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BIODIVERSITY: REGARDING ITS ROLE AS A BIO-INDICATOR FOR HUMAN CULTURAL ENGAGEMENT

Abstract

After wondering why environmental aestheticians tend to undervalue biodiversity as an indicator of nature's well-being, I discovered that Philosophy and Science are in a face off regarding biodiversity's utility. For the most part, philosophers meet science's confidence regarding biodiversity with skepticism. Rather than get bogged down in technical disagreements between scientists and philosophers over the possibility of measuring and utilizing biodiversity, this paper sidesteps that conflict by turning to the relationship between biodiversity and cultural engagement. By describing: the link between spoken languages and species diversity, the significance of cultural differences, the role of cities and remote communities in encouraging and safeguarding biodiverse habitats, and the heterogeneous nature of difference itself when determining biodiversity; I effectively demonstrate how human beings who value their own culture protect nature, which reveals the most important reason to value biodiversity. Biodiversity may be impossible to track, extremely difficult to measure, and shares no correlation with stability, yet no other yardstick indicates cultural proliferation. This paper surveys three ways in which biodiversity can serve as a bio-indicator for human cultural engagement, just as lichens are bio-indicators for air pollution, ozone depletion, and metal contamination.

1. Introduction of the problem (the face-off)

Several environmental aestheticians view aesthetic properties as opposed to biological ones like ecosystem function, stability, variability (genetic, molecular, species), to be appropriate assurances of nature's well-being. Arnold Berleant, Emily Brady, and Ned Hettinger represent the core of environmental aestheticians who routinely defend this view¹. Since environmental aesthetics is an offshoot

¹ Berleant 2004: 76-88; Brady 2004: 156-169; 2008: 397-412; Hettinger 2008: 413-437.

of Aesthetics, it's hardly startling that some aestheticians have opted to correlate nature's well-being with its appearance. And numerous examples appear to affirm this view, especially when pristine nature is their reference point. Consider crystal-clear lakes versus those with white bubbling-foam floating across them or dynamic forests providing animal habitat versus those with a paved road running down their centers, thus inviting deforestation. I worry however that any straightforward assumption that pristine nature is beautiful, let alone particularly appealing to human eyes, is flawed from the get go. Recall Lady Bird Johnson's national campaign, while First Lady, to germinate wildflowers, which had been demonized as weeds until she popularized them. Incidentally, she considered her wildflower campaign equally scientific, since she believed that wildflowers, especially native plants, could restore the health of the land, a view that seems obvious today, but was totally outré during the late sixties². One imagines her audacious campaign butting heads with the United States' multi-billion dollar gardening, seed-manufacturing, nursery, and lawn-care industries, who most likely had a hand in persuading the public to view wildflowers as uglier than cultivated flowers.

Three other cases that challenge the necessary correlation between appearance and well-being include mole hills, post-volcano landscapes, and gorgeous sunsets. Along Belgian country roads you can regularly see signs advertising exterminators' services to kill moles, presumably because they leave unsightly, random dirt piles around farmers' fields, people's lawns, paddocks, and kitchen gardens. Problem is, the soil that moles dig up is truly invaluable, since moles are especially drawn to loam soils (more nutrients, moisture, and humus than typical soil) and aerate the soil while making mole hills. Farmers and families who witness the arrival of mole hill deposited on their properties should be grateful, yet they often treat such gifts as eyesores. Similarly, when volcanoes blanket entire expanses with their black sooty ash and fiery lava, some people might imagine such destruction as the devil's work, yet scientists welcome it as a boon for releasing nutrients and hastening growth. By contrast, people sometimes admire a sunset only to discover that it's hardly gorgeous at all, as when the ordinarily «vibrant oranges and reds of "clean sunsets" give way to pale yellows and pinks when dust and haze fill the air»³.

Although I am quite leery of appearance-centric methodologies, I rather sympathize with the problem Aestheticians aim to resolve here. I imagine them thinking that if they can show people that they really do (already) appreciate nature, then these same people will be actively inclined to safeguard nature. The more people are convinced that they appreciate nature, the more inclined they will be to commune repeatedly with nature, thus increasing the likelihood that

² http://www.pbs.org/ladybird/windingdown/windingdown_report.html.

