

# The Transformation of Higher Education Institutions Towards Sustainability from a Systemic Perspective



Bror Giesenbauer and Merle Tegeler

**Abstract** Education for sustainable development has risen in scope and importance during the past decades. Even though the word sustainability has become much of a buzzword, the concept of sustainability itself has not made it to mainstream academia. This chapter presents an analysis of the value systems that shape the course of and the discourse in higher education institutions (HEI). Why are HEIs reluctant to change in general and towards sustainable development in particular? What kind of change would need to occur and which factors drive the evolution of HEIs? These questions are discussed from a systemic point of view against the backdrop of systems theories such as Spiral Dynamics and Integral Theory. Four distinct levels of value systems are described. These value systems represent different evolutions of HEIs that all have their place within the evolution of societies in general. The 17 sustainable development goals (SDGs) are framed as an ideal means for bridging the gap between value system 2.0 and 3.0. Implications for transforming HEIs are discussed. This chapter will be useful to anyone interested in the systemic forces that shape the way how higher education institutions deal with the task of education for sustainable development.

**Keywords** Sustainable development · Transformation of higher education institutions · Spiral dynamics · Systemic change · Integral theory

## 1 Introduction

Education for sustainable development has risen in scope and importance during the past decades. The publication of “Our Common Future” in 1987 (World commission on environment and development 1987) coined the term “sustainable development”

---

B. Giesenbauer (✉) · M. Tegeler  
University of Bremen, Enrique-Schmidt-Straße 1, 28359 Bremen, Germany  
e-mail: [giesenbauer@uni-bremen.de](mailto:giesenbauer@uni-bremen.de)

M. Tegeler  
e-mail: [tegeler@uni-bremen.de](mailto:tegeler@uni-bremen.de)

© Springer Nature Switzerland AG 2020  
W. Leal Filho et al. (eds.), *Universities as Living Labs for Sustainable Development*,  
World Sustainability Series, [https://doi.org/10.1007/978-3-030-15604-6\\_39](https://doi.org/10.1007/978-3-030-15604-6_39)

(SD) and gave birth to large collective and global efforts to spread and develop the concept.

As early as 1996 researchers have tried to outline ways of implementing SD as a concept and as a way of thinking at universities (Leal Filho et al. 1996). Since then the body of literature on universities' role in supporting sustainable development has grown and matured, especially in the context of competencies for future challenges (see e.g. Lozano 2006; Leal Filho 2010; Rieckmann 2012; van Weenen 2000; Wiek et al. 2011). Several research groups even have dedicated their whole careers to the case of sustainability.

In September 2015 the United Nations (2015) General Assembly adopted the Agenda 2030 resolution and thus renewed the commitment to SD with the 17 sustainable development goals (SDGs). This framework helps to break down to complexity of SD in more feasible fields of action. Education for sustainable development (ESD) is part of SDG 4: High quality education.

Along these developments the cause of sustainability has gained a lot of attention and a lot of effort has been put into promoting it at higher education institutions (HEIs) (Lozano et al. 2015). And yet—even though the word sustainability has become much of a buzzword—the concept of sustainability itself has not made it to mainstream academia (Thomas 2004; Blanco-Portela et al. 2017). For example, the SDGs are rarely integrated into existing curricula or campus management at German HEIs in spite of the fact that Germany has strong political initiatives for ESD such as the German Council for Sustainable Development of the German Federal Government (*Rat für Nachhaltige Entwicklung*), the German Advisory Council on Global Change (*WGBU*) and the German National Action Plan for ESD (*Nationaler Aktionsplan BNE*) (Müller-Christ et al. 2017, 2018). Furthermore, the term *sustainability* is subject to several misconceptions which hinders the advancement of SD at HEI (Leal Filho 2000).

HEIs compete for research grants, students and prestige—and mostly within the boundaries of mainstream academia. Researchers play by the rules of their respective disciplines and try to make a difference within the limited scope of their niche, too. Success is assessed by publication rates and the amount of research grants and not—for example—by impact on society. Within this numbers driven culture of competition and differentiation there is little space for interdisciplinary topics of general relevance such as SD (Müller-Christ 2017).

