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On the Meaning of Sustainable Development

Humanity and Culture in the Age of Gaia and the Singularity



> #Numéro 5
> Colloque Ingenium 2021 : le développement durable dans la formation et les activités d'ingénieur
> Working papers
> Développement durable - > Didactique - > Philosophie

To cite this article

Tabas, Brad. "On the Meaning of Sustainable Development. Humanity and Culture in the Age of Gaia and the Singularity", 27 April 2022, *Cahiers Costech*, numéro 5.
DOI <https://doi.org/10.34746/cahierscostech146> -
URL <https://www.costech.utc.fr/CahiersCostech/spip.php?article146>

Résumé

This text, a contribution to the philosophy of education, examines the meaning of the term sustainable development from the point of view of ordinary language philosophy. It argues that there are at least two dominant ways in which sustainable development currently makes sense, and that these two senses of sustainable development are mutually incommensurable and in fact radically opposed with respect to how they interpret the meaning of reforming education in the name of developing sustainably. Rather than attempting to resolve this conflict I argue that educators must acknowledge that negotiating with this divergence of interpretations and this

problem of making sense of sustainable development is an essential part of the challenge of thinking about education for tomorrow.

Keywords: Futures studies, futures past, sustainable development, engineering education, FutureLabs

Abstract

This text, a contribution to the philosophy of education, examines the meaning of the term sustainable development from the point of view of ordinary language philosophy. It argues that there are at least two dominant ways in which sustainable development currently makes sense, and that these two senses of sustainable development are mutually incommensurable and in fact radically opposed with respect to how they interpret the meaning of reforming education in the name of developing sustainably. Rather than attempting to resolve this conflict I argue that educators must acknowledge that negotiating with this divergence of interpretations and this problem of making sense of sustainable development is an essential part of the challenge of thinking about education for tomorrow.

Keywords: Futures studies, futures past, sustainable development, engineering education, FutureLabs

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1 - The Age of Sustainable Development

We are in the age of sustainable development. This is not because Jefferey Sachs (2015) proclaimed it so. Nor is it because the inhabitants of planet Earth have suddenly transformed their socio-technical existences in such a way as to ensure the long-term survival of humans and other forms of biological life, but rather because, at long last, attending to the ways in which the carelessness of the present threatens the possibility of the future has gone mainstream and everyone seems to be worried about the future. Sustainable development has become a cultural imperative. International organizations public and private are touting their advocacy of sustainable development, while politicians promise Green New Deals and companies great and small insist that what they do is “sustainable.” Education systems and educators have hardly been spared this transformation. Conferences on sustainable development education abound. New journals are being formed; new research projects are being funded. Curricula everywhere are being reformed, often following guidelines established by researchers promoting their expertise in guiding us towards this transition.

The following text must be understood against the background of this general context. It registers the impact of sustainable development talk within the context of engineering education research. Yet with respect to that research the viewpoints put forth in the following are profoundly heterodox. Rather than arguing how we should reform education from the point of view of some determinate understanding of sustainable development—and this is clearly the normatively sanctioned procedure within our discipline—I argue that the vagueness of the notion of sustainable development has serious implications for how we need to position ourselves with respect to thinking education in the age of sustainable development. I get to this claim about the slipperiness of sustainable development as a concept through a sounding out of the *meaning* of sustainable development. This investigation is carried out somewhat in the spirit of ordinary language philosophy—we are interested in understanding what we mean when we say that we are pursuing sustainable development. Yet our practice here differs from the one that might be typical in ordinary language philosophy as it has been pioneered by the likes of Wittgenstein, Austin, and Cavell. Our aim is not to sound out what it is that we mean in the spirit of finding a single meaning, but to trace out what we see as an inevitable divergence of what we mean when we say when we are pursuing sustainable development. This means that I—typically the voice of the speaker in ordinary language thought—will mostly be silent, mostly passed over in the aim of bringing out precisely what other people have historically said. My claim is that when we look at how others use sustainable development, we see that for some sustainable development is understood primarily in terms of sustaining, while for others the interpretative key is development. This means that our usages of sustainable development diverge in a way that rather resembles the semantic equivalent of Jastrow's duck/rabbit optical illusion. Moreover, it seems that most language users are precisely ignorant of this double sense, that they use sustainable development as if it did not have another possible sense, and as if its sense were obvious and unproblematic. In the following I do not argue for another interpretation of sustainable development, but rather aim only to encourage my readers to see this duck-rabbit as a duck-rabbit, to see sustainable development as a term poised between two competing and incommensurable fields of sense. My claim is that a failure to recognize this doubleness can only lead to incoherency, confusion, and perhaps even conflict. My aim in writing this paper will be fulfilled not when we take the sense of sustainable development to be resolved, but rather when we acknowledge and take

into consideration what now it all too often passed over as non-existent.

