Chapter 13
The PhD Revolution: World-Entangled and Hopeful Futures

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Abstract This chapter provides an alternative conceptualization, and narrative, of the current state and aim of researcher education and the PhD. In a time where much scholarship highlights concerns about cohesion, relevance, and quality of the PhD, I aim to foreground an alternative PhD-narrative found in emerging research strands. I show that in the PhD, today, (1) we are witnessing new forms of doctoral student and supervisor agency within institutional contexts, (2) new sightings of how much social support beyond the institutional context influences on research momentum and creativity, and (3) new scope and magnitude of the importance and influence of research on biocultural and biopolitical negotiations. In contrast to the commonly held idea that the PhD foundation is eroding, I argue that we are witnessing a powerful PhD-revolution from within researcher environments, spreading like a pulse through social and professional domains, and reaching crescendo in societal and cultural contexts. Such institutional hope is crucial if the PhD should itself be filled with hope and find the courage to engage with climate issues and other global challenges. To be able to lift the researcher horizon towards global challenges requires courage and creativity within its institutional rooting and curricular nerve systems.

Introduction: Ruin and Disillusion – Or Glimpsing a New Hope?

One of the most prevalent narratives about the PhD, over the last two decades, has been one of institutional degeneration and ruin – and researcher alienation and disillusion, with a PhD de-attached from and distant to its societal and cultural surroundings. Readings (1997) voiced a rising concern in the 1990s, that the university "no longer participates in the historical project for humanity that was the legacy of the

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Enlightenment," and asked if we were entering the "twilight" of the university (1997, p. 5). In Goldman and Massy's (2001) perspective, graduate schools were, at the turn of the millennium, turning into "PhD factories," where the overproduction of PhD holders no longer created any clear private or public benefits and where the PhD was no longer seen as the response of the university to meet new and rising grand challenges.[1] Policy drivers such as the professionalization (Andres et al. 2015) of doctoral education, with a focus on generic competences relevant to a job market outside academia, started to erode the institutional cohesion of Graduate School and destablized the doctoral curriculum. As Pearson and Brew (2002), Manathunga (2005), and recently Barnacle, Schmidt, and Cuthbert (2019) have shown, such policy measures have resulted in tensions between institutional leadership levels, research environments, and doctoral supervisors and their students.

The institutional consequences have become visible through the rise in studies revealing the crumbling of the Graduate School leadership ethos, where doctoral students become alienated, lost and "orphaned" in the very systems set up initially to support and guide them (Wisker and Robinson 2012). Even when Graduate School leaders, research program directors, doctoral supervisors, and PhD administrators all want to recreate Graduate School cohesion and momentum, their discourses, initiatives, and visions not often and easily align (Bengtsen 2017). Not being aligned and cohesive within, Graduate Schools have struggled to become in sync with the surrounding society as well and to engage with commitment and originality to global concerns such as the climate crisis, together with challenges around health, security, equity, and social justice. Cassuto (2015) states that we are facing a Graduate School "mess," where we need to realize that "[a]cademic freedom comes with academic responsibility" and that doctoral researchers need to "turn their creative powers outward" (Cassuto 2015, p. 229 and 233). As Cassuto argues, we need a new Graduate School ethic, and such an "ethic would define a relation between the university and the community" and should pave the way for a genuine "ecological consciousness" of the PhD (Cassuto 2015, p. 228 and 227), where research across the disciplines aim to engage with climate change issues such as carbon dioxide levels, rising sea levels, increasingly extreme weather, melting permafrost, and threats to animal (and human) habitats.

Severe repercussions of the Graduate School mess have been felt by doctoral students as well as their supervisors. Burford (2018) has applied the term "cruel optimism" to describe how doctoral students and their supervisors are being encouraged by Graduate Schools, and national policy drivers, to complete in a restricted time frame due to the demand for researchers within the society – but in reality, employment prospects for researchers are poor. Acker and Haque (2017) have applied the term "hysteria," borrowed from Bourdieu, to describe the experienced

[1] Even though the literature I draw from is international, when I use the term "Graduate School" I have in mind the EU-based system, which relates to the Bologna process. Graduate Schools, and the notion of the PhD, in Europe, the United States, Australia, and other parts of the world differ in scope, focus, and goal (Andres et al. 2015), and my default understanding relates, due to my own national and institutional contexts, to the European model.

