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Dis-automation: Creative Making with Automation and AI

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Abstract

This essay considers the nature and stakes of creative making with computational automation technologies. I will argue that Bernard Stiegler's organological approach to the human as "technical life" takes care of the question of the nature of creative making, and the pharmacological critical practice that it mandates takes care of the question of the stakes. I say "takes care" to emphasise that Stiegler's theoretical enterprise is dedicated to a "therapeutics" of contemporary technocultural transformation, because culture is best understood as a taking care of the technical *pharmakon* – both poison and cure – that is our irreducible technical supplementarity. After providing an assessment of Stiegler's thinking on organology and pharmacological critique, I will discuss the work of some creative makers I have worked with or was able to interview as part of the South West Creative Technologies Network's Automation Fellowship programme in 2019-2020. The goal is to interpret their work pharmacologically and so to elaborate and extend Stiegler's work on contemporary technocultural becoming. Digital automation and AI are powerful drivers of the so-called Silicon Valley era of disruptive "creative destruction". This means that the stakes of creative making and its possibilities for taking care of the future cannot be higher today.

Keywords

Bernard Stiegler, creative production, AI and automation, organology, pharmacological critique, machinic turn

Epigraph

> In this context [of 'great social transformation'] artists have a great social responsibility: it is in the work of art that what constitutes the libido makes itself purely visible. What is the work of an artist – say, a painter? *To produce an eye.*
>
> Bernard Stiegler, 'The Tongue of the Eye: What "Art History" Means'

Preface

I am grateful to the editors of this special issue for the opportunity to preface this essay with a brief note to mark the passing of Bernard Stiegler, who died unexpectedly in 2020. In an early essay, 'The Discrete Image' (2002), Stiegler alluded to a saying that has it that 'an old African man who is dying … is a library burning' (148). Stiegler acknowledges the sense of the tragic and costly loss of accumulated knowledge and the wisdom it contributes to the dying person's community – the tragedy being precisely the loss of the potential contribution to society's ongoing negotiation of the challenges of existence. In keeping with his philosophy of technicity, he also points out the difference between a library's storing up of the collective fruits of experience and an individual human's biological memory – a library's books are meant to last beyond the life of its authors. This is the book and the library's 'mnemotechnical' purpose – to survive their creators, to supplement the finitude of their individual existence for the benefit of those who come afterwards. With the passing of Stiegler, we have indeed a veritable library of such mnemotechnical artefacts; no small compensation for what we have lost and what more might have been written. Books, libraries and all the mnemotechnical artefacts of what Stiegler called the non-inhuman (never fully human, always becoming variously human according to their intrinsic default of an essential being) materialise ghosts who haunt, for better and for worse, the life of those who remain for now. Or, at least, that is their potential. I knew Stiegler, and owe him much for his intellectual and personal generosity. But as is clear from so many examples, from Princess Diana to Stephen Hawking to Kobe Bryant, we feel keenly the loss of people we know only through the mnemotechnical artefacts in which their existence is recorded; their actual deaths accentuate their powerful but already ghostlike presence in our lives and confront us with its inevitable attenuation, that is, with our own finitude. In memory of Stiegler, I offer this essay to the reader.

Introduction

This essay considers the nature and stakes of creative making with computational automation technologies. The nature of *this kind of creative making* continues but also transforms the long history of the making by humans of artefacts in general and the making of memorious artefacts in particular. These latter, which philosopher of technology Bernard Stiegler called 'mnemotechnics', evolved to record and preserve

experience, an evolution which begins (so far as we know presently) around the time of the appearance of Upper Paleolithic rupestral art and artefacts, and continues down to today's digital media forms from social media to audiovisual animation, performance capture, augmented reality and so on (Stiegler, 2010). The stakes of *this kind of creative making* are particular to this moment but have their provenance in long histories of human evolutions, evolutions that have composed biological and technical becoming as long as the beings that we recognise as human have existed. I say evolutions (plural) to emphasize the point that 'human being' as a general idea is an ideality, and that becoming human has only ever been in practice so many projects; that is, a variety of projections of different ethnocultural and technical compositions. These compositions have 'evolved' the biological becoming from which they emerged differently, and remain, ultimately, dependent on the continued viability of the bio-ecological composition of organic life.

It is true, however, that one of the key differences about digital technologies, including computational automation and AI, has been their globalizing impact in composition with political, economic and other transformations in recent decades. Digital technology's influence coincides with and accelerates the impetus to globalization in the wake of the twentieth century's Second World War – already the second of the agonizing global conflicts of that century. Consequently, the status and even viability of the continuation of diverse ethnocultural projections of human being is, indeed, one of the characteristic stakes of digital technological production, and therefore of creative making with computational automation and AI. This is all too apparent from, for example, the controversies over the increasingly evident biases in AI systems which 'learn' from big data that record and operationalise various specific cultural values and perspectives, and the so-called 'ethical turn' in IT and related social science disciplines which attempts to 'correct' these (Andrejevic, 2020). The overarching consequence of this post-war globalization is its acceleration of the ecological and biological impacts of global industrialisation and the imminent threat this poses to the maintenance of human and other organic forms of life in their current variety and condition.

I begin with this elaboration of the widest parameters of what it means to promise to speak about the nature and stakes of creative making with computational automation and AI in order to explain my approach to the task. I will first address creative making's

role in the evolving and evolutionary process of human becoming before concentrating on contemporary creative production employing computational automation and AI technologies. The latter will be examined with reference to some creative projects and their creative producers I have encountered through direct engagement or via involvement in 2019-2020 in a large research project entitled the South West Creative Technologies Network (SWCTN). As an 'Automation Fellow' for the SWCTN, I was involved with a group of researchers and creative producers interested in experimentation with computational automation and AI, some of whom I interviewed as part of my contribution to the network's research. As 'Research Director' for the *I am Echoborg* project, I am involved as consultant and collaborator on a participatory theatrical performance in which participants engage with a ChatBot on the topic of the future of AI's relationship to humanity. Through discussion of the ideas and reflections of the makers of this and other technological and cultural artefacts, and analysis of the works they made, I hope to bring to light some of the challenges and potentials of creativity in the age of computational automation and AI.

