Nature VS. Smartphones

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Insights

- There is abundant evidence for the restorative effects of natural environments.
- Some people think that digital devices negate the benefits of being in nature.
- Smartphones and other technologies present to us as “other” than nature, and that’s one of their main benefits.

Viewing nature “employs the mind without fatigue and yet exercises it; tranquilizes it and yet enlivens it,” wrote the pioneering landscape architect Frederick Law Olmsted [1]. It’s good to get outdoors from time to time and enjoy nature, whether in the garden, a park, the rural countryside, or the wilderness. Art, literature, design, and common sense attest to this. The Arts and Crafts movement and 20th-century Bauhaus modernism affirmed the place of natural materials and natural forms in good design. But the claims for nature run even deeper: Nature restores and revives. To encounter natural

environments is to be relieved of the stresses of modern living.

Do ubiquitous digital media help or hinder the benefits of natural environments? Many people suspicious of smartphones and other digital technologies think that for all their utility, they place a barrier between us and the outdoors. According to a book on nature and health by Eva Selhub and Alan Logan, “[I]nstead of stroking the keyboard or rubbing the belly of your smartphone screen, you—and the world—will be better served by petting your dog.” They also warn that “strolling through a park while engaging with

a smartphone screen may cause a vitamin G deficiency,” where vitamin G is vitamin B2 or the “green” vitamin [2]. A book by Larry Rosen presents similar caution: “If you are going to use nature as a restorative cure for technologically induced brain overload, it is best to remove all technology from the scene” [3].

Apart from the content delivered by digital devices, their physical operation may also be detrimental. A study by Brittany Wood and colleagues indicates that backlit screens on mobile devices emit a blue light sufficiently similar to daylight to inhibit the production of melatonin [4]. This hormone plays an important part in setting our circadian rhythms. So watching videos on a mobile device screen before bedtime inhibits sleep. The evidence is mounting: Smartphones and other digital devices are good for the workplace but promote stress, especially when you’re trying to socialize, relax, and recuperate for the next challenge. So leave your smartphone at home (or in the office) when you go for a relaxing stroll or when you go to bed.

Clearly, any harmful or positive effects on individuals depend on how they use their devices. Smartphones could, in fact, help us get out more, adding to our sense of security. GPS navigation means you can explore and find your way home again. There are innumerable information sources and apps about the outdoors, and there is the full set of Geological Survey and Ordnance Survey maps available for download on a GPS-enabled app. Digital photography also provides a means of engaging with nature and probing the world. As I’ll explore later, there is a sense that outdoor environments and what we get out of them are already mediated by decades’ worth of technology, not to mention presentations via art and the mass media.

Urbanized citizens are quick to reflect negatively on the very technologies (e.g., smartphones) that support the lifestyles they enjoy. As well as having legitimate concerns about the harmful effects of waste and pollution from digital technologies on natural environments [5], people worry about technology’s detrimental effects on their social lives [6]. As a species, we are bound to be wary of what’s new and untested, but our ambivalent attitude toward smartphones reflects a longstanding antipathy between the natural and the artificial. People tend to be ready to extol the benefits of fresh green vegetables, education, marriage, and a walk in the countryside, but are instinctively suspicious of new technologies. Here, I’ll examine this cultural conflict after considering the evidence for the benefits often attributed to the outdoors. My conclusion is that smartphones and other technologies present to us as “other” than nature, and that’s one of the main benefits they offer.

THE SIMPLE AND THE FAMILIAR

I live in Scotland, where urban populations have access to lochs, wild mountains, and sparsely inhabited moorlands and forests. The Scottish Forestry Commission has produced a series of reports outlining why it’s good to get out into forests and green space: “There is a strengthening body of evidence to support the view that green space and woodlands provide the ideal setting to promote health and physical activity” [7]. Environmental psychologist Roger Ulrich and his team have delineated some of the reasons for our tendency to enjoy natural environments, finding them restorative, pleasurable, and mood altering [8-10]. He doesn’t talk about mobile phones, but I’ll try and relate Ulrich’s arguments to the

challenge posed for country walkers who keep their phones close at hand.