2 - Insufficient Reason

The divergence in sense that interests stems from how language users weight the relative value of each of the two terms in sustainable development. On the one hand, there are *Sustainabilists*. Sustainabilists understand sustainable development in terms of sustaining ourselves perpetually within fixed limits. On the other hand, there are *Developmentalists*. Developmentalists place their emphasis upon the idea of development and growth beyond any limits. In correspondence with this difference in emphases, each group holds a different thing to be absolutely scarce. Sustainabilists believe that what is scarce is material: resources, space, or energy. Developmentalists, on the other hand, think that what is scarce is intellectual: creativity, insight, or computing power. It is typical of Sustainabilists to insist that there are not enough resources on Earth for the human economy and the human population to continue growing indefinitely, and so to understand development not as growth but as degrowth tending towards a society calibrated to limits. Developmentalists, on the other hand, argue that if we had more knowledge, innovation, and technology—we will ever be able to find and exploit new resources, thus sustaining into the future economic and other forms of growth. From an educational point of view, Sustainabilists tend to focus on inculcating knowledge of well-defined system limits and transitioning towards a steady-state culture of joyous sobriety and restraint, while Developmentalists tend to focus on fostering creativity and technical innovation, with an emphasis on building an alternative culture engaged in the pursuit of bold future visions and grand collective challenges.

In the following it may seem as if I am critical of both these ideas of sustainable development. Thus, it may seem as if what I am saying is that we lack the intellectual resources to sustain and develop a theory of sustainable development, and that this is precisely the reason why the meaning of sustainable development is so unclear. Mine is thus in part a skeptical critique of sustainable development rooted in an anthropology of finitude, one in which our own rational capacities may be characterized, following the philosopher Hans Blumenberg as burdened with a condition of “*insufficient reason*” (Blumenberg, 2019, p. 197). This principle might be said to state that we as human beings find ourselves to act—at least with respect to the future—with inescapably insufficient

reasons. This is because even if we feel ourselves called to think about the infinite future or the limits to reality, we do so in a condition that does not allow us to possess what can be called legitimate knowledge of these concepts. Put otherwise, we find ourselves called to talk about the future, but find ourselves incapable of truly making sense, and giving reasons, with respect to it. The problem with this condition comes to the fore in the age of sustainable development, for now we find ourselves constantly called upon to teach others how to act towards the future, but we also find ourselves in a state of insufficient reason when called upon to defend the rationality of these courses of action. Restated somewhat more provocatively, I deny that either of the two common senses of the meaning of sustainable development is a developmental hypothesis that can be *sustained* against all skeptical criticisms relative to its adequacy for service as a driving principle in the historical and social *development* of society. Simply put, I insist that in any particular case there are always ample reasons why the alternate sense of sustainable development may appear to be the desirable one.

This inadequacy drives both epistemic cultures to myth. I call these two myths Gaia and the Singularity, with Gaia belonging to the Sustainabilists, and the Singularity being proper to the Developmentalists. I would argue that at least in part the pertinence of my analysis stems from the tendency of such myths to generate polarization and even irrational enthusiasm, though that said, I in no sense think that this must be the case, nor do I mean to dismiss either position for this reason. Yet I do want to suggest that the movement from insufficient reason to absolute fantasy visions via the figures of Gaia and the Singularity does hamper dialogue and heighten enmity. Yet by bringing awareness to the fact that the difficulty of sounding out the rational meaning of sustainable development is at least as difficult as the practical challenge of bringing sustainable development about in practice, I hope at least to mitigate these conflicts, and pave the way towards more productive dialogues about the future of humankind.

3 - Sustainabilism and Developmentalism

In the preceding section I have highlighted—perhaps too briefly—my sense of the reasons for the non-univocity of sustainable development. In the following two sections I want to make clear precisely what it seems that each group thinks that they mean when they talk about sustainable development.

3.1 - Sustainabilism

Sustainabilist discourse is built upon a logical truth: that there *must be limits to growth within a closed system*. Sustainabilists assume that when we overshoot the limits of our system, which is generally understood to be the Earth system as it is defined by Earth System Science (ESS), our society will either decline or collapse. Development for them involves transitioning human civilization asymptotically towards an accommodation with this limit, via the adoption of some version of what Herman Daly (1977) called a steady state economy.

3.1.1 - Positing What Is

The internal challenge confronting all Sustainabilist discourse is locating this limit. How, after all, do we really know *the limit to growth*? How can we justify that this limit (the one that we assume is valid) is truly the right *absolute limit*? The simple answer is that we cannot, but the more complicated answer is that we can try to construct evidence—say using Bayesian probabilities—that our posited and purely hypothetical limits are the right or real ones. Why this matters, of course, is that settling on limit means compromising on our collective quality of life.

