Chapter 8
Remaking the PhD in US Higher Education: An Assessment

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Abstract The United States stands athwart a widening gap in PhD education with respect to effective consideration of the role of this degree in reference to the global climate crisis. Where a small number of research universities have begun to reconsider the role of the degree in the face of this crisis, most have not. In point of fact, within most US higher education institutions, the degree is framed and conducted as it has been for decades with little or no attention paid to its particular role within the crisis. The chapter seeks to place the current status of the PhD in American higher education in the context of Bruno Latour's analysis of the global response to the changing global climate.

Introduction

In his provocative essay on the politics of the "new climate regime" (2017) Bruno Latour seeks to organize the discourse that was arising within the twenty-first-century period of "mature globalization" by positing a set of "attractors"—foci of both discourse and behaviour that had come to predominate in the first two decades of the century—a discourse that had also come to be framed as the tensions existing between globalization and the "new nationalism". In providing the analytical framework for "up-dating" much of politics and discourse of the past two centuries, Latour has sought to conceptually re-frame the impacts being imposed on these phenomena by the "realities" of the steady movement toward the impending climate crisis. In his historical summary leading up to the "just-past" period of globalization, he highlights the tensions between the "local" and the "global"—which many commentators over the past decade had placed within the framework of the steadily emergent tensions between a globalization regime embodied by the forces of global

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capitalism, their instrumentalities of global firms, and their financial, production and distribution modalities. In his analysis, Latour terms these respectively, "Attractors" 1 and 2. The core of his theoretical contribution is to posit the emergence of an "Attractor 3", constituted of and embodied by what he terms "the Terrestrial", the movement toward all the combined and complex phenomena that constitute the existential climate crisis in which the world finds itself.

With one notable exception—the emergence of yet another "direction" which he terms "Attractor 4: Out-of-This-World". This distinctive attractor is constituted of the phenomena resulting from Donald Trump's election as US President, which has created "a political innovation of a rare sort that needs to be taken seriously (p. 34)". He goes on to frame this attractor in terms that clearly differentiate it from the other distinctive conceptual and theoretical constructions that constitute his analysis:

> It is as though Trump has managed to identify a *fourth attractor.* This one is easy to name: It is the *Out-of-This-World*…the horizon of people who no longer belong to the realities of an earth that would react to their actions. For the first time, climate change denial defines the orientation of the public life of a nation. (Latour 2017, 34–5)

And taking the "logic" of this position further:

> In a sense, Trump's election confirms, for the rest of the world, the end of a politics oriented toward an identifiable goal. Trumpian politics is not 'post-truth', it is post-politics—that is, literally, a politics *with no object*, since it rejects the world that it claims to inhabit. (Latour 2017, 38)

Addressing these phenomena in the Summer of 2020 as the COVID 19 pandemic continues to spread across the world, one can only urge a post-script to what Latour had framed in 2017 as the prevailing politics of the United States, inasmuch as the Trump administration has brought to the "conduct" of the pandemic an irrationality and a politics of the "idiosyncratic" that one would be hard pressed to find replicated in the behaviour of any modern national state that professes to be both "developed" and "democratic". What transpired in the first months of the pandemic in the United States simultaneously represented the greatest "dislocations" of the society and economy, at least since the combined impacts of the Flu pandemic in 1917–1921, the Great Depression, and WW II. Overall, in many ways the current pandemic may be the greatest dislocation ever, with one significant impact situated firmly within the education system of the country at all levels. None of which, it must be emphasized, was predictable at the end of 2019.

However, almost from the beginning of the Trump administration, the world was faced with a central feature of that administration, and a primary source of Latour's characterization: climate denial. "Within a nonce", as it were, those throughout the world accustomed to viewing the United States as its most economically advanced country, and who had come to regard that accomplishment as largely inseparable from the nature and contributions of its "science establishment", were confronted with the spectacle of that country's president's continued denial of the very reality of climate change, terming it yet another "hoax". Such pronouncements were made even in the face of powerful negative evidence such as a January 2019 report of the US Department of Defense that emphasized the "significant vulnerabilities" the US military faced from "climate-related events" (De La Garza 2019). Daunting as such

a stance is in the context of what the "rest of the world" holds to be true (and what was recently true of the United States as well as signified by its role in the creation and support of the Paris Climate Accords) the Trump administration has "pushed on" to make its position a matter of clear government policy including reducing governmental financial support for climate science research. Consistent with this position, at the time of this writing, the Trump Administration's proposed 2021 federal budget cuts funding for climate-related science including funds available for climate research conducted by American higher education institutions (Beitsch 2020).