Among the range of views Ulrich discusses, there are those who think the natural world is much simpler than the artificial worlds of cities and high-tech equipment. It’s not just that many people therefore prefer the countryside; people also find it helps them recover from stress. Being in a less complicated environment for a time allows us to catch up and recover from the pressures of our overly complicated lives.

Of course, what constitutes a simple environment depends on your experience and point of view, and the task at hand. Erik Stolterman provides an interesting discussion of complexity in the context of HCI design [11]. It’s about familiarity. A visitor has to spend more time thinking things through when in an unfamiliar setting. According to Ulrich, this theory maintains that unfamiliar (urban) environments require more *cognitive effort*, and so don’t provide respite and time for recovery. The evolutionary explanation for why humans prefer nature reminds us that we evolved on prairies and in woodlands. We therefore have a built-in affinity with environments that look as though they offer accessible food, water, and safety—not supermarkets, but rather meadows, lakes, and groves of trees. Natural selection favored populations with a tendency to seek out such places—those who find natural environments enjoyable.

Natural environments also provide a source of *fascination*. This is the argument put forward by environmental psychologist Stephen Kaplan, who notes a person’s ability to concentrate on any task is limited, no matter how much they enjoy that task [12]. Eventually they reach a point where their performance is severely hampered, things take longer than usual, and they make mistakes, becoming inefficient, less creative, and easily distracted. To concentrate on a task you need to block out distractions. In fact, that’s what it is to concentrate: to inhibit other instinctual inclinations. Once that blocking function gets worn down by fatigue, you are more likely to act on impulse, to shirk tasks that prove too challenging, to

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take unnecessary risks, to become irritable, and to get distracted from your task by things that are more engaging but less challenging, such as video games, television programs, random images on the Internet, Facebook communications, or email. Succumbing to such distractions is symptomatic of *attention fatigue*.

How can the worker restore their ability to concentrate on the important task at hand? The solution seems to reside in giving the difficult kind of concentration a rest, and instead redirecting one's concentration to things that don't require as much effort—things people find “naturally fascinating.” *Soft fascination* is a particular kind of engagement that maintains our ability to concentrate, willingly, with little effort, and most effectively. Soft fascination is good for recuperation, as it provides opportunities for reflection, is non-taxing, and deals less with exaggeration and its attendant disturbances.

The most obvious environment that provides soft fascination is the outdoors, with plants, sweeping vistas, water, and wildlife—but even just a vegetable garden or a row of indoor plants might play a part. Kaplan positions soft fascination as a major factor that contributes to a restored ability to concentrate: “Nature is certainly well-endowed with fascinating objects, as well as offering many processes that people find engrossing.” But Kaplan suggests that this restorative capability can be accomplished by experiencing an old environment in a new and different way, or even looking physically in a different direction from time to time. Being away involves a conceptual shift.

The restorative environment needs to provide a “whole other world.” Kaplan says, “It must provide enough to see, experience, and think about so that it takes up a substantial portion of the available room in one's head.” Places that evoke memories, stories, and histories, including natural environments, provide this. So viewing images at random on the Internet would probably not fit the bill. There's no structure, nothing to be probed in depth. The environment must also be responsive in ways that mean something to me in my

particular situation. So I suppose that a walk through a garden center would do little to restore my attention if I didn't like buying plants. Kaplan maintains that human beings have an instinctual inclination toward outdoor activities—as predators, nomads, domesticators, observers, and survivors. So most of us relate positively to natural environments.

CULTURAL CONDITIONING

Ulrich and his team introduced the idea of cultural conditioning: “Contemporary Western cultures tend to condition their inhabitants to revere nature and dislike cities.” We reverse the natural over the technical.

But an appeal to culture alerts us to the power of language, not least the establishment of oppositions such as nature vs. city and the natural vs. the artificial—and invites discussion of the way conversations about environment are set up and sustained [13]. Those familiar with Jacques Derrida's philosophy might note that

every appeal we make to the existence of nature in the raw is already imbued with artifice—in other words, technologies [14,15]. Apart from the language we use to describe nature, we see landscapes through the lens of so many paintings, photographs, and works of literature, mediatized, enhanced, promoted, and filtered. Needless to say, when we are out and about, we wear clothing and hiking boots, and carry guidebooks in nylon backpacks, along with our mobile phones.

