability, and these new forms themselves generate new forms of probability that tend to threaten the future of those improbabilities. Nietzsche saw these risks of new forms of the *loss* of retention in what he called levelling and the reduction to averages, and we see the meaning of this, today, in those algorithmically-driven processes that aim to reduce everything to calculability for the profit-driven purposes of standardization and particularization. What such processes destroy are the real diversity of knowledge that is the only real wealth of exosomatic life, because it is this rich diversification that enables the metastabilization of social life (just as ecologists have learned that biodiversity is what ensures the metastability of ecosystems) and allows for the generation of *new* improbabilities necessary in the face of the destabilizations brought about mainly by technical change and acceleration. *Exosomatic* improbabilities and the corresponding tendencies towards those probables that are stupidity, averageness and so on cannot be reduced to endosomatic considerations. Hence Stiegler and the Internation Collective propose: (1) that in endosomatic life, the synchronic tendency towards metastability should be understood as negentropy, and the diachronic tendency towards new diversification should be understood as anti-entropy (where these together compose with the overall entropic tendency); and (2) that is exosomatic life, these synchronic and diachronic tendencies should be understood as neganthropy and anti-anthropy, where these compose with the ineliminable anthropic tendency, and where *all* of these exosomatic tendencies are *also* inscribed within all of the endosomatic tendencies that ineliminably characterize all of life. It is at the scale of exosomatic localities such as tribes, ethnic groups, nations and civilizations that anthropy, neganthropy and anti-anthropy play out these compositions, whereas endosomatic localities are constituted by the cell, the organism, the species and the ecosystem.

This step of Stiegler’s thought coincides with recognizing two things: (1) that the largest of these “localities”, the biosphere, has now become so anthropized that it can equally be referred to as a technosphere, to such an extent that it fundamentally threatens the negentropic and anti-entropic dynamic of endosomatization across the planet, amounting to a genuine state of planetary-scale emergency; and (2) that a fundamental driver of this anthropization today is not just industrial production (as it was in the nineteenth century) or audiovisually-induced mass consumption (as it was in the twentieth century), but the algorithmic processing of “big data” derived from social networks that is leading simultaneously to the destruction of intergenerational knowledge, the loss of belief in every kind of certified truth, bringing all manner of dangerous psychopolitical consequences, the proletarianization of those who work with formal knowledge such as scientists, and the rise of a wave of automation that threatens to destroy the basis of the Keynesian compromise. This relationship between the destructive anthropization of the biosphere and the destructive algorithmicization of psychosocial life is why Stiegler considers the Anthropocene to be an Entropocene, and it is for this reason that in the introduction to *Bifurquer*, the book published by the Internation Collective, it states that the road to decarbonization must pass through deproletarianization, failing which it will be impossible to generate the collective will, desire, intelligence or maturity necessary to enact the emergency procedures without which catastrophe, which is in any case the most probable outcome, will be absolutely unpreventable.

The concept of the “internation” itself stems from Marcel Mauss’s thought at the time of the founding of the League of Nations that a transnational dynamic was needed that both respected the necessity of the diverse “wealth” of nations (unlike vulgar forms of internationalism) and respected the need for genuinely rich ties between nations in order to enrich that wealth and avoid war (unlike vulgar forms of nationalism). Just as endosomatic life *depends* for its continued existence on the continuous production of différance, that is, of differences amounting to biodiversity, so too exosomatic life *depends* for its continued existence on the continuous production of differences that amount to what we could call noetic diversity. In both cases, the loss of diversity is entropic and/or anthropic because it is both sterilizing and fragilizing. The “internation”, from a Stieglerian rather than Maussian standpoint, is the concept that recognizes the necessity of this always-local production of noodiversity, without which we are bound to destroy biodiversity and thus the conditions of possibility of our own existence: it is a call for new institutions based on the idea that, precisely *because* these processes are exosomatic, which is to say simultaneously anthropic, neganthropic and anti-anthropic in ways that are irreducible to biology or chemistry or physics, they must involve *decisions*, which is to say that they necessitate a new critique of political economy. Such a critique must become the basis for a new therapeutics taking care of the biosphere and psychosocial life in the biosphere, and this means that we must somehow inhabit the paradoxical dynamic that arises from both the absolute urgency of the current situation and the absolute necessity of taking the time to think about and take care of it.