confusion and change of behavioral patterns (frustration, anger, criticism) in research environments and between doctoral researchers due to increasing pressures and demands from outside. Kelly (2017) has argued that the political, societal, and institutional state of confusion and uncertainty about the goal and purpose of the PhD has created a "schizophrenic" PhD "characterized by fragmentation (…) and pulled in different directions" (Kelly 2017, p. 59), which has led Bengtsen (2020) to suggest a possible torn PhD curriculum altogether. Also, doctoral supervisors have been reported to change their behavioral pattern due to the institutional and curricular changes in the PhD. As Halse (2011) and Wisker and Robinson (2016) have shown, doctoral supervisors display new forms of coping and self-protection strategies, when feeling the pressures from national policy translated into many-sided and unaligned Graduate School demands. More radically put, by Wisker and Bengtsen (2019), the increased policy focus on well-being and mental health in doctoral education is threatening to pathologize and creating a "sick" PhD.

The narrowing in of institutional and curricular horizons threaten to stifle creativity in the knowledge creation processes, draining the will and energy to move the PhD beyond merely academic circles and to fully engage in the discussion and solving of current grand challenges. As Barnett and Bengtsen (2017) have argued, the ecological awareness that links research, researcher formation, and global issues together depends on an inherent epistemic and academic "optimism" and hope. To engage with issues of climate change, and similar true global grand challenges, demands the ability to think into the unknown. The "optimistic university thinks from the world as we know it and it thinks from what the not-yet-ness of the world" (Barnett and Bengtsen 2017, p. 8). For the PhD to address ecological issues, the PhD itself needs to have an ecological foundation – both in its internal working within Graduate Schools and the wider institutional infrastructure, together with its outward projections and engagements.

My aim in this chapter is not to belittle or undermine the many scholarly studies disclosing a challenged Graduate system, but I argue that this picture is only half the truth and that we should take care not get stuck or become pulled down, in our research narratives, into the slippery slope of the (sometime much-needed) criticism of neoliberal regimes and focus on what the PhD is not, and what it can*not* be. The focus needs to be turned towards possible future and what it *could* be and *would* be, if it had the chance.

Firstly, I argue for a complementary perspective on the PhD that foregrounds the rise of new forms of agency and cohesion within Graduate Schools. These years are witnessing the constitution of PhD student unions, institutionally and nationally, who engage critically with institutional leadership and policymakers on the basis of mental health reports and research community feedback. Also, doctoral supervisors show agency and integrity in their interest in political spaces within Graduate Schools such as PhD committees and PhD program leadership. Similarly, institutional agency may be witnessed amongst Graduate School leaders searching for a new PhD ethic combining originality in research and contribution to societal and cultural agendas and value. In many ways, the PhD is not broken, and neither are our institutions, and many are fighting to find a new societal and political footing

and build up new institutional hope. Such institutional hope is crucial if the PhD should itself be filled with hope and find the courage to engage with climate issues and other global challenges. To be able to lift the researcher horizon and creativity towards global challenges requires courage and creativity within its institutional rooting and epistemic nerve systems.

Secondly, I show that what feeds creativity in doctoral research is being drawn from the social, cultural, and ecological reservoirs beyond the academy. Crucial social, practical, and emotional support, together with personal meaning-making, in the PhD, is often sapped from extracurricular and extra-institutional support and feedback systems. The degree to which our social and cultural realities shape the quality, momentum, and drive in research is rarely acknowledged. Indeed, the PhD is already world-entangled to an extent policymakers and institutional leaders are rarely aware of. The PhD is itself sustained by human culture, which again is sustained by wider biopolitical (Esposito 2008) and biodiverse reservoirs and resources, which often go beyond the awareness of the individual researcher and institution.