³ <http://www.spc.noaa.gov/publications/corfid/sunset/>.

they will notice visible changes that signal improved health or degradation. Either way, people will be far more inclined to react on nature's behalf, in light of their greater appreciation of nature's existence, their admitted fondness for nature, and their heightened awareness of nature's vulnerability. Whether bird watchers, deer hunters, tree huggers, gardeners, or nature hikers, the more people engage particular ecosystems, the more sensitive they will be to its ongoing changes.

Given the far from direct relationship between beauty (to human eyes) and well-being, I worry that aesthetic appreciation only goes so far in protecting nature. As briefly noted above, it was not uncommon until quite recently for nature lovers to deem potentially entropic, cultivated gardens that require routine maintenance far more aesthetically pleasing than self-sustaining wildflower meadows. A swamp, compost heap, or forest fire considered ugly (or dangerous) by nature lovers could very well be far healthier than clear rivers or invasive blooms that look and smell swell, but are actually destined toward disequilibrium. Eager to identify a gauge that could assist aesthetically-minded environmentalists' quest to safeguard nature, I first considered delimiting changes in entropy, whose upticks are usually perceptible⁴. Realizing that by the time entropic upticks are noticed, it's often too late, I concluded that biodiversity monitoring could offer a better gauge for well-being, especially since nearly 200 nations have already committed to doing this. The 1992 United Nations Earth Summit defined biological diversity as «the variability among living organisms from all sources, including, *inter alia*, terrestrial, marine, and other aquatic ecosystems, and the ecological complexes of which they are part: this includes diversity within species, between species, and of ecosystems»⁵. The notion of biodiversity employed throughout draws on environmental philosopher Andrew Light's approach, whereby diversification reflects both numerical and qualitative differences occurring within and between habitats⁶. Notions of difference relevant to biodiversity are discussed in more detail in Section 4. Although biodiversity requires far more resources to track, it offers the best yardstick since its monitors can anticipate, rather than merely react to entropy upticks that tend to engender irreversible patterns.

Since declining biodiversity typically engenders entropy spikes (greater disorder), changes in entropy seem inversely correlated with biodiversity shifts, yet biodiversity philosopher Sahotra Sarkar notes that not only has this correlation

⁴ In response to Ned Hettinger's keynote paper "Prospects for Aesthetic Preservationism," which he delivered during "Values in the Environment: Relations and Conflicts" (2013) conference (X IIAA Conference on Environmental Aesthetics), I pointed out that his aesthetic model neglects entropy.

⁵ Hawksworth 1996: 6.

⁶ Light *et al.* 2007: 168.

not been proven, but it's uncertain whether natural ecosystems are in equilibrium⁷. To demonstrate the difficulties of proving causation between biodiversity and ecosystem functioning, biologist Michael Scherer-Lorenzen offers the example of plotted forest data that captures growth rising rapidly (asymptotically) as the number of different trees in the canopy increase. One is tempted to conclude that the «higher diversity of trees enhances productivity due to functional differences between species leading to higher resource exploitation and hence, higher growth». Problem is, the opposite explanation also works, as «more productive stands may simply permit the co-existence of more species. Thus cause and effect cannot be disentangled from observational and comparative studies»⁸. That said, Scherer-Lorenzen contends that ecosystem functioning depends on biodiversity, as opposed to biodiversity depending on some combination of climate, nutrients, and disturbance⁹. Species depletion has typically been viewed as the result of some combination of reduced access to nutrients (including water and sunlight), competition from invasive species, and human incursions. Here I have in mind the way soil erosion reduces animal habitat, desertification diminishes human access to food and water, fertilizer runoff (from lawns and monoculture farming) spawns algal blooms, and development facilitates flooding.

The above environmental aestheticians who credit aesthetic appreciation with motivating human beings to care for nature effectively discount biodiversity's significance for aesthetics on two fronts. They not only dismiss biodiversity's potential as a measure of nature's well-being, but they overlook its secondary prospect as a bio-indicator for human cultural engagement. Given the variety of ecological models (stochastic, statistical, or otherwise) for measuring biodiversity, plus the ordinary difficulties of differentiating species, tracking population fluctuations, and cataloging changes, it's little wonder most philosophers such as Sarkar remain skeptical¹⁰. Communities are left to react as entropy upticks visibly indicate an ecosystem's escalating destabilization.