This chapter aims to explain the dominance of a competition culture within academia and the subsequent disregard of sustainability issues by analyzing the underlying values systems with systemic frameworks based on Spiral Dynamics (Beck and Cowan 1996). Four distinct developmental stages of value systems are presented and applied to HEIs. Finally, the role of SDGs and learning labs in promoting systemic change is discussed and further implications for change agents are inferred.

## 2 Evolutionary Stages

The evolution of universities mirrors evolutionary patterns of general societal and human development. There are several theories of development describing these patterns—from pioneers such as Abraham Maslow, Jean Piaget, Jane Loevinger, Susanne Cook-Greuter, Lawrence Kohlberg, Clare W. Graves and others (Wilber 2001). The “emergent, cyclical, double-helix model of adult biopsychosocial systems development” theory of Graves (1981)—an American professor of psychology and colleague of Abraham Maslow—is especially suitable to describe complex change processes and stages of value systems like those of HEIs. After Graves’ death in 1986 his theory was refined and introduced to the general public by Don E. Beck and Christopher C. Cowan under the name of “Spiral Dynamics” (Beck and Cowan 1996) and became part of Ken Wilbers integral philosophy (Wilber 2001). This chapter builds heavily on the logic and terminology of Spiral Dynamics and integral philosophy.

Spiral Dynamics describes a distinct sequence of developmental stages of value systems. As civilization turned from hunter-gatherer tribes to more complex forms of social organizations, people’s value systems developed along, ideally as a perfect fit with present challenges and environmental conditions. As a general tendency, each stage incorporates several breakthroughs that enabled men to coordinate themselves in networks of ever-increasing size and complexity, from tribes to kingdoms, early nation states, organized world religions, transnational corporations, global markets and the United Nations—to name a few milestones of human coordination. Each stage represents a new way of dealing with arising challenges and simultaneously includes and transcends the preceding stages, preserving and reframing foregoing breakthroughs (Wilber 2001). Furthermore, the stages oscillate between a focus on the collective’s and the individual’s needs within society, what led Graves to describe human evolution as an upward spiral of outer and inner co-evolution (Beck and Cowan 1996).

In the context of sustainable development at HEIs, the earlier steps of societal coordination—as attributes of worldviews of tribes, empires and the like—are not of interest. Instead, following the reasoning of Hedlund-de Witt (2014a) and Müller-Christ (2017), the focus will be laid upon the four following phases and their respective breakthroughs in organizing people. These breakthroughs are tightly linked to their underlying value systems. According to Hedlund-de Witt (2014b, p. 194) value systems or worldviews are “inescapable, overarching systems of meaning and meaning-making that to a substantial extent inform how humans interpret, enact, and co-create reality”.

It is important to note that none of the different worldviews is inherently better, although they might differ in the way they fit conditions (Laloux 2014). Furthermore, even though a society or person might gravitate around a certain worldview, all other worldviews are still to be found in both societies and persons and can still be part of a mature, peaceful and healthy expression of adult human behavior.

In the following the four relevant worldviews are described and linked to sustainability. The four relevant stages are preceded by a short description of the prior worldview to better frame the evolution of worldviews.

### ***2.1 Pre-traditional Worldview: No Sustainability***

Early kingdoms and great empires were shaped by a power-focused worldview. Power was often used haphazardly and although there were strict rules, these rules were often changed at a glance (Beck and Cowan 1996). This kind of egocentrism and despotism can still be found in its pure form in organizations such as street gangs, patriarchal organizations and dictatorships. To a lesser extent its basic worldview can still be found in modern organizations and express itself in abuse, in fights over power or in a strong drive for market dominance. This value system is based on a short term, impulsive, hand-to-mouth a thinking and thus has no real understanding of sustainability issues. In fact, this worldview has no problem with abusing natural and social resources. Therefore, it will be disregarded in the discussion of HEI evolution.