**RB:** Your note in *The Age of Disruption* (page 339, note 32) addresses the etymology of two terms that Stiegler had been deploying more regularly: *pansée* and *panser*, as Derridean plays on *pensée* and *penser*. These neologisms helped formulate thinking in terms of care. As you note, the etymology links back to Old French, when the terms referred to the care for (feeding, grooming, etc) horses and animals before becoming more general terms for care and more specifically for tending to wounds and helping them heal. How do these terms helps encapsulate the theme of “thinking care-fully” that becomes central to the Internation project?

**DR:** In fact, the first place I know of that Stiegler uses these terms is in a lecture he gave in mid-2016 in Rome, which was later included in the book *The Neganthropocene*. Later that year, he gave a lecture in Santa Barbara on the theme of *panser* in the Anthropocene, and this text would be rewritten and expanded, including the addition of a section on the etymology of this word, and eventually became the last chapter of *The Neganthropocene*, with the title “What is Called Caring? Thinking Beyond the Anthropocene”. After that, Stiegler wrote a couple of books in French with the same title, *Qu’appelle-t-on panser?*, but these two volumes then in a way *anticipate* the unpublished third volume of that series, which might have included a (yet again) rewritten version of that Santa Barbara lecture. So, for the last four years of Stiegler’s life, this set of terms continually grew in importance in his work.

What these titles show is that Stiegler, having more or less left Heidegger to one side after *Technics and Time*, was engaging with him again, but this time with more attention to Heidegger’s later work and in particular the 1951–52 lecture course published as *Was Heisst Denken?*, which begins, as you know, with the thought that what is most thought-provoking of all is that we are still not thinking, “not even yet, although the state of the world is becoming constantly more thought-provoking”. Stiegler recognizes the importance of this paradoxical thought about not having yet started thinking, as well as Heidegger’s foresight in seeing “cybernetics” as the real question of the future of thought, and in some way what Stiegler is trying to do is introduce a différance from Heidegger here, by showing that Heidegger’s thought is still not able to get to the bottom of this question, not forgetting that Heidegger is also concerned with the relationship between *Denken* and/as *Danken*, thinking as thanking. By listening to old French rather than old German, Stiegler is introducing a différance from thinking, from how we have thought about and cared about thinking, reinscribing it back into a kind of “functionalism”, but where this cannot be a static functionalism of the kind we see in Talcott Parsons, but rather one associated with what Alfred North Whitehead calls the “function of reason”, which is to say, where this function of *panser*, of thinking/caring, would be to introduce improbable and incalculable bifurcations into a system, which means differences that could not have been anticipated on the basis of the prior state of that system. Beyond *both* Heidegger and Whitehead, of course, this function of *panser* as the capacity for introducing new elements must be conceived in terms of its exosomatic basis, that is, as the potential, not just for neganthropy, but for transformational anti-anthropy.

In the section I just mentioned on the etymology of *panser*, Stiegler draws attention, as you point out, to both feeding and tending to wounds, dressing or bandaging them, or healing them. Feeding means nourishment, which is not just a question of the need to assimilate various vitamins and minerals in order to sustain the body, but also of cultivating a taste for flavours and textures, that is, a sensitivity to the pleasures of subtle *differences*, which are noetically sustaining because this consumption and appreciation of genuine culinary diversity has the potential to individuate my taste, in a way that has the potential to go on forever, which is to say, infinitely. This is why Stiegler also likes to associate *savoir* with *saveur*, and it is why the authors of a book called *A General Theory of Love* could say in the year 2000 that the “child’s electronic stewards” today, meaning screens of all kinds, offer only “the emotional equivalent of bran”, hijacking attention but without nourishing it. Such electronic bran is entropic, because it does not introduce differentiations with the potential to defer the tendency towards flattening everything out into flavourless averages, which are now (but not yet in 2000) generated algorithmically by supercomputers on the basis of a lightning-fast two-way data stream.