Finally, I argue that we are witnessing a PhD revolution taking place through rising academic activism and doctoral citizenship. Academic activism is spreading through student protest movements, strikes by academic staff, and through conference themes, keynote topics, and the work of academic societies and associations. Here, we do not only witness a political activism demanding a more humane, fair, and equal doctoral education, but we see new forms of doctoral citizenship centering around enhanced climate awareness, promotion of social justice, and the fight against "epistemicide" (de Sousa Santos 2016) and gender and ethnic inequality. Increasingly, PhD dissertations, either through funding policy or institutional focus, address the posthuman situation and the Anthropocene (Gildersleeve and Kleinhesselink 2019; Lysgaard et al. 2019), where "[d]ichotomies such as human-nature and human-Earth, no longer work or fit" (Gildersleeve and Kleinhesselink 2019, p. 5). This way seen, the PhD may be on the brink of becoming more societally, culturally, and *biopolitically* powerful and important than it ever was. Not in order to turn into ideology or become party political but to reclaim its social, cultural, and even bioethical mandate and responsibility.

New Doctoral Agency, New Institutional Hope

In a time where doctoral students are often described as frail, existentially insecure about the future (their own individually, and in a constantly changing society and culture, and even insecure of their future survival as a species), anxious, and stressed, it is important to balance the picture by foregrounding studies that show a different situation. In a recent study, Frick and Brodin (2019) pointed out the link between creativity in doctoral research and doctoral student agency. Being able to form networks, participate in researcher communities and wider collegial spaces within their home institutions and beyond, has a positive effect on the ability to develop creativity and originality in the research and to start imagining and being willing to

contribute to new societal and global futures. In a study by Jazvac-Martek et al. (2011), the many different and diverse interactions and tasks doctoral students undertake on a daily basis become visible. Besides focusing on their own research projects, doctoral students are also part of research programs, peer groups, journal clubs, writing groups, editorial committees, conference organizing committees, other research teams, etc. Some of these tasks are assigned to the individual doctoral student, while others are sought out and chosen voluntarily, and "a plenitude of supportive and critical interactions [are] occurring beyond the primary relationship with the supervisor" (Jazvac-Martek et al. 2011, p. 25). Where formalized support systems, such as supervision, often cast doctoral students in the role of individual agents separate from wider academic and social contexts, the active informal support systems doctoral students engage in reveal a much more community-based and collective version of the PhD, which is, however, not fully embraced by and integrated into the Graduate systems.

Doctoral learning journeys are full of living and vibrant, but often institutionally hidden or unacknowledged and unrecognized, forms of individual agency and active communities. Wisker et al. (2017) reveal this 'doctoral learning penumbra,' which shows how doctoral students rely not only on supervision but on coaching, mentoring, and even extra unofficial scholarly feedback and support from so-called guardian supervisors. Doctoral students seek out help from academics who may help "translate and encourage understanding," and some of these informal supporters "edit students' work, proofread, serve as sounding boards, providing empathy, containing anger and frustration, helping make choices,", and they provide "encouragement, suggest solutions to problems or difficulties, search for materials and articles, help in phrasing and rephrasing, and adjudicating" (Wisker et al. 2017, p. 534). The PhD is full with agency, courage, and community building, also in times when policy reports focus on doctoral students' isolation, loneliness, and anxiety.

Also, a more politically tainted form of doctoral student agency is on the rise. These years, we see the formation of an increasing number of doctoral student associations and councils complete with boards, statutes, and mission statements. We see doctoral students forming strong political groups within individual institutions and nationally across institutions. These associations engage into constructive and critical dialogues with senior leadership levels and Graduate School management around issues of well-being, gender and ethnic equality, work-life balance, and precarity in academic careers. Besides constituting a strong community of support between doctoral students and early career researchers, the associations and councils also constitute units of institutional power to be reckoned with. These forms of political agency show that discourses centered round pathology and illness will not pacify doctoral students. On the contrary, we see doctoral students being mindful of, and caring for, a shared future, and we see a strong and growing ecological awareness linking the individual researcher to their institutional and societal context, and even further yet towards commonly shared cultural and biopolitical futures.

