



Ecology and
Technological
Enframement:

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ECOLOGY AND TECHNOLOGICAL ENFRAMEMENT

Cities, Networks, and the COVID-19 Pandemic

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Introduction

It is impossible to summarize what makes a city tick, and we do not try. Instead, we focus on attitudes that cities and contemporary technologies foster. We further consider how the recent COVID-19 pandemic expanded the use of networked platforms and how this has shifted attitudes in ways that could promote sustainability or detract from it.

Though environmentalists see cities as key to a sustainable future because they are in many ways more efficient than rural settlements, positive sentiments about urban living have not always been widespread. Jean-Jacques Rousseau (1762) called cities “the abyss of the human species” (9). The opinion that urban centers are morally bankrupt, dirty, and environmentally destructive has been echoed by American figures such as Thomas Jefferson, Edgar Allan Poe, Herman Melville, Nathaniel Hawthorne, and, more recently, the countercultural critic Ted Roszak (Pojman 2017). A good amount of the complaint may trace to discomfort with cosmopolitan values and the anonymity that helps them flourish, enabling other things like crime. Some of the remonstrance is also historical in that it was launched at a time when industrialization and its ills did not seem like the only option. While today’s cities still entail heavy consumption and higher concentrations of pollution, they yield per capita benefits to the environment because of streamlined use of space and a range of corresponding advantages in transportation grids, energy consumption, and more (Angelo and Wachsmuth 2020). At the same time, cities and the technologies required to run them can fuel ecologically dubious conceptions that psychologically sever people and their built environments from nature.

Properly speaking, cities are a part of nature, and virtually nothing on Earth is outside the human sphere since the planet is ecologically bound. This is such

that everything from the rainforests of Brazil to the North American Great Plains were cultivated by their original inhabitants (Mann 2005), and humans continue to intentionally and unintentionally affect vast swaths. Thus, while this chapter uses the word “nature” colloquially to signify areas with trees, rivers, mountains, forests, meadows, lakes, and so on, the term should not be taken to connote pristine regions untouched by humans. That this needs stating is in fact indicative of metaphysical conceptions that alienate people from nature. It may further be that the divide reduces nature to an instrumentality, thereby abrogating the idea that it has inherent value. In addition to these points, we explore how technologically mediated relations in pandemic times may sharpen or diminish estrangement from nature, as well as the environmental implications of these possibilities.

Networked technologies are, of course, energy intensive and environmentally destructive to dispose of and produce (e.g., Fowler 2017; Morley, Widdicks, and Hazas 2018; Crawford 2021). Yet transatlantic flights and daily commutes are more polluting than Zoom meetings, which is why many commentators stressed the environmental benefits of working from home during the COVID-19 pandemic (Maipas, Panayiotides, and Kavantzaz 2021). What has been pondered less is the extent to which electronic media may fracture our contact with the world. Thus, to give a hyperbolic example, one can imagine a future scenario in which people cease to ski on actual hills, instead pursuing the pastime in video games or virtual reality. The decrease in travel may prove ecologically advantageous, but at the cost of losing touch with unique alpine environments, along with the impacts of climate change on the winter season. An additional consequence is that love of place and protective attitudes that come with it will almost surely decline (Yi-Fu Tuan 1974; Scruton 2012; Crippen 2021).

On the positive side, the prominence of remote technologies during the pandemic opened certain individuals to personalized work rhythms, in turn encouraging some to take up outdoor pursuits like gardening, hiking, and so forth (Sachs 2020). The crisis also reminded urbanites what it is to dwell under clean skies and made cities less hostile to wildlife (Arora, Bhaukhandi, and Mishra 2020; Khan, Shah, and Shah 2020; Rume and Islam 2020). Such occurrences may have highlighted that neither people nor their cities are separate from nature. Thus, without diminishing the hardship and tragedy of the COVID-19 crisis, it may be that the pandemic has inched us away from harmful metaphysical divisions and toward environmentally conscious perspectives that will bring about more sustainable city living.