Indeed, mobile phones do offer familiarity and provide the opportunity for sociability. They are part of what it is to occupy a world both familiar and strange, that's sociable, linguistically rich, and stacked with information, including information that can enhance our experience of environment.

People who reflect on and research nature and technology are also caught up inevitably in particular cultural conditions that influence how they

see the world. At this stage it's worth drawing in two other factors that contribute to the bias of the natural over the technological.

NATURAL BIAS

In many respects the case for nature is an easy one to make, and it's easy to find supporting evidence, particularly as researchers tend to look for confirmation of a proposition they want to support, rather than the converse. We repress the obvious *disbenefits* of being outdoors.

Colleagues and I conducted a pilot study to show that walking in a park setting produces a measurable drop in stress levels [16]. We deployed a mobile EEG head-mounted measuring device to track the movement of 12 participants along a predefined route. Our research picked up evidence of a positive effect. It will be interesting to see if any researchers deploy similar techniques to disconfirm the hypothesis, but that seems unlikely. The theory of confirmation

bias indicates that the research community is less likely to embark on a study that attempts to disconfirm the idea that a walk in a park has benefits, than it is to attempt to *confirm* the hypothesis. Researchers tend not to invest effort in discounting the results from an experiment that confirms what everyone wants to believe.

THE PLACEBO EFFECT

Perhaps people feel better for being in natural environments because they think they will. In a seminal study into exercise and the placebo effect, a group of hotel cleaners were told their daily routine met all their exercise needs for health and well-being [17]. Their psychological and physiological health was later measured to be higher than that of a control group doing the same work who were *not* told their daily routine was good for them. The authors of the study, Alia Crum and Ellen Langer, found that compared with the control group, the group

primed with the idea that cleaning and making beds was good exercise “showed a decrease in weight, blood pressure, body fat, waist-to-hip ratio, and body mass index.” The authors assert: “These results support the hypothesis that exercise affects health in part or in whole via the placebo effect.” I’ve yet to find a study that says something similar about being outdoors, but it appears that if you believe in something, that whole frame of expectations will have an effect (positive or negative).

The meaning structures that underlie nature myths are the same as those that affect empirical evidence gathering. Researchers seek evidence for the benefits of being outdoors thanks to the wealth of cultural affirmations supporting people’s affinity with gardens; for example, the Garden of Eden and the myth of the Primitive Hut, the first dwelling fashioned out of the trunks of trees [18]. We gather evidence from the world as encountered through our cultural conditioning.

I’m not aware of any studies that demonstrate a placebo effect among those who are persuaded that digital devices are good for them, make life simpler, increase access to knowledge, and enhance curiosity. Perhaps it makes less sense to speak of a placebo effect outside of a medical context. We are also in the realms of “self-fulfilling prophecies,” consumer behavior, brand loyalty, and the nature of desire [19]. It’s well known that consumers will claim benefits from something in which they have invested a great deal of money. Consumers will be reluctant to assert that their latest electronic device brings anything other than benefits.

TAKING YOUR SMARTPHONE FOR A WALK

How do technologies fit into our experience of natural environments? Consider a domestic scenario. You order your dinner online, wait for delivery, then eat while multi-screening in front of the television and checking Facebook, while other members of the household work late, snack, or play computer games in different rooms.

For philosopher of technology Albert Borgmann, such a script signals a challenge to the moral as

well as the economic commodification of mealtimes, sociability, leisure, work, and home life: "A thing or a practice is morally commodified when it is detached from contexts of engagement with a time, a place, and a community" [20]. You need to get out of the house to break this commodified routine. Consider a similar scenario, this time in the outdoors. You read online reviews and recommendations; look up pictures of your proposed destination on Google Images; drive to a national park aided by GPS navigation, picking up packaged sandwiches from a supermarket on the way; park the car and eat lunch while listening to the radio, with an occasional break to make a phone call or send a text message; step out to take some photographs and send some photos via MMS; then drive home. There are few people who would describe this as an experience that captures the spirit of an outing in the countryside. In Borgmann's terms, there's little engagement with the place, the time, and a community, including the community with whom one might be traveling. It's commonplace to remark that technologies have positive or negative effects depending on how they are used.