As for the “wound” that must be treated, taken care of, healed, Stiegler connects it directly to the hubris of exosomatic life, that is, the “violence” that Heidegger reinterprets in *An Introduction to Metaphysics* via the “ode to man” in *Antigone*. This ultimately leads to the magnificent last dozen pages of *The Neganthropocene*, where, through a reading of an article by Rudolf Boehm, Stiegler reinterprets the question concerning technics in Heidegger, in particular via that 1935 lecture course, and the strangeness and indeed uncanniness of the fact that for Heidegger *tekhnē* was already both violence and knowledge. Without trying here to recapitulate those fascinating and mysterious pages by Stiegler, we can say that he finds in Heidegger some traces of a thought of différance, however suppressed, that ultimately eluded Derrida himself, and that, in the entropic Anthropocene, this gives to philosophy a duty to elaborate a careful therapeutics for the gaping psychic, social and biospheric wounds inflicted by technics, but where we must also never forget, *firstly*, that the bandages required for these wounds will themselves necessarily be exosomatic, which is to say technical (which Heidegger rejected in texts such as *Discourse on Thinking*), *secondly*, that, as exosomatic, they are always a matter of invention rather than resistance (which implies a critique also of many strains of contemporary *left*-wing discourse, if we can still use these terms), and of cultivation rather than application, and *thirdly*, that every bandage always threatens to become a source of reinfection, and is in fact *bound* to become such a source unless it is regularly *changed*.

**RB:** And to follow from the last question, the cultivation of care, or the lack thereof, connects with the closure or erasure of the horizon. Thus a future is cancelled because it has been pre-programmed by the digital *pharmakon* of calculation of a certain kind, one geared toward controlling potential outcomes of action (or futures). Stiegler argues that this entropic form of calculation circumscribes protentions and thus the capacity to care. This concept draws on Heidegger’s notion of *Gestell* as an enframing of the collective imaginary and thus an erasure of hope. Such a situation equals, or results in, a kind of madness, the loss of a reason to live (individually and collectively), and is thus suicidal at individual and collective levels. How does the Internation project attempt to address this complex nexus of truncation or erasure of the horizon?

**DR:** We can talk about a horizon of the future because we are able to share protentions, which means that they become collective protentions: an epoch is circumscribed by its ability to generate such collective protentions – expectations of a common future, and where we describe this in terms of a “horizon” precisely because these expectations are not *identical* between individuals but *converge* towards a future in which it is possible to believe together. But there are collective protentions only to the extent that there are collective retentions, which means the possibility of sharing secondary retentions, and the basis for this sharing is always ultimately tertiary retentions held in common. It is through educational systems of all kinds (not just schools and universities, but parental and cultural forms of the intergenerational transmission of knowledge) that secondary retentions can become collective, via tertiary retentions, through the sharing of which my own protentions are projected, and this projection must be both singular and yet occur within that common horizon in order for me to feel that I belong to an epoch, the here and now of a temporal locality that is not just a space, but a place.

But in saying this, I have kind of drifted from the question of an epoch to the question of a locality: what constitutes the specificity of a time that means we can refer to an epoch? Stiegler draws attention to the relationship between epoch and the phenomenological *epokhē*, which means an interruption through which a new way of seeing opens up. An epoch is not just some ongoing fact of sharing some collective retentions and therefore projecting collective protentions, but a process that arises and must arise when one epoch starts to lose the ability to function *as* an epoch.