Efforts at constructing and re-constructing the logical and empirical supports for limit claims take up a great deal of discursive space in the history of sustainabilist discourse. Carlowitz ((1713) 2009), one of the first to hold a sustainabilist interpretation of development, argued that there was a limit to the number of trees that could be harvested without considerations regarding the “conservation and cultivation” of the forests. Malthus ((1815) 1992), insisted that the limit that mattered was the quantity of agricultural land. For Jevons (1866), the paradigmatic limit was the hypothetical total of the extractable coal in England. Within the current understanding of sustainable development, the limit paradigm is generally situated as being the carrying capacity or the systemic balance of the Earth. Most probably the first people to understand sustainable development in approximately this planetary way were the authors of *The Limits to Growth* (Meadows, Meadows, Randers, & Behrens, 1972). They showed that global economic development would ultimately be constrained by the limits of what, in their early systems-theoretical analysis, was understood as a closed system. This limit paradigm was taken over in the first political pronouncements regarding sustainable development. The 1987 *Brundtland Report*, for example, begins with an

evocation of how humankind first discovered the Earth—and its limits—from outer space, describing the discovery of the planetary limits as a veritable Copernican revolution in the human understanding of our own development:

In the middle of the 20th century, we saw our planet from space for the first time. Historians may eventually find that this vision had a greater impact on thought than did the Copernican revolution of the 16th century, which upset the human self-image by revealing that the Earth is not the centre of the universe. From space, we see a small and fragile ball dominated not by human activity and edifice but by a pattern of clouds, oceans, greenery, and soils. Humanity's inability to fit its activities into that pattern is changing planetary systems, fundamentally. Many such changes are accompanied by life-threatening hazards. This new reality, from which there is no escape, must be recognized - and managed. (Brundtland, Khalid, Agnelli, Al-Athel, & Chidzero, 1987)

Arguably, and even though our understanding of the Earth system has been significantly enriched over last few decades, the posited limit to the closed system that is our own has essentially stayed constant within Sustainabilist discourse, even and particularly as they have embraced historical theories such as the Anthropocene and new and more nuanced boundary theories such as the one popularized by the Stockholm Resilience Center (Rockstrom & Klum, 2015).

3.1.2 - Preventive Thinking

The rational problem with all posited limits is that they are speculations. That is not to say that there are no planetary or other limits, but to know these limits in scientific terms would involve testing them through experience by intentionally overstepping them and then measuring the consequences. However, according to the perspective adopted by Sustainabilists, such testing would be meaningless because it would be ecocidal. In other words, we can never know if our limits are *the limits* because learning that we were right would imply dying. Rhetorically, then, the aim of limits talk in Sustainabilist discourse is always aligned with the principle of prevention, it aims to keep us seeking validation for our limit hypothesis—which is, of course, not the same thing as seeking data bearing on the consequences of overstepping those limits, nor data bearing on why our posited limits ought to be treated as legitimate and well-grounded hypotheses.

Vaclav Smil (2019), for example, recently published a monumental study documenting, based on the best recent scientific evidence, the likely limits to growth of everything from microbes to megacities. Sustainabilists such as Jared Diamond (2004) have also combed the past in search of examples aimed at illustrating the collapses that have ensued when civilizations overstepped and ignored the biophysical limits to their growth. Cultural studies scholars focused on the Anthropocene have effectively illustrated the ways in which our forcing of planetary limits is shifting cultural practices across the world. Yet publications of this sort, if they bolster the claim that we ought to attend to the limits of growth, can never dispel the legitimacy of the fundamental question of whether our limits are the absolute limits.

This question matters, since the limits that we accept ultimately determine how much we as a species can hope for in the future, and it is in this space that Developmentalist resistance against Sustainabilism has emerged. At least since Gerard O'Neill's publication of *The High Frontier* (1977), Developmentalists have been pointing out the irrationality of the planet as a limit paradigm. As O'Neill argued, it was at least in principle possible for humankind to move out into space, and when there, "exponential growth" would be possible, thanks to virtually unlimited access to energy, lands, and materials (all of which would be "available without stealing, or killing, or polluting" (loc.594)). Sustainabilist thought leaders like Garret Hardin (1993) and Mike Berners Lee (2019) have responded to this provocation by claiming that expansion into space is impossible. But these demonstrations cannot be convincing: we can't really know whether a future in space is impossible until we have made a concerted effort to expand into space. At present, and thanks to the efforts by Developmentalist believers, the space economy is booming, and the drive to gain access to space resources and to pave the way to an eventual settlement of near space, is currently a major developmentalist prerogative, pursued both by national governments including the US, China, India, and the UAE, as well as by individual investors, including Jeff Bezos, Elon Musk, and Larry Page. While it remains highly doubtful that these efforts will yield anything akin to what Developmentalist Jeff Bezos promises: an "incredible civilization" with a "trillion humans in the solar system" (2021, p. 247), it certainly does remain credible to imagine that space resources will extend the limits of growth beyond the limits assignable when merely taking the planet into account. Similar arguments can be made with respect to miniaturization and dematerialization. In the end, it is only this weaker version of limit

extension that matters from the point of view of Developmentalist argumentation—since this exception to absolutism of the Sustainabilist limit is enough to draw into question the entire affirmation of the limit as limit. Neither party can win the day, and so the implications of the limits of the planet and its resources remain an open matter of interpretation when it comes to the practice of engaged actors, since both expanding out beyond the Earth system or miniaturizing within that system offer different perspectives on the meaning of the limits to growth even if they are pursued in such a way as to maintain a belief that there is—in some absolute sense—a limit to growth.