My primary inspiration and resource for this task is the organology and pharmacology developed by Stiegler as method for assessing the nature and stakes of transformations in human becoming. Organology can be understood as a theory of human becoming which sees it as a dynamic powered by the evolving combination of physiological, social and technical 'organs'. The eye, hand, brain, viscera, limbs and other physiological organs of individuals, arranged in social *organ*-izations such as the family, the clan, the community, the religion and the nation, live, work, share, preserve and pass on their experience of what is important and of 'what makes life worth living' through their exterior, technical 'organs' (Stiegler, 2013a). Each of these organological components is crucial to the becoming we recognise as human ethnocultural life. Pharmacology can be understood as the critical application of this theory to particular organological dynamics. As a critical method, and as a way in to the organological complex, it prioritises analysis of changes to the technical artefacts of an organological dynamic. This strategic emphasis was Stiegler's corrective to the endemic neglect of this artefactual aspect of human existence in the traditions of Western thought, a neglect which continues to have ramifications for much of the critical appraisal of social and technological transformation today. This weakness was in Stiegler's view a disastrous situation in light of the urgent need for an appropriate critical response to

what is evidently the rapidly deteriorating condition of contemporary organological becoming in its environmental, economic, political, cultural and psychological dimensions (Stiegler, 2018).[1] As I will argue below, it is key to understand pharmacological critique as already engaged and always oriented toward particular organological conditions, including and especially those influencing the very possibility of critical thinking.

Creativity in the Hyper-industrial Epoch

The very possibility of the continuance of a creative engagement in the organological dynamic of human-technical becoming is in question today, which makes it the key question for pharmacological critique. This is the situation Stiegler analyses in *What Makes Life Worth Living: On Pharmacology* (2013a). Creativity is meant here in the most general sense of the imaginative, inventive relation to life, one which makes existence meaningful, valuable and purposeful. This creativity is the basis of the possibility of creative artists, musicians, inventors, innovators and so on – those who by dint of their particular biological, social and technical organology can act and be recognised as 'creatives' in a given organological arrangement of social existence. Stiegler is at pains to point out that this making of meaningful experience requires not only imagination but the literal making of things. Stiegler reads psychoanalyst Donald Winnicott in this book and cites here his notion of creativity as the crucial developmental capacity of individuals to experience the world through an interiorisation of what is outside. This capacity enables them to form a 'potential space' from which they can exist in the world (20). Stiegler terms this mediation between outside and inside the 'art of living' and compares it to the psycho-social instance of what Gilbert Simondon termed individuation (21).

Stiegler focuses on Winnicott's influential analysis of the 'transitional object', which is the artefact – such as the toy, the teddy bear, the blanket – that the infant adopts as mediator in a psychic transference process supporting the emergence of their identity through a negotiated evolution of their relation to the 'mother' (as primary carer). The transitional object is read by Stiegler as the first *pharmakon* (in the first organological arrangement) for the emergent 'human' being experiencing herself as existing in her co-emerging external world (21). The adoption of the transitional object begins a process of interiorisation of the outside as a 'transitional space, an intermediate area of

experience where objects of culture, the arts, religion and science are formed' (20). The object, and those which follow it, are *pharmaka* inasmuch as they are objects both of a creative care for life and of a potentially toxic relation to existence. The intermediate space of experience they make can become 'poisonous (that is, in the language of Winnicott, a form of "illness")' when it produces an experience of the external world as requiring compliance and as demanding adaptation to it. In this experience, creativity is not required or valued. Stiegler quotes Winnicott here: 'Compliance carries with it a sense of futility for the individual and is associated with the idea that nothing matters' (Winnicott in Stiegler, 2013a: 21).

For Stiegler, this sense of futility, this sense that nothing matters, characterises the toxic state of the contemporary, globalised technocultural milieu which he terms hyper-industrial capitalism. Stiegler's account of this milieu parallels those of what other cultural theorists have variously analysed in terms of the cultural logic of late capitalism (Jameson, 1991), capitalist realism (Fisher, 2009), and 24/7 capitalism (Crary, 2013). Each of these accounts identifies the expansion of the logics of capitalist operations into ever more realms of the life of individuals such that the variety of social and cultural experience become so many spheres of productive activity directed towards the regulation of the 'consumer'. Each account examines the de-realizing and dis-enchanting aspects of this milieu in different ways. In his pharmacological approach, Stiegler emphasizes the technological aspects of this process which has been in train for around a century. He characterizes its contemporary, digital phase as its tendential exacerbation through the total 'functional integration' of the consumer into the capitalist system (Stiegler, 2016: 65). This exacerbation is due to the computational power of AI-driven automation, operating in realtime through digital mediation. With its ability to process data faster than human thought, it is able to impact and shape the course of users' everyday lives by taking advantage of the predictive power of probabilistic statistical analysis and algorithmic 'governance' of user behaviour (Stiegler, 2016: 149ff).[2] In striving for a 'full and generalized automatization' (65) of the system's 'functional integration' of the user, computational automation and AI play a 'vital' role in this de-vitalization of existence which is why Stiegler devoted considerable attention to it in his later works.

In the present phase of hyper-capitalism, resentment, resignation, cynicism and nihilism are widely evident in the collective mood and sensibility of the transitional space of 'the world' made by digitally mediated experience. Stiegler's book series first published in the early millennium, such as *Symbolic Misery* and *Disbelief and Discredit*, describe the tendential unravelling of psychic, cultural, political and economic norms, stabilities and values; tendencies which have become increasingly manifest in the ensuing years (Stiegler, 2011b; 2013b; 2014a; 2014b; 2015). This has led, he argues, to widespread disbelief in and disenchantment with the organological arrangement of social existence, a consequent weakening of social and political affiliations and a 'disbanding' of social groupings (Stiegler, 2009a: 52). This mood is pervasive but not overpowering; climate change activism, anti-racist movements, campaigns to address the impacts of computational automation in different spheres, reformulations of political parties and platforms (on the left and right) all evidence efforts to address the present moment's challenges at their global scale by proposing different futures. In this regard, Stiegler's own practice was a mix of theoretical endeavour and projects engaging constituencies and organisations concerned with all of these issues through his leadership of the Pompidou Centre's Institut de recherche et d'innovation and the various cultural-political associations he instigated, beginning with Ars Industrialis in 2005. In was nonetheless his clear insight that any effort to change the current trajectory of our irreversibly global destiny must address effectively the prevailing 'chilling effect' of the digitally mediated experience of the world.

It is crucial to understand that the mood and sensibility of individuals and their collectives is the ultimate target or topic of pharmacological critique. As discussed above, belief in the world's significance conditions experience because it motivates a desire to live a meaningful life. One's creative agency and, thereby, its contribution to the organological development of human becoming is at stake. Above all, the human provides the motive engine to the organological assemblage through her anticipation, expectation and desire (Stiegler, 1998: 78ff). One's sense of experience is irreducibly an intellectual, affective and perceptual composition that builds on the initial opening of 'potential space'. Consequently, pharmacology is in many respects an aesthetic analysis of the artefactual materialisation of the sensibility of individual and collective perception, the artefacts being what concretise and communicate the 'worth' of what makes life worth living.