Technological Enframing

An entry into our analysis is Martin Heidegger’s (1954) concept of “enframing”—or *Gestell* in German—which characterizes altered reasoning about reality—in other words, metaphysics—that has risen in the wake of technological advances. Heidegger asserts that “modern technology . . . puts to nature the unreasonable demand that it supplies energy that can be extracted and stored as such” (14). 

the Rhine is “dammed up into the power works” (16). It ceases to be a river with unique qualities and is instead leveled into an undifferentiated source of energy to be exploited, stockpiled, and held in “standing-reserve” in a hydroelectric reservoir (16–34). Likewise, “a tract of land is challenged into the putting out of coal and minerals. The earth now reveals itself as a coal extracting district, the soil as a mineral deposit” (14). Heidegger contrasts these scenarios with a windmill, observing that “its sails . . . are left entirely to the wind’s blowing. But the windmill does not unlock energy from the air currents in order to store it” (14). Although Heidegger does not differentiate renewable from more destructive forms of gathering energy since he lumps hydroelectric with coal, he recognizes that grinding grain into flour gets close to stockpiling an undifferentiated commodity, and while Heidegger seems further to suppose a clean break between older and newer technological modes instead of recognizing a gradual evolution, he correctly suggests that the windmill operates in harmony with its surroundings, whereas coal and hydroelectric energy extraction involve an almost violent slicing into the Earth.

The great American novelist John Steinbeck (1939) anticipates Heidegger in his *Grapes of Wrath* and paints a nightmare picture of an alienated, loveless, mechanical leveling of the land, giving literary form to variations of ideas that figures like Karl Marx, John Dewey, and Rousseau have expressed. Describing the industrialized farming of his day, Steinbeck writes that “the tractors came over the roads and into the fields, great crawlers moving like insects, having the incredible strength of insects” (35). Steinbeck continues: “The man sitting in the iron seat did not look like a man; gloved, goggled, rubber dust mask over nose and mouth, he was a part of the monster, a robot in the seat” (35). These machines “ignored hills and gulches, water courses, fences, houses” (35). The driver “could not see the land as it was, he could not smell the land as it smelled; his feet did not stamp the clods or feel the warmth and power of the earth” (35). What is more, “[H]e could not cheer or beat or curse or encourage the extension of his power, and because of this he could not cheer or whip or curse or encourage himself” (35). Steinbeck sums up by saying that the tractor driver:

loved the land no more than the bank loved the land. . . . Behind the tractor rolled the shining disks, cutting the earth with blades—not plowing but surgery, pushing the cut earth to the right where the second row of disks cut it and pushed it to the left. . . . Behind the harrows, the long seeders—twelve curved iron penes erected in the foundry, orgasms set by gears, raping methodically, raping without passion. The driver sat in his iron seat and he was proud of the straight lines he did not will, proud of the tractor he did not own or love, proud of the power he could not control. . . . No man had touched the seed, or lusted for the growth. Men ate what they had not raised, had no connection with the bread. The land bore under iron, and under iron gradually died; for it was not loved or hated, it had no prayers or curses.

(36)

As Heidegger (1954) puts it, “[A]griculture is now the mechanized food industry, so that “the cultivation of the field has come under the grip of another kind of setting-in-order, which sets upon [*stellt*] nature . . . in the sense of challenging it” (15).

Steinbeck’s and Heidegger’s accounts do not necessarily imply we were good stewards before the arrival of advanced industrialization. The point, rather, is that recent technological developments and all-consuming economic forces driving them have brought about a leveling of nature into undifferentiated commodities, which has negative consequences, whatever the situation was before this occurrence. Accordingly, trees are conceptually and concretely reduced to woodlots; a rugged mountain similarly becomes a source of coal, measured in terms of BTUs of heat; fruit is sorted according to grade and not the highly localized conditions that produced unique flavors; soil itself is increasingly regulated by chemical and mechanical means; everything from Marvel movies to burgers is franchised, so that consumers more or less know what they are getting beforehand (Crippen 2016, 2). These changes bring a loss of love. A McDonald’s branch is unlikely to inspire the abiding attachment that a mom-and-pop diner does, and the same goes for the latest Incredible Hulk flick in comparison to a one-of-a-kind film like *Hiroshima Mon Amour* (dir. Alain Resnais, 1959). Affectionate bonds are less likely for a woodlot that is grown to be cut than for a forest in which people spent their childhood foraging fiddleheads and wild leeks in the early spring. It is also difficult to imagine that what looked to be the permanent discontinuation of Necco candies in 2018 brought the same sense of loss as of a forest and its fiddleheads and wild leeks and that people yearn for the former with the same depth as the latter.