3.1.3 - Sacralizing the Limits

The Sustainabilist sense of the meaning of sustainable development is conservative. It often embraces an ethics which assumes a risk averse interpretation of the principle of prevention as a highest law. It continually seeks justifications to support the rationality of its aversion to risk, even if, and when, the evidence might seem to point in the contrary direction.

For example, it has been argued that we have currently overstepped five of the nine planetary boundaries ('limits') set forth by the Stockholm Resilience Center (Rockstrom & Klum, 2015). One interpretation of this claim could be to deduce that this was a demonstration that those boundaries were illegitimate (on the assumption that real, absolute boundaries would be incapable of being transgressed without disaster). But to avoid this conclusion, Sustainabilists have recourse to a secondary notion: "resiliency" (Rockstrom & Klum, 2015, p. 70). Within the epistemic economy of the discourse, resiliency is employed to posit a hypothetical limit to how far one can go beyond a seemingly plastic limit before that limit reveals itself to be what it is, a real limit. As a logical operation, resiliency saves the limit. However, resiliency also undermines the very idea of the limit itself as absolute or real by replacing what we normally mean by limit with another concept altogether. This gives fire to developmentalist accounts, which tend towards a socially constructive account of the notion of limits, seeing them not as metaphysically or ontologically real entities, but rather as human constructs—essentially psychological biases—that need to be overcome if we are to innovate ourselves out of the perceived problems of the present.

In response to this psychologization of their position, many Sustainabilists have felt the need to develop metaphysical or theological foundations for

their claims. These kinds of metaphysical arguments are always doomed to failure as rational arguments, even if they can sway our passions or assuage our desire for foundations. Nevertheless, the advocates of this approach, for example Bruno Latour, seem to think that there is a practical—read political—efficacy to such arguments. These kinds of fantasies are seen as having the constitutive power of political theologies and other foundation myths. On Latour's account, Gaia is adapted to be the master figure in Sustainabilist political theology because she is not an irrational goddess or a fantasy but precisely a being that is an expression of the collective rational practice which is science as he understands it (he claims that Gaia is perhaps "the least religious entity ever produced by occidental science" insisting that she is "totally secular" and even "mundane or *earthly*" (2015, p. loc. 2294)). She is, as Bruce Clarke explains, not a product of divination but of evidence, "a self-generating, self-maintaining planetary constellation emerging from the interactions of living and nonliving components—systems and structures, embodying their integrated intermodulations" (2019, p. 11) Yet even if these Sustainabilists are justified in claiming that Gaia is a product of empirical science, they nevertheless cannot claim that she is a finding of empirical science without precisely stomping on the key possibility of differentiating between empirical science and empiricism-inspired metaphysics (in other words, between science and scientism). Put otherwise, even if all the evidence points towards Gaia's existence, there is no possible—even on principle—empirical evidence that could be brought forth to demonstrate her existence to one who systematically doubts. She is at best a scientific theory and never a scientific fact and elevating her to the status of fact collapses the difference between both, and so transforms radically the sense and meaning of modern science. This has not kept Latour from attempting to read the history of science as theodicy of her revelation through scientific facts. This is precisely the meaning of his account of Anthropocene, the coming of which, for him, reveals self-realization to humankind that it is mastered by the sovereign Gaia, a being who despite all of our deluded promethean efforts at denial, we now know to be "the final judge" (p. 6080). But the cost of this re-reading of the history of science as gospel is the undoing of scientific authority by confounding it with metaphysics, and in so doing transforming science from rational fact-finding into myth-making, and with a corresponding transformation of facts into fetishes (Latour, 2009).

In other words, transcendental moralizing only has sense for those that already stand within the Sustainabilist field of sense. For the others, these

arguments for Gaia as a historical force only serve to undermine the misguided and fantastic elements in Sustainabilism, while additionally shedding light precisely on the limits of this picture of reality, in particular its tendency to put stress on the significance of certain evidence while passing over other elements as meaningless. It is just this meaningless evidence that is most key for the Developmentalist sense of sustainable development.

3.2 - Developmentalism

The sense of Developmentalism derives from the idea that growth is always possible, with this seemingly paradoxical idea being supported by an anthropological thesis regarding the fallibility of the human perception of limits and an empirical thesis based on the historical experience of modernity. The justification for this otherwise irrational perceived need to continue growing is expressed perfectly by Naveen Jain (2018, pp. 10-11), who, in a rather striking turn of phrase, calls Sustainabilism “unsustainable.” What he means by this is that one of the results in believing in limits is scarcity itself, since an irrational fear of risk-taking can prompt us to embrace a future in which we consent to simply manage our ever-dwindling resources until they are gone, rather than boldly endeavoring to find new ones which may help us to aid the millions worldwide that are even now living in extreme poverty. Of course, given that there is no proof that abundance is possible, and no way of demonstrating that the limits that we perceive are always false, nor any reason to believe that there is no ultimate limit to growth (perceived or not) this way of understanding sustainable development is ultimately as fragile as Sustainabilism.