Heidegger argues in *Being and Time* that it is when a tool such as a hammer fails that our attention is then drawn to it *as* a tool, whereas when we merely use it without any problem this fades into an almost imperceptible background – the technical milieu. Stiegler argues that this is the case, not just for a hammer, but for the entire technical system in which we live: technical systems regularly change, slowly at first but then more rapidly, and when they do, the “ways of life” that have formed and adjusted in relation to that technical system are thrown into disruption. This requires us to pay attention to what usually goes unnoticed, so as produce a reinvention of life, new ways of living and thinking and caring, the possibility of which stems from the potential for reflection enabled by the shared collective retentions that form the “already there” of my past, which is for this reason not *just* my past, but a past that I must nevertheless *make* mine by adopting it, which means, incorporating it into the dreams I project of my future, which is inevitably collective. The formation of a new epoch thus occurs in two stages: the first is the disruptive change of a technical system that has the effect of overturning all kinds of social understandings and forms of knowledge, which find themselves obsolete; the second is the transindividuation of new knowledge on the *basis* of this suspension, generating new knowledge and new ways of adjusting psychosocial life to the new technical system.

There is therefore nothing new about the disruption of ways of life and the need to reinvent them. But there are two things that are new in the current disruption caused by the shift to a technical system thoroughly penetrated by digital tertiary retention, and in particular in the most recent phase of that shift, characterized by the very rapid spread of those handheld computers that are smartphones, the very rapid extension of global internet access, and the very rapid uptake of membership in so-called social networks, which, as I said, utilize incredible computing power to exploit vast amounts of user data for the purpose of influencing behaviour in the direction of calculable averages. The first thing that is new is that there is a systematic and systemic interference with the formation of intergenerational bonds and the transmission of intergenerational knowledge, which undermines the very possibility of sharing collective secondary retentions, to the point that the very sense of the past itself becomes thoroughly atrophied. The second thing that is new is, as you say, the systematic and systemic effort to take control over collective protentions, through processes that effectively automate the relationship to the future and do so through the generation of addictions that, despite this automation, contain side effects producing unintended and very harmful consequences, including politically, and at the national and international scale.

The result of this destruction of the possibility of *sharing* – either of collective retentions or of collective protentions – amounts to the destruction of the possibility of the second stage necessary for the formation of epoch, leaving us caught within what Stiegler calls an “absence of epoch”. This is why the Internation Collective calls for the establishing of new forms of disautomatized sharing via what we call “contributory economies”, “contributory research”, and so on: new economic arrangements supporting the sharing and generation of all kinds of knowledge, new forms of remuneration for all kinds of neganthropic work, new kinds of software or even hardware designed to facilitate not just collaborative research but the collective generation of knowledge, including between students and teachers, and so on. All of this requires dedicated institutions to be formed, technologies to be developed, and policies to be adopted, and therefore necessarily involves “top-down” political and economic decisions to be made in support of the development of what are essentially “bottom-up” knowledge-valuing processes. And it is also why the Collective supports the development of new kinds of therapeutic approaches, including “contributory clinics”, premised on the idea that the psychopathologies of contemporary everyday life are also and to a large degree symptoms of sociopathologies, and require new forms of sharing to be fostered, particularly in order to overcome the ravages of the destruction of intergenerational relations.

Of course, these kinds of projects are vast, especially if they are to be undertaken on a scale capable of making a substantive difference to the entropic and anthropic tendencies that currently prevail, and their likelihood of success may seem doubtful, if not fanciful, especially if we bear in mind the deadlines set by the IPCC and so on. Yet the question remains: if it is the case that, in the age of post-truth, there is no way of resolving our biospheric problems of thermodynamic entropy (climate change) and biological entropy (loss of biodiversity) without taking care of the psychosocial problems of informational anthropy, then how can we address *any* of these problems and questions without finding new means of fostering the shared noodiversity necessary for the generation of the collective protentions (will, belief, reason) that alone can produce an anti-anthropic shift to a new epoch, beyond this absence of epoch?

Whatever else it shows, the current pandemic does make clear that when governments are convinced of the necessity of an emergency procedure, they can marshal an almost limitless level of economic resources to fund it, as long as representatives are able to share the collective belief that there is no viable choice but to do so: however unlikely it may be, governing bodies at all levels must now be mobilized to fund solutions to other contemporary global problems, problems that these governments know themselves to be incapable of solving without the creation of such new means. This is why Stiegler always felt the need to engage not just with academics, nor just with activists, but *equally* with political and business representatives at all levels – the possibility of successfully effecting such an emergency procedure at an adequate scale without genuine multilateral engagement has a probability indistinguishable from zero. How high above zero that probability can ever rise is another question…

**RB:** The *Bifurcate* volume by the Internation Collective, soon to be published with Open Humanities Press, is an important statement for and iteration of the Internation project, both as a marker of where it is at the moment and for projected directions of where it could go. The concept of bifurcation as it pertains to the Internation clearly addresses means by which entropic forces might be slowed or reversed, and as such they offer potential for hope and care. Can you provide an overview of the book in relation to this key concept as well as explaining how the volume provides its own protentions for the Internation project?