Borgmann draws substantially on the work of Martin Heidegger [21], who wrote about technological *objects*, mere objects manufactured and circulated under the command of instrumental reason [22]. Borgmann described such mass-produced objects as commodities or devices. In contrast to devices, there are the *things*, of which Heidegger also wrote, and that he favored. Things are situated, corporal (relate to the body), and involved in human practices. Things provide a focus for significant human actions, draw people together, and depending on their scale, act as places to gather.

For Borgmann, the archetypal example of a thing is the domestic hearth, which in earlier times provided a focus for domestic activity and a locus for thinking about the home and the family, encouraging tropes such as comfort, warmth, center, storytelling, and the trappings of sociability. Such things are still with us in the technological age but take on a different significance. As

well as the importance of things, Borgmann identified the role of *focal practices*, examples of which include the preparation and serving of a shared meal, and hiking and jogging, not just as leisure diversions but as totally engaging activities that unite means and ends, effort and accomplishment, labor and leisure. Engagement is key. So too is the concept of an interconnected whole, for which conceptions of nature provide the model particularly as experienced through a "relational sensibility" [13]. Nature is not so many independent objects like Wikipedia entries, but rather a set of interdependent relationships.

Focal practices may also recruit devices (such as running shoes, camping equipment, highways, and motorized transportation), but the devices are in the service of the focal practices, not the other way around. Borgmann thinks that technological contexts and focal practices can enhance one another. He believes radical reform within technological society will come about by attending to, accommodating, and enhancing the relationship between devices, things, and focal practices. In his more recent writing, Borgmann provides a nuanced illustration of how this enhanced relationship can operate:

"If you order your food from SeamlessWeb...and eat it while surfing the Internet, you are in the thrall of technology. If on a late afternoon you and your children go harvesting in your vegetable garden and if in the evening you prepare the meal with your spouse and sit down to dinner with your beloved, you are blessed. If on the way home you pick up prepared food at the store, warm it, wait for your spouse, and sit down to eat it with her, you are on the side of the angels. Contexts of engagement can be thickened and widened by degrees" [20]. He translates such engagement to the larger economy: "If that turn

should be widely taken, the economy will change too. It will produce fewer cars and more buses and trains; fewer jet skis, more canoes; fewer DVDs, more books; fewer iPods and more flutes and guitars."

I buy this argument, but I think it leaves out one important function for high-tech devices, which is to disturb and bring into relief our focal practices by setting up contrasts. For some people, some of the time, the takeout meal might just increase a sense of the value of home cooking; communication on the Internet makes you value face-to-face personal contact even more; mass production brings the value of hand crafting into awareness; the limits of photography invoke a preference for experiencing real things; and the synthetic invokes a desire for the natural. Of course, some traditional skills may be on the decline (e.g., neat handwriting, pen-and-ink drafting by architects and engineers, unaided way finding), the local gets weakened in favor of the global, and we can become addicted, deluded, desensitized, stressed, and duped by hegemonic technologies. But there must be some occasions when reflecting on our technology dependence prompts an enhanced awareness of life offline. If the hearth occupies the central position of the archetypal focal practice, then it also allows for the process of departure. We depart from the comfort of the hearth and venture forth into worlds less familiar, returning also to the hearth and the home, where we start to see something different glowing in the embers.

Technologies also have the capacity to disrupt. The concept of disruptive technologies has been incorporated into models for successful entrepreneurship, but it has lessons for the social positioning of technologies and of our place in nature. It supports the view that new technologies have the potential to disrupt social and cultural practices,

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a further explanation of why some of us are fascinated by new gadgets. Like a stunning new artwork, they challenge and disturb what we do and think. The proliferation of mobile apps brings into sharp relief the power of digital technologies to disrupt, and therefore reveal, aspects of our experience of the natural world.

DIGITAL INTERVENTIONS

I'll conclude by suggesting some disruptive interventions that mediate our relationships with nature and contribute to the identification, presentation, and invention of the natural.

Mass-media entertainment and

documentary nature programs present nature as spectacle, with varying references to the amazing and extraordinary. Of course, the natural world is not like that. As any visitor to a wildlife park knows, animals seem to spend a lot of their time in their burrows, grooming themselves and waiting for the next feed. If they are grazing animals, they eat constantly. If they are predators, then they spend a lot of time waiting for their prey.