We find an increase too in doctoral supervisor agency and researcher community agency. The notion of "Bildung" or the formation of doctoral researchers, has been continuously foregrounded in the literature. In Chris Golde (2007) and Mullen and

Tuten's (2010) work on journal clubs and cohort mentoring in doctoral education, we find that such cross-generational and semi-formal meeting and learning spaces inform the participants' research, strengthen the momentum and energy in the individual learning and research processes, and create a community within the larger institutional structure, where other rules, social codes, and cultural values may be co-defined and shared. The informal support of doctoral mentoring "involve[es] not merely a knowledge of institutional policies and procedures, but also a sense of the value and purpose of the doctorate and doctoral education as an important area of work" (Halse and Malfroy 2010, p. 87). As Sinclair et al. (2014) have shown, a central form of supervisor agency is the acknowledgement of doctoral students' autonomy and independence and the importance of building sustainable intellectual communities (Walker et al. 2008), where junior and senior researchers escape the supervisory dyadic, and hierarchical, relation and may research and work together in mutual and collegial respect and recognition. This awareness of the value in, and the competence in building, shared and sustainable intellectual communities is foundational to the wider global awareness of the shared climate challenge and the awareness of sustainable biopolitical futures. There is an inextricable link between the understanding of the importance of learning ecologies (Bengtsen 2020) on the individual and institutional levels and the wider societal and global biocultural ecologies.

Interestingly, we start to see a call for stronger and more practice-oriented leadership agency within Graduate Schools. We learn that Graduate School leaders themselves may feel ambivalent about "acknowledg[ing] the importance of centralising some of the power and responsibility in committees (the PhD committee, for example)," while also "recognising the importance of vibrant and inspiring research environments within the disciplines" (Bengtsen 2017, p. 265). The increasing centralization, and thereby often increase in size and complexity of Graduate Schools, may make Graduate School leaders perceive themselves "as (too) far away from doctoral supervisors and, especially, students in everyday doctoral education" (ibid.).

In a similar vein, Elliot, Bengtsen, Guccione, and Kobayahsi (2020) argue that besides showing an interest in and care for the activities and events taking place in the everyday life of the members of the Graduate School, "it is also important that Graduate School leaders know very clearly what goes on in the community. Not only in relation to merging the levels of policy and practice within the Graduate School, but also in relation to being *there* as a *member* herself or himself" (Elliot et al. 2020; italics [original]). Also, Clarke et al. (2016) call for stronger links between "institutional structures and local cultures of supervision" (Clarke et al. 2016, p. 286) and underline that what is needed is not ad hoc patchwork initiatives but "a larger process of institutional reform [and] educational leadership" (p. 287). To create new institutional hope within doctoral education, agency must connect across all levels of Graduate Schools and involve not only doctoral students and their supervisors but also research program leaders, department heads, and directors of graduate studies.

After decades of Graduate School leadership concentrating on translating policy reforms into structural changes within the PhD and the strengthening of Graduate School infrastructure, we now witness a much-needed change, or turn, in Graduate School *culture*, where doctoral students, their supervisors, research program leaders, and directors of graduate studies begin to reach out to each other and to form a new PhD ethic and a new community foundation, lending doctoral students the much-needed intellectual optimism and moral nerve and vitality that may direct their attention to even larger and more far-reaching biocultural and -political challenges.

World-Entanglement

The PhD cannot be contained within its disciplinary cloaking and dissertation format. We need to fully understand that the PhD is a wild-growth, overflowing its institutional, curricular, and disciplinary boundaries and mandates. In this section, I wish to shed light on the world-entanglement of the PhD. Students draw support, inspiration, energy, and ideas not only from beyond their supervisory teams, as shown in the section above, but even beyond the institutional and curricular contexts. As McAlpine and McKinnon (2013) show that "on a day-to-day basis, students depended as frequently on peers, friends, and family as they did on their supervisors, drawing on each relationship for different kinds of support" (McAlpine and McKinnon 2013, p. 265), concluding that "supervisors, while important, are not paramount in the doctoral journey" (McAlpine and McKinnon 2013, p. 278). While feedback relating to disciplinary expertise and professional support is very important in the PhD, doctoral students report that equally important to completion and quality in the learning journey are practical support, moral support, and emotional support (Cornér et al. 2018; Mantai 2019). The wider societal, socio-geographical, and even environmental surroundings affect our lives and the focus and energy we may put into our academic efforts and endeavors during the PhD.