**DR:** *Bifurcate* is framed by the context of António Guterres calling for genuine multilateral action to address the forecasts and recommendations of the IPCC, and Greta Thunberg calling for the generation above hers to take responsibility for the crisis whose vertiginous worsening they have overseen. So it is a book that sets itself up in terms of an immense imperative and the immense difficulty of living up to that imperative, a difficulty that involves both theoretical and practical aspects. As we’ve said, the starting point for doing so is to try to take entropy into account in all its forms: the thermodynamic entropy that is the concern of the IPCC, the biological entropy that consists in the reduction of biodiversity, which is to say the loss of species, and the informational entropy that consists in the reduction of noodiversity, which is to say the loss of knowledge as it is reduced to automatic computation.

The last point, about informational entropy, depends on Lotka’s conception of exosomatic life: where the processes of life are no longer determined by the endosomatic evolution of instinct, they become a matter of the knowledge necessary to take care of exosomatization, where the condition for the formation of this knowledge is itself technical, but where this technical exteriorization of knowledge can always also end up (and does always end up) becoming non-knowledge, that is, becoming harmful or inadequate. The contention of *Bifurcate* is that the reason it has become so difficult to take responsibility for the toxicity of today’s technical system is that it systemically undermines the knowledge necessary to take care of it, and does so by systemically valuing this destruction, in the process tending away from genuinely neganthropic economic investment and towards speculation and negligence (which are two forms of the same carelessness). For this reason, the book argues for, and aims to embody a starting point for, the initiation of processes designed to revalue knowledge, and to revalue “work” understood as a knowledgeable activity, as always in some way a matter of transformational activity (failing which, it becomes mere labour, “productive” processes that are automatic precisely in the sense that the operators of the machines have no ability to transform the conditions of their activity, which is in that respect passive, reducing them to a state of what Adam Smith already called “torpor”).

That exosomatic life is a matter not of instinct but of knowledge also stems from the fact that it operates in terms of a locality that is not that of the species itself. There was a time during the process of hominization when the pace of technical change was so slow that, even though the pace of the *transmission* of technical means throughout the inhabited parts of the biosphere was itself very slow, there was nevertheless enough time for the dissemination of new forms of technics to all those parts before the advent of each new technical development. At that time, even if the use of tools was still a matter of knowledge that had to be transmitted from generation to generation, it was nevertheless not yet localized beneath the level of the species. Then, especially with the rise of “regional civilizations”, starting with Sumer and then Egypt, technical forms start to advance more quickly than occurs the spread of these advances, and so too does the knowledge produced and required by those developments. Knowledge thus becomes an irreducibly local affair, and cannot in any way be reduced to any basis in species life.

Now, of course, the situation has changed again, and the dissemination across the face of the Earth has become just as rapid as the rhythm of innovation and invention. But knowledge itself remains localized, in the sense that it has a localized history (*this* calendrical system, *that* language, *this* alphabet, *that* keyboard, and so on), but one that has been generalized to the scale of the biospheric locality. And the means by which this generalization occurs is through its reduction to the kind of data that is amenable to computation, which is also to say, the elimination of everything that is not so amenable. The paradoxical consequence of this generalization of a particular form of localized knowledge is that it is itself inexorably reduced from knowledge to information, thereby impoverishing *all* localities. It is largely this entropization of localities, so to speak, that turns them into “identities”, which then become the fuel that fires the kind of reactionary anti-politics currently on the rise in so many places around the world, and threatening to inflame peaceable contention into military conflict. If we then take the view that *only* a diversity of local knowledge, engaged in a genuine contention of standpoints, possesses the wealth and the strength to produce genuine leaps in the process – the contest of such local knowledge being what, in this way, actualizes the potential for *bifurcations* – then this reduction of the local and the knowledgeable to the “universal” and the “informational” amounts to the elimination of the engine of difference: the engine of a different future.