Embracing the framing proposed by Latour creates a conundrum for those within the United States context seeking to follow the wisdom of his argument within their own currently tortured frames of reference. On the one hand, given the historical framing of his argument, it is clear that the emergence of the Third Attractor is, from any sensible macro point of view, an important and perhaps even essential framing for developing sensible understandings of the challenges facing all of the earth's societies within the emergent climate crisis. Five years ago the vast majority of American scholars and commentators would join some aspect of discourse being framed by the tensions between what was then seen as "emergent nationalism" and a "run-away" globalization that had at the very least provided for the most astonishing increase in wealth inequality of the modern era. Those "facts" alone provided the basis for the underlying tensions that Latour has so well captured. And, importantly, the insight provided by the realization of these emergent tensions "fitted" surprisingly well the continued directions of American higher education and its related research establishments.

The over-riding issue created by the "Trump-reality" within which the country finds itself is whether this will prove to be an anomalous "side-track" along a pathway being mapped by the tensions between Latour's Attractors One and Two, holding open the possibility that a "post-Trump" government could bring the country "back in line" with a generalized movement toward the Terrestrial, *or* whether this "detour" will prove enduring: taking what is currently the largest economy in the world in a direction in which its fossil-fueled structure *demands* legitimation from the rest of the world, irrespective of consequences.[1]

This is the over-riding tension that undergirds American higher education in 2020, *irrespective* of the additional unknown, but potentially equally transformative, effects of the current COVID 19 pandemic. And, whereas these are for the most part unknowable at the time of this writing and the publication of this volume, some early data and estimations of possible effects are worth noting. As a case in point, early in the course of the pandemic, and inseparable from the extraordinary mismanagement of its onset and course by the Trump administration, the Spring semester of US higher education was in full session, having begun in almost all instances in January. And, as is well-known, the epicentre of the pandemic was

[1] And, it deserves to be pointed out, the longerterm effects of the Trump administration, even should it prove to be one-term event of 4-years duration, will be substantial, nevertheless. As this is being written, that administration is in the process of repealing over 100 environmental-oriented regulations that were governing the US economy. Again, even if the task comes down to rebuilding this structure after a one-term presidency, the amount of climate damage wrought during this period will be substantial (Popovich et al. 2020).

New York City, which geographically and institutionally stands as close to the centre of US higher education as exists, given that within the northeastern states a large number of its oldest, best known and highest regarded institutions are located. Furthermore, the other major early epicentres of the virus were the West Coast and the states of Washington, Oregon and California, wherein are located another tier of the most established and highly regarded institutions.

By early March, it had become clear that continuing face-to-face education in such institutions was impossible, and these institutions were rapidly shut down to students, dormitories were closed, and to the extent that the research and service missions were allowed to continue, these institutions embarked on creating novel ways to "work from home" for faculty. In some cases, the semester was simply abandoned, whereas in others, teaching by distance was instituted in an effort to save at least some of the semester. Overall, as will be recalled, much of the country and its 330 million plus inhabitants were "shut down" for most of April and May.

One important consequence of this has been early estimations of the number of US higher education institutions that may simply not survive the effects of the pandemic. Richard Vedder, a long-time analyst of higher education finance, to cite one view, has estimated that the pandemic will "kill" 500–1000 colleges, noting that many of these were in marginal financial condition before the onset, and even with any available governmental support, they will be unable to continue as viable higher education institutions (Vedder 2020).

The basic point to be made here is that the overall "fate" of American higher education at this moment and within this framing is simply unknown, especially as the society as a whole prepares for a "second wave" of the pandemic, and as other instances of social unrest such as urban riots and demonstrations, having their origin in racial issues, have spread across the country. Even as the country seeks to "reopen" and moderate the extraordinary extent of damage to the economy suffered,[2] it is profoundly uncertain how higher education institutions will change in response to the challenges of making campuses operational once again. At the very least, the existing situation will provide increased incentives to introduce a range of technologies into the teaching process, and in doing so accelerate the degree to which existing instructional modalities are transformed.

The Doctorate in Contemporary US Higher Education

With very few exceptions, the PhD in American higher education has been viewed as a pinnacle degree, initially giving rights and status to teach and conduct research within universities. Recently, however, as Michael Jones has noted, the degree is increasingly being re-conceptualized and re-examined.