It is beginning to dawn on us that quality and originality in research is strongly linked to a more holistic, or ecological (Barnett 2018; Barnett and Bengtsen 2019), picture. The force with which doctoral students manage to push the boundaries for their own thinking and learning depends not only on supervision pedagogy but also very much on existential meaning-making and access to reservoirs of deeper social and emotional support. As Bryan and Guccione (2018) show, doctoral education and research drive are as much about personal meaning-making, existential beliefs, and reflections about the wider societal relevance and cultural value of their research. During their PhD, many doctoral students start up their own family, have children, and spend time on maternity and paternity leave. Some get married, some get divorced. Some have elderly parents to attend to and care for, and some become ill or have spouses or children who become ill. As Hopwood and colleagues underline, we often forget that doctoral students are also "parents, siblings, daughters/sons,

and friends; they have other interests to pursue, health and finance to maintain, and domestic lives to run" (Hopwood et al. 2011, p. 218).

Also, cultural integration and realities to a large extent influence doctoral students' access to institutional infrastructure, supervisory and technical support, personal meaning-making, and even happiness. Elliot and her research team have shown how important, especially for international PhD students, cultural integration is to both research focus and momentum. Often, cultural integration does not happen at the institution itself, or even in the research environments at universities, but takes place in "third spaces" such as job contexts and professional networks outside the university, NGO volunteer work around wider societal issues, and through membership of sports clubs and interest societies, together with wider socialization with friends and family (Elliot et al. 2016; Cai et al. 2019).

Manathunga argues that the PhD is often understood as existing in a social and cultural vacuum and where its epistemic and pedagogical cultures are implicitly favoring some cultural identities and norms over others (Manathunga 2014). This is unfortunate as we witness our current "chronological bureaucratic approaches to doctoral education timescapes adopt assimilationist approaches to the supervision of women, working class, culturally diverse and Indigenous candidates which positions these candidates as lacking the capabilities, organisational skills and commitment deemed necessary to fit with dominant temporalities" (Manathunga 2019, p. 11). The world-entanglement of the PhD, paradoxically, becomes more and more visible in a time where policymakers and Graduate Schools search for a generic curriculum and wish to harness transferrable skills that transcend contextual differences and different sociocultural realities.

The world-entanglement of the PhD is equally visible when tracking post-PhD careers (McAlpine and Amundsen 2016; McAlpine and Amundsen 2018). Geographically the PhD(-holders) move between disciplines, departments, universities, cities, countries, and parts of the world, depending on the individual PhD-holder's willingness to relocate for a better position, a higher salary, to be closer to family (elderly parents), and to follow spouses moving jobs. In recent studies by Barnacle and her research team (Barnacle et al. 2019) and Guerin (2019), we see world-entanglement relating to the kinds of jobs PhD-holders find outside the university, including government positions, employment in state and federal departments, NGOs and not-for-profit organizations, private industry, and self-employment as freelancers.

The PhD disperse "throughout the workforce" (Guerin 2019, p. 13) in different shades of writing (editorial work, grant application writing, creative writing), researching (research analyses, research librarian work), teaching (high school teaching, staff training, and development officer work), and managing (project management, communication, and business management, team management) (ibid.). The world-entanglement of the PhD is powerful, and when "doctoral graduates take their knowledge and skills out of the ivory tower and into the broader workforce, they are at the forefront of breaking down boundaries between universities and wider society." (Guerin 2019, p. 17). The PhD has become a facilitator of change and an ecological driver through its ability to "facilitate engagement between

universities and industry, establishing collaborative research projects and offering internships for students," and the PhD-holders' "understanding of both university and industry needs places them in an ideal position to broker these exchanges" (ibid.).

This way, the PhD may become a biopolitical broker when connection stakeholders, communities, and even worldviews through the diverse forms of knowledge creation and knowledge work. Our knowledge of 'climate change is leading to mass civic and economic disturbance, quit apart from environmental degradation,' and we may find that "[m]oral norms may be challenged and political views may be unsettled' (Barnett and Bengtsen 2019, p. 116). The world-entanglement of the PhD stretches from the individual researcher, through researcher communities and institutional contexts, into societal knowledge practices and cultural and moral norms, and perhaps even resulting in push new biopolitical agendas and transforming global biocultural worldviews.

