Nietzsche's Challenge to Physical Geography

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Abstract

Using the philosophy of Nietzsche as a stimulus, I aim to engage physical geographers and fellow scientists to reconsider their roles as scientists and to make their work more action-oriented and powerful. I outline the false mystique of science and the misconception of seeing science as independent of people and society. I make a case that science gains its power by the way we attach meaning to it and its findings, and that we should act on our ability to bestow that power. Through Nietzsche, I argue that we are challenged to overcome our trained tendency toward detached environmental science and instead put in place a new physical geography that includes meaning and action. We have the opportunity to do so in practical ways, by being reflexive and acknowledging the context of our science, and by finding more ways to communicate our ideas in support of action to change our world.

Introduction

This discussion paper had its genesis in remarks that were prepared for a panel on Nietzsche and Geography at the 2006 Annual Meeting of the Association of American Geographers in Chicago. Panelists were asked to pick a stimulating or favorite quote from Nietzsche and provide a reaction to it, a response; in other words, to give it some (personal) meaning. I am a physical geographer, a climatologist, and until that point all I knew of Nietzsche was "God is dead" – like most other physical geographers and probably many geographers of any kind, I had

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never read a word more of his. It turns out that Nietzsche is quite readable to the novice, perhaps because of his clear writing and his style of using aphorisms. So, he can get you thinking quite fast, even if a deeper understanding of his work takes considerably more background.

I have aimed this discussion piece at fellow physical geographers (well, all scientists really) as a challenge to our generally naïve philosophy of science and, more importantly, as a stimulus to have us reconsider the way we see our science and our role as translators and agents to help act on what we learn. I don't mean to imply that some scientists don't do this already; in fact, I admire many outstanding scientists who exemplify this notion. Rather, I intend to ruffle the feathers (at least!) of those who see their science as something separate from human affairs. For many, this view may result from a passive neglect of the philosophy of science, but for others it might be a more actively held position. Either way, my hope is to engage my colleagues by introducing a few elementary, and no doubt oversimplified, elements of philosophy using Nietzsche as a springboard. I encourage the uninitiated to read some of his stuff; start on the internet or with an entertaining introductory volume such as *Nietzsche for Beginners* (Sautet 1990). Nietzsche citations in this paper are referenced by aphorism or section so that they can be found more easily in various translations, such as the many works by Kaufmann or Hollingdale (e.g., Kaufmann 2000, Hollingdale 1996).

So, to begin, consider the following quote in which Nietzsche's imagery of the desert and his interest in science caught my attention, especially as a climatologist from Arizona. Nietzsche paints a picture of the folly of science's search for truth, especially via the "mirages called philosophical systems," or what we might call ways of knowing, and certainly via our use of conceptual and mathematical models (such as a general circulation model of the climate system, to name a current example). The quote comes from approximately the middle of Nietzsche's career, following his work on Greek tragedy and about the time he reassesses his defense of Wagner, and when he is still following a rationalist approach. He would later go on to consider topics including Christianity, nihilism and Darwin.

> *In the desert of science.*— To the man of science on his unassuming and laborious travels, which must often enough be journeys through the desert, there appear those glittering mirages called "philosophical systems": with bewitching, deceptive power they show the solution of all enigmas and the freshest draught of the true water of life to be near at hand; his heart rejoices, and it seems to the weary traveler that his lips already touch the goal of all the perseverance and sorrows of the scientific life, so that he involuntarily presses forward. There are other natures, to be sure, which stand still, as if bewildered by the fair illusion: the desert swallows them up and they are dead to

> science. Other natures again, which have often before experienced this subjective solace, may well grow exceedingly ill-humored and curse the salty taste which these apparitions leave behind in the mouth and from which arises a raging thirst — without one's having been brought so much as a single step nearer to any kind of spring. (*Human, All Too Human (1879). First Sequel: Assorted Opinions and Maxims, Aphorism 31).*

Bowles (2003) highlights the "primacy of practice" for post-analytical philosophers such as Nietzsche and Wittgenstein, in which meaning is a practical affair. For Nietzsche, meaning is a synonym for power, and a concept only has meaning if it has power (or, affect). Therefore, in the practice of digesting the above quote, it acquires meaning (power), at least for the reader. Both of these philosophers also argue that practice unfortunately involves the loss of meaning too and yet "such a void is the hole out of which meaning comes into the world" (Bowles 2003, 12-13).