[2] In April 2020, the unemployment rate was 14.7% which translates into a total of 23.1 million unemployed.

This re-examination has come about for a number of reasons:

> (1) employment options within the academe are no longer as abundant or secure as they once were; (2) employers have become more discerning; they are looking for specific skills and qualifications which are absent from the traditional PhD; (3) government and society are demanding a research degree that is more relevant to the needs of business and the growth of the economy; and (4) universities are seeing the economic value of increasing student numbers, and creating better alignments with industry (Jones 2019).

Within this changing structure, the PhD has come predominantly to signify a course of study culminating in a major research undertaking, one rendering the holder a perceived expert in the subject matter of the dissertation. However, increasing numbers of "doctoral degrees" have emerged in recent years, often carrying a certification that distinguishes their course of study from that of the PhD and with the designation of being earned within professional programmes, such as law (JD), education (EdD) and engineering (DEng/DESc/DES). Such degrees are further differentiated from other increasingly popular professional degrees. These are meant to signify accomplishment in either endeavours outside the traditional fields of the academy (e.g. Doctor of Acupuncture, Doctor of Professional Counseling and Doctor of Podiatric Medicine), or those conducted within conventional academic structures but closely aligned with their practice environments outside higher education (e.g. Doctor of Optometry, Doctor of Management, Juris Doctor/Doctor of Jurisprudence) (Wikipedia 2020).

In this transitional higher education climate in the United States, addressing the question of how the "doctorate" may develop/evolve/emerge as a designed frame for disciplined academic discourse—even in the absence of the critical issues of how climate change may impact higher education—becomes extraordinarily complex. And to this set of circumstances must be added the reality of how higher education as a national "structure" is "organized" or "un-organized", such that seeking to make generalizations about these phenomena is always fraught with the reality of there being no national "centre" to American higher education and no governmental ministry at the national level to make, coordinate and enforce policy. In place of this, and as a result of over a century of developments within this model, there exists an extended complex of regulation and oversight consisting of state departments of education, boards of regents and trustees, and professional associations—including those focused on quality assurance and the maintenance of professional standards—all overseen by a national Department of Health, Education and Welfare whose role in the actual governance and regulation of higher education is limited by the federal structure of government.

The overall result is that the dynamics that underlie and propel such questions as the nature, role and future of the PhD, in all of the frames provided by the preceding analytical chapters of this volume, not to mention the more radical and complex analysis of Latour, are quite unique within the American experience.

Climate Change Engagement Within US Higher Education

Whereas the reality and critical importance of climate change have been recognized and addressed within US higher education since shortly after the turn of the century, and not discounting the fact that a relatively large number of universities have supported voluntary organizations to pursue the goal of climate mitigation, specific focus on the role of the PhD in that endeavour has, on the whole, been pursued within the context of the individual institutions themselves, most notably through a large coalition structure known as Second Nature.[3] In 2017 a number of the most important universities pursuing climate research (and to a significant degree highly dependent on grant funding from science-focused governmental departments) were faced with the reality of the United States withdrawing from the Paris Accords, following yet another of the nationalist commitments of the Trump Administration. One entailment of that was the formation of the University Climate Change Coalition (UC3) representing some of the top US research universities (and representatives from both Canada and Mexico).[4] The focus of both these large institutional coalitions embraces the full range of activity from basic science to applied science, to policy structures, and the analysis of effects. To that extent they seek to gain "buy in" across the whole of contemporary higher education structures including, importantly, the social sciences and the humanities as well as the natural sciences. Overall, this continued, transforming focus has not (yet) affected the overall structure of how the PhD is conceptualized or actualized within the majority of universities. In the vast number of cases the degree is located within existing disciplinary structures and doctoral students are charged with demonstrating their overall knowledge of "the field" (as defined by those structures) while making a distinctive and (hopefully) original contribution to it. Numerically, what one might consider "interdisciplinary" PhD's are far and away, a minority contribution to overall research and knowledge structures.

[3] At the overall "cooperative" level, perhaps the key action has been the creation of Second Nature, an organization dating from 2009 of over 600 signatories representing university presidents and chancellors. Their climate leadership statement reads: "We, the undersigned presidents and chancellors of colleges and universities, believe firmly in the power, potential, and imperative of higher education's key role in shaping a sustainable society. Not only are we deeply concerned about the increasing pace and intensity of global climate change and the potential for unprecedented detrimental impacts, but we also understand that technology, infrastructure, global interconnectedness, and our greatest asset—engaged, committed and smart students, allow us to explore bold and innovative solutions and to lead in climate action and sustainable solutions" (Second Nature 2020).