To counter this situation, *Bifurcate* proposes the creation of so-called “territorial laboratories”, designed in order to facilitate the regeneration of local knowledge, by the implementation of systems that value and remunerate activity that tends to generate and share individual and collective knowledge. The origins of such an idea go back to a long-running scheme in France for intermittent workers in the performing arts: in order to maintain and develop their knowledge and their ability to *keep* working intermittently, this scheme pays for training and other knowledgeable activity that occurs outside times of employment. To remain enlisted in this scheme, however, depends on continuing to find a certain level of paid employment (within a certain time period), and so it is a kind of negotiation between the demands of the labour market and the need for investment that produces ongoing and sustainable psychosocial wealth.

By generalizing this kind of idea, and what’s more collectivizing it, the hope is to provide outlines for sustainable mechanisms that ultimately lead to the regeneration of old wealth and the creation of new wealth, where “wealth” must obviously be conceived as not just a matter of monetary accumulation, but rather as the cultivation of richer and richer forms of local knowledge, which alone will allow the kinds of common protentions that constitute the horizon of what we could imagine in terms of a sustainable future. For the fact is that, in the Anthropocene, the criterion of what counts as “wealth” must itself be redefined in terms of the capacity to generate fruitful collective responses to the problems of biosphere-scale anthropy. For this kind of scheme to be generalized on a wide scale, new forms of institutional accounting will also be required, on which basis new mechanisms of investment can be developed. These, too, are discussed in the book, along with the need to think very carefully about how supercomputing technologies are integrated into our towns and cities, in order to ensure that such integration in so-called “smart cities” is something other than an intensification of the destruction of knowledge by the rise of information. Ultimately, this may mean that the very conception of how computational systems are designed, or what counts as data, and what kinds of processing is applied to such data – all of this may all need to be thoroughly reconsidered.

**RB:** What are the next steps in terms of what needs to be thought and done in relation to this project. Or, to put it another way, what tasks are left to do be accomplished in Stiegler’s philosophical and political project in general? What would you flag up as being of specific import in terms of next steps?

**DR:** I should say that this is a question which each member who contributed to this Internation Collective project would answer differently, so what I say is just my own standpoint. One thing Stiegler talked about in some of his last texts and in various forums was the need for a new *informatique théorique*, a new theoretical computer science: what does this really mean? I’m not sure, but I think that the key point, here, is the tight connection between “information” as the “data” that forms the material processed in computational systems and “information” as the mechanism of “the market”, as theorized from Friedrich Hayek onwards. What Stiegler seemed to be saying is that a really fundamental critique of this association is needed, a critique that, on the one hand, starts from the recognition that this association is really an ideology, and a powerful one at that (meaning that it generates a dynamic that is hard to shift), while, on the other hand, recognizing that the roots of this ideology lie very much deeper and earlier than the beginning of this association between economics and computation that begins to get going in the mid-twentieth century.

What makes this association possible is the fact that both computer science and neoliberal economics take information to be a fundamental element and one that is essentially *calculable*. There are all kinds of ways of conducting such a critique – for example, by tracing it back to debates arising at the origin of calculus (Descartes, Leibniz) and their influence on Kant, or by tracing the fate of the notion of information in the historical development of economic theory and practice (as does Philip Mirowski), or by exploring the enigmatic question of the relationship between, on the one hand, the second law of thermodynamics, and, on the other hand, entropy as it is postulated in information theory. I think that Stiegler intended to address these questions in the fourth volume of *Technics and Time*.