The False Mystique of Science

Nietzsche had a pretty unequivocal view of science, especially the science of the late 1800s, which critiqued "science as faith." Here are several examples of Nietzsche's take on this problem, in his own words:

> ...A "scientific" interpretation of the world, as you understand it, might therefore still be one of the *most stupid* of all possible interpretations of the world, meaning that it would be one of the poorest in meaning...an essentially mechanistic world would be an essentially *meaningless* world... (*The Gay Science*, §373)

> I mistrust all systematizers and I avoid them. The will to a system is a lack of integrity. (*Twilight of the Idols, Maxims and Arrows*, 26)

> Against positivism, which halts at phenomena [and says] "there are only facts," I would say: no, facts are precisely what there is not, only interpretations. (*Nietzsche's Notebooks*, Summer 1886-Fall 1887 7 [60])

> To prove a conviction is quite senseless; rather, it is important to prove that one has a right to be so convinced ... Conviction is an objection, a question mark, a défi ["challenge"] — very popular error: having the courage of one's convictions — ? Rather it is a matter of having the courage for an attack on one's convictions!!! (*Nietzsche's Notebooks*, Spring 1888 14 [159])

> A casual stroll through the lunatic asylum shows that faith does not prove anything. (*The Antichrist*, §51)
>
> "Faith" means not wanting to know what is true. (*The Antichrist*, §52)

Nietzsche clearly opposes the notion of science as a detached process, a dispassionate assessment of facts that speak for themselves. It is interesting that he does not make a distinction between the natural and social sciences (such as the latter were in the late 1800s) and he rejects the broader notion of a mechanistic view of the world as one that is irrelevant without human meaning attached. If we rely on examining the world through a science that studies only phenomena and facts and that establishes systems to organize them, we are kidding ourselves that this knowledge is somehow independent of ourselves. These facts and systems are intrinsically human and relying on them as objective is to treat science and its practice as faith. In other words, an unquestioned view of science is simply having faith in it, and faith cannot be used to prove anything.

Nietzsche's argument undermines traditional notions of scientific objectivity, and it leads the way onto a well-trodden path in the philosophy of science and a field now known as science studies. On this point, the ideas of Thomas Kuhn (1962) are perhaps the most influential across modern science. His work on scientific paradigms and paradigm shifts is well known even among scientists. A scientific paradigm is a framework of theories and laws together with the methods and acquired knowledge used to derive them. For example, in physics, Einstein's famous work on relativity constituted a paradigm shift from the previous paradigm of Newtonian mechanics.

Scientists commonly recognize that paradigms are non-objective human constructions, reflecting how we think about and do science (our epistemology). However, it is relatively uncommon for scientists to conceive of the universal quality of science-based knowledge, i.e., determining the Laws of Nature (our ontology), as anything but objective truth. My sense is that most physical geographers and scientists think of science as a human process that reveals underlying objective knowledge about how the world works. These notions of the human process of science and its often unquestioned objectivity, Nietzche's "facts and systems" and our faith therein, are core concepts in the philosophy of science that are not widely understood by scientists themselves.

If we focus on physical geography in particular, there is a body of contemporary philosophical writing that recognizes the intrinsically human aspects of doing science. Bruce Rhoads (1999), drawing on Crombie (1996), explains how human and social reasoning in this area depends on our conceptions of nature and its knowability, our ideas on what a society's purpose should be, and what in those contexts we believe to be satisfactory kinds of explanations for new phenomena.