Despite the obvious difficulties of measuring biodiversity, one still imagines expending less energy identifying and resolving events that are likely to incite disequilibrium than reversing their outcomes. While Sarkar remains skeptical of biodiversity's measurability, let alone its predictability; scientists like John Harte and colleagues¹¹ are confident that deriving maximum entropy is doable and necessary. Given the apparent difficulties associated with assessing biodiversity

⁷ Sarkar 2005: 115-119.

⁸ Scherer-Lorenzen 2005:229-242.

⁹ Scherer-Lorenzen attributes the Biodiversity-Ecosystem Function Paradigm to Shahid Naeem's 2002 article "Ecosystem Consequences of Biodiversity Loss: The Evolution of a Paradigm".

¹⁰ Sarkar 2005: 174-175.

¹¹ Harte *et al.* 2008: 2700-11.

or its potential counterpoint, maximum entropy, this paper seeks to bypass this academic impasse by exploring biodiversity's potential as a bio-indicator for human cultural engagement. It is thus hoped that biodiversity appreciation will prove win-win, especially for environmental aestheticians who have heretofore privileged aesthetic appreciation. It's important to note that my view offers a strategy for bolstering approaches that emphasize human aesthetic potential, and is not meant as an aesthetic defense of biodiversity conservation.

Just as lichens are bio-indicators for air pollution, ozone depletion, and metal contamination, this paper surveys three ways that havens for localized biodiversity serve as bio-indicators for human cultural engagement. To arrive at the point where nature, which some aestheticians frame as useless in order to aesthetically appreciate it, can occupy a functional role (like a bio-indicator) first requires dispelling the Kantian myth of "free beauties". As we shall soon see, it's a misnomer and a misgiving for Aesthetics to treat nature like a "free beauty", even if viewing it thusly facilitates the jump from ordinary bits of nature to treating them as artworks. I next juxtapose the relationship of species interactions, emphasized by Light and his colleagues, to the notion of *différance* popularized by continental philosopher Jacques Derrida. Lastly, I discuss Jean-François Paquay's *Portager* (2012-present), a public artwork growing on the terraces of a Belgian university building that is effectively a sculpture, farm, and biodiversity laboratory. Even if philosophy and science are in a face off regarding biodiversity's accuracy or predictability, more and more evidence suggests that biodiversity and cultural proliferation go hand in hand. This realization should be sufficient for environmental aestheticians to recognize biodiversity's relevance to their field.

2. *Biodiversity and human cultural engagement*

Since six of nine countries, where the largest number of languages are spoken, provide habitat for the greatest diversity of plants and animals, one might assume a link between biodiversity and cultural diversity. To be precise, of nine nations where 60% of the world's remaining 6500 languages are spoken, six (Mexico, Brazil, India, Indonesia, Democratic Republic of Congo, Australia) are also centers of mega-diversity for flora and fauna¹². My hunch is that the same factors, like local cultures and protective habitats that enable obscure languages to endure, are those that ensure that multiple species survive. To anthropologists who study local cultures, this comes as no surprise. To others, it seems wholly irrelevant, since the kinds of places where diverse species and obscure languages thrive are really not the regions where the arts thrive. Yet

¹²Nabhan 1999: 105.

when one thinks about it, one also realizes that the more remote the culture, the more likely its members are to have particular conventions (cuisine, dress, rituals, crafts, etc.). Conventions that capably adapt to periodic invasions prove crucial to a community's sustainability. I employ the term convention instead of tradition, since conventions evolve, even if outsiders do not recognize this. In fact, nothing is more stultifying to remote cultures than invasive tourists whose rote consumption of yesteryears souvenirs warrants their repetitive production, long after their cultural significance ended.