In contrast to the repeated policy mantras concerning greater societal impact and the ambition to move the PhD beyond the institutions and into society, it is clear that the PhD is already there – deeply entangled with the world through its "entanglement with life" (Barnett and Bengtsen 2019, p. 8). The PhD should be acknowledged as a true knowledge ecology (Wright 2016) and epistemic and ontological ecology (Barnett 2018; Barnett and Bengtsen 2017) and be met in its already far-progressed influences on research, researchers, organizations, companies, local communities, and families. The policy community and institutions have been on their heels awaiting rational curricular and career planning, while the PhD itself has been, in a more messy and organic way, spilling over from the institutions and into society for years.

As Fig. 13.1 shows, the PhD is situated within an ecological circuit mediating and transforming environmental, social, and cultural contexts and realities into original research and research momentum within doctoral education and spilling over into diverse societal, professional, and biopolitical futures. As I argue elsewhere (Bengtsen and Barnett 2019), the PhD is influenced not only by immediate national and institutional policies and strategies but by much wider environmental realities mediated through cultural and social contexts. The "darkness of higher education reveals that universities and higher education exist, and are being held up, *in addition* by stranger forces that we may not yet discern or even be willing to accept"

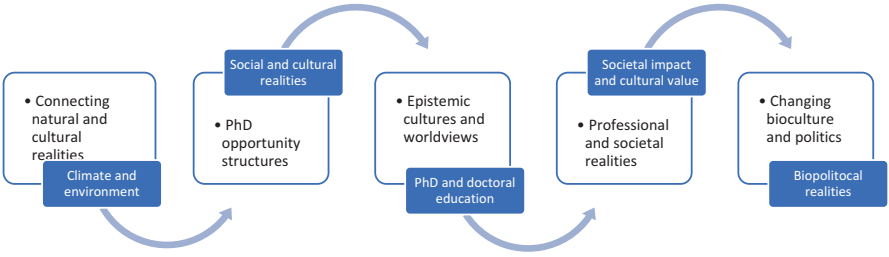

Fig. 13.1 The world-entangled PhD (the ecological circuit of the PhD)

(Bengtsen and Barnett 2019, p. 25). The first step to connect more closely the PhD with global issues of climate change is to make visible the ecological circuit that the PhD is a part of – and may be an active change-maker within!

Academic Activism and Citizenship

The cultural vibrancy of the PhD extends beyond institutional borders and societal rooting. Research and researcher formation, today, is being caught up in discussions around epistemicide (de Sousa Santos 2016) and the North-South cultural divide and the ambition from the researchers themselves to create the conditions of anti-instrumentalist and anti-racist change. The PhD is becoming visible as a societal and even political arena, and, following McArthur's argument on social justice (2018, p. 155), the research engagement itself "should be similarly active, critical and transformative" as there is a major "responsibility in how we frame and project the world in our research – and how we critically deal with our knowledge methodologies." Activism clings to discussions about the aims of research today, and Waghid and Davids (2018, p. 72) remind us of the often lack of critical voices from university staff and students in South Africa and argue that if the "decolonisation of knowledge were to be taken seriously, critique should invariably be invoked," so that we might arrive at "an African university of critique that will deal more poignantly and transformatively with higher educational matters, conflicts and concerns." Researchers today cannot avoid reflecting critically on questions such as: Who provide our funding and is that "funding genealogy' ethical and sincere? How may our research feed back into society and reach marginalized groups and societal peripheries, which forms the main driver in our research project? How may our research contribute to global concerns of climate change and health issues?

Today, the PhD is inescapably linked to societal and cultural ethics, where thought and cultural values are mirrored and where, for example in a New Zealand context, "the incommensurability of thought, and diverse and often marginalised, subjugated ways of knowing and being of indigenous knowledges might (re-)arise and flourish within the university" (Arndt and Mika 2018, p. 48). To Arndt and Mika, criticality in research and societal attitude are sworn together, and in this view "revolt is seen as a disturbance to the expected smoothness of the status quo, for example, of contemporary measurement and revenue raising systems and expectations" (ibid.). Research has an inbuilt political dissidence, and the dissident critical thought lies in its compulsion to "scrutinize, problematize and complicate thought and identity," and it aims to "disrupt familiarity, move language into improper, even obnoxious disturbances" (Arndt and Mika 2018, p. 52).