For example, he mentions how landforms are a useful human concept (an epistemological tool) for understanding physical landscapes, and yet they can also be understood as an artificial classification that we impose on "seamless spatial variations in chemical, physical, and biological properties and processes" with little status as fundamental components of the underlying workings of nature (their ontological value; Rhoads 1999, 766).

Once we acknowledge the human aspects of doing science, it is quickly clear that different kinds of humans may have different approaches to finding and judging what constitutes a satisfactory explanation for a new phenomenon. For example, feminist scholars such as Sandra Harding, Evelyn Fox Keller and Carolyn Merchant have developed critiques and theories on the nature of objectivity and the role of gender in science. Quoting Fox Keller, "This is not about women doing science differently to men. It is about everybody doing science differently when the gender ideology shifts" (Sarzin, 1996, np). An analogous logic extends to people doing science and the impacts of science in industrialized countries versus those in the developing world (e.g., bioethics and post-colonialism). For example, the works of Vandana Shiva show the effects of genetic engineering research on crops as working against sustainable agriculture and development, no doubt in contrast to some well-meaning scientists and graduate students who believe their work in producing special varieties to be wholly good.

Physical geographers and other scientists may be surprised to learn that the National Academy of Sciences (1989) recognizes that science is constantly influenced by social factors. Geographers Clare Madge and Anna Bee (1999) have explored how female physical geographers view the relationship between their research approach and their identity as scientists. The gendered nature of science within geography is perhaps most discussed in relation to the environment, with a well-developed literature emerging from political ecology and nature-society studies. In a recent example, Andrea Nightingale (2006) highlights the mutual constitution of gender and environment as a philosophical lens through which to view (gendered) human relations with nature, which include science. She discusses new conceptions of gender and environment, drawing on her work that shows how gendered perspectives increase our understanding of the ecology of forests and their management in Nepal, as well as how the environment and its management in turn shape society.

So, getting back to Nietzsche, he makes the point that there are no intrinsic facts out there, only our interpretations that we mistake as facts. To confuse the two is to delude ourselves that our understanding of how the world works is somehow separated from whom we are. To summarize some of the deeper philosophical points here, one could simply say that science is done by humans and for humans, and it therefore is all too human itself. The power of science derives from its ability to attach meaning via its own social process. A particular

interpretation of the world takes on greater meaning if the case for that interpretation is agreed to be stronger than a competing idea based on mathematical, visual or other forms of reason. Of course, the reasoning of the case and its adjudication are human and social. Yet, science's own public relations image is as something free-standing and apart from humans, with an imprimatur of independence and an aura of truth. Instead, science is quite the opposite. Science by humans has bias, culture, politics, personality, etc., and it cannot escape those origins; a stint as a scientific journal editor will quickly convince one of that!

The Power of Human Meaning

So much for science, what about the desert? For this, it is useful to turn to "geophilosophy," a concept introduced by contemporary philosophers Gilles Deleuze and Félix Guattari (1991). What is the meaning of landscape metaphors in philosophy? Is it their relative geographical context (e.g., the desert)? Well, in *What is Philosophy* Deleuze and Guattari (1991) call Nietzsche the philosopher that "founded geophilosophy."

According to German philosopher Stephan Günzel, Nietzsche encouraged readers of his philosophical geography to visit the "tropical zones of the earth as well as of language, of existence and theory", tropical zones to Nietzsche being North Africa and Mexico including their deserts (Günzel 2003, 88). Günzel argues that rather than Heidegger's interpretation of Nietzsche's desert as a wilderness, a cipher for expanding global nihilism, Nietzsche names the desert as "the place where the saints went to find solitude; it never symbolizes destruction or extinguishing" (Günzel 2003, 85).