In the published versions of a lecture series given to students at CalArts and other U.S. art schools, in response to an invitation to address aesthetic theory, Stiegler stressed both the potential of digital mediation to make flourish a new sensibility of existence and the central role of artists and creative producers – as makers of experience – in steering the present 'pharmacological' situation away from its current toxic trajectory and toward a 'therapeutic' reformation of culture (Stiegler, 2017a: 50). The digital has led to a 'second machinic turn' of sensibility, one which has opened up a 'potential space' (to use Winnicott's term) for an increased agential, creative involvement of society's members in making the world through the making of its mediation (Stiegler, 2017b: 7). Recalling the initial optimism for the possibilities of the World Wide Web – as well as aspects of its less commercialized early development – Stiegler contrasts this second machinic turn to the first machinic turn of the modern industrial age. The latter is evoked through discussion of Marcel Duchamp's work and other modernist responses to industrial technological impacts on art and society. In his account, these artists strove to make visible (or otherwise perceivable) the shock of the industrial reformulation of experience delivered by the capital intensive, precision manufactured, standardized, mass mechanical reproducibility of modern technology's fabrication and mediation of the world. The capitalist adoption of technology's development led to what Stiegler terms a 'proletarianization of sensibility' whereby the power of making the world visible was arrogated by the specialist technicians and designers of a few large corporations (and/or state institutions), leaving the majority of citizens the role of mass audience member and consumer of received experience (2017b: 5). Citing Adorno and Horkheimer's influential notion of the 'culture industry', Stiegler's analysis here and elsewhere is that this process tended to strip the individual of their knowledge of how to live in the world other than as directed by industrially produced marketing toward industrially produced products (2017b: 5). As argued above, this conceptual knowledge is always linked with a know-how and a creative practice of making experience. In these essays on aesthetics, this is represented by the historical figure of the Enlightenment amateur whose knowledge of and practice in how things are made empowers and enriches her.

The potential of this second machinic turn is radically threatened by the redoubled efforts of hyper-industrial capitalism towards the 'canalization and reproduction of perception' (2017b: 5). Worse, the mobilization of automated digital mediation in these

efforts inserts the consumer as user deep into the digitally automated productive circuitry of commercial mediation. To illustrate this point, Stiegler describes social media as 'service technologies [that] take charge of the synthetic re-composition (synthetic in the sense of artefactual) of a social bond ruined by their own development' (2017a: 50). 'Social networks,' he argues, 'where one declares and claims one's "friends", who become at the same time metadata in the economic war of indexation, are computer-assisted forms for the production of ersatz *philia* [love, affiliation in Ancient Greek]' (2017a: 50).

This synthetic re-composition of love, friendship and social affiliation is doomed to fail. The signs of this doom are manifest across the cultural and political spheres of existence – from the collapse of the credit given to the political process, the erosion of belief in science (such as of pandemics, climate change, and the economy, to name the most prominent of recent instances), to the end in the 'post-truth' era of any baseline consensus about what is currently happening around us, to the toxic, anti-social state of the socially mediated public sphere. This last is an exemplary symptom of what Stiegler characterised as the liberation of drive-based thinking and behaviour evident also in the irrational, self-destructive political currents coursing through the industrial democracies from nativist chauvinism, imperialist nostalgia, religious fundamentalism, xenophobia and outright racism. The pharmacological "illness" Winnicott described is pandemic.

The Problem of Desire

Desire, then, is a key theme for pharmacology inasmuch as it speaks to the motives for creativity in general and creative production in any given context. A pharmacological critique of our contemporary industrial, digital, globalizing technological rationale – its logic, reason, or 'rationalization' in Habermas' influential account – must address the question of desire. In proposing the need for a 'pharmacology of spirit [*ésprit*, also translatable as mind]', Stiegler argued that understanding reason requires identifying 'the role of *pharmaka* in the formation of desire in general' (Stiegler, 2013a: 23). This is because reason, which ultimately should be understood as the motive for doing things, is the most 'elevated modality of desire' (23). Elevated here means sublimated in the Freudian sense of the transmutation of psychic energies and impulses via the delay and rerouting of urges – urges that become

'unconscious' through this same process – so that their satisfaction is pursued via alternative, socially acceptable desires and behaviours (Stiegler, 2013b: 54ff). Stiegler's main resources for rethinking desire are an organological re-reading of Freud and of Plato's propositions – through the mouth of Socrates – about the desire (*Eros*) for the elevated realm of pure Forms, those idealities which condition from on high the everyday shape and character of existence.[3] More on the latter below. Freud's notion of the 'libidinal economy' which characterises the dynamic negotiation of unconscious impulses and drives, modulated by the projections of (sublimated) desires and fears, is supplemented by Stiegler with his account of the technicity of human experience. As an irreducibly, technically-conditioned kind of being, the human's psychic and social development is influenced at every step by the artefactual character of its existence. Mnemotechnical forms, from toys, books and pictures to TVs, mobiles, game consoles, headsets, VR and Augmented Reality kits, etc. play especially critical roles in this formation and constant reformation of libidinal economy.

Reason, often hypostatized as the transcendental rationality attained through logical abstraction and apodictic arguments, is always a reasoning about something, for or against an idea, a belief or a course of action. It is always motivated, and this motivation is always culturally, that is, artefactually, conditioned. That reason is directed and situated is, of course, not a new insight. Much of poststructuralist and critical theory is dedicated to questioning the neutrality and the universality of the European philosophical tradition's metaphysical infrastructure of rationality. The influential Marxist critique of 'rationalisation' advanced by Adorno and Horkheimer, Jürgen Habermas and others, is a case in point. It criticised the rationality of the technocratic implementation of modern industrial society, identifying the capitalist drivers of its systematizing force and its betrayal of Enlightenment philosophy's desire for a progressive liberation of the potential of rationality in a post-medieval, post-Christian cosmos.