Australian researcher Frances Kelly (2017) argues that the PhD today finds itself with a peculiar, and perhaps unwanted (but also unavoidable), societal momentum and power. The natural strive in doctoral students, and PhD research, to destablize and unsettle existing paradigmatic hierarchies and epistemic authoritarian systems "tells us that there is an openness or perhaps even a desire to think outside or beyond

the modern Western episteme" (Kelly 2017, p. 120). Where the PhD earlier on has been almost clinically separated from societal and cultural discussions and identity formation, we see a clear connection between PhD research today and societal concerns. This is not without ambiguity as research funding and political agendas may influence research understandings to an extend that we cannot yet foresee or grasp.

With Gildersleeve's (2016, p. 1) wording, I argue that there is a 'knowledge imperative' embedded within the PhD, which signifies a "social contract between colleges and universities and society" around the promise to "safeguard knowledge – as an organizing system of social life – from partisanship, political whim, and undue influence from powerful factions." A similar perspective is found in Nixon's (2008) argument for universities and research constituting a "buffer zone" between the crude forces of personal self-interest and the impersonal interests of the state. Nixon's argument connects with the idea of a particular form of "Bildung," or formation, being embedded within doctoral education, which contributes to the harnessing of a moral and societal dimension of the PhD not yet fully realized.

Research and the PhD holds a dimension of care, as pointed out by Barnacle (2018). Barnacle argues that at the heart of knowledge creation at the highest level, there is a requirement for developing a "capacity to care" (Barnacle 2018, p. 77) to actually become able to carry out research and to become a researcher. In the PhD, we expect researchers to not only reproduce already known and existing knowledge but to create new and original knowledge through diligence and experiment, but also through an authentic respect, even esteem, for the aspects of the world being studied. Barnacle argues that the "conception of care is distinctive and important for learning because it involves a genuine openness to an other and the situation in which they find themselves" (Barnacle 2018, p. 81). Care makes us open to what lies beyond our preconceptions and social and cultural prejudices, and we become able to listen to and comprehend social identities, cultural value systems, or personal and religious worldviews that might otherwise escape us and create distance, confrontation, and conflict.

In the PhD, Barnett and Bengtsen (2019) argue, the aim is not to understand knowledge as being *about* life, but *from* life, and in the service *of* life. This understanding draws from a new realism that enhances the ontological empathy of research and argues that knowledge is not only of the world but from the world and from life. Knowledge lets us access dimensions of reality and experience otherwise beyond our grasp and to experience different aspects of the world afresh. Knowledge may be a living the life, and through knowledge we may "see with the eyes of tiger, or the space-traveller, or the prisoner of war, or listen with the ears of the diplomat or feel with the hands of the mountaineer. Knowledge is traversing life" (Barnett and Bengtsen 2019, p. 86).

The notion of researcher activism here links closely to an ethical dimension of academic citizenship (Macfarlane 2007; Nørgård and Bengtsen 2016, 2018) and the idea of the citizen scholar (Arvanitakis and Hornsby 2016). In line with my earlier work (Bengtsen 2020), I argue that we see a particular form of "doctoral citizenship" on the rise, which requires that Graduate Schools "understand themselves as embedded within the wider societal context and belonging to that context, but not

being limited and defined by it solely" (Bengtsen 2020, p. 154). In current times of climate change, virus outbreak, and culture meetings (clashes) due to refugees of war or ethnic segregation, frontline research has the ears of politicians and publics. Also, in a time of fake news and post-truth, the PhD, once again, needs to reestablish itself as a unique place of societal trust. Considering the PhD curriculum today means not only to consider disciplinary anchoring, dissertation formats, and where to draw the methodological line of demarcation in relation to dissertation assessment but also to acknowledge the rising, and very real, societal expectations and hopes put on research and researchers – which is an invitation to social and cultural engagement and leadership.

Conclusion – The PhD Revolution

Around the world, in Graduate schools, research environments, professional domains, and wider societal arenas, we are witnessing a PhD revolution. With the term "revolution" I mean, on the one hand, that the PhD is moving rapidly towards new (bio)political, institutional, societal, and curricular momentum; a re-volution. On the other hand, I also mean that the PhD is at the same time being transformed from within and is becoming a real contribution to a social and cultural transformation process. I have illustrated the trajectory of the PhD revolution in Fig. 13.2 below (inspired by the idea of the PhD and its "nested contexts" in the work of McAlpine and colleagues (McAlpine and Norton 2006; McAlpine and Amundsen 2016), showing how the PhD revolution spreads like a pulse through the institutional domain, into wider forms of world-entanglement beyond the institution, and even further transforming into forms of academic activism and citizenship.

