Becoming-Data, Becoming-Mountain

Affordances, Assemblages, and the Transversal Interface

Mark Nunes

Abstract

This article explores our ecological relation to both information and information technologies as we "mediate mountains." Starting with a Gibsonian approach to affordances, and considering how an agent-specific account of action limits human access to "the digital," I suggest that the interface between human and device marks a double-coupling of two agents—one digital the other embodied—each of which draws out the other to alter potential action. The essay explores the affordances of agents and the environments in which they act, and how action seemingly occurs across the boundaries marked by the human-device interface. Drawing on actor network theory, assemblage theory, and Don Ihde's "inter-relational ontology," I examine how, within an ecology of humans and mobile devices, "agency" and "action" operate within a Deleuzean transversal, cutting across body-machine boundaries. As an application of this analysis, I examine the relationship between embodied and digital agents "in the wild" of the mountains, through AR and GPS-enabled smartphone apps, and how each agent, acting upon its own environment, gives rise to transversal events that alter the affordances offered to agents across a seemingly uncrossable divide.

Suggested Citation: Nunes, Mark. "Becoming-Data, Becoming-Mountain: Affordances, Assemblages, and the Transversal Interface." *JAAAS: Journal of the Austrian Association for American Studies* 2, no. 2 (2021): 247–262, DOI: 10.47060/jaaas.v2i2.98.

Keywords: affordances; becoming; mobile devices; transversal

Peer Review: This article was reviewed by the issue's guest editors and an external reviewer.

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Mark Nunes

Of course, we should all know better, but how often do we still encounter that persistent, romantic illusion: that technology *removes us* from nature, or that we should experience nature as directly and in as unmediated a manner as possible? In the United States, at least, this admonition declares itself, without any apparent irony, on websites and in social media campaigns, encouraging youth and adults alike to put down their screens and enjoy the natural world around them. Retreat centers like Digital Detox call upon us to "disconnect to reconnect," offering "unplugged, immersive experiences" to remove us from our networked lives and (re)turn us to nature.[1] A growing number of businesses have sprung up, such as Nature Unplugged, offering retreats, coaching sessions, and consulting services to facilitate "nature immersion [and] a chance to unplug from your devices and let go of your daily to-do list."[2] Over and again, we encounter this rhetorical opposition between technology and nature—in the words of Nature Canada's public health initiative to improve the health and welfare of children: it's a matter of "Screen Time vs. Green Time."[3] Writing for *Blue Ridge Outdoors* in a hiking piece titled "Unplugging from Technology, Plugging into Nature," "College Ambassador" Sarah Puckett notes:

> Life is amazing when you actually look up from your phone and notice the world around you. You have more time to explore the mountains and explore your mind. You have more time to acknowledge and really enjoy the beauty of a snowcapped mountain or the soothing sound of rain in the wilderness. Try it! You'll be surprised at what you might find.[4]

The dichotomy set up here assumes that when we are on our devices, we are out of our embodied environment. The less mediated our lived experience, such an opposition suggests, the more directly we will experience the natural world. But, of course, our experience of the world is always already mediated, and thank goodness for that.

As a case in point: in the fall of 2019, I went on a three-day solo backpacking trip, which involved a leg up and over Grandfather Mountain, the highest peak in my little corner of the Blue Ridge Mountains of North Carolina. I am quite happy that my experience of the mountain was mediated by way of the hiking shoes on my feet, my jacket and my hat, my tent and my water filter, and so on.[5] Grandfather Mountain is a low altitude summit by Austrian standards, to be sure—just over 600 meters of elevation gain to a peak of about 1800 meters. There is no technical climbing involved to reach the summit, but there are several stretches at the ridge line with ladders and fixed cables to aid hikers: a form of mediated ascent, to be sure. While hikers depend upon these technological mediations, this same dichotomy between "direct" and "mediated" experience follows us up the mountain: thus, the privileging of high-altitude ascents, for example, completed without the aid of supplemental oxygen. In rock climbing (perhaps especially in the United States), we encounter a similar hierarchy of "pure" ascent, which places free climbing above aid. And yet when I free climb, my "unaided" ascent is still, and quite happily, mediated by way of the climbing shoes on my feet and the chalk on my hands. Even Alex Honnold, in his mind-boggling free *solo* climbs, embraces these two forms of mediation in his pursuit of pure climbing. But of course, there are those who seek the purest of free solo ascents: climbing shoeless, without chalk bag, or any clothing at all.

But if we are to set aside this admonition that warns us off of a technological corruption of an otherwise pure experience of nature and accept in its place an understanding that our experience of the natural world is always technologically mediated, we might then begin to explore more critically the environment for potential action offered by this mediated relation, and how this relation conditions and shapes our experience of the world. And what goes for boots and hats and gloves applies equally well for screens and networks and mobile devices.