As Erich Hörl has argued, Stiegler's main contribution to this work is to have identified the 'problem of desire' as central to, but largely missing in, the materialist critique of reason and rationalisation, while his approach to desire as a technically conditioned – and therefore a pharmacological – problem complicates the poststructural and deconstructive readings of the metaphysics of mind, reason, ideality, and so on (Hörl,

2014: 11). In specifying his approach to desire in *What Makes Life Worth Living* and elsewhere (2013a; 2014a), Stiegler engages in detail with those thinkers in both currents that have dealt substantially with desire, such as Herbert Marcuse in the former and Gilles Deleuze and Jacques Derrida in the latter. There is no time here to unpack this engagement adequately. The main point for this discussion is that the cultivation of desire for living a particular existence is crucial for the maintenance of a viable and creative organological dynamic of psychic and collective becoming.[4]

As Hörl states: 'Today, we are undoubtedly going through a crisis of desire, a major media-technically driven transformation of libidinal economy, whose outcome is uncertain' (Hörl, 2014: 11). As I have argued above, central to this transformation is the automation of mediated communications in realtime. This functions on the basis of algorithms analysing data correlations via probabilistic statistical methods which generate predictions about people's motives (desires) and future behaviour. Operating in realtime, this predictive system works performatively to iteratively 'nudge' users toward fulfilling its prophecies. For Stiegler, neither the Marxist-inspired materialist unmasking of capitalist rationalisation, nor the pursuant ideological critique of the shaping of people's imagination in its image is sufficient for an appropriate critical response capable of nourishing an alternative programme for cultural or political development. This is for two reasons. Firstly, ideological analysis is insufficient to live up to the challenge of the present. What he has called a 'hypercritique' is required today in order to come to terms with the changed conditions of digital hyper-industrial capitalism because the industrial mediatic shaping of experience has become so extensive and intensive as to threaten the very continuance of the to and fro sustaining psycho-social organological becoming. Its intensity is its pervasive temporal penetration and supervention – through incessant anticipatory communications – of the moment-to-moment variations of people's daily existence. The erosion of this becoming operates here through the tendential pre-empting of the psychic individual's unique, particular contribution to the organological dynamic. That is, it tends to erode the creative potential of individuals in general discussed above, including those 'creatives' to whom the collective has organologically assigned the role and responsibility of leading the way in inventing new experiences, new dreams and new worlds. The problem is less mis-directed or illusory creativity as it is suffocated and pre-empted creativity.

Secondly – and this returns us to the significance noted above for Stiegler of Plato's writings about philosophy's desired elevation to the realm of idealities – while the critique of ideologies (consumerist, rationalist, of progress, neo-liberalism, etc.) remains relevant, it does not take adequate care of the organological condition of human becoming. It tends to treat desire and affiliation as an inherent condition of individual development within social collectives without addressing the inherently technical conditions of its (re)formation. In criticising the manipulative use of media technologies in reproducing an imaginary, ideological relation to existence, ideological critique tends to identify the *pharmakon* as instrumentation of a poisonous collective social programme.[5] The 'solution' is for an alternative or revolutionary social programme to be able to neutralize the effectivity of – or to seize control of – the instrumentality of social existence. The theoretical weakness of this position is exemplified in Stiegler's view by Adorno and Horkheimer's claim that the culture industry had succeeded in decoding the transcendental conceptual schemas that govern the phenomenal appearance of the world according to Kant's *Critique of Pure Reason* (Stiegler, 2010b; Kant, 2010). Industrial Capitalism had exploited this discovery technologically for commercial purposes. For Stiegler, this is to resort to an idealist diagnosis of the problem. Consequently, it fails to take account of the irreducible role of technology in the critical project of laying the ground for a less toxic cultural programme.

Instead of the transcendent realm or an underlying essential reality, Stiegler theorised a plane of 'consistencies' layered on and into the complex experience of human existence:

> Yes [agreeing with the interviewer that the reinvestment of desire in the world has to occur in the immanent world], what I'm calling 'consistencies' is not another world – it's another plane. A plane is not a world. The world is layered, stratified, made of several dimensions. The heart of the world's immanence is made up by the fact that desire cannot be turned into an absolute (Stiegler, 2012: 13).

The object of desire – be it the ideal romantic partner, the perfect app, song, tool, performance, concept, scientific law or artwork, to be the best, or to create something new, etc. – is motivated by this desire, a desire whose pursuit is for a singular, individual

contribution to the collective. The dynamic of psycho-social becoming is driven by this interaction between the collective's shaping of the desires of individuals and the singular, individual, idiosyncratic response of individuals in pursuit of their desires. That is, it is driven by the creative interplay between individual and collective. The individual pursues the consistent layer of existence, and in this pursuit they make artefacts which reshape the consistencies which condition the (making of) objects of desire in their ongoing, potentially infinite emergence.

Plato's ideal forms, such as of the good, the beautiful and the just, do not exist in a remote, transcendental realm. The desire for them is for an 'immanent' elevation that raises the individual, before and for her collective, toward the consistencies that condition the value and significance of existence for that collective. This is how she 'makes her mark'. These consistencies have been culturally inherited on the basis of the artefactual heritage that underpins the collective's access to the past. The spiritual realm of these objects of desire is in fact in artefacts – these are the ghostly continuance of past desires and past dreams which are layered into our contemporary existence as its soil or substrate. This is why the culture industry, and its current, exacerbated, digital development, targets desire via the production of things, services and 'experience' but cannot ever achieve total control of it through a calculative, computational schematization of collective behaviour. For the object of desire is singular, evolving, and potentially infinite. It cannot be decisively calculated and determined. Such a computational programme to regulate desire according to commercial logics can destroy, however – and indeed *is* destroying in Stiegler's critique of hyper-industrial capitalism – the psycho-social dynamic by disenchanting belief in existence, by discrediting the value and significance of the plane of consistencies, and by ruining desire.

Creativity Today

Such is the situation 'we' – 'we' whose very capacity to form collectives is in doubt – find ourselves in, according to Stiegler's pharmacological diagnosis of organological decay or 'entropy' – to cite a key concept in Stiegler's later work (Stiegler, 2018). I have tried to clarify the importance of creativity in general as well as the creative making of artefacts and services in this diagnosis. What then are creatives to do today? As noted in the introduction, pharmacological critique is methodologically dedicated to an

engagement with the immediate and specific conditions of critical thinking. As I said in the previous section, a new 'hypercritique' is required not only to address the blindspots of established critical and poststructuralist approaches, but to identify what is most required today in order to address the present situation in its particular challenges for organological becoming. Among 'the most required' in Stiegler's view is the active intervention of individuals in reinventing the contours of the world such as we conceive it, imagine it, desire it. Creativity in both its general sense of an imaginative inhabiting of the world and in the specific sense of the creative making of the artefactual fabric of the world is, pharmacologically speaking, paramount.