Secondly, the co-existence of multiple languages amidst shared habitats exemplifies respect for different peoples, which encourages the proliferation of various cultures to persist and interact with one another. While cultures may enjoy conventions, art's capacity to adapt and evolve over time is often the result of multiple cultural backgrounds intersecting and fusing into new forms. Here I differentiate culture, which fosters a particular community's identity, and thus includes language; from art, which is typically idiosyncratic and furnishes an individual his/her identity. Communities that host multiple cultures and encourage them to intersect facilitate experimentation, human engagement, and art's ever-changing course. Just as the nine nations hosting 3900 languages are macrocosms of diversity, cities thrive as microcosms of diversity.

Thirdly, since biodiversity characterizes inter-habitat differences, not just the availability of the species variety, cities that attract artists from disparate communities facilitate dynamic artistic outputs, as artists encounter both new experiences and unfamiliar audiences. Consider Flemish painter Jan van Eyck traveling to Lille as a court painter for Philip the Good during the early 15th century, Venetian painter Titian working for Kings Charles and Philip II in Madrid during the 16th century, Hannoverian George Handel moving to London to be court composer to King George I during the early 17th century, Paris Surréalistes inhabiting New York City during the early forties, Beijing artists immigrating to Paris in the late eighties, artists from everywhere moving to Berlin in the nineties, and more recently African artists descending on Brussels. It is unlikely that these artists would have left their legacies had circumstances not required them to leave home. The convergence of difference galvanizes new forms of art-making, as foreign artists are exposed to many more artworks and cultures amidst unfamiliar environments.

Of related interest, biologists increasingly attribute the success of urban apiaries to cities' heretofore untapped pollinating opportunities over rural communities, increasingly blanketed with monoculture farms that depend on pesticides and herbicides to reduce competition from insects and weeds. A greater species pool might augment inter-species interactions, and thus reduce access to invasive species. As hosts to diverse cultures, it is hardly surprising that cities are increasingly becoming biodiversity centers. A 2002 Argentinean study compared the biodiversity index of exotic flora and birds in urban Buenos Aires, an urban reserve, suburban, and rural communities. «The biodiversity index for birds

(BiB) shows the same trend as that for native plants, with the highest value in the urban reserve»¹³. The researchers' conclusions are particularly relevant here:

All biodiversity indexes of plants in the present rural areas are lower than the values observed in urban parks. This indicates for the study area, that the effects of urbanization on the plants have a lower influence than agriculture. [...] Size and nature of anthropogenic and natural events influences species diversity, with a peak frequently being found where the disturbances are intermediate. The results are also coincident with those of Blair (1996), who found major diversity of native and alien species at intermediate levels of urbanization.¹⁴

Three corollaries can be distilled from these points.

i) A breadth of human languages correlates with biodiversity.

Corollary: Human beings who value their culture protect their natural environment.

ii) Languages tend to survive where diverse species thrive.

Corollary: Respect for habitat encourages cultural diversity and biodiversity.

iii) Biodiversity is relational and interactional with human beings.

Corollary: Mixing it up, difference, and convergence compound biodiversity.

3. *The myth of nature as a free beauty*

Historically, Aesthetics, though not Ethics, has primarily been concerned with the study of beauties that are considered good for their own sakes, that is, freed (as opposed to appendant) from some particular *telos*, interest, defining concept, purpose, or function. To make a case for the significance of biodiversity as an indicator of an ecosystem's well-being, I must demonstrate that nature, including wilderness, is no more a free beauty than Immanuel Kant's "horse" or "maiden". That Kant identifies tulips as "free beauties of nature" partly explains why some environmental aestheticians still cling to the ideal of nature as a free beauty.

But the beauty of man (including under this head that of a man, woman, Child), the beauty of a horse, or of a building (such as a church, palace, arsenal, or summer house), presupposes a concept of the end that defines what the thing has to be, and consequently a concept of its perfection; and is therefore merely appendant beauty. Now, just as it is a clog on the purity of the judgment of taste to have the agreeable (of sensation) joined with beauty to which properly only the form is relevant, so to

¹³ Faggi 2008: 384.

¹⁴ *Ibidem*: 385-386.

combine the good with beauty (the good, namely, of the manifold to the thing itself according to its end) mars its purity.¹⁵

Moreover, the pleasure in «aesthetic judgments is [...] merely contemplative and does not bring about an interest in the object»¹⁶. It's no wonder that those environmental aestheticians who deem aesthetic appreciation a good in itself dissolve aesthetic objects of *telos*.