### ***2.2 Traditional Worldview: Sustainability 1.0 as Environmental Compliance***

The traditional worldview tries to mitigate the fleeting and arbitrary nature of the pre-traditional worldview and is focused on order, absolute truths and standards. This kind of thinking values the group more than its individuals. Its major breakthroughs for humanity are a basic understanding of cause and effect and the ability for long-term planning, supported by strong hierarchies and a strict division of labor (Laloux 2014). These innovations made it possible to build large and lasting organizations. It can be found in its purest form in military organizations and Christian religious institutions, where roles are clearly stated and each individual is thought to be replaceable.

Indeed, the traditional worldview is more focused on establishing stable processes and norms rather than on taking care of nature or people. Organizations and societies that gravitate around the traditional worldview are often quite gruesome to minorities and alternative thinking individuals. Following a fixed set of rules is more important than the rules' content (Beck and Cowan 1996). Therefore, traditional minded organizations are very compliant to regulation—for example with regards to waste management and safe work conditions—and at the same time very reluctant to changing existing rules in favor of sustainable development.

### **2.3 Modern Worldview: Sustainability 2.0 as Eco-Efficiency**

Being dismayed by the strict rules of the traditional worldview, some individuals developed a new, questioning mindset. *What if we changed the rules set generations before us? What if we could make it better?* Questioning assumptions and focusing on optimization marked mighty breakthroughs for society (Laloux 2014). Indeed, modern democracy, technology, empirical science, academic medicine, free market systems were invented from modern worldview and led to the expansion of wealth, citizen rights, knowledge and drastically improved health care. The modern worldview is currently the most powerful worldview in industrialized countries.

However, radically questioning assumptions and striving for evermore optimization did not only create ever-increasing “progress” but also powerful side effects (Scharmer and Kaufer 2013). Breaking with traditions and focusing on efficiency as an end in itself, the modern worldview made the massive exploitation of natural resources possible (Hedlund-de Witt 2014a). Furthermore, the believe in pure meritocracy as well as in the powers of the free market often works against social welfare and the active inclusion of traditionally disadvantaged groups such as people of color and women. In line with this kind of thinking, the modern worldview frames all sustainability issues to be either solvable by eco-efficiency or technological innovation—or to be non-important in the face of economic growth.

### **2.4 Post-modern Worldview: Sustainability 3.0 as Respect for Nature and People**

The post-modern worldview developed as a counter movement to the modern worldview’s negative characteristics, namely exploitation of nature and people, cold individualism and an autistic focus on efficiency, achievement and improved numbers. It is described as the green worldview (Beck and Cowan 1996) and focuses on feel-good themes such as respect for nature and people, mutual care-taking, community and wellbeing. The pure post-modern worldview reacts allergically to hierarchy, to society’s focus on economy and to the disregard of minorities.

The concept of sustainable development arose from a post-modern worldview, in light of the world’s ills and aches. It strengthened the humanitarian role of the United Nations and led to the development of non-governmental organizations (NGOs). Therefore, this worldview is the dominant one of those engaged in the promotion of SD.

However, trying to include all relevant stakeholders in decision making processes free of hierarchy can often be tedious and ineffective. Focused on being positive and empowering, the post-modern way of thinking is often blind to the challenges and trade-offs of implementing sustainability in economic processes—both in industrial and pre-industrial countries (Müller-Christ 2017). Furthermore, the post-modern worldview’s language of community and respect is often regarded as “hippie hog-

wash” and overly political correct by relevant decision making authorities operating from a modern worldview (Müller-Christ and Giesenbauer 2019; Laloux 2014).

## ***2.5 Integral Worldview: Sustainability 4.0 as Systemic Management of Multi-level Development***

Whereas the modern worldview focuses on *creating* wealth, the post-modern worldview focuses on *sharing* wealth. Thus, at least in theory, both worldviews could act as partners for enhancing quality of life all over the globe. There are however limits to this cooperation, as both the modern and the post-modern worldview usually take themselves to be the only valid approach to life and therefore often end in opposition.

One of the major breakthroughs of the arising integral worldview is the ability to recognize both the truths and pitfalls of all worldviews and being able use them flexibly in order to create the conditions for sustainable development. This ability to see the world from multiple perspectives simultaneously marks an important milestone in the advancement of human evolution (Brown 2012). Therefore, the integral worldview is described as the first second-tier worldview and the first one with a truly systemic understanding (Wilber 2001).