To some extent, I am embracing an ecological understanding of mediation, which suggests that the devices we use, and the environment in which we use them, has a strong impact on our experience of being human and being in the world. "Environment," in this context, is both natural and technological, in that it provides a frame for social, cultural, and embodied action. While we could—as Marshall McLuhan does—explore a broad range of technologies as "extensions" of human sense and action, mobile devices provide a particularly compelling context for a discussion of our ecological relation to both information and information technologies that, at the same time, problematize this "extension" metaphor by challenging us to think carefully about who (or what) is "extended," into which environment, and across which borders and boundaries.[6] By focusing on the ecology of our media interactions, we can begin to understand our embodied and informatic engagement with our devices and the environment in which we act. But by no means is this relationship unidirectional. As

I will suggest later, the ecological perspective that I am applying to mediated action is very much interactive, providing a way of understanding how technology *engages us*, and how we in turn engage technology in a co-active system. To think about how mobile devices "mediate mountains" for human users is, in effect, only half of the story. We will also want to consider how the human user likewise mediates embodiment and embodied action for a digital device.

To frame this discussion a bit more specifically, I will turn now to J. J. Gibson's theory of affordances, which defines "action" in relational, organism-specific terms. Gibson developed the concept of affordance to help explain an organism's embeddedness within its environment, arguing that what an animal perceives depends upon a kind of mapping of an organism's potential for action onto a particular environment. This ecological approach to perception offers an understanding of how agents make use of their environments, and the sorts of interactions that give rise to ways of not only using the environment, but also embodying space through use. What an environment affords, then, is contingent upon a relation between an embodied actor and the environment in which it acts. When an organism acts, it likewise *makes actual* specific potentials for action that otherwise remain virtual. Thus, affordances articulate a set of relations between actor and world such that, in Gibson's words, "to perceive the world is to coperceive oneself."[7]

Gibson's work has had far-reaching impact, to be sure, most notably through a lineage that includes Don Norman's appropriation and expansion of the term into the realm of applied design.[8] Norman's work has provided the basis for a great deal of application in user-centered design and interaction design, but to some degree, the term "media affordances" has been used so widely in these fields that it has lost considerable specificity. For this reason, I would argue that when we deploy the term "affordances" in a discussion of mediated relations between actors and environment, it is important to keep intact Gibson's concept of an *organism-specific frame of action*. Doing so forces us to acknowledge not only how our mediated interactions give rise to potentials for action but also the boundaries that mark this structural coupling and the processes that mediate action across these apparent boundaries. This issue becomes critically important when we begin to speak of "digital affordances." How can we claim that an embodied organism acts upon a digital environment when embodied interaction with digital devices occurs at a level that is fundamentally distinct from the level at which algorithmic and computational actions occur? Rather than suggesting that a mobile phone offers digital affordances to users, it strikes me as more accurate to claim that the phone-user interface marks a coupling between a human agent and a material environment that includes this digital device. I would also claim, however, that, at this point of interface, this digital agent is likewise engaged in a structural coupling within a data environment, which

just so happens to include a human user, functioning as an embodied "socket."[9]

This more limited embrace of the term "affordances" somewhat paradoxically allows for a more expansive understanding of both actor and environment that would include the device itself as actor, with its own potential for action within an environment in which those potential actions can be articulated. In other words, while smartphones, as objects within a material environment, have properties that afford human users for whom they were designed a range of potential actions,[10] they likewise possess their own potential for *digital* action as agents within a digital environment (such as database queries and data processing). From a user-centric perspective, this digital "substratum," to use Ian Hutchby's term, certainly impacts how a human actor can engage a device, yet the data-device coupling that gives rise to algorithmic and computational action does not afford human users the capacity to act directly upon a digital environment.[11] As the device acts upon and within a digital environment, however, it materializes and actualizes opportunities for users to coperceive themselves within an inhabitable space of information.

Similar to Bruno Latour's actor-network theory, this actor-centric framework for affordances allows us to explore what we might mean by an agency of devices, digital or otherwise.[12] Furthermore, this approach allows for a more complex understanding of how media ecologies operate, to the extent that we will need to consider not only how digital devices serve as an extension of the human, but also how the human user likewise functions as a material extension for the digital device. It also calls attention to how this "extension" in some fashion marks a border or boundary for each actor. In an attempt to answer the similar question of how this interaction occurs at and across borders between human and nonhuman agents, Kirsty Best suggests that we think in terms of "relational affordances," in which device and human alike "inscribe" each other as agents within a system of interactive dispositions.[13] As digital agents, these devices are acting upon a data environment, but these data sets are likewise coupled, through embodied engagement of a human user, to a material environment. What I am suggesting is not entirely in conflict with Jane Bennett's new materialist "agency *of* the assemblage," which expresses itself as process, at the point of assemblage, and which is irreducible to the individual agencies of the actors collected into that assemblage.[14] Like Bennett, I would affirm that "bodies enhance their power *in* or *as a heterogeneous assemblage*."[15] By focusing on affordances, however, I am attempting to maintain an actor-centric perspective on potential action while at the same time noting that, at this point of interface, that potential is caught up in a crossing marked by a data-body assemblage.

