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Regenerating Bodies

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Abstract

This article is an expanded commentary on the essay "The Social Life of 'Scaffolds': Examining Human Rights in Regenerative Medicine" for the proposed special issue of *ST&HV*, "New Technologies, Developments in the Biosciences and the New Frontiers of Human Rights." In discussing the limits and possibilities of the essay, this commentary suggests that problematizing scaffolds in regenerative medicine as a kind of infrastructure rather than prosthetic opens the way for understanding complicates an understanding of the genesis of regenerative assemblages in ways that help to reframe inherent issues of human rights. Ultimately, it proposes the notion of experimental ecologies as a way of thinking about an ethically driven productive entanglement of bodies, environments, and technology.

Keywords

ethics, futures, alternative life forms, other

In "The Social Life of 'Scaffolds': Examining Human Rights in Regenerative Medicine," Bronwyn Parry provides a fascinating picture of the complex institutional framework through which the identities of new regenerative assemblages are constructed and maintained. What emerges from her discussion is the sense that the current legal systems in the

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European Union (EU) and the United States remain invested in a modern classificatory schema premised on substantialist notions of identity. As such, they are incapable of grasping the novel, dynamic materiality of regenerative technologies and their relationship with the body. In other words, the EU and US legal systems operate according to essentialist principles, requiring stable categories, assuming an ontological priority in their identification of bodies and technological devices as corresponding to subjects and objects as discrete and bounded entities. Such an approach, Parry shows, leads to the classification of regenerative devices as prosthetics, which assumes that the regenerative devices remain "materially circumscribed" in their interaction with the bodies. Insofar as this approach works in the interests of medical device companies by simplifying the regulatory and testing process so as to reduce the cost of research and development, it is entirely incommensurable with the actual modality of regenerative technologies, which blur the boundaries between body and assemblage on multiple levels. We see this blurring happens in the way in which the devices incorporate various nonhuman-engineered biomaterials (including animal collagen) and in the way in which the devices become deeply enmeshed in the body such that it is difficult to discern where the body ends and the device begins. The result, Parry shows us, is a disjuncture between the legal classificatory schema and actual ontological indeterminacy of regenerative assemblies, which leads not simply to a philosophical dilemma but also to a real crisis of human rights in which inadequate testing of regenerative techniques produces instances of malfunction in which a legal determination of causality and subsequent claims cannot be established. Parry draws in ethnographic accounts of malfunction at the end of the argument in a manner that counters the narrative of regenerative assemblage as prosthetics.

To a certain extent, we can understand the problem posed by regenerative assemblages as simply a matter of their misclassification as a prosthetic device, as a result of the legal system's inability to keep up with technological changes. As Parry explains, the modern classificatory schema was more or less adequate for conceptualizing the relation between individuals and prosthetic devices such as artificial limbs, toes, teeth, or even heart, which for the most part were designed to restore some element of lost functionality to the body. Denoting a device or apparatus that remains materially inert and circumscribed, and thus distinct from the body, such devices do not necessarily present a challenge to modern conceptualizations of the human or the individual. By contrast, new regenerative assemblages, specifically their scaffold, produce a dilemma in that they are "materially

diverse and lively" while also often diffusing within the body. As such, they appear to have more in common with medicinal substances. On the one hand, the reclassification of regenerative assemblages as a drug would indeed be more commensurate with their performance and would demand the same level of rigorous regulations and testing to which medicinal products are subjected. On the other hand, it would not attend to the specific quality of the technology and the challenge that it poses to the modern classificatory schema. In part, this is because drugs tend to perform temporally as catalysts, stimulating or regulating some metabolic processes before dissipating within the body. While the scaffold of regenerative assemblages does in fact diffuse in the body like a drug, it is, more importantly, the genesis point of a material process that is irreducible to the catalytic effect of a medicine. As Parry explains, the scaffold acts as an "artificial structure" that supports "three-dimensional tissue reconstruction." We can think of the scaffold, then, as a kind of infrastructure. Indeed, Parry seems to point us in this direction near the end of her argument, when she suggests thinking of regenerative assemblages as a kind of architecture: similar to architecture, they "fundamentally alter the habitus of human existence." But scaffolds are not quite architecture or infrastructure. They are far too provisional to serve as either. We can think of scaffolds rather as placeholders that enable the processes, whereby an infrastructural architecture is supposed to take shape. An apt analogy is perhaps to think of scaffolds in military terms as the deployment of troops, equipment, and logistical support teams in conjunction with the advance across territory. Such an assemblage of human and machine resources is not a permanent structure but rather merely a placeholder for the processes of reterritorialization and subsequent recoding that follows. The military scaffold thus lends itself to the rearticulation of the landscape.