Animal behavior is also influenced by the conditions under which the observations take place. Many nature programs now include a documentary element about what it's like to be a nature documentary maker. There

are television shows that engage with the practices of zookeeping, veterinary science, and the activities of park rangers. Some follow, in intimate detail, progress in the lives of animals and their environments as captured by cameras secreted in burrows and other natural habitats. That reveals to me that we human beings are interested not only in natural environments, but also in the representation, recording, management, and monitoring of those environments.

Needless to say, such material spills over into what's available on mobile devices to include encyclopedic information about plant and animal species, behaviors, and how to locate their habitats. There are travel guides and mapping apps that enable and encourage people in the outdoors to explore. But crowdsourced maps highlight how people don't take maps for granted. You can create your own maps or contribute to the maps provided by others. Such tools and practices reveal what it is to create and use maps. Who would have expected the Google mapping exercise to then spill into the storing of panoramas of streetscapes (StreetView), and controversies about privacy and surveillance?

There's digital photography and imaging, and the rapid distribution of such material via social media. You can view the night sky aided by celestial mapping applications. There are pedometers and tools for monitoring the movement and mental state of the carrier or wearer. In the context of specialized research, there are monitoring and measuring devices to help researchers better understand what it is to be active in the outdoors, as in the case of our use of mobile EEG. This is all about enablement, but it's also the differences these technologies and their uses bring to light that spark our interest.

Many people use music and sound [23] to adjust their responses to environments. According to music sociologist Tia DeNora, "Personal listening is also, by definition, a highly individualized solution to the problem of well-being." In any case, some scholars think that the mechanisms by which music affects our emotions derive from human responses to the natural environment

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[24]. There are also mobile tools that draw on and reinforce the character of the natural world. Meditation and sleep aids invoke nature scenes to relieve stress and induce relaxation: feeling the warm sand beneath your feet on a deserted beach, approaching a clearing in a forest and smelling damp pine needles, entering an exotic garden with birds and flowers, listening to a babbling brook, and so on. But we soon awake from such reveries. This is not nature as it really is, but rather nature as invented, idealized, perceived, and experienced through countless filters in the form of shared narratives and recollections.

Such devices, programs, and apps enable us to do things we couldn't do otherwise. This is undoubtedly their main value. But they also reveal something about ourselves and the world we live in. Smartphones obviously enable access to masses of information and provide communication over distance and while on the move. They also reveal that we are mobile creatures, placing emphasis on movement in ways many of us never thought of before the technology went mainstream. We like to watch, observe, and watch ourselves and others watching and observing. Such technologies show us what we human beings think is important: We are still nomads, after all; social media indicates that sociability trumps utility; we'll use whatever means are at our disposal (e.g., social media) to identify with the right group or assert our individuality. For some, this involves identifying strongly with the natural world. It's not easy to pin down such revelations. What digital devices reveal about the world depends on who is making the assessment, the context, and the time, and will vary over time. More than anything, the reflective use of digital devices outdoors reminds me of the contingency of the natural world and our representations of it.

There are good reasons to stay indoors: excessive UV from the sun, bush fires, predators, perishing cold, searing heat, getting lost, or drowning in a flood. In fact, *Homo sapiens* is happy to step outside when it's safe and sunny and retreat back into the shelter when darkness falls or when

the weather gets unpleasant. For the hunter and the hunted, the edge provides cover. Species compete for the advantages provided by the edge condition, the threshold between open space and enclosure. It's the site of biodiversity. I maintain that digital devices are now complicit in defining, modifying, and breaching the edge condition between the strange and the familiar, the unkempt wildness of whatever it is that we define as nature and the technologized world of innovative consumer products such as smartphones.

ACKNOWLEDGMENTS

I'm grateful to Jenny Roe, Peter Aspinall, and Catharine Ward Thompson for introducing me to research on the restorative benefits of outdoor spaces. This article has arisen as part of a collaborative project, "Mobility, Mood and Place" (EP/K037404/1), supported through the EPSRC/AHRC/SRC/MRC scheme "Design for well-being: Aging and mobility in the built environment."

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