I would like to suggest the addition of another path, but one that admittedly lies outside both of these fields: the one who postulated that economics should be treated as a “total social fact” was Marcel Mauss, which he did, of course, through his work on gift and exchange. Now, Lévi-Strauss rejected Mauss’s use of the term *hau*, because, according to Lévi-Strauss, Mauss was resorting to a non-existent form of energy as an explanatory cause for social phenomena. I think this rejection was hasty, or was intended to serve the goal of founding what was hoped to be structuralist science, and a critique of this step might open a pathway to reconceiving the connection between economics and information. The question of *hau* is precisely, I think, the question of what Stiegler means by libidinal economy, and Lévi-Strauss’s critique of Mauss can be seen as a manoeuvre that meant that, for “structural” reasons (so to speak), structural anthropology could never think about “energetic” questions. Recognizing this could, I believe, open a path to a fundamental critique of the conceptions of information, energy and exchange that have dominated the world for the past half-century, and there are some clues about this in, for example, Derrida’s seminar *Life Death*.

A second task that to me seems to remain open is to imagine how the critique laid out in *Bifurcate* can lead to political and economic consequences at the largest scales. The contributory economics proposed there, and pursued in practice in projects such as the Plaine Commune contributory learning territory project with which Stiegler was engaged, are essentially a reimagining of micro- or mesoeconomic arrangements, supported by institutional structures that remain regional or national, but themselves supported by contributory research that is effectively transnational – deriving from the institutions of the so-called Internation, understood as essentially a matter of networks of scientific research institutions. And it is no doubt necessary to start with the possible, which is to say, with experiments conducted on these limited scales, and through the evaluation and hopefully the success of these microeconomic and mesoeconomic experiments, to upscale towards the macroeconomic level necessary to truly respond to the global crises afflicting the Entropocene. Perhaps it is literally impossible to imagine at this point what reinvention of international economic and political mechanisms could truly respond in a way commensurate to the scale of the emergency, but I’m also not quite sure that territorial experiments will be capable of leading the way to such an imagination, given that problems at different scales can also be problems of different kinds.

It seems to me that the kind of critique that animates this project also suggests that the entire framework of national “democratic” governance and international bureaucratic governance is today outstripped and overtaken both by the economic power of thermodynamic capital and the performative power of algorithmic capital. Doesn’t an organological critique of the retentional basis and mechanisms of democratic and administrative institutions show that they are functionally bound to operate more slowly than those ultra-high-speed algorithmic processes that, for precisely this reason, short-circuit them, run by companies whose very model is to turn politics into marketing, and to subject social life to algorithmic control, while always remaining several steps ahead of any regulator’s ability to constrain them? It is one thing to say that the rapidly self-destructive character of this situation absolutely necessitates overcoming it; it is another thing again to say that one can conceive an alternative macropolitical and macroeconomic model that could feasibly be installed in the timeframe called for by the IPCC for addressing just the climate crisis alone (and what we are confronting is really a convergence of systemic crises). Even though I think the work that lies behind this critique and this elaboration of the economy of contribution model is an important and genuinely transformational response to our situation, nevertheless it is not clear to me exactly how this economic model and the political and administrative institutions it requires can be applied at the scale of nations or the biosphere, even theoretically, let alone getting it done.

A third task that remains concerns the question of desire, but more specifically, the relationship of desire to addiction, sexuality and kinship. Stiegler’s entire project can be construed as a philosophy and politics of desire, starting with the extension of the phenomenological concept of protention to every form of the relationship to the future, and continuing with his insistence on the Freudian distinction of desire and drive (and the further distinction between drive and instinct) as the basis for a critique of the self-destructive character of consumerist capitalism, which is precisely *not* a capitalism of desire but of the drives, chaining the libidinal economy to the productive economy and thereby depleting its own basis. But among the forms of proletarianization afflicting contemporary existence in this consumerist and now algorithmic capitalism, key instances are those affecting the entry into adult relationships and sexuality, producing manifold forms of suffering, often little recognized and certainly never rising to the level of being a “political issue”. Then there is the increasing rise of all kinds of relationships between reproduction and technology, from IVF to surrogacy to so-called “designer babies” (starting with being able to choose their sex): these kinds of phenomena are all prone to consumerist tendencies, and for this reason alone are inadequately dealt with by the discourses of ethics committees that are ultimately set up to help manage the successful marketization of such technologies. And finally, the intensifying power of what are no longer just cultural industries, but anti-cultural hyper-industries operating via anti-social networks to hook especially young people into addictive spirals directly targeting the dopaminergic systems (as Gerald Moore has analysed), is a very significant issue, and one that manifests itself in different ways in different regions (for example, in Asia compared with in the West). It seems to me that there remains plenty of work to be done to conceive how all of these processes can be thought about and cared about within an organological neganthropology.