[4] Among the perhaps better-known institutions are Caltech, Arizona State University, the University of Washington, the University of Michigan, The Ohio State University, Boston University and the University of California.

Interpreting the US PhD Through Latour

One way to engage Latour's climate argument in the context of US doctoral education and research orientations is to see his interpretation of modern history as a staged movement from a "generalized force" of a socially useful "power" source that multiplies human labour, dating from the advent of the steam engine, into and through successive waves of technologies capable of powering and advancing industry and the historical sequences of continued organization and reorganizing of such capabilities. Over the last four decades, these forces have culminated in the current predominant stage characterized by the globalization attractor (Latour, cf. pp. 25–38). By extension, he argues that the movement of individual societies and cumulatively, the world as a whole, toward the world-changing event of climate change constitutes in effect fundamental interruption of this entire process. This transition involves moving away from the seemingly endless proliferation and aggregation of the "specializations" in virtually every endeavour that has defined technology, industries, economies, societies and so on back toward an encompassing "general" force—that of the terrestrial. The underlying logic of this aggregate process has been a continuous sequence of extensions of the "specific" that had been defined and captured successively by all such technologies and their endless applications. Collectively, they embody "ways of being". The emergent reversal of this dynamic involves movement away from such highly distributed and differentiated "ways of being" toward the new "general" imperative. Importantly (critically important!) is the premise that such a movement is constituted such that it is incapable of being "escaped from". This is the climate dynamic that Latour frames as Attractor 3 (the Terrestrial) and the ultimate resolution of the dynamic and tension between Attractor 1 (the Local) and Attractor 2 (Globalization), a dynamic that exists despite the futile efforts of the Trump Attractor 4 to create an alternative that denies it.

By extension, and operating within the terms of this argument, it is necessary to view the past century and a half of US higher education and its research elements, which included the development of the PhD as its premiere degree, within this emergent transformation as well. Historically, higher education research structures in general have led to the degree having a privileged social status, which entails creating access to critical resources in institutional roles and settings that operate to reward ever-greater knowledge accumulations within more narrow and specific knowledge specializations. It is useful, in the overall context of the Latour argument, to hypothesize that these research structures will also be asked/forced to yield to the imperatives of the emergent climate change objective contained within the Third Attractor. In this circumstance the graduate degree representing the "highest levels of higher education achievement" will be forced to focus on the vast multitude of changes taking place in the movement from the Global Attractor to that of the Terrestrial and its inseparable and constitutive climate objectives. In effect, Latour is suggesting that "all of knowledge" needs to shift toward this objective to have continued meaning for a surviving humanity, and it makes sense, given the logic of this argument, that the doctoral degree may/will become the framework for this shift within the academy as well.

Direct Implications

Assuming for the sake of this argument that such transformations do emerge, we can speculate on how the PhD may be transformed within the overall context of American higher education. Doing so, it is also useful to emphasize the rising awareness already occurring within higher education commentary concerning the impacts of artificial intelligence (the Fourth Industrial Revolution) on all of higher education, in a time frame that often begins with the articulations of the annual meeting of the World Economic Forum in 2016 and its focus on "Mastering the Fourth Industrial Revolution" (Schwab 2016). Increasingly, higher education institutions throughout the world are being impacted by various aspects of what is also termed 4AI and the varied extents to which it is beginning to transform the relationships between higher education institutions and the societies within which they reside. (For a brief accounting see C. N. Davidson 2017; Doucet et al. 2018.) Even without an intervening event such as the COVID 19 pandemic, projections about the future of higher education within an AI regime presage various fundamental restructurings. One seemingly common conclusion is that over the coming decade, most higher education graduates will be entering into a radically transformed social reality of altered expectations. Daniel Susskind, for one, has predicted that within the next decade (and even perhaps sooner), as many as 40% of existing jobs are likely to disappear as a result of AI-induced social change (Susskind 2020). These dynamics alone, this literature suggests, will create a "new reality" for all higher education graduates, with perhaps those holding advanced degrees being affected the most.

Within this emergent view of higher education, it takes little effort to locate a growing chorus of expert commentators offering projections of how these emergent dynamics will be radically hastened and given effect by the COVID 19 pandemic. Consider in this regard the prognostications of Yuval Noah Harai in March 2020 in which he argues that *all* of education will be confronted with the new and radical emergent framings of online education.