The integral worldview is closely linked to sustainable development since its focus lies on promoting the health of all systems. Integral thinkers are usually very much aware of their evolutionary purpose and try to create the necessary conditions for the emergence of sustainable change (Laloux 2014; Brown 2012). Trying to support all levels of human evolution to develop concurrently, one step at a time, requires the ability embrace uncertainty and dilemma (Brown 2012). Furthermore, the integral worldview cherishes natural emerging hierarchies based on competency—breaking with both the anti-hierarchy attitude of the post-modern worldview and the deep trust in rigid hierarchies of the traditional and modern worldviews. This means that in integral organizations practically anyone can start initiatives and implement changes—as long as she commits to the case and consults with all relevant stakeholders (Laloux 2014) (Table 1).

## **3 Four Distinct Value Systems of HEI**

Having looked at different stages of evolution and their affinity to sustainable development, it is time to look at higher education institutions (HEIs) in the light of systemic development, following the reasoning of Müller-Christ (2017).

**Table 1** Overview of four evolutionary stages

1.0: Traditional Environmental compliance	2.0: Modern Eco-efficiency	3.0: Post-modern Respect for nature and people	4.0: Integral Systemic management of multi-level development
Focused on order, absolute truths and norms Inclined to be critical of development and change	Currently the most powerful worldview in the developed world Based on positivism, focused on achievement	Focused on respect for nature and people Emphasizes ways of knowing beyond the rational-empirical methods of modern science	Embracing uncertainty and able to inhabit different perspectives simultaneously
Basic understanding of cause and effect and the capacity for long-term planning, supported by strong hierarchies and strict division of labor	Radically questioning assumptions and the pursuit of optimization have led to both societal wealth and disastrous side effects for nature and people	The concept of sustainable development emerged from a postmodern world view Emphasis on fundamental changes needed in society as a whole	The integral world view is the first worldview of the second tier and the first with a truly systemic understanding Often holds to an evolutionary, spiritual-unitive notion of development
A set of rules is more important than the content of the rules Particularly critical of material- ist/consumerist notions of development	Belief in pure meritocracy Emphasis on development of science and technology for sustainable solutions Focused on win-win solutions and eco-efficiency	Postmodern thinking focuses on being positive and empowering and is often blind to the challenges and trade-offs of implementing sustainability in economic processes—both in industrial and pre-industrialized countries	Emphasis on integration and synthesis of different interests and perspectives Attempts to integrate local and global Potential willingness for change of lifestyle and of self

Based on Müller-Christ (2017) and Hedlund-de Witt (2014a)

### ***3.1 Traditional HEI 1.0: Preserving Truths and Insights from Experts***

Universities—as preservers of truths, virtues and norms—were invented from a traditional worldview and have managed to keep their distinctive spirit for several centuries. Even in the 20th century, teaching at universities often meant that a supposedly all-knowing professor literally read his insights and knowledge to the passive stu-

dents. This kind of worldview is not open to crosscutting topics such as sustainable development (except in very concrete forms such as the protection of rare plants and animals) and rather protects the division of disciplines (ibid.).

Although most HEIs to this date are not pure traditionalist, their basic structure is usually still shaped by traditional thinking. The more they gravitate around the traditional worldview the less they are open to impulses from the outside, resulting in few initiatives for SD that go beyond the bare minimum of compliance with environmental or minority protecting regulations.

### ***3.2 Modern HEI 2.0: Top Notch Science in Specialized Fields***

Current academia is mostly shaped by the modern worldview with its focus on quantitative success, professional specialization and competition. This kind of worldview leads to an academic merit system based on numbers such as frequency of publications, journals' impact factor and level, acquired research grants or number of students, to name a few. Each HEI and each participant of the scientific community thus compete for attention, grants and status (Müller-Christ 2017). Researchers have to distinguish themselves by both quality, quantity and specialization of publications, as defined by their narrow disciplinary niche. This means that crosscutting topics such as SD are often disregarded—not so much due to their content but due to their limited ability to promote careers.