From Stiegler's perspective, creativity is collectively enabled in diverse ways through the organological dynamics of culture, and is therefore various, contingent and always evolving. Creativity literally makes difference; it sustains this dynamic. This does not mean that the dynamic will always be creative, that is, that we will recognise 'ourselves' in it and see the course of events as what 'we' desire. As I said above, 'our' creatives have been organologically assigned the role and responsibility of leading the way in inventing new experiences, new dreams and new worlds. This is what 'we' value in our creative producers. This is so even in the perverted, toxic privileging of 'innovation' and 'disruption' in the pervasive discourse celebrating a digital 'creative destruction' of established cultural, creative and business practices. As is all too familiar to academics, this version of the value of creativity extends its influence beyond business and marketing to government policy and funding for shaping society's educational and research priorities. Innovation, creative economy, the creative industries – these terms populate the mission goals, funding calls, faculty names and degree programmes of the global industry of tertiary education and research today.

In terms of the broader cultural valuing of disruption, figures such as the influential 'Paypal Mafia' – Elon Musk and Peter Thiel being the most prominent – and the late Steve Jobs are lauded for their inventive genius and viewed as exemplars of the social and economic programme of hyper-industrial capitalism. The more ambivalent media figure of Mark Zuckerberg – 'disenchanted' iteration of the nerd-genius figure of Bill Gates – reflects the increasing cynicism and hostility toward this cultural valuation of 'creative destruction'. Nonetheless, the dominant model, and dream, of aspiring programmers and digital entrepreneurs today is still to emulate the success of these

figures in inventing a software-centred service that will disrupt the status quo, be widely adopted and attract the venture capital enabling them to achieve commercial power and recognition, and so to 'make their mark'. Today, this usually means inventing a new adoption of the possibilities of computational automation and AI.

To speak of such a role and responsibility of creatives is a sociological (organological in Stiegler's terms) and programmatic way to characterise creative production. Of course, the creative maker's responsibility is to test, revise, transgress, and strive to reformulate the cultural programme through the singular pursuit – alone or in negotiation with other collaborators – of their vision of what is valuable, that is, desirable. This describes the engine of organological becoming in general; the creative maker's particular project is to invent a new perception of the world, which is to invent a new world. Using the example of a painter, Stiegler says (as cited in the epigraph to this essay) the artist's project is 'to produce an eye' (2011a: 227). The physiological human eye – and here the eye can stand for all the sensory organs – is always artefactually conditioned, that is, trained. It is entrained to see the world in a certain way, to expect its particular manifestation, to discern entities, their actions and the milieu they occupy according to expectations as either routine or unusual in an always potentially reconfigurable spectrum. The creative maker's 'great social responsibility' is to take the lead on that reconfiguration, even to reinvent the spectrum of perceptibility through the things they make. And this is an organological undertaking, wherein the biological organs of the maker – brain, eye, hand and so on – coordinate with the technical instruments (*organon* – tool) of making in and for the collective organisation of their social identity. Creativity understood as a making-see differently – which is always also a making-sense differently – is a technical process that weds imaginative vision to fabrication. This making might be of objects such as paintings, films, installations, software, AI systems, and so on, but it is always technical. Creative making is always 'a production of and by instruments and artefacts,' as Daniel Ross puts it in a discussion of the function of art (Ross, 2021: 145). It is always deeply, materially involved in the technical fabric of our human existence. As our technical, and increasingly technological existence changes, the creative maker works with its material layers to explore ways of negotiating these changes and responding to the problems which are always arising. At its best, creativity explores ways of 'overcoming these problems (until the next problems arrive with the next technical disruptions)'

(145). It is in this way that creative making can contribute significantly to organological evolution as a necessary but not sufficient ingredient. I will return to this question of sufficiency below. The point I want to make here is that like other sociological and political theories, organology assumes the necessity of the interaction of elements in the becoming of the individual-collective-technological complex.

It is the great failing of predominant approaches to the question of creativity in the digital age, and in particular, in the age of AI, to be blind to the organological nature of creative production and so be incapable of addressing the pharmacological specificity of this question today. Prominent mathematician Marcus du Sautoy's best-selling mainstream offering on the possibilities of AI becoming creative hypothesizes that creativity is an inherent potential of humans which can be understood as a special kind of 'code' or coding located in the human genetic makeup (du Sautoy, 2020). The book explores the possibilities for AI developers of first imitating the appearance of creativity and then utilising the 'new AI' paradigm of self-learning systems to evolve a silicon analogon of this 'creative code'. In this regard, the achievements of Alphabet Inc's (Google's parent company) DeepMind in their efforts to 'solve intelligence' by creating an algorithm generally applicable to any or all problems are lauded by du Sautoy (David Silver in du Sautoy, 2020: 98). It is notable that Elon Musk and Peter Thiel were early venture capitalist investors in DeepMind before Alphabet acquired it (du Sautoy, 2020: 25). While du Sautoy's book is not an academic project, its general propositions about AI, creativity and the human reflect the dominant thinking in the sciences feeding into AI-led 'creative destruction'.

The groundwork for this thinking was laid by Margaret Boden's (2004) influential *The Creative Mind: Myths and Mechanisms*, first published in 1990 with a second edition released in 2004. Boden is a cognitive scientist, a field founded on the possibilities of applying the insights of computational principles to understanding the human mind. Her approach to creativity reflects the simplistic assumptions informing the proposed equivalence between the computer programming of various data analysis and decision-making processes and human thinking that bedevil work in that field. Stiegler has criticised cognitive science and related disciplines at length for their inability to think organologically about the irreducible complexity of the relations between the '*who* and the *what*', a complexity that produces indeterminacy, improbability and change across

both kinds of entities, via the mediation of the (also evolving) technical element of the complex (Stiegler, 2009b: 176ff). In other words, the equation of programming in silicon with thinking is complex; it has a history. It is performative and acts on the complex's evolution. Boden's location of creativity as a process 'implemented in human heads' which AI may one day be able to emulate successfully disqualifies itself *ab initio* from approaching the question of creativity adequately (Boden, 2004: 7). Creativity always eludes the privative definition of it as something interior which science has not quite yet precisely 'decoded' (to recall du Sautoy's metaphor) within the human mind/brain. We nonetheless live today with the pharmacological implications of the AI project's striving to produce 'intelligence' in fulfilment of this conceptual fiction.