What is at stake, then, is not simply a matter of reclassification but rather understanding the relationship between identity and process that is brought forth by regenerative assemblages. That is to say, what is crucial is not the specific nonhuman materiality and the subsequent blurring of boundaries between human and nonhuman but rather the processual and dynamic nature of assemblages within the processual and dynamic nature of the body. Whereas the modern classificatory schema treats the human and nonhuman (be it animal or machine) as inherently disparate forms of being and then proceeds to attend to the crisis of their combination within the framework of a zero-sum game, an emphasis on process understands things as a provisional manifestation of ongoing relation that is always already entangled with other sets of ongoing processes.[1] Hence, from a processual

point of view, there is no fixed identity, no ontological priority, be it human body, animal, or machine, from which to begin the discussion. There are, rather, identities that are constantly emergent from sets of processual interactions. In this regard, what matters, then, is not so much specific material difference but rather the degree to which the final form of material combinations remains undetermined and thus open to interaction, such that they can continue to transform in conjunction with other sets of material processes. Borrowing from the language of postvitalist neomaterialism, which draws on theoretical physics and complex systems theory, what matters is the extent to which different sets of processes can form an associated milieu conducive to further individuations. It is worth stressing that such an approach does not displace emphasis on materiality. It augments it. The perspective that it encourages is not a matter of body versus device, organic versus technological, or even human versus nonhuman, but rather a symbiotic relationship between the body as one system of relations and the technological assemblage as another.

Thinking in terms of process complicates, moreover, an understanding of the genesis of regenerative assemblages in ways that help to reframe the problematic of human rights that is at the core of Parry's concerns. Put simply, attention to process allows us to see that there is perhaps more in common between the prosthetic device and novel regenerative assemblages than we might initially have imagined. Consequently, challenges to the modern classificatory schema precede the development of regenerative assemblages. As suggested above, the question that thinking in terms of process poses is the degree to which the processual qualities of a device/assemblage mesh symbiotically with the processual qualities of its host environment. In this sense, a prosthetic toe, tooth, or heart can be understood not as a delineated apparatus providing a supplemental function but rather as part of the integrated processes articulating the body as an ecologically situated entity. Accordingly, the move from toe, prosthetic toe, tooth, and artificial heart to regenerative assemblages does not constitute a radical paradigm shift in technological development but rather a slow transition to devices with increasingly less stable forms and thus a potential for a higher degree of dynamical interaction with the host body. This is not to say that regenerative assemblages should be classified as devices. Instead, what I think Parry is ultimately asking us to consider is that the problematic they pose for human rights is not something that we should see as only having recently emerged with the novel capacity of biotechnology to blur boundaries between human and nonhuman so as to destabilize the ontological coherency of each. What regenerative assemblages tell us is that

if the modern classificatory schema does not work in the present, it never worked in the past as well. It is mere fiction born of (mostly) Western essentialist philosophy and a human conceit that has become compounded by an increasing tendency over the course of last century (if not earlier) to conflate identity in the deliberation of human rights with a potential to engage successfully as an autonomous agent within an economic field.

Parry brings these problematics to the foreground through her exposition of the intense institutional and corporate-driven effort to maintain the fiction of an autonomous subject despite the transgressive force of regenerative assemblages. Yet, the discussion leaves us wondering how and if the conceptual and legal impasses to a different way of thinking the human, and by extension human rights, might be overcome. Specifically, what might be a new vocabulary and conceptual framework for describing and understanding the indeterminate causalities at work within a system of relational processes that are irreducible to a structure of bounded subjects and objects? In addition, how might we think of this system not merely as one of relationality but, more importantly, in terms of relational ethics? I believe that this is where sustained ethnographic attention to the lived reality of the dynamic and processual quality of human and nonhuman relations can be of help.

Insofar as Parry offers ethnographic accounts as a counternarrative to the modern classificatory schema, we can perhaps glean from these accounts the emergence of a novel language of human rights. Recent ethnographies within the field of environmental anthropology, which have been inspired in great part by science and technology studies (STS), offer, I think, a good example. This work has given us terms such as "entanglement" or "associated milieu" to describe an experience of subjectivity that is both unburdened by bounded ontologies and inherently ethical.[2] What remains to be done, it seems, is to convince the legal system to begin to adopt some of this language so as to start thinking of the relationship between the body and the regenerative apparatus as one of entangled processes within a symbiotic ecology.