The broader point, in phenomenological parlance, is that the contemporary age may be diminishing our grasp of what it is to existentially inhabit a locale. Existential involvement is a kind of “being in” that occurs when we are in love or enmeshed in the public good of a Christmas gathering with intimate friends (Dreyfus 1991; Crippen 2019). Another example is that some indigenous communities have traditionally seen their relationship with the land not as one of ownership but instead as one in which they belong to it and it to them, as family members belong to one another (Whitt et al. 2001; Crippen 2021). Existential immersion is contrasted with categorical or spatial involvement (Dreyfus 1991), whereby an individual is in surroundings as marbles are in a box (Crippen and Youssef 2022), so that intimate bonds are lacking. The decline of existential ways of experiencing forests, mountains, lakes, desert vistas, and more amounts to a diminishment of emotional involvement with these ecological niches. It thus coincides with the diminishment of what environmentally oriented scholars have called *topophilia* or *oikophilia*, meaning love of place or home (Yi-Fu Tuan 1974; Scruton 2012; Crippen 2021). The networked age—which we now turn to—may exacerbate these losses. The risks are arguably higher for city dwellers who have less access to what is colloquially called “nature.”

Digital Networks and Isolation

The COVID-19 pandemic brought about increased use of remote platforms, streaming services, and food delivery apps, with favorable but still mixed environmental outcomes. For example, packaging used in food delivery has a heavy carbon footprint (Li, Miroso, and Bremer 2020). Streaming is energy intensive, but it may be less damaging than other forms of entertainment, such as travelling to rent or buy a DVD or see a movie (Shehabi, Walker, and Masanet 2014). Remote communication—despite also being energy intensive—reduces commuting and therewith air pollution (Maipas, Panayiotides, and Kavantzis 2021). While granting that there were net environmental benefits, the main issue we want to explore is the extent to which networked technologies are a late stage in the situation that Steinbeck and Heidegger describe. We specifically consider this question in the context of cities during the COVID-19 crisis and contemplate whether or not digital media are further cutting urbanites off from nature, thereby desensitizing them to environmental problems.

When we speak of being “cut off,” we mean losing existential contact. A closely related phenomenological term is *lived experience*, which Maurice Merleau-Ponty (1945) helpfully elucidates. He does so when he advocates returning to a lived world “in relation to which every scientific schematization is an abstract and derivative sign-language, as is geography in relation to the country-side in which we have learnt beforehand what a forest, a prairie or a river is” (ix). Steinbeck’s farmers, for example, have at least partly lost their lived sense of earth, seeds, plants, and land. This implies distancing, withdrawal, and hence alienation, which Steinbeck emblemizes with his otherworldly description of the tractor drivers in gloves, goggles, and masks. Their alienation is also manifested in their passionless disconnection from the land and what it produces. With no intimate relation to the fields, the machines plow through; they disregard hills and gulches, leveling the land, ignoring its unique contours in ways recalling Heidegger’s account. It is not incidental, moreover, that the farming practices that Steinbeck describes contributed to environmental problems like soil erosion and thus to the disastrous Dust Bowl of the Great Depression (McLeman et al. 2013).

Let us first sketch some parallels between Steinbeck’s example and the COVID-19 pandemic. Steinbeck’s farmers are gloved, masked, and goggled, placing a physical barrier between them and their surroundings. The pandemic brought the same thing: people wore masks, gloves, and protective faceplates, and eerie tented test sites were pitched in cities with medical workers in hazmat suits. Remote technologies are a digital variation of masks and suchlike, for they were employed to separate and create distance to prevent viral spread. These physical and electronic barriers cause, emblemize, and are products of alienation, though one might add that remote contact is less alienating than none at all. Also, in the same way that Steinbeck’s tractors level the contours of the land, digital communication  nuances from interactions, for instance, the subtleties of a particular hands , which is part of what makes remote platforms alienating. Food delivery apps

similarly deprive us of friendly interactions with a favorite barista or server. When it comes specifically to social media, obviating uniqueness is the business model: Facebook and Twitter are designed to identify what one user has in common with one million in this category, three million in that one and so on, all in order to target ads. In Heidegger's language, social media companies generate revenues by "challenging" information out of people—mining and essentially reducing human beings to data stockpiles.

It is perhaps more than coincidental that the terms "*network*" and "*worldwide web*" suggest entrapment and that the English translation for Heidegger's term *Gestell*—enframing—suggests being penned up. These connotations are fitting insofar as networked technologies facilitated pandemic lockdowns. Despite the ecological advantages of the situation, environmental consciousness may wane in consequence of being confined at home in a city and spending less time outdoors and in natural settings, as seems to have sometimes occurred during the pandemic (Cindrich et al. 2021). Studies in fact suggest that the combined influence of urbanization and frequent uses of digital technologies for entertainment purposes psychologically alienates people from and degrades concern for natural environments by reducing time spent in them (Larson et al. 2018; Rosa and Collado 2019). Robert Pyle (1993) calls this growing separation from nature "the extinction of experience," adding that outdoor pursuits instilled environmental consciousness in him. This last point is amply supported by empirical evidence, which shows that outdoor play and recreation increases attachment and moral care for the environment (e.g., Wells and Lekies 2006; Evans, Otto, and Kaiser 2018; Rosa, Profice, and Collado 2018). Research also indicates that reasoning in the absence of emotional attachment is seldom enough for ecologically responsible behavior (Kals, Schumacher, and Montada 1999). All these claims are simultaneously reinforced by common sense.