3.2.1 - Evidence

Given the seemingly paradoxical idea animating Developmentalism, the production of historical and empirical evidence to support the idea that Developmentalism is critical. Popular examples are both macro-historical and micro-historical. Macro-historical evidence for the coherency of Developmentalism as a project can be found in the history of the development of modern civilizations, sometimes (and mostly polemically) described as the Enlightenment. Thus, according to intellectuals such as Steven Pinker (2018), what history teaches us is that human beings are fantastically capable of progress, i.e. of transcending past limits. More specifically focusing on sustainability discourse, Patrick

McCray and others have pointed out the ways in which previous descriptions of the limits to growth—including the prognostications of Malthus, Jevons, and even the authors to the *Limits to Growth*, have always been wrong with respect to the specific details of their analyses of limits and the impacts of limits, and this is because technological innovations are ways of transforming what was previously inaccessible into fuel for growth. Many extreme Sustainabilists follow Peter Diamandis and Steven Kotler (2012) in being so impressed by the historical evidence of the sustainability of growth that they suggest that perpetual growth is not only possible, but (drawing on the historical case of the biannual doubling of microprocessor speeds known as Moore's Law) both law-like and exponential. Focusing on micro-scale evidence, Sustainabilists are keen to find examples that amount to squaring the circle—cases in which the seemingly impossible paradox of increasing growth while maintaining sustainability is shown to be possible. John Elkington, an economist who developed one of the most commonly used indexes for measuring sustainability, the triple bottom line, in which the economic, the ecological, and the social are all seen to balance, calls these “green swans,” explaining that even if examples where growth comes with diminished environmental impact and improved social well-being seem “statistically improbable” these “miracles” do happen, and this ought to give us confidence that it is possible for us to conceptually “step into a larger world in which new things are possible” (2020, p. 24).

Of course, Sustainabilists have a strong case against these positions. As we have seen via our interpretation of Latour, they see their own position as the culmination of lessons of science. They also find it quite simple to point out just how exceptional or even non-miraculous green miracles are, and they do so by precisely putting supposedly green innovations within a larger and more holistic context. For example, many green innovations—for instance electric cars—balance on the triple bottom line with respect to existing technologies like gasoline cars but aren't sustainable when seen within a larger time frame. This insight has prompted some de-growth advocates to insist that the entire concept of green growth is invalid (Hickel, 2020). Supporting this view, Sustainabilists can also draw on known phenomena such as the “paperless office paradox” (Moore, 2015). This refers to the empirically observed phenomenon that even innovations that are clearly better in terms of material and energy costs (for example moving from printing documents on real paper to merely producing documents electronically) often yield less sustainability (more energy and resource consumption)

because the workers interacting with these new technologies see and use them with the wrong mindset (striving for growth, and believing their dematerialized activities sustainable, workers in paperless offices increase the baseline production, circulation, and storage of information.)

3.2.2 - Exo-Horizons

One way of escaping from these sorts of critiques and perpetuating the rational gamble that is growth fueled development is to highlight alternative horizons in which obtaining new resources not only seems possible, but inevitable. This is easier than it might seem, both because most existing growth (and sustainability issues) as well as most of the critiques of growth made by Sustainabilists, focus on growth as understood within a natural or anthropic perspective and with respect to the planet seen as a maximal scalar unit. Some popular exo-horizons or solutions to the problem of constrained resources include:

1. Expansive sustainability: Advocates of expansive sustainability insist that the solution to all the Earth's resource problems is to be found by expanding out into the solar system. Jeff Bezos, Elon Musk and others claim that once we are able to tap into "the virtually unlimited resources of space" (Bezos, 2021, p. 147), then we will enter into an age of what Joseph Pelton (2017) calls "astral abundance."
2. Intensive sustainability: The idea behind intensive sustainability is that growth can be had through miniaturization. The idea that shrinking our growth is possible (outside of SF) is doubtless to be attributed to Nano-tech pioneer and advocate Eric Drexler. As he argues, quoting the physicist Richard Feynman, there is plenty of room at the bottom, and by scaling down our production we still have massive room to achieve "increased capacity and reduced production costs" (2013, p. 222).
3. Virtual sustainability: The idea of virtual sustainability could also be described as dematerialized sustainability. The general idea is that by replacing material goods and services with virtual ones, we can grow the economy while reducing our resource use. Andrew McAfee (2019) has shown that the miniaturization of computers, the Internet, and other digital technologies has allowed us to enter into an era of "dematerialized growth" in which the substitution of "bits for atoms," helps us to "consume more and more while taking less and less from the planet" (3).

None of these alternate horizons is de-facto unlimited. Moreover, as Vaclav Smil has pointed out, "arguments about the impressive miniaturization (and hence dematerialization) of modern electronics are based on faulty assumptions. Smartphones may be small and light but their energy and material footprints are surprisingly large" (Smil, 2019, p.