Experimental Ecologies

In the way of an extended conclusion for my reading of Parry's argument, I want to suggest the notion of *experimental ecologies* as a way of thinking about an ethically driven productive entanglement of bodies, environments, and technology. In working from the presupposition of entanglement among heterogeneous realities, experimental ecologies urge us to move

beyond attention to human rights, per se, and consider instead the rights of all actors, human and nonhuman. The term experimental ecologies emerges from research that I have been pursuing in northeast Japan, where I am looking at local opposition to the government-initiated regional reconstruction plan for disaster resilient infrastructure. Provisionally, an experimental ecology is an attempt to foster novel and open-ended ecological correspondences in order to create environments that will produce, in turn, new modes of being and thinking with nature. An experimental ecology is not a return to an idealized nature but rather a highly technical endeavor involving engineered material processes with the aim, nonetheless, of producing indeterminate outcomes. The term "experimental," in this sense, corresponds with the understanding of experiment as developed in STS literature as a dynamic and performative process from which can emerge new knowledge alongside new ontological possibilities (see, e.g., Gad, Jensen, and Winthereik 2015; Jensen and Morita 2015; Pickering 1995; Latour 1999). An experimental ecology is thus equally consonant with what Stengers (2005) identifies as environmentally embedded tools for "thinking through a practice" in a way that resists received frameworks of knowledge. At the same time, experimental ecologies are also explicitly political in that they articulate with a growing sense of radical uncertainty. In contrast to risk management paradigms, which strain to contain and "organize uncertainty" (Power 2008), experimental ecologies emphasize uncertainty as an engine behind novel patterns of self-organization and thus are a key force in rendering social transformation thinkable.

In more concrete terms, what I am calling experimental ecologies can be seen in attempts among local communities in northeast Japan to imagine alternatives to the Japanese government's current project of constructing mammoth seawalls to protect the coastal population from tsunamis. Intended to prevent damage from a level 1 tsunami (three to twelve meters) and limit the damage of a level 2 tsunami (twelve to twenty-five meters), the seawalls will be between nine and fifteen meters high and eighty meters wide. As a result, the seawalls will effectively cut off the relationship with the sea, not only for the human population but also for the overall ecology. Although historically unprecedented in both its scale and cost, construction of the seawalls follows a postwar industrial paradigm of (infra)structural thinking in which bodies, environment, and technology are treated in accordance with the modern classificatory schema as bounded and discrete things. Local groups opposing the recovery plan cite concerns over the effectiveness of the new infrastructure, its enormous cost, and its potentially detrimental impact on the sea-based culture and environment of the region.

Drawing on knowledge from local experience, environmental designers, and environmental science, a number of these groups are developing alternative proposals that call for reviving and amplifying a resilient ecology that was suppressed under years of postwar industrial development. Thus, instead of trying to block a tsunami with towering gray concrete barriers between land and sea, one plan proposes, for example, intensifying the existing topographical patterns formed by winds and waves to create a seafront park that would absorb its force. Another plan envisions allowing a tsunami to have a rejuvenating effect on a complex network of trees, hills, and marshes. Whereas the seawalls treat the ocean as a threat and hold everyday life hostage to an event predicted to take place once in a millennium, such alternative experimental ecology projects envision living with the sea. As such, they imagine open-ended ecologies comprising bodies and technology elicited forth from existing environmental processes rather than imposed from the top through governmental fiat. Whereas the mammoth seawalls prioritize the rights of the coastal human population, these alternative projects are just as equally concerned with the tacit rights (so to speak) of flora and fauna to flourish. In sum, experimental ecologies, environmental design is a process that emerges in situ as a kind of thinking that takes place in conjunction with complex biological systems. It is about shifting the design process from a modern rationalist ideal of shaping landscapes to a postcatastrophe and biomimetic ideal of learning from geographic ecologies.

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Notes

1. Some of the key thinkers who emphasize entangled process over structure throughout their work are Gilbert Simondon, Gilles Deleuze, and Bruno Latour.
2. I confine myself to mentioning just a few works, Herzogenrath (2009a, 2009b), Jensen and Rödje (2010), and Nading (2014).

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