Given human beings' cherished interactions with nature, it's rather difficult to imagine human beings contemplating nature without also developing a keen interest in it. In lieu of developing an interest in the object under contemplation, Kant deems «[t]he consciousness of mere formal finality in the play of the cognitive faculties of the subject attending a representation whereby an object is given, [a]s the pleasure itself, because it involves a determining ground of the subject's activity in respect of the quickening of its cognitive powers»¹⁷. No wonder aestheticians often focus on aesthetic appreciation's side-benefits, such as the pleasure aroused when one appreciates something aesthetically, the satisfaction gained from determining a meaning, the joy gained by sharing one's excitement about an aesthetic experience, the therapy received from the artwork's prompting self-reflection, or the ideas inspired from others' imaginative solutions.

Michael Pollan's bestseller *The Botany of Desire*, which describes tulips co-evolving with bees and humming birds, dispels the myth of tulips as "free beauties", while demonstrating their *telos*. Flowers reproduce via pollination, facilitated by bees and butterflies in search of food. Just because human beings cannot divine some concept or purpose to justify flowers' beauty, this hardly means that their beauty is functionless. Artworks too have long been considered free beauties, since no apparent concept presupposes what kinds of objects artworks are. However unrecognizable, artworks also serve functions (created to be sold, provoke thought, provide status, or gain attention), though very few have practical uses. One example of a practical artwork is Patricia Johanson's *Ellis Creek Water Recycling Center* (2000-2009), which serves the City of Petaluma, USA. This massive outdoor installation, modeled after a field mouse's head, cleans stormwater runoff, transforms sewer waste into irrigation water, and provides a public park¹⁸. Most of Johanson's environmental artworks double as public works.

Valuing biodiversity as a bio-indicator for human cultural engagement requires acknowledging that biodiversity is significant because its success reflects the whole ecosystem, which includes human beings, not particular species, or individual species members. Moreover, the beauty of particular ecosystems

¹⁵ Kant 1790: §16.

¹⁶ *Ibidem*.

¹⁷ Kant 1790: §39.

¹⁸ Spaid 2012: 36-40.

depends entirely on biodiversity and the equilibrium afforded by regular interactions between inhabiting species. Living as we are in the Anthropocene, human beings offer the greatest threat to species depletion. However, human beings who direct their actions toward minimizing species depletion, which includes respecting other cultures and requires living peacefully with one another, seem more inclined to appreciate cultural difference.

Although environmental philosophers like Allen Carlson, or Arne Naess several decades earlier, tried to push environmental aesthetics in mind-independent directions, most environmental philosophy is still rather mind-dependent (anthropocentric). In 1971, Naess first proposed that the ecology movement be concerned with «an ethic respecting nature and the inherent worth of all other beings. [...] The long-range deep approach involves redesigning our whole system based on values and methods that truly preserve the ecological and cultural diversity of natural systems»¹⁹. Nearly forty-five years ago, Naess had already connected a respect for habitat to preserving cultural and ecological diversity, which is incidentally Section II's second corollary. I've thus far claimed that the global push to measure and monitor biodiversity stands to augment both ecological and cultural diversity, yet as we shall soon see, human values play a huge role in evaluating scientific data, so perhaps mind-independence is just as mythical as tulips being free beauties.

4. *Différance as species interaction*

I next try to connect Section II's first and third corollaries to notions of cultural and biological difference, as popularized by Derrida's *L'écriture et la différence* (1967) and Light *et al.*'s *Environmental Values* (2007). That Derrida coined "différance" to convey "to differ" and "to defer" is well known. Less known are its possible ecological implications for preserving, conserving, and restoring nature. As noted above, nine countries known for their biodiversity host 60% of the world's remaining languages. On this level, Derrida's emphasizing *différance* as rooted in language proves relevant, since heterogeneity loosely correlates with biodiversity, which Corollary i captures: "Human beings who value their culture protect their natural environment". In Derrida's 1967 essay, he notes that *différance* indicates multiple heterogeneous features according to which textual meaning has to be produced. The production of textual meaning requires a globalized crew of engaged readers working together like a beehive, to generate and disperse new meanings.