> Many short-term emergency measures will become a fixture of life. That is the nature of emergencies. They fast-forward historical processes. Decisions that in normal times could take years of deliberation are passed in a matter of hours. Immature and even dangerous technologies are pressed into service, because the risks of doing nothing are bigger. Entire countries serve as guinea-pigs in large-scale social experiments. What happens when everybody works from home and communicates only at a distance? What happens when entire schools and universities go online? In normal times, governments, businesses and educational boards would never agree to conduct such experiments. But these aren't normal times. (Harai 2020)

In the American case, it seems clear that an effort to identify and sort through the macro forces situating the transformation of the PhD within its universities now forces us to engage not only the reality of Latour's Attractor Four—Trump's world and its uncertain duration and after-affects—but also the overall structural impacts of the pandemic simultaneously taking place within the transformative processes of the Fourth Industrial Revolution. It is this novel and continuously changing context that frames any effort to assess and predict the status of the PhD in US higher education with respect to the inescapable imperatives of climate change.

As indicated earlier, the overall salience of the climate change narrative within US higher education is itself limited. On the one hand, formal recognition exists at a senior level, evidence of which is Second Nature, yet the translation of such symbolic commitments into extensive higher education organizational processes is limited. For example, a recent World University Rankings report on climate change ranks only two American universities among the top 31 as globally distinguished by their efforts to engage climate change. Where climate research and instruction do have an independent focus, they are characteristically situated within designated research centres and institutes that are themselves located within larger complex university structures. Such emphases typically are not located within the core "academic" units into which students are recruited and provided their primary instruction, units which overwhelmingly continue to be structured and recognized as "traditional" departments and related academic units. Two useful contrasting examples of how such very distinguished climate-focused entities do operate are the University of Hawaii, Manoa, and the University of Maine.

In the former, climate research has been ongoing for years as a key element of its research on ocean temperatures affected by climate change (conducted primarily within its School of Ocean and Earth Science and Technology-SOEST). Within the School, the doctorate is a combined endeavour of the disciplines that contribute to the organization and structure of the School itself, but as a motive force within the overall university processes, the structure of this particular PhD has had little overall effect, given that each school or college offering the doctorate does so within its own framing, as dictated by its predominant knowledge paradigm and traditions, and most frequently providing certification at the departmental level (over which a separate Graduate Division provides coordination and oversees standards). At the University of Maine, climate science is organized into an interdisciplinary school covering a wide range of research endeavours[5] which do not, however, reach into the kinds of implications and analyses for societal impact that are more usual to the social sciences and humanities.

Returning to the terms generated by Latour's analysis, it is the overwhelming case that in virtually all American universities, the PhD (and with the above caveats to differentiate it from other professional terminal degrees) is first and foremost perceived of and structured as a terminal degree in an established and accepted field of study with minority provision existing for the development of "new" fields of research and scholarship. With respect to the impending climate change crisis, and the movement toward Latour's Third attractor, it would seem that three fundamental and far-reaching changes would need to take place to give the degree essential salience in the face of the nature and scale of social needs.

First, and foremost, would be a reconceptualization of the degree within university hierarchies that allows for a transition from its historic role as a research signifier within the context of its "culmination of the (a) discipline focus", and as such, bound by the many structures that reinforce existing disciplinary-focused activity and organization.

[5] Including: glaciology, sedimentology, plate tectonics, paleoclimatology, structural geology, glacial geology, sea-level change, hydrogeology, environmental geochemistry, petrology, mineralogy and marine geology.

Moving away from its current and predominant role as labeling (both explicitly and by inference) of the degree holder as "expert" within a defined, accepted and "legitimated" disciplinary field, the degree would need to be reframed in terms that extend the knowledge holder's capabilities beyond most currently constituted academic disciplines. Rather than signifying the holder as expert (and presumably with an expert-knowledge capability unmatched by virtually all "others" in society) in a "subject field", the degree would come to indicate the holder's distinguished capability to frame, describe and conduct analyses on and across a range of human occurrences that transcend existing modes of inquiry *and* to engage, with both creativity and intensity, inquiries into "the novel", "the unexpected", and the "never previously experienced".[6]

Among current US doctoral programmes, that which most closely approaches this model may be Prescott College, a private institution located in Prescott Arizona. Its PhD descriptor reads: "The Ph.D. program strives to contribute to equitable educational change and building a more just future: through a socially and environmentally oriented lens" (Prescott College 2020). Were one to find an analogue for this model within existing higher education, it is probably within the varied forms of Future Studies[7] in which much of the intellectual and analytical burdens fall on giving framing and a sense of substance to issues, structures and behaviours that at best are only emergent within existing categories of description and analysis.