The popular imaginary view of a desert sees it as nothing, barren, maybe even a wasteland. However, those of us that live and work in the desert know it as incredibly diverse, beautiful and inspiring. Nietzsche's comment about the "desert of science" seems to reference the barren imagery to describe meaningless science, but the further description and use of the tropical desert metaphor as a contemplative place extends its critical value. Nietzsche in fact planned to travel to Tunis in 1881, during its French occupation, to "gain a view of Europe from the outside." Günzel (2003, 85) argues that "to Nietzsche, the desert is thus the imaginary place on the edge of the European map from which critique must begin."

To use a modern spatial analog, Nietzsche is encouraging us to "think outside the box" and see science from the outside. This is a way of assessing what we reject and what we value, of seeing the issues with the clarity and perspective of distance. In the social sciences and human geography, this stance is similar to what we nowadays call being reflexive. Reflexivity is a conscious effort to be aware and self-critical of whom we are and our circular role in shaping what we observe, who we represent, where we are, our biases and projections, at least to the extent we can. We can't escape them but we can acknowledge them. Being analytically self-

aware is something that philosophers and social theorists (e.g., Michel Foucault and Anthony Giddens) and our colleagues in human geography have been grappling with for a while. Given our typically unacknowledged nature of science, we physical geographers might also think of how our field looks from the reflexive "edges of the map."

Bruce Rhoads has explored several of those edges, and in Rhoads (2006) he examines the role of process in physical geography. He draws on process philosophy to better understand how we see processes and systems in geomorphology, and he moves us to consider how values intersect with our science. Process philosophy characterizes process and change as fundamental to reality, as opposed to fixed or timeless substances, and it therefore sees science "not as a body of knowledge but as an ongoing activity, or process of inquiry" (Rhoads 2006, 23). Incidentally, we can see why Nietzsche is considered a process philosopher, interested as he was in the social process of science. He critiqued the idea of reality comprising inert objects and argued instead that events, rather than things, form the fundamental elements of the world. Nietzsche therefore favored a philosophical process of becoming over a state of being.

One of the leading process philosophers was a mathematician, Alfred North Whitehead, who argued that understanding has to come from a unity of mind and body (Whitehead 1938). One implication of his point is that the human experience is as valid and real as "physical reality," which can be extended to say that nature and society are essentially combined as one. Rhoads (2006) thus links Whitehead's work to the importance of values in our consideration of objects. In so doing, we find that we have much in common with the work of human geographers such as David Harvey (1996) who are concerned with social justice and environmental conservation. Of course the importance of values within science quite commonly emerges visibly into public debate. Stem cell research is a recent example, and a classic from half a century ago is the development of nuclear weapons by physicists, as exemplified in Robert Jungk's (1958) *Brighter Than A Thousand Suns*. At the end of his account it is heartening to learn that atomic scientists began to realize the dimensions of their social responsibility, that they were part of the world and not somehow isolated from it, and that their loyalty was really to humanity even more than to the nation.

One should not let realization of the philosophical flaws in our naïve non-human view of science freeze us with inaction. Science is laden with theory and is all too human, but that does not mean it doesn't have a certain kind of objectivity, at least to some philosophers. A socially-constructed and relativistic perspective on science, exemplified by Paul Feyerabend (famous for his epistemological anarchy of "anything goes"; Feyerabend 1975), is not the only possibility. I will resist the temptation to open up the philosophical can of worms that debates realism versus relativism, but suffice it to say that it stretches from Plato to Alan

Sokal's (1996) "science wars" and beyond. Scientific realists have moved well beyond naïve empiricism as this debate has evolved (Boyd 2002). Bruce Rhoads and Colin Thorn provide a very accessible discussion on various aspects of realism and the opportunities it provides to embrace methodological diversity in geomorphology and physical geography (Rhoads & Thorn 1994).