500). Yet it remains true that these exo-horizons do offer sufficient leverage for re-thinking the limits to growth. However, taking advantage of this externality relative to the consensual limits of growth comes at the cost of abolishing the reality of the horizon of sense possessed by the Earthlings that we currently are. These alternative horizons for the limits of growth imply exo-interpretations of the meaning of the human body and of human rationality. They are post-human insofar as they require transcending—either literally or figuratively—the Earth-evolved and hence Earth-bound biological bodies and senses of reality that are our own. It is perhaps on this point that Sustainabilism and Developmentalism become “incommensurable” (to borrow Kuhn’s term (2000)) to the point that there is no possible translation between the uses of sustainable and development as they exist within each language community. Stated somewhat otherwise, the very idea that these exo-horizons exist posits a fundamental ontological gap between what Sustainabilists and Developmentalists count as existence, history, reality, and humanity.

3.2.3 - Transcendence

Just as Sustainabilism seems to descend towards a mythology about nature, Developmentalism’s embrace of exo-horizons seems to thrust humankind forwards into science fiction. How, after all, can human’s find a form of life in correspondence with the possibilities opened by the exo-horizons if it is not via a transcendence of their humanity, a leaving behind of their state as embodied Earthlings? Extensive sustainability, for example, seems to make good sense only if we ignore the very real limits of our human bodies, which as Sylvia Ekstrom and Javier Nombela (2020) have pointed out, are incredibly ill-adapted to the rigors of life off-planet. Indeed, the only foreseeable way of taking advantage of these newfound limits seems to be via the almost incredible transformation of ourselves into post-humans, “immortal software-based humans, and ultra-high levels of intelligence that expand outward in the universe at the speed of light” (Kurzweil, 2008, p. 1). The same obviously goes for downsizing as well as for transforming us into beings that can somehow live out our lives entirely in cyberspace. Only after the coming of the Singularity—the moment when computer intelligence surpasses human intelligence—as well as the coming of the uploading—the moment when we become one with our machines—can we really and coherently believe that Developmentalism has been a coherent program that has accomplished (to re-tweet Elon Musk) the perpetuation of “the light of consciousness” (2020) into the indefinite future of the universe.

All of this sounds both slightly crazy and indeed substantially impossible. It is doubtless for this reason that Developmentalists are so fond of affirming the power of human rationality even as they fantasize about the coming of a hyper-rationality beyond our rationality, a rationality that will arrive when wetware is replaced by hardware. Rebecca Henderson, a Harvard Business School professor, for example, affirms that “humans are infinitely resourceful,” capable of developing the technology and discovering the resources “to fix the problems that we face” (2020, pp. 11-12). Other Developmentalists, more conscious still of the limits of our ability to overcome our limits, seem to want to push us towards madness or even self-annihilation. Many urge us to consider moonshots or loon shots, radical attempts to obtain new resources that if they succeed would demonstrate the small-mindedness of common sense. As Naveen Jain writes: “People often say the sky is the limit. The sky is not the limit. There is no such limit. It is an artificial boundary. Imagination is our only limit. If we can imagine something then we can accomplish it” (2018, p. 54). Fixing our problems thus becomes as much about questions of psychology as it does about questions of engineering with limited resources, such that the contents of our thinking on how to become sustainable include quests after irrational-seeming forms of higher rationality, trance states that are described as Csikszentmihalyian “flow” states (1990), and understood as the key to stealing fire from the gods or uncovering the enigmas of the Eleusinian mysteries (Wheal & Kotler, 2017). As Google founder Larry Page puts it: “Good ideas are always crazy until they’re not.”¹ In this way Developmentalism seems to push us towards a posture in which embracing the belief in sustaining human development is akin to affirming our willingness to tragically gamble with all our lives. As Diamandis and Kotler re-phrase it: “Fail early, fail often, fail forward!” (2012, p. 114). The failure referred to here is not just the failure of a capital investment, but the failure of the human odyssey, with the paradoxical feature of success being itself the annihilation of the human, the transcendence of its material self, an escape from what science fiction author Greg Egan, alluding to the writings of J.D. Bernal (2017), and writing from the imagined viewpoint of a fully realized post-human consciousness called the “flesh:” “disease and aging” “gravity, friction, and inertia” the physical world understood as “one vast, tangled obstacle course of pointless, arbitrary restrictions” (1995, p. 59).

4 - Tragedy, Acceptance, and Avoidance

I find no satisfaction in the extreme futures articulated in the

Sustainabilist and Developmentalist senses of sustainable development. The futures that they portend—one in which we have perhaps sacrificed collective well-being for a perpetuation in an existence that seems to fall short of our collective potential, and the other in which all the meaningful qualities of existence seem shorn away in a mad drive towards infinite persistence—seem equally unpalatable. Doubtless all readers have a preferred bias for making sense of sustainable development, a justification for why they find the sense that they accord to sustainable development to be the justified one, the one that we want to teach to our children, to perpetuate in our classrooms, acting in light of what John Urry (2016) has called the performativity of our anticipated futures, our sense that what we say will likely come to be. Doubtless most readers will want to deny that their sense of sustainable development necessarily entails the radical and even tragic conclusions that I have drawn from it above, though I would be willing to argue that this is more a testimony of their refusal to push their perspective to its extremes than a testimony to the specific virtues of their alternative posture. There is, I don't doubt, a sense of existential exigency on the part of both communities of language users which drives them to embrace sustainable development whatever its inconvenients. Doubtless they believe that whatever the dissatisfactions of their position, we must act now, we must embrace sustainable development and use it to transform our educational institutions, with this conviction being coupled with an equally strong or stronger belief that embracing the alternative face of the sustainable development duck-rabbit poses an even greater risk to our collective future than doing nothing at all. There is, I want to say, a collective feeling that we are on the edge of tragedy, and that somehow embracing sustainable development and using this concept to reform our educational institutions is the only solution.