In the institutional domain, we identify the PhD revolution through witnessed renewed forms of agency in doctoral students, their supervisors, and in Graduate School leadership. We see efforts in bridging and integrating formal, informal, and hidden curricula of the PhD (Elliot et al. 2020), and doctoral students and their supervisors fight for gaining a stronger political voice and institutional influence in a time where the eyes of politicians, external organizations, and companies are set on the PhD and its promise of financial and societal growth.

In the domain of world-entanglement, it becomes visible how the boundaries of the PhD have become still more permeable and how private life issues, sociocultural worldviews, and notions of professional competence mix with understandings of researcher creativity and quality in the research. The PhD, today, does not belong to the knowledge economy but to a knowledge ecology (Wright 2016) sustaining itself through environmental, cultural, and societal contexts.

In the domain of academic activism and citizenship, we see how the PhD, through enactments of research practices and researcher identity, influences not only the private, social, and professional contexts but reaches into negotiations of cultural values, societal agendas, and political cultures. This way seen, the PhD can no longer be understood as an isolated disciplinary endeavor, and core disciplinary

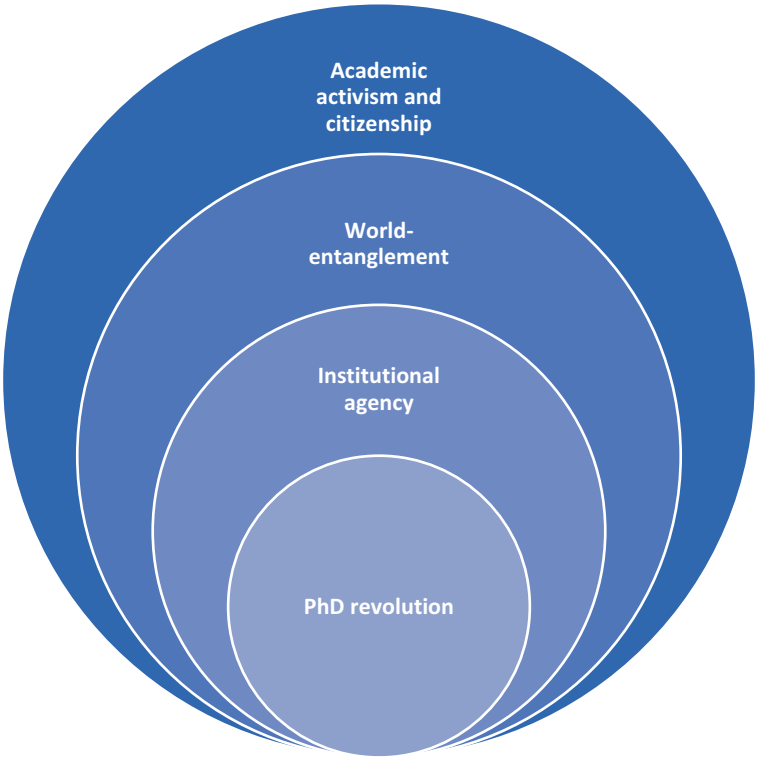

Fig. 13.2 The PhD-revolution-model

contribution must be seen as a form of engagement with, and endeavors in the service of, the natural, social, and cultural world around the degree.

The PhD is spiraling out and beyond institutional contexts and control, and one of the main challenges for Graduate School leaders and doctoral supervisors today is how to try to link and connect the individual doctoral student's research project with wider institutional, societal, and cultural contexts and how to help the doctoral students build synergy and cohesion across the domains in order help and sustain wider societal and cultural issues around them.

Situating the PhD successfully within a context of climate change and other major global concerns requires the development of an in-built ecological dynamo, where doctoral students become aware of their own institutional agency, societal belonging, cultural relevance, and biopolitical mandate. Being able to fully unleash the PhD into a climate context demands a graduate and carefully developed ecological awareness and mindset in the doctoral learning process. Establishing institutional agency and making the ecological circuit tangible to doctoral students and their supervisors may catalyze a more wide-ranging PhD revolution.

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