A second major transformation that would be required to align PhD programmes with the needs of the climate crisis would be a fundamental restructuring of programmes within the social sciences and humanities. Here the effort would be to focus them beyond their existing complex descriptions and analyses of how societies and cultures are created, organized and operated and with what outcomes and consequences. In their revised form and mission, they might be re-conceptualized to render them increasingly relevant to the emergent crisis and to the full range of consequences emerging from such powerful new forces as AI and climate change.

In short, a massive effort would be needed to shift them away from the positivist and analytical paradigm that has dominated these disciplines within higher education for the past several decades, into a normative framework in which their intellectual energies and capabilities would be directed toward the social challenges already taking place and emergent in the dynamics and consequences of climate change. In specific, the disciplines currently embraced by the social sciences and humanities would increasingly be charged with seeking both to analyse and to account for the "new worlds" being created by the synchronistic forces of artificial intelligence and climate change, including the nature, range and implications of their disruptions. In a manner that is currently difficult to imagine given the frames within which current PhD programmes operate, these degree programmes would be

[6] In this regard, such a conceptual approach would resemble Tim Morton's notion of "hyperobjects", namely a problem or phenomenon that not only seems to defy our control, but our very understanding of what it "is" (Morton 2013).

[7] Cathy Dawson, seeking to identify Futurist resources throughout the globe that seemingly possessed such capabilities in 2019, found one such program in the United States offering a Ph.D., located at the University of Hawaii, Manoa, having been established by Professor James Dator over two decades ago (Dawson 2020).

charged with the dual task of exploring how current inhabitants of existing societies are impacted by and respond to these extraordinary changes, while also gaining a sense of new modalities of "the possible", including new visions of social life and organization, emergent within such dynamics of change.

It seems to follow that where PhD programmes to embark upon a course in which such new ways of thinking become central to their revised mission(s), novel modalities of recruitment would soon develop within universities. That which is regarded as "novelty" and "creativity" would (conceivably) rapidly change, as would "ways of thinking" within higher education structures. Much of the existing burden placed upon "individuals" to display their capabilities could, conceivably, be fundamentally modified by new ways of producing and organizing "intelligence" for those asked to operate within new higher education structures—again, a process that is likely to be much framed and influenced by the developments and progression of artificial intelligence. The prevailing presumption that holders of the PhD do so in part as the result of a demonstration of their capability for both analysis and creativity could find, conceivably, that the burden of their intellectual demonstrations was increasingly shifted in the direction of their ability to think creatively about the transforming nature of society within never before experienced social realities and the consequences that may flow from that.

And finally and importantly, to fully appreciate the current structure and "operation" of the PhD system within American higher education, one needs to take into consideration the extraordinary degree to which it is funded by research grants, largely from governments at all levels, but also through the extensive structure of private-sector spending, by both foundations and corporations (Mervis 2017). Such funding structures, as they have in the past, perform the dual role of creating new agendas for research into which PhD cohorts are introduced, educated and graduated, and also operate as powerful forces to institutionalize and maintain the status quo. Within the policies of the Trump administration, it is simply unrealistic to see government funding leading to any significant support of research that would impact in a novel and positive way, the overall role of doctoral research focused on climate change. By contrast the commitment of private foundations to support research on climate change is substantial and continues to grow (Wendelbo 2018). The critical question here is whether in this regard higher education policies and structures may, in effect, get "caught in the middle" of these two possibly contending agendas.

Conclusion

Working with Latour's framework provides American students of its higher education structure an opportunity to attempt a difficult task: namely, employing his categories and insights to confront the transformative dynamics of climate change and gain the benefits of the insights produced, even while appreciating how theoretically and analytically isolating the prevailing American perspective is becoming within the Trump presidency. Confronted by the onrushing challenges to its structures, pedagogies, intellectual orientations and financial underpinnings embodied in the unprecedented combination of the COVID 19 pandemic, the rapidly emergent

Artificial Intelligence Revolution, *and* climate change, American higher education must face fundamental questions about its basic purposes, capabilities and desired outcomes. From every perspective, it is apparent that the country's higher education structure is unlikely to produce acceptable outcomes without fundamental changes. One of these can be, and should be, re-conceptualizing the PhD to focus it in various novel forms toward addressing these unprecedented national and global challenges.[8]

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