I have no reassurances to offer on this account. To the contrary, I would argue that there is something within the very pretention to think development sustainably, namely, to extend development out into an infinite or at least indefinite future, that overstretches the bounds of ordinary language and leaves us on a slippery logical grounds, putting us in a situation in which the right sense of our words, and the right course for our collective actions, becomes both ambiguous and lacking in the friction that is required for really rational collective action. This, I want to say, also feels tragic. It feels as if we are akin to those heroes in tragedy who, no matter what we do, find ourselves at the fate of the gods. But this is a different tragedy from the one that we perhaps imagine impends

upon us. I would say that at least from the point of view of those who wish to think about sustainable development and its implications for education the acknowledgment of this situation, not knowing what sustainable development really means is not a tragedy at all.

Stanley Cavell has described philosophy as “the education of grownups,” (1979, p. 124) and he sees it as emerging in the moment when those who are purported to be the teachers learn that they have something to learn—perhaps even from their charges. This turn to philosophy—this acceptance that we have something still to learn in the context of thinking about sustainable development—comes about when we “convene our culture’s criteria” (124), our sense of how and why and where we use our words, and we find them thin, or conventional, or inadequate. It is my own sense that Gaia and the Singularity are synonyms for precisely the thinness of our collective criteria, the inadequacy of our current sense of sustainable development, and perhaps also of the danger of passing on these terms to our children as the core and central idea within our culture and our curriculum, no doubt in part because as educators this can only undermine their sense that we do have something meaningful to teach them. But tragic as this inadequacy of sense may feel, existentially critical as it may appear, it is not in itself the end of the world but rather an occasion for our own education as educators. My point, then, is not that we should or even could banish sustainable development talk of all sorts from our curricula, but rather that we collectively, need to acknowledge that we have much to learn. We need to begin to think deeply about whether the right term is sustainable development, and to do this we need to dig deeply into our criteria, our sense what means what and why, with this sensing out bearing not only on material things but also on all aspects of the human reality that we transmit to our children, all of our shared “routes of interest and feeling, modes of response, senses of humor and of significance and of fulfillment, of what is outrageous, of what is similar to what else, what a rebuke, what forgiveness, of when an utterance is an assertion, when an appeal, when an explanation—all the whirl of organism Wittgenstein calls “forms of life” (Cavell, 2015, p. 52).

Having conversed about all of this, perhaps then we can begin thinking about what it is that we really do want to project into our future, what we really do want to put within the gaping and ambiguous place held now by this forking thing that we call sustainable development. I think that the outlines of this other thing will emerge only when we remove questions of limits and infinite growth, all ideas about perpetual survival and infinite

expansion. Perhaps we will choose to consider the forms of human life that are not now present but which we, without hesitation, want to call realistic, by which I mean that their realization will not entail the negation of some aspect of our current human existence which we hold dear. Perhaps in this search for realistic new forms of life we may be inspired by alternative futures proposed by those now speaking and writing in a minor key, indigenous futurisms, afro-futurisms, feminist futurisms and so forth. Or perhaps we will decide that the real way of learning to think and talk sustainably involves summoning up not our criteria but re-imagining our educational institutions in such a way as to encourage our students to create and to speak out their own ideas regarding the future, to give them space and time to dream and to create futures that they themselves want to live. Based on the actions and forms of life embraced by the Greta Thunberg and the other young members of Extinction Rebellion, these futures may be, in our terms, be more radically Sustainabilist than those we might seek to impose on them, or they may be, to the contrary, images of a Developmentalist future that precisely illustrates our own norm-blinded projective limits and the Developmentalists infinite faith in human creativity. In either case, though, there is doubtless some justice in reforming our curricula to empower our descendants to create the futures that they will live.

As a first step towards getting to this point, it would behoove us to acknowledge that we do not really know what we are saying when we talk about sustainable development, and that this is no tragedy but the comic reality of human reason. Perhaps it would likewise behoove us as educators to pitch our future concerns—both in terms of our own activities and the ways in which we integrate them into an educational context—lower, by which I mean that we should focus on directing our care towards concrete environmental and social problems, missions and goals that have a clear sense and with respect to which we can make clear headway, recognizing that in acting towards these goals we will be moving towards sustainable development however we might want to describe it, and acknowledging that as teachers we are at least bound to try to make sense, or that we are at least bound to propose puzzles to our students of such kind as to permit them to make sense of things for themselves. I suppose that in simplest terms I find it tragic that we, as adults and educators, strive so hard to avoid humbly acknowledging before our students that we do not know the future, that we do not yet hold the keys to sustainable development. Which is hardly to say that we know nothing or have nothing to do. But it is perhaps to say the rage for

sustainable development reform in this age of sustainable development needs to take its own significance with a grain of salt—a touch of skepticism and an ounce of wisdom.