Suppose, for example, that Jack lives in Toronto. Imagine further that networked ways of operating become the new norm after the pandemic, so that people increasingly stay home. Though one hopes this means Jack will spend more time outside, the reverse often happened during the COVID-19 pandemic (Cindrich et al. 2021), so it may be that he gradually loses contact with nature. He may never experience the currents of cool air that sometimes flow down hills like water, or how fragrances grow in the day, or again the way the arc of the Sun changes with the passage of seasons, to name just a few things. His knowledge may thereby become more abstract and less existential, which means an extinction of lived experience. If Jack's primary contact with wilderness is mediated and curated through Netflix documentaries, then his experience of nature is effectively reduced to standing reserve: it is on call anytime, minus the inconveniences of inclement weather, flies, and much else good and bad that goes with firsthand encounters. Therefore, it is also leveled, and it is hard to imagine Jack forming an abiding connection. Empirical research affirms something like this, indicating that video encounters with nature engender less connectivity than firsthand experiences (Mayer et al. 2009). Direct immersion also corresponds to emotional attachment to nature and heightened environmentalism (Kals, Schumacher, and Montada 1999).

To consider a contrasting illustration, imagine that Fatema dwells about 100 km northwest of Toronto in Hockley Valley, which is part of a UNESCO World Biosphere Reserve. Hockley Valley has ample forests, extensive trail systems, and numerous tributaries that form the headwaters of the Nottawasaga River, which runs along its base. From the empirical work already cited, one would expect Fatema to develop moral and emotional concern for her surroundings, though this can depend on factors such as education and upbringing (Berenguer, Corraliza, and Martín 2005; Yu 2014). Thus, while the dangers of heat waves and droughts were on the minds of many in the summer of 2021, Fatema could not help notice decreasing water levels in years previous or plants so deprived of moisture as to be wilted flat in what are normally damp forest. She would be very disturbed that winters are no longer cold enough to eradicate invasive insects. The emerald ash borer, an invasive beetle, has killed virtually all the ash trees. Recent summers have brought another invader—a European moth, *Lymantria dispar*—with infestations of the caterpillars so severe that their feces darken the ground.

Because Hockley Valley is her home, Fatema cannot escape seeing these problems even under lockdown conditions, which do not prevent walks in local forests, in any case. Her *topophilic* sense of place, moreover, makes the decreased water levels, dead ashes, and caterpillar infestations traumatic. We can suppose that the earlier mentioned Torontonians also see them as problematic, but they are distant and abstract for him, so they do not have the same palpable impact. The danger, then, is that as remote technologies, streaming services, and social media platforms take on increasing roles in city life, people may become ever more desensitized to impending and current environmental disasters. Losing a sense of emotional urgency, the population may not be inclined to support drastic action to circumvent threats.

Networked Redemption?

Steinbeck (1939) describes tractor drivers as becoming “a part of the [mechanical] monster” that they rode (35). The COVID-19 crisis mirrors this insofar as it brought swaths of humankind closer to cybernetic existence by integrating them with digital technologies. In this light, COVID-19 might be seen as a techno-organic virus. Such viruses are inventions of comic book science fiction and are said to introduce machine elements into biological agents. Another sense in which the COVID-19 virus may be considered techno-organic is that it fundamentally changes urban functioning, in this sense infecting cities too (Cortés and Crippen 2021).

Such a conception supposes cities are akin to living systems, which was a common outlook in the past. An ancient Greek view was that vital life functions comprising the human soul have analogues in societal constituents that integrate into quasi-organic systems that comprise cities (cf. Aristotle 350 BC, Bk. 2; Plato c. 375 BC, Bks. 2–4). In some cases, for example, the human soul was seen as having rational, emotional, and appetitive components, each performing important functions but integrated in certain ways in healthy individuals. The same was said of

cities, which had rulers, emotionally committed soldiers, and wealthy bankers, who similarly focus on their own business but in ways that integrate for the betterment of the city. The outlook was applied even more broadly, so that organic and nonorganic forces were described as ecologically uniting into a world soul (Mohr 1980) with the idea showing up in other ancient sources such as the *Tao Te Ching* (400 BCE). It is barely metaphorical to say that the COVID-19 virus affected the pulse and heartbeat—the soul—of urban settings. To name just a few outcomes, schools closed, restaurants went out of business, and traffic flows changed, as did social patterns and political dynamics. More positively, wildlife occasionally wandered back into urban areas when businesses were largely shuttered and road traffic light, hopefully reminding people that nature does not end at the city limits, perhaps also reducing alienation or what Pyle calls the extinction of experience.