Furthermore, in the field of campus management, the modern worldview of HEI 2.0 leads to optimized and numbers-driven administration, with clear and at the same time changeable processes. Sustainability is generally not a part of HEI 2.0's reasoning, with the exception of "greening the campus" and eco-efficiency regarding the use of water, energy and other resources, leading to reductions of costs (Leal Filho 2010). Although being cost-aware and optimizing processes are highly appreciated from a SD point of view, HEIs 2.0 are too much focused on quantitative success and show a lack of societal responsibility. According to Müller-Christ (2017), this stage can be classified as an egocentric system.

### ***3.3 Post-modern HEI 3.0: Action Research and Stakeholder Dialogue***

When members of HEIs act mainly from a post-modern worldview, they tend to have a different approach to teaching and researching. Being highly aware of global challenges and societal responsibility they try to integrate different perspectives of regional and global stakeholders (Leal Filho 2010). They try to make everyone heard, especially with regards to students, minorities and disempowered and underprivileged groups (see e.g. the Rio+20 Treaty on Higher Education 2014). This is reflected



by the large amount of qualitative research methodologies and inter- and transdisciplinary research projects. The HEIs' ethos thus changes from fact orientation to relationship orientation.

In teaching, HEI 3.0 prefer dialogue oriented seminars to classic large-scale lectures and experiment with innovative concepts such as global classrooms. These learning arrangements aim at competencies rather than knowledge only (Rieckmann 2012) and try to bridge the gaps between the scattered disciplines and stakeholders by reaching out and promoting self-reflection. Moreover, post-modern universities begin to experiment with online learning tools and on-demand lectures to further help meeting students' needs.

In the field of campus management, HEI 3.0's post-modern worldview is reflected by the attempt to achieve climate neutrality and reduce unnecessary resource consumption. Furthermore, in line with their dialogue orientation, HEI 3.0 are often shaped by student initiatives, for example regarding organic, vegan and/or vegetarian food options as well as social initiatives regarding inclusion, gender sensibility or refugee projects. In general, HEIs 3.0 try to be as much stakeholder oriented and considerate as possible.

A lot of current researchers—especially in the realm of sustainability research—are centered in the post-modern worldview of HEI 3.0. However, to advance or stabilize their careers they often have to play by the rules of the modern worldview of HEI 2.0, leading to a lot of tension and trade-offs on a personal level.

### ***3.4 Integral HEI 4.0: Integrated Learning Labs***

While there are several examples of integral organizations in business (Laloux 2014) there are few examples for integral HEIs. Deduced from Laloux' (ibid.) research, such HEI 4.0 should possess qualities of self-management, a strive for wholeness and listen to their evolutionary purpose. Researchers are then part of a larger evolution and generation of knowledge, blurring the boundaries between objects and subjects of knowledge as well as between rational and non-rational sources of knowing (Müller-Christ 2017; Brown 2012).

Researchers, teachers, students and citizens are then co-creating solutions for common challenges. Therefore, a HEI 4.0 can be framed as a citizens' university (*Bürgeruniversität*) (Schneidewind 2014). Integral HEIs build on post-modern HEIs' community values but go beyond them by allowing natural hierarchies to emerge and by allowing the open discussion of tensions, dilemma and trade-offs of sustainable development. These developments are facilitated by the willingness of individuals to take responsibility for SD challenges and be vulnerable at the same time—a new kind of action oriented mindfulness. Therefore, within their Theory-U model, Scharmer and Kaufer (2013) propose the evolution from HEI 1.0 to HEI 4.0 to be an *inversion journey*: “That means opening the mind, heart, and will (micro), moving conversations from downloading to generative dialogue (meso), and converting hierarchical

**Table 2** Four phases of HEI evolution

Evolutionary phase	Teaching	Research	Operation
HEI 1.0 Traditional system, hierarchical	The scientist reads his books	Confirmation of dogmas Structure of disciplines	Building palaces of knowledge
HEI 2.0 Modern system, competitive, egocentric	Result-oriented transfer of non-reflexive knowledge Construction of project-oriented learning	Rationalization knowledge generation Staged interdisciplinarity Analytical problem orientation	Rapid growth in functional buildings without energy awareness Control of cash flows
HEI 3.0 Post-modern system, dialogue-oriented	Competencies- oriented transfer of self-reflective knowledge	Transdisciplinarity Solution orientation through new forms of dialogue Action research	HEIs as a place for encounters Virtual spaces for learning and dialogue Climate neutrality
HEI 4.0 Integral system, co-creative	Intentional generation of self-transcending knowledge Co-creative design	Using collective creativity Global action research HEI	Sources of physical and creative energy for the whole environment

Based on Müller-Christ (2017)

silos into eco-creative fields that connect the eco-system as a living whole (macro)” (ibid., p. 240).