Bibliography

- Bernal, J. (2017). *The World, The Flesh, and the Devil*. New York: Verso.
- Berners Lee, M. (2019). *There Is No Planet B: A Handbook for the Make or Break Years*. New York: Cambridge University Press.
- Bezos, J. (2021). *Invent and Wander* (Kindle ed.). Boston MA: Harvard Business Press.
- Blumenberg, H. (2019). *History, Metaphors, and Fables*. (H. Bajohr, F. Fuchs, & J. P. Kroll, Eds.) Ithaca: Cornell University Press.
- Brundtland, G. H., Khalid, M., Agnelli, S., Al-Athel, S., & Chidzero, B. J. (1987). *Our Common Future*. New York.
- Carlowitz, H. C. ((1713) 2009). *Sylvicultura oeconomica*. (P. Warde, Trans.) Leipzig: Johann Freidrich Braun.
- Cavell, S. (1979). *The Claim of Reason*. New York: Oxford University Press.
- Cavell, S. (2015). *Must We Mean What We Say?* London: Cambridge University Press.
- Clarke, B. (2019). *Gaian Systems*. Minneapolis: University of Minnesota Press.
- Csikszentmihalyi, M. (1990). *Flow: The Psychology of Optimal Experience*. New York: Harper Collins.
- Daly, H. (1977). *Steady State Economics*. New York: Island Press.
- Diamandis, P., & Kotler, S. (2012). *Abundance: The Future is Better than You Think*. New York: Free Press.
- Diamond, J. (2004). *Collapse: How Societies Choose to Fail or Succeed*. New York: Viking.
- Drexler, E. (2013). *Radical Abundance: How a Revolution in Nanotechnology will Change Civilization*. New York: Public Affairs.
- Egan, G. (1995). *Diaspora*. London: Orion.
- Elkington, J. (2020). *Green Swans: The Coming Boom in Regenerative Capitalism*. New York: Fast Company.
- Estrom, S., & Nombela, J. (2020). *Nous ne vivrons jamais sur mars ni ailleurs*. Lausanne: Favre.

- Fisher, M. (2009). *Capitalist Realism*. London: Zero.
- Hardin, G. (1993). *Living Within Limits*. New York: Oxford University Press.
- Henderson, R. (2020). *Re-Imagining Capitalism in a World on Fire*. New York: Public Affairs.
- Hickel, J. (2020). *Less is More*. London: Random House.
- Jain, N. (2018). *Moonshots: Creating a World of Abundance*. New York: Moonshots Press.
- Jevons, W. (1866). *The Coal Question; An Inquiry Concerning the Progress of the Nation, and the Probable Exhaustion of Our Coal Mines*. London: McMillan.
- Kuhn, T. (2000). *The Road Since Structure*. Chicago: University of Chicago Press.
- Kurzweil, R. (2008). *The Singularity is Near*. New York: Penguin.
- Latour, B. (2009). *Petite réflexion sur le culte moderne des dieux Faitiches*. Paris : Les Empêcheurs de penser en ronde.
- Latour, B. (2015). *Face à Gaia : Huit conférences sur le nouveau régime climatique*. Paris: La découverte.
- Malthus, T. ((1815) 1992). *An Essay on the Principle of Population*. New York: Cambridge University Press.
- McAfee, A. (2019). *More From Less*. New York: Scribner.
- Meadows, D., Meadows, D., Randers, J., & Behrens, W. (1972). *The Limits to Growth*. New York: Universe Books.
- Moore, J. (2015). *Capitalism in the Web of Life: Ecology and the Accumulation of Capital*. New York: Verso.
- Musk, E. (2020, June 1). Elon Musk Status. Retrieved from Twitter.com: <https://twitter.com/elonmusk/status/1267531196751323144?lang=en>
- O'Neill, G. (1977). *The High Frontier*. New York: William Morrow.
- Pelton, J. (2017). *The New Gold Rush! The riches of space beckon*. Cham, Switzerland: Springer.
- Pinker, S. (2018). *Enlightenment Now: The Case for Reason, Science, Humanism, and Progress*. New York: Penguin.
- Rockstrom, J., & Klum, M. (2015). *Big World Small Planet: Abundance Within Planetary Boundaries*. New Haven: Yale University Press.
- Sachs, J. (2015). *The Age of Sustainable Development*. New York: Columbia University Press.
- Smil, V. (2019). *Growth: From Micro-Organisms to Mega Cities*. Cambridge MA: MIT Press.
- Thornley, R. (2019). *Moonshot Innovation: How You Can Positively Benefit a Billion People*. New York: Create Space.

Urry, J. (2016). *What is the Future?* London: Polity.

Wheal, J., & Kotler, S. (2017). *Stealing Fire: How Silicon Valley, the Navy SEALs, and Maverick Scientists Are Revolutionizing the Way We Live and Work*. New York: Dey Street Books.

¹ Quote is from Ashlee Vance's (2015, p. 354) biography of Elon Musk.