When one considers engaged readers as voracious animals, inhabiting place, interacting with other human beings, animals, plants, acquiring food and whatever

¹⁹ The quote comes from the homepage of the "Foundation For Deep Ecology", written by Alan Drengson. URL = <http://www.deepecology.org/deepecology.htm>.

other products they consume, then the struggle for difference takes on physical dimensions. I am hardly the only one to voice this intuition. Tim Morton's essay "Ecology as Text, Text as Ecology" takes this view even farther when he writes

Life, intentionality, even consciousness, might all be intersubjective aftereffects of more fundamental "differential" processes – though "fundamental" is not quite appropriate, since the surface-depth manifold does not operate in this style of thinking. When life, when writing, has begun, we find ourselves unable to draw a thin rigid line around it. Ecology thinks a limitless system with no center or edge, devoid of intrinsic essence (no "Nature").²⁰

Alternatively, Light and colleagues consider «biodiversity shorthand for "biological diversity" [since it] refers specifically to diversity amongst life forms. The term attempts to capture the existence of actual and potential differences between biological entities»²¹. They rightly consider diversity a «complex, multi-dimensional concept that embraces different kinds of difference – difference in weight, size, color, etc»²². For them, biodiversity refers both to actual and potential differences. They list numerous kinds of difference as follows:

1. Numerical diversity
2. Dimensional diversity
3. Material diversity
4. Relational diversity
5. Causal diversity

There are also different levels of difference. For example, Light and colleagues note that it is standard to distinguish genetic, species, ecosystem, and habitat as distinct levels of diversity. One main point that they stress is the fact that biodiversity is not just the sum of species, but interactions between them, what Bryan Norton terms 'cross-habitat' and 'within-habitat' diversity²³. This point seems particularly relevant for our discussion of biodiversity as a bio-indicator for human cultural engagement. They note how two similar habitats might be internally diverse, but not particularly diverse between them. If one suffers an incredible loss of species, «the loss might actually increase 'cross-habitat' diversity, both because there will be a greater difference between the two habitats in their mix of species, but also because there is therefore a greater possibility of their diverging from one another in the future»²⁴.

²⁰ Morton 2010: 1-17.

²¹ Light *et al.* 2007: 168.

²² Ivi.

²³ Ivi: 169.

²⁴ Ivi.

Although Light and colleagues are aware of the most current methods for enumerating nature, measuring biodiversity, and producing biodiversity indices (itself a growing math/science industry with everyone out to stake their name on the newest biodiversity index), they caution against what Norton calls the ‘chunk and count’ approach. Despite all of the scientific and computational energy geared toward itemizing biodiversity, they rather push for an alternative system that qualifies, in terms of history and context, rather than merely quantifies biodiversity. Their final concern addresses the way itemization shifts values away from *in situ* to *ex situ* diversity, though in the name of biodiversity. They offer the case of seed banks whose biodiversity is preserved at the expense of *in situ* diversity, which is real since it is tied to a particular place²⁵.

Light *et al.*’s primary concern is the way myriad strategies for effectively measuring nature detach human beings from place, which in their minds is embodied in the history of a place, the stories people tell, and the localized environmental values that they convey, which also provide place its text. And it is on this singular point, where the significance of human texts for ecological thinking intersects with philosophy’s analytic and continental traditions. Place and nature cannot be faked, given their *in situ* biodiversity. *What matters is the story of the place* [emphasis mine]. This renders even many ‘ordinary’ places that are technically ‘easily reproducible’ less open to substitution than is usually supposed²⁶. They conclude, «If we want to preserve biodiversity, we need to preserve the ancient meadowland, not a modern reproduction of an ancient meadowland, not because it is difficult to reproduce, but simply because it wouldn’t be an ancient meadowland»²⁷. It’s worth citing the powerful sentences concluding their “Biodiversity” chapter.