Scharmer and Kaufer (2013) further propose that learning at integral HEIs will be shaped by global classrooms, action learning, innovation hubs and individualized lifelong learning journeys. Sustainable development will then be integrated into the DNA of HEI, not as a special topic but as the main purpose and driver of social learning. Ideally this would lead to true trans-disciplinary and trans-institutional action research aimed at solving our most pressing societal problems. This evolution of HEIs will likely not lead to a frictionless organization but produce its own unforeseen problems (Table 2).

## 4 Facilitating the Evolution of HEI

HEI 4.0 will most likely be needed to solve humanities problems. However, most universities are at the point of trying to perfect HEI 2.0, in line with the general societal evolution. Van Opstal and Hugé (2013, p. 697) comment:

Despite claims of a paradigm shift, scientists argue that the widely institutionalized SD paradigm—as endorsed by many U.N. documents—remains based on a modern normal scientific and classical economic rationality, incorporating dominance of some worldviews

instead of thorough integration of different views with variety serving as a basis for sustainability.

This call for advancement of all evolutionary levels of HEIs is also reflected in the Rio+20 Treaty on Higher Education (2014): “To be transformative, higher education must transform itself.” In line with these comments, the following paragraphs are intended to show ways of facilitating the evolution of HEIs toward a post-modern or even integral level.

#### ***4.1 SDGs: Bridging the Gap Between 2.0 and 3.0***

In order to make the change from one evolutionary phase to the next, there need to be either radical shifts in consciousness and structure or—following a gentler path—bridges toward the new paradigm (Beck and Cowan 1996). The sustainable development goals (SDGs) adopted by the General Assembly of the United Nations (2015) appear to be an ideal means to bridge the gap between HEI 2.0 and 3.0.

First of all, the SDGs are—as their name clearly states—goals and are thus well suited for the numbers and achievement driven modern worldview of HEI 2.0. Their content, however, is one of respect for nature and people and therefore promotes the emergence of the post-modern and integral worldviews. Secondly, the structure of the SDGs helps to break down the complex challenge of SD and enables the integration of SD into specific disciplines. The focus on high quality education of SDG 4 further helps to connect SD to the realm of HEIs.

Moreover, the concept of the SDGs is not limited to scattered research and teaching of singular disciplines—the framework itself references the overarching goal of a more general SD. Thus, by implementing a single SDG, the door is open to connect it to one or more of the other SDGs and to come closer to the “transformation of higher education itself”.

Indeed, the SDG framework as a whole stresses the importance of sometimes contradictory goals. Embracing contradictions and tensions is closely linked to the emergence of the integral worldview seeing the relative truth of multiple perspectives. For example, economic growth and decent work (SDG 8) can lead to immense progress in issues of social sustainability such as ending poverty (SDG 1) health (SDG 3) or quality education (SDG 4), to name a few, and at the same time be detrimental to other goals such as climate action (SDG 13) and life below water and life on land (SDG 14 and 15). These tensions are not easily solved and need to be balanced by individuals and institutions that are able to integrate different perspectives without losing the ability to act. Working with the SDG framework as a whole might therefore promote the development toward integral HEI 4.0. As Singer-Brodowsky and Mader (2018) state, to enable complex changes such as the *Energiewende* (energy transition) a change of the education system is needed as well.

## 4.2 *Learning Labs and Innovation Hubs*

While the SDGs are helpful to promote the evolution of HEIs by their content and structure alone, teaching methodologies need to be adjusted, too. To promote the development of competencies for future challenges, teaching needs to guide students toward self-directed and research-based learning. Learning labs might at first be closely linked to classic 2.0 research and yet open up the formerly linear transfer of knowledge, thus enabling the emergence of post-modern and integral problem solvers.