"Location," then, would offer a particularly salient mapping of affordance as actor-environment coupling by *situating* this data-body assemblage within a mate-

rially articulated sense of place. What my environment affords, when I engage my smartphone, depends upon two acts of structural coupling—one digital and the other embodied—that *involve* distinct actors and distinct action-oriented relations to data-as-location, as well as location-as-data.[16] Human agency gains access to an augmented sense of place by way of the information overlay materialized by these devices, as placeness is likewise mediated for a digital actor by way of an embodied human interface. At this point of double coupling and double articulation, material and digital agents alike embed their actions within this scene of material-informatic translation. In this regard, the device operates as an extension of the human, but, likewise, the human serves as an extension of computational action into a world of flesh and movement.

Which brings me back to mediating mountains.

I am the sort of person who will lose my car pretty much every time I leave it in a parking lot. My wife says that I am "spatially challenged." I am not sure if this is a real condition, but perhaps it explains why I have been so interested in how individuals experience space and place, and why it has been a consistent theme in my scholarship for the past twenty-five years. Another consistent theme in my personal life, for the past fifteen years at least, has been a commitment to spending a good portion of my time in the mountains. I live in Western North Carolina, on the eastern escarpment of the Blue Ridge Mountains in southern Appalachia. I enjoy technical climbing when I can, and, when I can't, I often spend one day a week in the woods, on a trail, ascending some peak. And when I am in the woods, my smartphone comes along with me.

I have quite a number of apps on my phone that enrich my experience of the mountains. I use trail-finding apps, GPS apps, rock climbing apps, peak-finding apps, and so on. While it has become commonplace to refer to these sorts of apps that provide information overlays as offering "augmented reality," I would argue instead that it is more accurate to speak in terms of "augmented affordances." As I have already admitted, I am indeed spatially challenged. But with a GPS tracking app at my disposal, my action-oriented relation to outdoor space changes radically. As I follow a trail, both under my feet and on my smartphone's screen, my device is quite literally materializing relations for potential action that are not available to me without the actions of this device within a digital environment. The mountain trail remains unchanged, yet in profound ways, my engagement with the material environment in which I find myself has changed considerably. I can now bushwhack confidently, explore cliff lines and summits where little trace of a trail exists. I act "within" a space of information that is likewise articulated within an embodied field of potential action.

Certainly, I could engage in a paper-based form of wayfinding, by way of a printed map, and make use of a magnetic compass to augment my sense of orientation. Or perhaps, if I were attempting to perpetuate that romantic illusion of an unmediated experience of nature, I might turn to those wayfinding cues embedded in the natural world itself and draw out my sense of location in nature more "directly." But setting aside such fantasies for a moment, and with an attempt to identify what differentiates a paper map and compass experience of wayfinding from one that is digitally mediated, I would note that, unlike the passive medium of a printed map, my digital device is engaged in a whole series of actions that are quite literally beyond my (embodied) reach.[17] While it may seem obvious to note that a paper map does not change with my movement through the space it represents, this simple observation highlights the different set of relations that exist between a smartphone engaged in digital action and a human user engaged in embodied action. Thus, while there may be important distinctions to be made regarding the type of digital device one uses for wayfinding, be that a mobile phone or GPS tracker, the distinction between *digital and embodied actors*, and the interface between these two distinct actors acting within distinct environments, provides a more salient frame for analysis. Likewise, while "mundane technologies" such as socks and boots and crampons engage and act upon each other in what Mike Michael describes as a "*cascade* of affordances" that alters the range of potential actions for human, embodied experience,[18] these affordances all map within the same *material* environment. In contrast, the augmenting of affordances that ensues for human and digital actor alike occurs at and across a boundary between two *distinct* environments—one digital and the other material. In effect, two agents act within and upon the environment in which those actions are embedded, yet each "extends" the potential for action across an apparently uncrossable boundary.

To help elaborate on this point, I would call attention to the ways in which my body interacts with my smartphone when using an app like *Gaia GPS*, and how this account differs considerably from most discussions of user interaction and "digital affordances."[19] The touchscreen provides an important locus of human-device interaction, and by engaging this interface, I can alter much of what my screen presents to me—loading different map overlays, changing orientations, expanding or shrinking the map image, and so on. However, if I want to change the location of my indicated presence on the map—in this instance, an orange arrow—I can only do so by moving my body in the space in which I am materially embedded. As I hike, occasionally consulting my GPS-driven app, I leave traces on a map that mark my ascent. At the same time, the device calculates changes in GPS coordinates, articulated by my bodily movements, and translates that displacement as output on the screen. Each agent, in effect, inscribes and enlists the other, at and across this boundary. My wayfinding

is dictated by my body's interaction with the world and the corresponding translation of these actions as data input for my device, which is then acted upon by the device to produce a representation of position on my screen's dynamically changing map. Each actor performs according to a set of possible actions defined through agent-specific affordances, mapped onto each environment in which they act. As an embodied actor, I experience an augmented sense of place by way of data queries and other digital actions that materialize as images on a screen. At the same time, however, my movement through space augments a digital environment for a digital agent, translated in and by the interface. But how do we make sense of what occurs *across and between* this apparent divide between two sets of environmental relations—one material, the other digital? How is it that I do, in fact, experience an augmented sense of place by way of this data translation? And can we likewise acknowledge that this digital device, left at home or in my car, would have an impoverished sense of *its* digital environment, were I not to take it with me on a mountain ascent?