Science may not wear the emperor's clothes of social neutrality, independence and truth, but it still has an impressive wardrobe of overalls and work boots to wear. How we think of biochemistry does not reduce the value of a medicine and the lives it saves. How we understand plants and climate does not diminish their importance in planning a better food supply or conserving soil. We reliably experience scientific interpretations and the results of science every day, such as living with gravity, switching on the lights or flying in an airplane. In fact, society and scientists hold science in high esteem precisely because it demonstrates this kind of reliability and objectivity. John Ziman (2000), a physicist and philosopher of science, wrote extensively on this sort of basis for our beliefs in science and the corresponding need to consider the social dimension in how we do "real" science. We should beware of interpretations that claim they are the only true answers by somehow being objective (realist in a naïvely empirical sense), and instead judge for ourselves what the most meaningful ones are. By attaching meaning, even without the misconstrued cloak of simple objectivity, we bestow power on these ideas.

Allow me to indulge in some Nietzsche-like metaphor to recap and move forward. So here you are, a physical geographer, to whom it may seem as though the rug of your previously unquestioned faith in science (or at least its ontology) has been pulled out from underneath you by a bunch of philosophers. Fear not, you are still on the rug! However, the rug does not rest on a solid concrete floor as you had thought; rather, it floats like a magic carpet that can take you to important new philosophical places.

The Challenge to Physical Geography

Working in science, as a practical matter, we have a certain level of privilege in being able to bestow power on ideas. I argue, at Nietzsche's prodding, that this privilege creates an obligation to act upon powerful ideas if necessary. Lest this sound too much like *noblesse oblige* for scientists, I hasten to add that scientists, including physical geographers, do not hold this obligation uniquely. One could make the same case for journalists, certainly for politicians, and for public and private sector decision-makers too.

My sense is that too often we study an important environmental problem, pronounce that something should be done, and move on to the next thing. Mysteriously, *acting* on the knowledge that we have just created is not taken to be part of our professional responsibility. Part of the reason for this is our training –

we think of ourselves as answering technical questions rather than working towards broader societal solutions. More fundamentally, our scientific acculturation leads us to construe action, especially social action, as unscientific. Advocacy for a cause that overlaps our science, no matter how arcane the topic, might be perceived as tainting the science. I fear that this kind of thinking leads many into a kind of scientific apathy. Again I acknowledge many fine colleagues who defy this charge, but there are still an awful lot remaining who just want to study things in isolation from human affairs.

Given what Nietzsche and many others tell us about the human nature of science, it seems absurd to insist on the naïve empirical objectivity of science as a reason for inaction. Instead, the challenge is to move away from doing 'dry' physical geography, 'dry' science, to literally change the world. What does an action-oriented version of this science look like? I am not advocating any less rigor or quality of work; on the contrary, the highest scholarly standards should still apply. But, the issues, the findings, the further questions should be both reflexive and in some way supportive of real action.

How do we achieve these goals? First, there is no question that reflexivity is hard to do, a never-ending and imperfect effort, but an important one. The initial way to be more reflexive is to acknowledge that our science is socially constructed and influenced by us as individuals and by society. It should not be hard for most uncritical realists to agree on this, at least at the epistemological level; no doubt it will be more challenging for some to acknowledge it at the ontological level. While this difference is philosophically significant, I am not sure it is a crucial one for most physical geographers and scientists. There is no getting around the fact that we are indeed a philosophically unsophisticated group who generally avoid this disciplinary territory, thereby practicing a kind of reverse mathematics phobia. In other words, take Nietzsche's critique of science to heart and to mind at the level you deem appropriate. Realize that our science is not philosophically objective, at least in the naïvely empirical sense, but it is still a useful way to solve important practical questions. After that, one can start to develop a more nuanced reflexivity about how we and the objects we study are tangled together.

Second, in supporting real action, what can we do? Again, following Nietzsche's lead, if we acknowledge the essential humanness of our science rather than denying it, then it is quite easy to move forward. Take publication of results – publishing one's findings in a journal article is not the end of the scientific process. Rather it should be a milestone within a broader communication process, one that very significantly helps to attach meaning and power to those interpretations. There are multiple ways to communicate meaning, to truly make something of the power or affect of an idea, such as working with the media, engaging decision-makers, formulating or recommending policy, teaching students the real debates

rather than conventional textbook pabulum, writing opinion pieces, and generally getting ideas out there.