If overcoming the challenges of SD implies transforming HEIs themselves, then learning labs are a helpful means to reach this ambitious goal. In the beginning, labs might be more conservative and be formed by students and teaching staff only, but over time this arrangement might involve more and more stakeholders relevant to the issues at hand. In the end this might lead to inter- and transdisciplinary innovation hubs, where different stakeholders work together to design innovative solutions for complex challenges (Scharmer and Kaufer 2013; see e.g. Armstrong et al. 2014).

## 4.3 *Leadership Qualities*

To shift toward HEI 4.0 a whole institution approach is needed (Mader and Rammel 2015) which implies an integrative leadership concept. Therefore, in line with the assumptions made by Scharmer and Kaufer (2013), building collective leadership capacities is crucial for the transformation of HEIs. Scharmer and Kaufer (2013, p. 243) propose the need for awareness-based leadership technologies:

The capacity to facilitate processes of profound societal innovation is grounded in mindful leadership and awareness-based leadership technologies that link the intelligences of head, heart, and hand. These methodologies combine state-of-the-art organizational learning tools with participatory innovation techniques and blend them with awareness-based leadership practices.

Following the reasoning of Beck and Cowan (1996), HEIs have to shift from 2.0 toward 4.0 one step at a time without skipping intermediate steps. Therefore, leadership quality in general has to be raised at HEIs before more advanced techniques can be applied. At the beginning this might imply the need to strengthen the positive breakthroughs of the modern worldview, namely process optimization, efficiency and questioning assumptions, in order to prepare the ground for healthy and sustainable evolution of HEIs. Furthermore, HEIs should at the same time shift toward a dialogue- and stakeholder orientation and include more reflective and active learning arrangements to facilitate the emergence of HEI 3.0 and to minimize the negative impact of the still dominating modern worldview.

## 5 Conclusion

Although the different worldviews have been presented separately throughout this chapter, all of them can—to some extent—be found within a single institution simultaneously. Therefore, the transformation of a HEI would probably be tackled most effectively by a multi-level organizational development approach from an integral point of view, depending on the evolutionary level of HEIs' leaders. The chapter at hand tries to contribute to the evolution of more complex approaches to leadership and transformation.

In order to promote the transformation from HEI 2.0 over 3.0 toward 4.0, championing the inclusion of SDGs into curricula would be a vital first step. The focus on goals is very much in alignment with HEI 2.0's achievement focused worldview. At the same time, the goals' content prepares the ground for a shift towards HEI 3.0 and HEI 4.0. The SDGs could, however, also be used as a means for greenwashing the campus—especially when minor initiatives are used to bloat the HEIs contribution to the SDGs. But if the SDG framework is taken seriously, it could as well serve as a map of the SD landscape and thus help exploring the terrain.

Moreover, learning labs and innovation hubs would further facilitate the evolution of more complex forms of academic and societal collaboration to overcome the planets' most pressing problems. This shift is of huge importance for our common future, as higher education institutions have a high impact on the thinking and competencies of future leaders. Therefore, the transformation of HEIs sets the foundation for the transformation of society in general.

If HEIs are to live up to their potential and responsibility for the planet, collective efforts have to be undertaken, e.g. by promoting the SDGs, learning labs and systemic thinking at every educational level. However, further research and systemic concepts are needed to help HEIs and their members to successfully transform themselves.

## References

- Armstrong L, Bailey J, Julier G, Kimbell L (2014) Social design futures: HEI research and the AHRC. University of Brighton
- Beck DE, Cowan CC (1996) *Spiral dynamics: mastering values, leadership and change*. Blackwell, Maiden, MA
- Blanco-Portela N, Benayas J, Pertierra LR, Lozano R (2017) Towards the integration of sustainability in Higher Education Institutions: a review of drivers of and barriers to organisational change and their comparison against those found of companies. *J Clean Prod* 166:563–578
- Brown BC (2012) Leading complex change with post-conventional consciousness. *J Organ Change Manage* 25(4):560–575
- Graves CW (1981) *Summary statement: the emergent, cyclical, double-helix model of adult biopsychosocial systems*. Boston
- Hedlund-de Witt A (2014a) Rethinking sustainable development: considering how different worldviews envision “development” and “quality of life”. *Sustainability* 6(11):8310–8328
- Hedlund-de Witt A (2014b) The integrative worldview and its potential for sustainable societies. *Worldviews Glob Religions Cult Ecol* 18(3):191–229