As I have argued elsewhere,[20] we can extend Taina Bucher's discussion of "programmed sociality" to describe a *programmed spatiality*, in which the production of a lived space for human actors involves both human and nonhuman actors alike.[21] As Wendy Hui Kyong Chun notes, in our daily engagement with information technologies, we are inhabiting a set of relational practices that position us "within" socio-technological environments: habit as *habitus*.[22] If we accept, as Chun argues, that "habit is ideology in action,"[23] then it is my habitual engagement with a programmed spatiality—mediating mountains in this instance—that "hails" me into a set of relations as both an embodied actor *in* a material environment and as a constellation of data *within* a digital environment *for* a digital actor.[24] My experience of "the mountains" is very much impacted by my own actions within this natural space, but, to the extent that I am engaging in the augmented affordances offered up through this double coupling of human and digital agent, that environment is likewise altered for me by way of the programmed actions of a digital actor within a data space. "Trailblazing," for example, defines two distinct sets of engagements with "location" to the extent that my movements through space are constantly tracked and recorded and displayed on a screen for me. My own sense of how I move through an unmarked natural space, in other words, alters to the extent that *it has been marked* in a materially present way on my screen. Tracing back my own steps becomes a matter of aligning my physical movements in space with my marked location on a dynamically changing map rendered on a screen. Clearly there are boundary matters at play here but boundaries that are crossed as well through this point of interface between location-as-data and data-as-location: derivatives of the digital action of digital agents that are dependent upon a materially embodied human agent, acting upon an embodied environment in ways that are equally dependent upon digital agents.

While the account I am giving of human and nonhuman agencies as well as their associated environments resonates somewhat with Latour's actor-network theory,[25] my ecological account of augmented affordances, I would argue, aligns more closely with Don Ihde's "inter-relational ontology," in which humans and their technologies are caught up in a "mutual co-constitutional process."[26] Like Ihde, I am interested in this point of co-constitution—an "interface" (in Ihde's sense) of an embodied agent that gives rise to a "symbiosis of humans plus their artifacts in actional situations."[27] While a boundary exists at this point of interface, a crossing still occurs. Hyo Yoon Kang describes this symbiosis between embodied action and computational environment as a "hybrid agency," marked critically by a "continuous, co-constitutive relation" between information and the conditions of embodiment.[28] Questioning how this co-constitution occurs at and across the interface calls attention to mediation as an *ecological* crossing, giving rise to a materiality of the digital as well as an informatics of the body, much in keeping with Eugene Thacker's discussion of biomedia.[29] As José van Dijck notes, drawing on Thacker, "both body and machines are considered platforms through which activities are mediated, yet the materiality of that platform profoundly *matters*: information is embodied as much as flesh is computed."[30] An inter-relational ontology of affordances, like Thacker's biomedia, "take[s] us beyond the familiar tropes of technology-as-tool or the human-machine interface."[31] Thacker's emphasis on the body as medium and body as remediated through bioinformatic engagement translates here into another way of understanding how the body maintains its engagement with an embodied environment while at the same time acknowledging how the digital actors engaged in a digital environment transform the lived experience of an embodied potential for action. In effect, "the body you get back is not the body with which you began, but you can still touch it."[32] Thacker frames this body-technology relation as neither tool-oriented nor extension-oriented but, rather, "generative" within the biological; the body remains body, with technology "creat[ing] novel contexts, and establish[ing] novel conditions for biological components and processes."[33] I would argue as well for a reciprocal relation: the digital remains digital and, in its generative coupling with an embodied materiality, new modes of engagement emerge for data-driven action. The interface, then, marks a scene of co-constitution, a generative moment in two directions around this point of assemblage: what we might tentatively—if not hesitantly—call a becoming-data of the human, and a becoming-human of data.

I say "hesitantly" here in part to acknowledge that "affordances" and "becomings" to some extent map orthogonal relations. Gilles Deleuze and Félix Guattari discuss "becoming" as an "unnatural participation" that occurs along an axis distinct from what creates delimited subject positions.[34] Affordances, in contrast, orient action within that axis that *defines and determines* subject, actor, and agency (thus "to per-