The Scylla and Charybdis of such an approach to a neganthropology of desire are evolutionary psychology (and its partner, neuropsychology, itself caught between and merging together biologism and cognitivism, and giving birth to neuroeconomics) insofar, precisely, as it fails to take account of the irreducibly exosomatic constitution of desire, and forms of psychoanalysis that remain stuck in psychological topographies that refuse any consideration of the endosomatic processes that *always* underlie exosomatic desire (and these forms of psychoanalysis, too, often cannot consider the relationship between the interpretive character of psychoanalysis and the dream technologies that arise in Freud’s lifetime – starting with Freud’s own neglect of the invention of cinema). Feminist approaches to sexuality and desire have always tried to navigate this Scylla and Charybdis, but it seems to me that they have never succeeded in overcoming it, remaining caught in nature/culture oppositions at the very moment they believe they are escaping them. But an organological critique, or what Stiegler calls a neganthropology, really makes it possible to leave such oppositions behind, providing one is willing to question established dogmas. I would also add that there is a story that remains to be told about the origin of a lot of these approaches in the fact that, at the moment she was writing *The Second Sex*, Simone de Beauvoir received a pre-publication copy of Lévi-Strauss’s *The Elementary Structures of Kinship*, and her inclusion of the anthropologist’s findings into her own argument also served to increase the prominence and readership of the budding structural anthropologist. In fact, however, from the start, anthropologists started to pull apart Lévi-Strauss’s synchronic picture of kinship and its relationship to sexuality and the division between the sexes, but the significance of this critique mostly failed to become news outside the discipline itself.

In my view, Maurice Godelier’s book *The Metamorphoses of Kinship* will inevitably hold a fundamental place in any future neganthropology of desire, both for its convincing critique of Lévi-Strauss and for its attempt to make “proposals for a different scenario”, where the anthropologist attempts to draw on scientific knowledge of the evolution of primates in order to think the form and function of human kinship structures, yet precisely *without* reducing them to endosomatic evolutionary pressures. Nevertheless, there is a striking contrast between the highly suggestive character of Godelier’s proposals and the extremely tepid and unconvincing character of his conclusions about the future of kinship ties, and this stands as testament to a failure to have thought to the bottom the fate of kinship, desire, sexuality and reproduction in computational capitalism: published in 2004, Godelier was perhaps unable to imagine the transformational processes that would be unleashed by the combination of smartphones and social networks, although it was in the very same year that Stiegler published the first volume of *Symbolic Misery*, whose “Allegory of the Anthill” foresees exactly what has arisen over the last fifteen years. My understanding is that the intended second volume of *Automatic Society* was to have included a critique of Godelier, but to what extent this would have taken up questions of kinship and sexuality I’m not sure. In any case, I think that such a neganthropology of desire, which would need to take careful account of what Stiegler calls “co-individuation”, is very much needed today, if we are to think and care our way through an entropic and anthropic world in which younger generations are facing almost indescribable and unprecedented forms of suffering and nihilism associated with just these questions.

Finally, I would also add that to really weigh the significance of Stiegler’s work is an immense task, and one that has barely gotten underway. So the specific points that I have just made about possible future directions themselves need to be recontextualized and reformulated in light of a process of interpreting Stiegler’s thought in general and in depth. The best way of going about this remains, I think, an open question, and it might take another thirty years to really pursue the transindividuation of Stiegler’s work, which is to say that its accomplishment will coincide with the reduction of carbon emissions to net zero, assuming that we succeed in achieving the goals demanded by the global scientific community.

Biolines:

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