The motivation for producing some ‘new environmental ethic’ that transcends debates based on a human scale of values, with human concerns, relationships, interests, delights, and cares, rests on a mistake. There is no escaping debates that appeal to a plurality of particular values. Nor would such an escape be desirable. Environmental concerns have their place amongst those values. Ethical debate needs to remain on an earthly plane.²⁸

This is yet another reason why it is both a misnomer and a categorical mistake to continue treating nature like a free beauty. Human concerns, relationships, interests, delights, and cares must find a public voice. All of this seems to correlate with Corollary iii, for which “Mixing it up, difference, and convergence compound biodiversity”.

²⁵ Ivi: 172.

²⁶ Ivi: 176.

²⁷ Ivi: 176-7.

²⁸ Ivi: 181-2.

Of course, one problem remains. Contemporary human beings are incredibly detached from their natural environments. They know very little about where their food comes from, how it is made, how plants interact, why biodiversity matters, etc. I now turn to a public artwork whose express purpose is to provide passersby edible foodstuff, while inadvertently demonstrating the time required to produce food, the significant amount of change plants undergo and the possibility for farms focused on biodiversity to generate vaster harvests. Just as difference and greater (more lively) interactions amongst human beings generate richer, more dynamic cultures, farms rooted in biodiversity yield more food.

5. The *Portager* as biodiversity experiment and living sculpture

While employees of CREAT (Centre de Recherches et d'Etudes pour l'Action Territoriale) at Université catholique de Louvain know about the functioning kitchen garden sited on the terrace outside their offices, few recognize it as either a sculpture or a research experiment concerning biodiversity in an urban environment. Built in 1972, Catholic University is an elevated concrete suburbia of sorts, situated in Louvain-la-Neuve, surrounded by farmland, some 25 km south of Brussels, in suburban Belgium. The artist Jean-François Paquay, who is also CREAT's cartographer happens to be a master gardener and ceramist. Knowing full well that his colleagues are interested to learn more about growing their own food and to market their urban planning services as sustainable, Paquay has established a portable kitchen garden (*portager* blends "portable" with "potager" (French for kitchen garden)) in full view of all passersby.

There are several factors that make Paquay's kitchen garden unique. For one, it is effectively a pixilated garden whereby every 30cm x 30cm plot is contained in one portable basket. As a result, the garden can be planted more densely than ordinary garden rows and each pixel (individual basket) can be rearranged during the day, maximizing both exposure to the sun and exposure to other plants. What Paquay has learned in this short time is that diversity matters. His yields are far higher in the *Portager* where he really packs plants in and rearranges containers to maximize sun and minimize shade, than in his "fixed" garden rows, where he plants similar plants.

Another factor that Paquay has encountered concerns the way the *Portager* enhances biodiversity. In his mind, everything that arrives is part of the system. For example, this year he experienced additional butterflies, infinitely more slugs, seeds in the soil, earwigs, aphids, lady bugs, nettles, borage, euphorbia, the fungus oidium, and caterpillars. For him, all of these new (even if unwanted) factors contribute to the *Portager's* greater biodiversity. Ultimately, he attributes the *Portager's* greater yields to his home-made soil, which itself is a diverse amalgamation of millions of micro-organisms all working together to nourish the plants growing in their midst.



Elements of "The Portager". Pictures courtesy of Jean-François Paquay

6. Conclusion

This paper began with the possibility of tracking biodiversity, so as to anticipate biological catastrophes that lead to destabilization and ecosystem malfunction (ill-being). Rather than getting bogged down in technical disagreements between scientists and philosophers over the possibility of measuring and utilizing biodiversity, this paper sidesteps that conflict by turning to the relationship between biodiversity and cultural engagement. By describing: the link between spoken languages and species diversity, the significance of cultural differences, the role of cities and remote communities in encouraging and safeguarding biodiverse habitats, and the heterogeneous nature of difference itself when determining biodiversity; I effectively demonstrate the second and foremost corollary, whereby “Respect for habitat encourages cultural diversity and biodiversity”, which suggests the most important reason to value biodiversity. Biodiversity may be impossible to track, extremely difficult to measure, and shares no correlation with stability, yet no other yardstick is so well-suited to indicate cultural proliferation.²⁹

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²⁹ This paper benefitted enormously from comments made by two anonymous reviewers.

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