ceive the world is to coperceive oneself"). By bringing these two concepts into dialogue with one another (an assemblage of sorts, to be sure), I am striving to account for both the boundary of action and the crossing of that boundary that occurs when I engage in this body-data assemblage. The boundary that is both marked and crossed between these two interacting agents, acting at the same time within distinct environmental mappings of potential action, would serve as a locus of what Deleuze and Guattari call "transversal communications between heterogeneous populations."[35] This locus likewise serves as a scene of assemblage: "multiplicities with heterogeneous terms, cofunctioning by contagion."[36] I would argue that "data" offers a site of unnatural participation for embodied actors that, in assemblages of co-functioning agents (human, digital) gives rise to a becoming-data of the human, much as "the pack" does in Deleuze and Guattari's becoming-animal.[37] If the interface (what Deleuze and Guattari would refer to as borderline or threshold) marks a becoming and a site of multiplicity, it does so "not by the elements that compose it in extension, not by the characteristics that compose it in comprehension, but by the lines and dimensions it encompasses in 'intension.'"[38] It is in this "plane of consistency or composition," marked by "subjectless individuations," that contagions and crossings can occur, to the extent that an agency of the interface expresses itself distinct from its co-constitutive, co-functioning agents.[39] In this moment of threshold crossing, Deleuze and Guattari argue, "the plane itself is perceived at the same time as it allows us to perceive the imperceptible (the microplane, the molecular plane)."[40] Might we include as well the plane of the digital—the data plane of computation and calculation? Can we add to the list of "becomings of bacteria, viruses, molecules and things imperceptible" the becomings of data and the digital?[41]

To move once again from theory to practice, and back to the mountains, let us consider a location-aware app such as *PeakFinder*, which positions users within a topographic map showing the names of mountain peaks, along with other orientation cues such as the path of the sun on that particular day, the user's current longitude and latitude, and their compass heading.[42] *PeakFinder* hails me to look "through" my screen, pointing my mobile device in the direction of a peak. Within this assemblage, one might ask, where is the interface—is it the screen I am looking at, the lens of my camera as I point it toward a peak, or is it my body positioned in relation to my environment? As a co-constituting symbiosis, I would argue, it is marked in this plane of composition as a crossing and contagion of data-driven action and embodied action. I experience this interface as an altered, embodied relation to the land in which I find myself. Ihde describes this process as a "material hermeneutics," whereby elements otherwise beyond human perception are made visible.[43] This translation across the interface—from technological sensors to a human sensorium—alters a human experience of the observable world.[44] Database queries materialize as output

on my screen, and I find myself surrounded not only by mountains but by imperceptible geographic, cartographic, and orientational information now made visible—and more importantly, perhaps, now virtually *incorporated* in my environment through a transformation of my potential for embodied action. But at this point of interface, my embodied actions are likewise part of a co-constituting process, a becoming-data of movement and position that is altering the digital environment for a digital actor. I am a socket for this app, positioned between datasets and embodied experience, as the device queries and logs my experience of these mountains into sets of data that position me—embodied and as a constellation of data—into the landscape. What I experience, as I peer at mountain ranges on my *PeakFinder* app, is a kind of a data overlay; at the same time, however, my body and its embodied actions provide a co-constituting material overlay for the data-driven potential for action of a digital agent in a digital environment.

Guattari describes these assemblages as "strange contraptions" and "machines of virtuality," a relationship that is "half-object" and "half-subject," to the extent that "subjectivity" is both marked and transgressed in these relations.[45] These strange contraptions of co-functioning and co-constituting agents are the basis, I would argue, of a becoming-other, a becoming-data. To the extent that digital media impact our potential to act, they alter as well the virtual in which we find ourselves, and in which we are located. This human-technology assemblage is never without impact in both directions, at and across the interface. As Michael notes, even the "mundane technology" of hiking boots "are not simple intermediaries, going about their business as innocent conduits, pristine channels. They too contribute to this process of communication—this exchange of meanings—by introducing their own heterogeneous messages."[46] In this "heterogeneous dialogue between humans and the environment," we mark a boundary at the same time that it is crossed.[47] The "interface," then, is not the surface it appears to be; rather, it allows for the sort of transversal communication that not only places actors within potential fields of action but also suggests other modes of being, other modes of action, and other virtual becomings.[48] This transversal interface allows for articulations of potential action, much as transversality stands in relation to the virtual: "a space in which becomings are truly creative—radically open and simply not what is now actual," as Gary Genosko notes.[49]

In this "unnatural participation," Deleuze and Guattari argue, in the process of a human "becoming-dog" (for example), the dog likewise becomes "something else."[50] If we speak of a becoming-data of the human, then, can we reciprocate and likewise suggest a becoming-human of data? Or is it more accurate to speak, in this instance, of a becoming-mountain? After all, "The street is as much a part of the omnibus-horse assemblage as the Hans assemblage the becoming-horse of which it initiates."[51] In this assemblage of human and device ascending a mountain, might

we likewise suggest that the mountain itself is as much a part of that assemblage? If the digital is involved in a becoming-other, perhaps it is not the human actor, which serves merely as an embodied socket, but the material environment in which that body is situated that draws the digital device toward becoming. In the multiplicity of data, the mountain itself opens its terrain to novel mappings—a movement of territorialization and deterritorialization—as actors digital and human alike find themselves in an altered environment of movements and flows.[52] We cannot apprehend how a becoming-other (or a becoming-mountain) of a digital agent might be experienced, but, from the perspective of the human agent engaged at and across this interface, experiencing an environment that is altered and augmented, my sense of potential action—my virtual ecology, to use Guattari's term—is indeed transformed: "I am no longer as I was before. I am swept away by a becoming other, carried beyond my familiar existential Territories."[53]