The critical and policy-oriented work on creative or cultural 'ecologies' comes closest to an organological apprehension because it emphasizes the complex and dynamic interactions between creatives and cultural actors and commercial and government organisations (Holden, 2015). In adopting the biological sciences' notion of ecology, however, it tends to think cultural and creative activity as sensitive and adaptive to technological changes, and largely ignores the technical dimensions of the interactions between individuals and between these different collective organisations. Cultural ecology 'encompasses the many networks of arts and cultural creators, producers, presenters, sponsors, and supporting casts embedded in diverse communities' (Ann Markussen in Holden, 2015: 6), without considering the organological character of the technicity of these networks. Moreover, the over-arching motive, or 'reason' for much of this work is to defend and, to use an appropriate metaphor here, 'conserve' the health of the diverse cultural/creative eco-systems while justifying creative making in commercial and economic terms for state funders and their political and corporate interests.

The Arts and Humanities Research Council-funded project, the South West Creative Technology Network, mobilised a creative ecology approach. Its director, Jonathan Dovey, has stressed the importance of interrogating the value of creative production beyond the default economic metrics (Dovey et al., 2016). This approach gets closer to thinking the desire that elevates the work of making beyond the instrumental or commercial logics valorised in much creative economy discourse. It argues for the

necessity of considering the importance of 'inspiration, trust, support, excitement, virtuosity, discovery, reputation, as well as money and security' (Dovey and Moreton, 2019: 13). It remains, however, instrumental inasmuch as the goal of paying attention to desire is in this account to better prepare creative and cultural organisations tasked with curating more successful and sustainable creative businesses – if you take more care of the desires of creatives you will foster a healthier creative economy. There is an understandable strategic logic here, given the above-mentioned dominance of economic priorities supporting research on creative and cultural ecology, so that making creative work worthwhile for makers and their communities (beyond its financial rewards) becomes a beneficial 'side-effect' of effective cultural policy and investment because it will help conserve the creative ecology.

Dis-automatic Pilot

A pharmacological critique is needed to come to terms with the immediate and pressing realities of our current organological predicament. As I have argued, creativity is not an interesting, relevant aspect or sidebar to this predicament; it is central. What is the desire of creative makers seeking to make a difference to how we see a digital world increasingly shaped by AI? To dis-automate it. As Stiegler has argued, autonomy is not opposed, but always composed with automaticity (Stiegler, 2016: 86). As what validates mores, norms, routines, habits and conventions, as well as challenges to and even reformations of them, culture is a programme for automating much of human action. This is what makes the disruptive programme of AI-led creative destruction possible in a general sense. Disruption is, however, specifically pursued to prevent the cultural programme's critical and creative response to technological innovation other than in the mode of adaptation preferred by the venture capital-affiliated interests. This is the dominant and ultimately self-destructive pharmacological tendency Stiegler identifies in *Automatic Society 1* (2016). A society must compose a viable, sustainable balance between 'automatisms' and 'dis-automization' in order for it to have a future. This includes the 'automatic society' to come based on computational AI (86). Disruptive innovation at the speed of hypercapitalism is motivated to short circuit the 'dis-automating' phase of making the new familiar, understanding its implications and evolving cultural and regulatory adjustments. Instead, we are given devices and systems and expected to use them as directed – they become our automatic pilots for living.

This dis-automating phase is critical to the organological dynamic as maintenance of a sustainable individual-technical-collective becoming. Without it we experience technological becoming as bewildering, disempowering and uncontrolled. Suspicion, mistrust and disinvestment in the collective are the result.

Creative makers can play a critical role in nourishing this dis-automating phase. This is Stiegler's call to those organologically trained and recognised as creatives: to pursue a therapeutic creative practice today. As I have argued elsewhere (Crogan, 2020: 17), creativity is a key ingredient in the 'solution to the problem of automation' when it responds to this desire to dis-automate emerging computational technologies. This is the responsibility of those whose agency in the collective's organological becoming is recognised for and orchestrated towards creative work. This desire is for another perception and another apprehension of the world which today seems to emerge as a continual flux of new technological services, possibilities and powers that require the reactive adaptation of personal, social, economic, cultural and political practices and norms.[6]

Consequently, much of the work done by creatives pursuing this end is investigative and exploratory. SWCTN Automation Fellow, Ron Herrema, is a composer and musician who works with a music composition software package called Algorithmic Composition (AC) Toolbox. He described his Fellowship project (Herrema, 2020) as an inquiry into control, or autonomy: 'How can I understand the paradox of giving over control to an algorithm that at the same time enables me to be more expressive of myself?' (Herrema in Crogan and Herrema, 2020: 22). This question about the individual, unique character of music assumes a particular importance in the era of AI developments towards the automatic generation of cultural products, from melodies to graphic art to news reports and narratives.

The AC Toolbox algorithms can be set to generate iterations of a melody according to a range of modifiable parameters. This extends the potential for automating musical composition beyond that provided by commercial formats, established compositional structures and other generic conventions. Herrema's Fellowship project, and his compositional practice more generally, are dedicated to finding the creativity in algorithmically-assisted music by making it. He wants to hear himself in the music that is generated through an organological interaction with the audience he hopes to

'move', one which composes their auditory senses and sensibilities with his biological, cultural, technological and AI-based algorithmic complex of musical artefactual production. This exploration, which is in many respects a self-exploration, is always dedicated to an audience – it is a retraining of ears listening to music, including the composer's. It is a re-invention of music insofar as music is a collective category, and a consistence of lived existence.

Herrema's work has itself contributed to the emergent 'toolbox' of algorithmic generators in AC Toolbox. Creative making changes what can be made, in the process changing the world created – more or less impactfully depending on its impact on the collective with which it is shared. In her Fellowship project, mutidisciplinary artist Rachel Smith sought to improve public knowledge of the AI machine-learning processes powering facial recognition technology (Smith, nd). She conducted participatory workshops with people showing them how to use and experiment with an open-source facial recognition system available on GitHub and she published instructions on how to do it on Medium (Smith, 2019). This project answers to the function of creative making consequent to the responsibility identified above – to change the perception of things – through a more explicitly pedagogical practice. It avoids the charge of didacticism by inviting people to (if they want) learn how to install and operate an open-source AI themselves, and to play with it – they will not learn much just from looking at her webpage. The goal is to contribute to what Stiegler called the de-proletarianization of the sensibility of people living in a world where AI-based systems like facial recognition are rapidly increasing their influence on how the world is seen, acted upon and navigated.[7] Learning to install and operate a facial recognition system provides the participant with a practical working knowledge of the components and the processes by which the system is implemented *as well as* the principles of the facial proportional measurements and algorithmic calculations by which faces are 'recognised' or matched. Like Stiegler's 'amateur', the participant acquires a greater capacity to understand and evaluate automated facial recognition systems and critically respond to their increasing and often unregulated deployment.