It is obvious and hence not our central point that the business impacts were economically harmful but ecologically advantageous. Mainly, we here want to address how integration with digital networks may, somewhat ironically, disentangle us from the web of technological enframement. In this way, technology might help overcome the alienation from nature to which city dwellers are susceptible. Key to this possibility is the idea that the “immunological” reorganization of city systems is not exclusively traumatic. Among other things, remote working introduced personalized rhythms and time organization into at least white-collar labor, in this way respecting individual uniqueness. Supposing the situation does not further degrade employers’ respect for private time, then the scenario may mark a movement away from what Steinbeck and Heidegger describe. This is insofar as employees are able to work around personal contours of their lives, so that they are not reduced to undifferentiated “human capital” or “resources.”

An occurrence directly related to the lockdown and how remote work allowed more personalized work rhythms for some is the fact that increased numbers of people in towns and cities took up gardening during the pandemic, to a point that there were seed shortages. Likewise, outdoor pursuits were one of the few activities that many felt they could do safely, though there were complications such as closed parks and the challenge of balancing work with childcare. Anecdotal evidence suggests this was made worse by police targeting minorities over white picnic-goers in closed parks (CBC 2021). It is worth adding that certain minority groups are inclined to use outdoor areas for social interactions, compared to whites who are often interested in solitary activity (Whiting et al. 2017), and that parks are places where people can meet safely during pandemic times if exercising some basic precautions. Introducing features that are attractive to diverse populations and not driving minorities out may be a very small way to mitigate some imbalances that are likely to arise in a postpandemic world. White-collar workers still stand to gain the most since they specifically have the luxury of working from home. Yet combined with less crowded roads and public transportation, along with the mass resignations of the pandemic causing labor shortages and thus more leverage for low-income earners, some modest benefits will hopefully accrue to the vulnerable and also the environment by generating greater concern for it.

So, there is evidence that outdoor time and physical exercise actually went down during the pandemic (Xiao et al. 2020), one can imagine a future in which the reverse is so. With the flexibility of remote work, less choked public transit, outdoor areas designed for people of a variety of backgrounds, and of course the absence of pandemic obstacles, individuals would have more chances to walk, jog, or gather in city greenspaces. Some may use remote work as an opportunity to get out of the city since they can hike in the day and work in the evening or complete employment-related tasks while camping at a lake. Research suggests that the additional time spent in nature would cultivate connectedness to it (e.g., Otto and Pensini 2017), along with a stronger attachment to place and an accompanying biocentric morality (Larson, Whiting, and Green 2011; Lawrence 2012; Hahn and Garrett 2017). The fact that nature has restorative effects on humans is not of incidental importance (e.g., Mayer et al. 2009; Byrka et al. 2010; Collado and Corraliza 2013; Wyles et al. 2016). In addition to heightening well-being, health-promoting outcomes may increase caring attitudes toward nature.

By introducing flexibility into daily life, networked platforms may thereby enable people to escape from what Heidegger thinks of as technological enframing. These relatively new ways of working accordingly have the potential to subvert the environmentally costly metaphysics that divides humans and their cities from nature. If this is true, then we are perhaps moving closer to recognizing, as the psychologist James Hillman (2005) observes, that humans are always involved in broader planetary ecologies. Hillman adds that it could not be otherwise since people and the world share a common nature. These assertions are patently obvious, even though we often act contrary to them. However, Hillman's call not to divide people from nature carries a deeper imperative. In Heidegger's terms, it asks us to "let beings be" instead of mercilessly imposing our own measures, as when conceptually and concretely reducing a forest to nothing more than a woodlot. These shifts in attitude, if carried out, will heighten environmental consciousness, while reminding people that neither they nor their cities are separate from nature. Such a realization is particularly urgent in what may be the last part of the Anthropocene when half the human population already lives in urban areas; when we are therefore moving toward what is increasingly being called the "Urbanocene"; and when many are consequently blind to the world outside cities and to the ills we are inflicting on them and, by extension, on ourselves.

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