And perhaps it is the becoming-other of data that *matters* the most, be it on a mountain or a desert or the open sea. But does not the specificity of territory signify in this assemblage of hiker-device-mountain? Of course. Yet, it is precisely the *otherness* of the mountain that is most relevant in beginning to understand the interface as transversal. The mountain, mediated by way of this interface, provides an augmented environment of "embodied awareness" that is both tactile and dynamic,[54] expressive of a terrain that has been mythologized and symbolized as "extreme"—a *limit* in the mathematical sense of embodied human experience. Framed as a relation that is at once a becoming-data of embodied actor and a becoming-mountain of a data environment, this limit is not "conquered" as so many accounts of mountain approaches and ascents would have it; rather, it is a limit expressed as an irreducible, indeterminate form. The mountain matters, for certain, but the territorialization of data as mountain and the deterritorialization of the climber in becoming-data provide a terrain of inquiry that is both specific to what it means to "mediate mountains" and, likewise, a mapping that applies more broadly to "all" terrains of otherness.[55]

How, though, do we avoid that old and tired story of technology as a tool of domination? For if we are thinking of augmented affordances as a matter of expressing one's dominion over earth and nature, we have, in effect, left standing that stable, romantic subject: our mountaineer hero, conquering new heights, aided and abetted by his technological extensions. But I would suggest instead a more "minoritarian" perspective (in Deleuze and Guattari's sense) of what it means to cross this "transversalist bridge" between embodied experience and digital action.[56] If we translate Guattari's "coefficient of transversality" as a measure of displacement between a verticality of relations (human-tool hierarchy) and a horizontality of non-distinction between digital actors and embodied actors,[57] we might attempt to identify what Genosko refers to as a "transitional phenomen[on]" between these two agents

and agencies, a transversality that operates upon the potentialities of both fields of action.[58] Genosko, in reading Guattari's earliest discussion of transversality in an institutional setting, suggests that the "Master" position of the analyst is displaced from hierarchical/vertical power structures, allowing for an opening that shifts group relations toward more horizontal, deterritorializing interrelations.[59] This same displacement of the masterful mountaineer might likewise open a space in which we can shift two sets of power relations: one in which the tool in the hands of the human user falls entirely under human purview as a willful extension of human power; and the other, a relation between Man and mountain that creates a structure of dominance, writ large in American and other Western mountaineering traditions, that inscribes climbing as conquest, dominance, and an expression of masculinized power.[60] Rather, in a becoming-data of the human user through this transversal relation, the production of subjectivity is opened and altered in unforeseen ways, assuming one allows for such a coefficient of transversality, such that in mediating mountains, I am likewise becoming-other. This sort of group relation between agents and environments, and the becoming-other of each agent at the point of interface, suggests the sorts of "breaks and ruptures" from pre-defined subject positions that produce the "initiatic" assemblage.[61] Such a movement suggests a shift in virtual ecology, a shift in potential to act that ultimately destabilizes both the embodied subject ascending a mountain and the apparently stable and indifferent ground "under" the subject's feet. And might we also imagine the altered virtuality of a digital agent—a becoming-solid in the form of the ground itself materialized, which we might call (still somewhat hesitantly—but why not?) a becoming-mountain of the digital? Our virtual ecology alters through these "strange contraptions": a transversal shift in our relationship to both ourselves and the environment in which we act. At this moment of crossing, I become other than the subject that I was.

A becoming-data of the human, and a becoming-mountain of the digital, suggests both a shift in potential action within this assemblage as well as an acknowledgement of how actors engage within specific environments. As Genosko notes, "transversality may be best appreciated in terms of its praxic opening and the virtual potential it holds for subjectification."[62] A transversal understanding of affordances would, in effect, mark this same sort of praxic opening, marking the interface not as an extension of a predetermined subjective agency but, rather, establishing a virtual potential for new modes of being and acting. This relational coupling between user and device and between agent and environment is critical to ecological understandings of the role and place of media in everyday life, be that in the mountains or amid urban spaces. At the same time, this approach calls attention to the border itself between two environments and two agents, one digital and the other embodied. As Ihde notes, we are "embodied outward" in and through the environment in which

we act—and in and through the relations in which we find ourselves embedded.[63] We find ourselves in mountains, mediated. At the same time, we mediate the digital for actions that are performed only in the digital. What and how the mountains become depends largely upon our own becomings, our own interfaces, and the multiplication of potential actions within an embodied landscape.

Notes

1 "Experiences," *Digital Detox*, accessed August 24, 2020, https://www.digitaldetox.com/experiences.

2 "Our Services," *Nature Unplugged*, accessed August 24, 2020, https://www.natureunplugged.com/services.

3 "Screen Time vs. Green Time," *Nature Canada*, accessed August 24, 2020, https://naturecanada.ca/enjoy-nature/your-naturehood/screen-time-vs-green-time/.