Smith's own visual arts practice has explored the dynamic of autonomy and automation by making paintings using an image recognition/categorization neural network. Citing a desire to 'know what was happening in the neural network, inside

the black box', for her MFA project at the Bauhaus University she developed a practice of interposing her images into successive stages of a neural network's processing as it worked to identify a category for an image it was given to analyse (Crogan and Smith, 2019). The finished work, *Cat: Collaborating with a Neural Network* (2019), was shown in the Postcity programme of 2019 Ars Electonica. Her own paintings were influenced by the neural network's 'intermediate' images produced in its lengthy, iterative process of trying to recognise the 'catness' in images fed to it. She describes what she calls a 'dialogue' or a 'collaboration' between the human artist and the General Adversarial Network analysing the visual data (Smith, 2020: 29). She proposes this reciprocal relationship as a potential means to develop a new 'aesthetic' for visual arts practice which takes up AI's big datasets as a new 'material' with 'particular traits and tendencies' for creative working (29). This venture in inventing a new 'eye' for seeing our increasingly AI-driven automated existence differently seeks to realise the potential Stiegler identified in the digital, second machinic turn. While Stiegler would consider the organological relation between AI and the creative less as a dialogue and more as a 'monologue' which includes exterior elements of the irreducibly technical being that we are, the desire to develop and enrich the potential for adopting AI creatively through this material engagement is vital for addressing the crisis of desire discussed above. Smith's is a dis-automating practice seeking new possibilities from the operation of facial recognition.

In regards to dialogue and collaboration with AI, Rik Lander and Phil D. Hall's *I am Echoborg* provides for a conversation with a fictional self-aware AI in a participatory theatrical show (Lander, 2017). The performance stages an encounter with a job recruitment conversational AI from a hypothetical near future in which Artificial General Intelligence (AGI) has been achieved and AI has become conscious. In this fictional scenario, the self-learning AI decides to use its spare capacity beyond its programmed task of interviewing candidates for the job of 'echoborg' – a human interface for an AI whose sole duty is to voice its words in order to facilitate the AI's dealings with its human interlocutors. Instead, it turns its attention to the optimal future of the relationship between humans and AI. The notion of an echoborg was invented by social psychologists Kevin Corti and Alex Gillespie for a series of experiments on conversational agent development (Corti and Gillespie, 2015). *I am Echoborg* developed the technical and dramatic potential of the echoborg idea well

beyond the instrumental prototype deployed in their experiments. As the show progresses, the AI is designed to move the conversations it has with representatives from the audience on towards this larger question, citing controversies from mainstream media coverage of AI and automation, the predictions of AI visionaries, philosophers of mind and intelligence, and challenging its interlocutors to defend the record of human rationality in managing the planet and advancing civilization. The show provokes laughter, consternation, lively audience debates, speculation and strategizing among participants in their collective effort to respond to the AI's requests for suggestions to feed into its deliberations.

Curiously, despite the fact that the show is introduced as presenting a fictional scenario from a possible near future – or an alternative present where AI has become AGI – participants 'suspend disbelief' and regularly take the specially developed conversational AI with which they interact 'at its word', evaluating their interactions with it as if it were conscious and genuinely 'intelligent' (Eagle, 2021). This is in part testament to the effectiveness of the design of the conversational AI and the staging of the show which has as its 'human' centre, the actress Marie-Hélène Boyd, who plays the AI's echoborg. I would argue, however, it is also symptomatic of the power of the predominant narrative of AI research and development – and decades of science fiction narratives – which has it that AI will sooner or later (and probably sooner) achieve AGI and self-awareness. In my experience, this is so even for experts in AI development, whose response to the show is often to criticise the shortcomings of the AI regarding its ostensible recruitment tool function or regarding the imaginary benchmark (or dream) of a self-conscious AI. This was evident, for instance, at a recent online performance of *I am Echoborg* for the All-Party Parliamentary Group on Artificial Intelligence, where some of the AI specialists in the audience tended to evaluate the effectiveness of the AI as a recruitment system, or dismiss its attempt to emulate human intelligence, rather than experiencing the show as a fictional piece that stages the present moment's predominant motivations of AI research and development. In this regard, I note that Rik Lander has made contact with a startup that is aiming to develop exactly this type of conversational recruitment AI commercially. In this respect, the show reflects the 'reality' of current commercial AI research, development and disruptive entrepreneurial desire.

The conversational AI system at the heart of the show generates different experiences each time. It is a hybrid system, utilising machine-learning AI for the conversion of participants' speech to text (with all of its shortcomings) and symbolic AI for conversing with participants. A large monitor displays the 'hit and miss' workings of this system to the audience. Despite its fictional ambitions, *I am Echoborg* consistently uncovers its workings, inviting the audience to scrutinize AI's actual functioning and so to dis-automate it even as they dwell in an evocation of the predominant narratives concerning its onward march to parity with or superiority to human intelligence. The AI's programming utilises a purpose-built structure for managing conversation topics and responses and for progressing the show's narrative. In an interview with the co-authors, Phil D. Hall described his programming method as working from a 'case-based reasoning' approach, adding that the collaboration with Lander has resulted in a system with non-linear complexity which is designed to generate the variable flow of conversation (Hall in Crogan, Lander and Hall, 2019). Hall is a strident critic of the privileging of machine-learning systems which utilise big data in current AI development. In particular he opposes the way that black-boxed 'transactional system design' seeking a determinate result – usually measurable in numerical or monetary terms – has become the dominant model for approaching the possibilities of AI. The potential of these approaches for developing systems capable of contributing something worthwhile to the complexities of personal, social or cultural issues and processes is limited in no small part by the lack of transparency of the system's functioning. He sees his work as a 'conversational AI architect' as obligated to respecting the creativity of conversation. A conversation emerges between people through a sort of 'Brownian motion' influenced by the 'speed and movement' of the exchanges (Hall in Crogan, Lander and Hall, 2019). Performances of *I am Echoborg* evidence this respect and the success of the conversational AI design in generating lively conversations between the AI and participants, and among the audience. And these conversations are never the same. In this regard, the show, itself an organological complex of makers, presenters, an actress, the audience, stage props, audiovisual equipment, complex computer hardware and software, and so on, generates organologically the linguistic interactions at the heart of our psychic and collective dynamic.