I don't wish to oversimplify the nature of how scientists should communicate meaning. It is too easy for scientists to simplistically and non-reflexively cross the boundary between professional knowledge and their personal opinions, especially in the area of public policy about which we also tend to be naïve. I am arguing that we must have opinions, but in the science-to-policy transition we need to make a very careful distinction between the meaning we attach to our knowledge and our generally less-informed ideas about their implications for policy. The cost of not doing so is to risk having the former rejected if people disagree with the latter. An excellent contemporary example is climate change: knowing that the world is warming as a result of human activity does not say much about the best policy to solve the problem. This is, again, old (but good) philosophical ground known as the is-ought problem. How can we know what *ought* to be based on how the world *is*? This ethical question was introduced by David Hume, a Scottish philosopher in the 1700s, in his book *A Treatise of Human Nature* (Hume 1739). It has been termed rather graphically as "Hume's Guillotine" (Black 1964). So, we should capitalize on our humanness to identify problems about which we care, we should get the news out about what we find, but we should also overcome the is-ought problem by collaborating with human geographers and other social scientists regarding what ought to be done about our findings. As physical geographers we are most comfortable dealing with "is", and we are unprepared for a sophisticated consideration of "ought" that often leads to advocacy. A partnership between human and physical geographers can therefore be a promising way to address is-ought problems inherent in environmental questions.

Conclusions

Nietzsche's three threads, the desert, science, and meaning, together create a challenge to physical geography. As a physical geographer myself, a Nietzsche panel session seemed like a pretty good desert to me at the time, something well outside the familiar, from which to begin a critique, to gain the courage for an attack on our mutual convictions!

In physical geography if we simply systematize the world, finding "facts" or "interpretations" of "an essentially mechanistic world," then that exercise is actually *meaningless* according to Nietzsche unless we attach meaning that has power and affect. Therefore, I challenge physical geographers to move our science towards a new physical geography, one that transforms earth and environmental science beyond Nietzsche's meaningless facts to action based on interpretation, meaning and power. We can attach meaning and power through practice, by being reflexive about acknowledging the human and social context and nature of our science, and by engaging with the world to communicate ideas in support of action.

There is a further implication of this challenge – if we claim to engage important problems as geographers, then surely for many of those problems we will need physical geographers and human geographers to engage each other more. Rhoads (1999) makes the case for an integrated physical and human geography that is as old as another philosopher and geographer, Strabo, through which geographers try to understand a world inhabited by people. Solving the above challenge is an excellent way to make some progress on this cooperative front too, working together on important geographical topics by collaborating and communicating in how we approach any particular one.

Nietzsche wrote about the practice and power of music and poetry as *La Gaya Scienza* (*Freuliche Wissenschaft*, the joyful or gay science). Perhaps we can work towards the challenge of a new physical geography in this mold as "La Gaya Geografica Physica." Whether or not Nietzsche is a good place to start this effort, my underlying point is to impress upon my physical geography colleagues the importance of actively doing science in a human context. My point is not particularly new or original. John Ziman (1994) has argued for reflexivity in doing science. With regard to our teaching, David Pepper (1985, 69) urged us some time ago that "there is little point, or interest, in teaching physical geography outside its social context". I believe that bridging the detachment will further enrich our fascinating discipline. Of course, this engagement with the world might rub off on you (with any luck!), and it will hopefully transform not only the way you ask questions but also perhaps the questions themselves.

To conclude, a final word of caution from Herr Nietzsche, directed squarely at my own insufficiently deep knowledge of this topic: "The worst readers are those who behave like plundering troops: they take away a few things they can use, dirty and confound the remainder, and revile the whole" (*Mixed Opinions and Maxims*, §137)!

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