4 Sarah Puckett, "Unplugging from Technology, Plugging into Nature," *Blue Ridge Outdoors*, last modified March 19, 2015, https://www.blueridgeoutdoors.com/hiking/unplugging-technology-plugging-nature/.

5 For further discussion of boots as technological mediation between embodied experience and environment, see Mike Michael, "These Boots are Made for Walking: Mundane Technology, the Body, and Human-Environment Relations," *Body and Society* 6, nos. 3–4 (2000): 107–26, DOI: 10.4135/9781446221266.n6.

6 Marshall McLuhan, *Understanding Media* (Cambridge, MA: MIT Press, 1994).

7 J. J. Gibson, *The Ecological Approach to Visual Perception* (Hillsdale, NJ: Lawrence Erlbaum, 1979), 141.

8 Don Norman, *The Design of Everyday Things*, rev. and exp. ed. (New York: Basic Books, 2013), DOI: 10.15358/9783800648108.

9 For a more complete discussion, see Mark Nunes, "The Affordances of Place: Digital Agency and the Lived Spaces of Information," *Media Theory* 3, no. 1 (2019): 216–20.

10 I will set aside, for this paper at least, a discussion of the normative forces at work in those design decisions, the conditions of embodiment they assume, and how they determine both the "intended user" and the potential for use.

11 Ian Hutchby, "Technologies, Texts and Affordances," *Sociology* 35, no. 2 (2001): 450, DOI: 10.1177/s0038038501000219.

12 Bruno Latour, *Reassembling the Social: An Introduction to Actor-Network Theory* (Oxford: Oxford University Press, 2005).

13 Kirsty Best, "When Mobiles Go Media: Relational Affordances and Present-to-Hand Digital Devices," *Canadian Journal of Communication*, no. 34 (2009): 402, DOI: 10.22230/cjc.2009v34n3a2205.

14 Jane Bennett, *Vibrant Matter: A Political Ecology of Things* (Durham, NC: Duke University Press, 2010), 24.

15 Bennett, *Vibrant Matter*, 23.

16 This "involving" certainly holds parallel with Gilles Deleuze and Félix Guattari's discussion of "involution" and its relation to processes of contagion, coupling, and becoming, to

which we will return later in this essay. See Gilles Deleuze and Félix Guattari, *A Thousand Plateaus: Capitalism & Schizophrenia*, trans. Brian Massumi (Minneapolis: University of Minnesota Press, 1987), 238–40.

17 The magnetic compass provides a more complicated point of comparison, I will admit, if we attempt to tease out whether it is the Earth that is acting upon the compass, or the compass that is acting upon the Earth's magnetic fields. While this point of speculation is worth further consideration, for the sake of this essay, I will bracket off this quandary for future discussion.

18 Michael, "These Boots," 112.

19 *Gaia GPS*, dev. TrailBehind (Berkeley, CA: Trailbehind, since 2014), iOS and Android.

20 See Nunes, "Affordances of Place," 223–24.

21 Taina Bucher, "The Friendship Assemblage: Investigating Programmed Sociality on Facebook," *Television & New Media* 14, no. 6 (2012): 479–93, DOI: 10.1177/1527476412452800.

22 Wendy Hui Kyong Chun, *Updating to Remain the Same* (Cambridge, MA: MIT Press, 2016), 7, DOI: 10.7551/mitpress/10483.001.0001.

23 Chun, *Updating*, 9.

24 Chun, *Updating*, 120–22.

25 It is appropriate to note—in a footnote—that Latour signals this connection in a footnoted reference to J. J. Gibson. See Latour, *Reassembling the Social*, 72. See also Taina Bucher and Anne Helmond, "The Affordances of Social Media Platforms," in *The SAGE Handbook of Social Media*, ed. Jean Burgess, Alice Marwick, and Thomas Poell (New York: Sage Publications, 2018), 242, DOI: 10.4135/9781473984066.n14.

26 Don Ihde, "Smart? Amsterdam Urinals and Autonomic Computing," in *Law, Agency, and Autonomic Computing*, ed. Mireille Hildebrandt and Antoinette Rouvroy (New York: Routledge, 2011), 18, DOI: 10.4324/9780203828342.

27 Don Ihde, *Bodies in Technology* (Minneapolis: University of Minnesota Press, 2002), 92–93.

28 Hyo Yoon Kang, "Autonomic Computing, Genomic Data, and Human Agency: The Case for Embodiment," in *Law, Agency, and Autonomic Computing*, ed. Mireille Hildebrandt and Antoinette Rouvroy (New York: Routledge, 2011), 112, DOI: 10.4324/9780203828342.