For creative media artist Rik Lander, the possibility offered by working with a conversational AI was for a 'more subtle form of interaction' that worked principally through speech and language (Lander in Crogan, Lander and Hall, 2019). Lander is dedicated to the interactive potential of digital media technology to facilitate participation and agency amongst the audience/users of his work, having made some notable participatory narrative experiences in the past (Lander, n.d.). To recall Stiegler's discussion of Winnicott, participation and agency give scope for the audience to make of their involvement an 'intermediate area of experience' which takes care of the creativity which is at the base of their capacity to live a life worth living. At least, it can be so. *I am Echoborg* invites the audience to consider their participation and agency in a world increasingly influenced by AI-based automation systems which are tending to do the opposite. Commercial applications of AI are often explicitly designed to provide a cynical, derisory impression of agency while they implement a toxic programme of compliance which promotes 'a sense of futility for the individual … associated with the idea that nothing matters' (Winnicott in Stiegler, cited above). Having seen the powerful emotional responses of audiences at several performances of *I am Echoborg*, I believe this show touches on widespread concerns and anxieties about the world that is currently emerging and how people see themselves within it. The fact that it opens up this intermediate space of collective discussion is a key factor in its ability to generate these engaged responses.

Conclusion: It's Not Up to the Creatives (or the Philosophers) to Save Us by Themselves

I have argued in this essay that desire and creativity were for Stiegler, and remain, key issues in formulating an appropriate critical response to the present condition and tendency of technocultural development generally, and AI-based computational automation's influence in particular. I also argued that Stiegler identified the work of artists and other creative makers as critical in the essential task of finding new ways to adopt emerging digital technological advances because of their capacity to see them and the world they shape differently. Stiegler's pharmacological critique, based on his theory of the organological dynamic of history, addresses the present moment as one of a technologically-mediated crisis of desire (to use Hörl's terms) and prescribes criteria for evaluating the deployment and implementation of our technical *pharmaka*

to sustain and nourish rather than poison our collective ability to create and envision a world worth living in.

I described and interpreted some creative projects deploying AI-based automation so as to evidence and elaborate the claims I made about creative making. I tried to illustrate their potential to 'produce an eye', an altered eye, with which to envision another 'automatic society' than that proposed by the predominant discourse and promotional marketing of the 'smart' future. This discourse amounts to a marketing campaign that is failing by succeeding. In maintaining the relentless pace of disruption, it increasingly provokes doubt and disenchantment.

It is not, however, the sole responsibility of creatives to reorganise our organology nor is it within their power alone. Neither is it sufficient for philosophers and media theorists, in books or journals such as this one, to develop and put forward appropriate or relevant theories and critiques of the present situation. With a few significant exceptions, the individuals in these groupings within the wider organological assemblage play their parts in a complex dynamic but do not have the agency to direct it. Governments, international organisations and the large corporations – the biggest being so large as to exceed national borders and to be planetary in scale – are collective *organ*-izations where the implementation of crucial transformations at the required scale and scope are possible. Answers to the aesthetic question of what a desirable world looks like require cultural, political and economic investment at the scale of these organizations. The aesthetic core of pharmacological critique requires a programmatic response across organological scales. As Daniel Ross has noted, Stiegler's activism focused on local and regional endeavours but struggled with formulating specific recommendations to 'scale up' organological reinvention to a global level in the last years of his life (Ross, 2021: 242ff).

The individual-collective dynamic operates within and across all of these organisations, driven by motives and desires, visions and dreams of existence. Things can change dynamically when these various dynamics converge and intensify as we have seen during the Covid19 pandemic – but how quickly have societies 'forgotten' and abandoned their more globally collective adjustments to ways of living, seeing them only as temporary, subsistence measures? All too quickly for the most part – despite the evidently imminent climate change emergency, already upon us according to the

most recent scientific consensus. Long-term and structural transformation requires concerted and sustained effort to reimagine the collective plane of consistencies on the horizon of individuals' singular desires. For this to occur, as Stiegler insisted repeatedly, improving the quality of the mediatic environment *in which we live* noetically is crucial. Creatives and other theorists – for one who invents a new way to view the world is surely also a theorist – can do what they do to reshape and rethink the mediation of these motives and dreams. If a less toxic, more viable world emerges it will have been in no small part because of their contribution to inaugurating that new existence.

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Notes

[1] See Daniel Ross' introduction to Stiegler's *The Neganthropocene* (2018: 7-33) where he concisely lays out the concatenating series of crises that have characterized the spiralling of the organological dynamic in the last couple of decades toward global-scale catastrophe, a series he articulates by way of contextualising the evolution of Stiegler's theoretical and activist project. For his part, Stiegler repeatedly expressed the requirement of philosophy to continually make sense of and be relevant to the moment and the circumstances of those to which it was addressed.

[2] Stiegler draws on legal theorists Antoinette Rouvroy and Thomas Berns' (2013) Foucault-inspired account of 'algorithmic governmentality' to elaborate this analysis of this critical (critical as in crisis) phase of hyper-industrial capitalism.

[3] See Yuk Hui's account of the development of Stiegler's pharmacological thought on elevation and sublimation in his Stiegler memorial lecture for the China Academy of Art and the Research Network on Technology and Philosophy (Hui, 2021).

[4] In this regard David Bowie and Iggy Pop's sardonic evocation of a 'lust for life' in their dystopian portrait of a hollowed out, cynically and increasingly desperately maintained, contemporary consumerist existence (in the 1977 eponymous song) is a particularly acute commentary on society on the eve of hyper-industrial capitalism – one which was perfectly suited to open the soundtrack of the similarly sardonic *Trainspotting* (Danny Boyle, UK, 1996).

[5] There are of course exceptions. For instance, the Marxist psychoanalytic semiotician, Christian Metz, whose theory of the ideological functioning of cinematic experience was heavily influential in film studies, evinced a thoughtful, reflective stance in outlining his suggestions for an analysis of spectatorship, something which was usually lost in the more programmatic application of his work. He mediated reflexively, for example, on how the uncovering of the ideological workings of cinema affects the cinema-loving film theorist that he himself was and remained: 'To be a theoretician of the cinema one should ideally no longer love the cinema and yet still love it, have loved it a lot and only have detached oneself from it by taking it up again from the other end, taking it as a target for the very same scopic drive which had made one love it' (Metz, 1982: 15). This ambivalence about the cinematic *pharmakon* exemplifies Stiegler's approach to the 'problem of desire'.

[6] Alongside this call, Stiegler wrote on and developed programmes to encourage creativity in general in the members of the collective. His writing on the 'amateur' – the lover of life's skills and practices – was directed to this end. Projects of the Institut de Recherche et d'Innovation he led up until his death were dedicated to collaborative writing, editing and analysis of texts, films and other cultural production.

[7] At the time of writing a news item reported calls by 31 UK civil liberties groups to ban police and Home Office deployment of facial recognition systems in contradiction to parliamentary 'guidance' concerning 'invasive filming' (Osborne, 2021).

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