29 Eugene Thacker, *Biomedia* (Minneapolis: University of Minnesota Press, 2004).

30 José van Dijck, *Mediated Memories in the Digital Age* (Stanford: Stanford University Press, 2007), 45.

31 Thacker, *Biomedia*, 6.

32 Thacker, *Biomedia*, 6.

33 Thacker, *Biomedia*, 14–15.

34 Deleuze and Guattari, *A Thousand Plateaus*, 240.

35 Deleuze and Guattari, *A Thousand Plateaus*, 239.

36 Deleuze and Guattari, *A Thousand Plateaus*, 242.

37 Deleuze and Guattari, *A Thousand Plateaus*, 239–43.

38 Deleuze and Guattari, *A Thousand Plateaus*, 245.

39 Deleuze and Guattari, *A Thousand Plateaus*, 266.

40 Deleuze and Guattari, *A Thousand Plateaus*, 267.

41 Deleuze and Guattari, *A Thousand Plateaus*, 248.

42 *PeakFinder*, dev. Fabio Soldati (Zurich: PeakFinder, since 2010), iOS and Android.

43 Don Ihde, *Postphenomenology and Technoscience: The Peking University* Lectures (Albany: SUNY Press, 2009), 56.

44 Ihde, *Postphenomenology*, 61.

45 Félix Guattari, *Chaosmosis*, trans. Paul Bains and Julian Pefanis (Bloomington: Indiana University Press, 1995), 92.

46 Michael, "These Boots," 114.

47 Michael, "These Boots," 114.

48 To return to mountains and climbing, a brief non-digital example: I experience a parallel phenomenon when I free climb, engaged as I am in a becoming expressed in a human-technological assemblage of body, harness, rope, and gear. While I climb without "pulling" on the aid of any device to ascend, my field of potential action alters to the extent that I climb "differently" knowing I have protection against a fall. This example may seem far removed from what I am attempting to describe as a transversal interface, but it is, once again, an instance of an altered virtual ecology, expressed at and across a point of co-constitution that forms the human-technology assemblage.

49 Gary Genosko, *Félix Guattari: An Aberrant Introduction* (New York: Continuum, 2002), 75, DOI: 10.5040/9781472546449.

50 Deleuze and Guattari, *A Thousand Plateaus*, 258.

51 Deleuze and Guattari, *A Thousand Plateaus*, 263.

52 For a discussion of "mapping" vs. "tracing," see Deleuze and Guattari, *A Thousand Plateaus*, 12–15.

53 Guattari, *Chaosmosis*, 93.

54 Neil Lewis, "The Climbing Body, Nature and the Experience of Modernity," *Body and Society* 6, nos. 3–4 (2000): 58–80, DOI: 10.1177/1357034x00006003004.

55 We might likewise ask: Which mountains? Does it matter, after all, if we participate in this transversal interface on the Blue Ridge Mountains of North Carolina or on the North Chain of Tyrol? Again, I would answer: of course—but only to the extent that we are focusing our attention on experiencing the specificity of that particular co-constituting assemblage and that particular becoming. In this regard, and risking a descent into a vortex of singularity, we might just as well ask: Which moment? And: Which climber? Much as the "we" in this note—and employed throughout this article—can be taken not as an uncritical overgeneralization but, rather, as a provocation of sorts to enter into a (rhetorical) assemblage with the author, so too would I suggest that "the mountains"—to the extent that this generalized term evokes a terrain of otherness to both digital and embodied action—offer the same sort of provocation and calling-forward of becomings for embodied and digital actors alike, at and across a transversal interface.

56 Guattari, *Chaosmosis*, 124.

57 See Félix Guattari, "Transversality," in *Psychoanalysis and Transversality: Texts and Interviews 1955–1971*, trans. Ames Hodges (Cambridge, MA: Semiotext(e), 2015), 102–120.

58 Genosko, *Félix Guattari*, 71.

59 Genosko, *Félix Guattari*, 77–79.

60 For one account of this tradition of masculinity, "purity," and ascent in American climbing in particular, see Joseph E. Taylor, *Pilgrims of the Vertical: Yosemite Rock Climbers and Nature at Risk* (Cambridge, MA: Harvard University Press, 2011), DOI: 10.2307/j.ctvjnrvb3.

61 Genosko, *Félix Guattari*, 97.

62 Genosko, *Félix Guattari*, 108.

63 Ihde, *Postphenomenology*, 42.

Acknowledgments

Portions and fragments of this essay have appeared in earlier form in Mark Nunes, "The Affordances of Place: Digital Agency and the Lived Spaces of Information," *Media Theory* 3, no. 1 (2019): 215–238.

About the Author

Mark Nunes is Professor of Interdisciplinary Studies and Chair for the Department of Interdisciplinary Studies at Appalachian State University in North Carolina, in the United States. His ongoing research focuses on the impact of new media on culture, society, and embodied experience. He is the author of *Cyberspaces of Everyday Life* (University of Minnesota Press, 2006), which explores how the internet restructures our everyday experience of the public and the private, and the local and the global. He is also editor of and contributing author for a collection of essays titled *Error: Glitch, Noise, and Jam in New Media Cultures* (Continuum, 2011), which examines how the concepts of "noise" and "error" structure modes of cultural resistance in a network society.

Contact: Mark Nunes; Appalachian State University; Department of Interdisciplinary Studies; nunesm@appstate.edu.