- Laloux F (2014) *Reinventing organizations*. Nelson Parker, Brussels
- Leal Filho W (2000) Dealing with misconceptions on the concept of sustainability. *Int J Sustain High Educ* 1(1):9–19
- Leal Filho W (2010) Teaching sustainable development at university level: current trends and future needs. *J Baltic Sci Educ* 9(4):273–284
- Leal Filho W, MacDermott F, Padgham J (1996) *Implementing sustainable development at university level: a manual of good practice*. Association of European Universities-Copernicus
- Lozano R (2006) Incorporation and institutionalization of SD into universities: breaking through barriers to change. *J Clean Prod* 14(9):787–796
- Lozano R, Ceulemans K, Alonso-Almeida M, Huisingh D, Lozano FJ, Waas T, Lambrechts W, Lukman R, Hugé J (2015) A review of commitment and implementation of sustainable development in higher education: results from a worldwide survey. *J Clean Prod* 108:1–18
- Mader C, Rammel C (2015) Brief for GSDR 2015 transforming higher education for sustainable development. UN Sustainable Development Knowledge Platform vol 22, no 01
- Müller-Christ G (2017) Nachhaltigkeitsforschung in einer transzendenten Entwicklung des Hochschulsystems—ein Ordnungsangebot für Innovativität. In: Leal Filho W (ed) *Innovation in der Nachhaltigkeitsforschung*. Springer Spektrum, Heidelberg, pp 161–180
- Müller-Christ G, Giesenbauer B (2019) Konturen eines integralen Nachhaltigkeitsmanagements. In: Englert M, Ternès A (eds) *Nachhaltiges Management*. Springer Gabler, Heidelberg
- Müller-Christ G, Giesenbauer B, Tegeler MK (2017) *Studie zur Umsetzung der SDG im deutschen Bildungssystem*. Rat für Nachhaltige Entwicklung, Berlin
- Müller-Christ G, Giesenbauer B, Tegeler MK (2018) *Die Umsetzung der SDGs im deutschen Bildungssystem—Studie im Auftrag des Rats für Nachhaltige Entwicklung der Bundesregierung*. *Z Für Int Bild Und EntwicklSpädagogik* 41(2):19–26
- Rieckmann M (2012) Future-oriented higher education: which key competencies should be fostered through university teaching and learning? *Futures* 44(2):127–135
- Rio+20 Treaty on Higher Education (2014) Rio+20 Treaty on Higher Education. [http://www.eauc.org.uk/higher\\_education\\_treaty\\_for\\_rio20](http://www.eauc.org.uk/higher_education_treaty_for_rio20)
- Scharmer CO, Kaufer K (2013) *Leading from the emerging future: from ego-system to eco-system economies*. Berrett-Koehler, San Francisco, CA
- Schneidewind U (2014) Von der nachhaltigen zur transformativen Hochschule. *Perspektiven einer "True University Sustainability"*. *UmweltWirtschaftsForum* 22(4):221–225
- Singer-Brodowski M, Mader C (2018) Die Energiewende braucht die Bildungswende: Der Beitrag der Bildung für nachhaltige Entwicklung zur Energiewende auf individueller, organisationaler und gesamtgesellschaftlicher Ebene. In: Holstenkamp L, Radtke J (eds) *Handbuch Energiewende und Partizipation*. Springer VS, Wiesbaden, pp 463–473
- Thomas I (2004) Sustainability in tertiary curricula: what is stopping it happening? *Int J Sustain High Educ* 5(1):33–47
- United Nations (2015) *Transforming our world: the 2030 agenda for sustainable development*. A/RES/70/1, 21 Oct. <https://sustainabledevelopment.un.org/post2015/transformingourworld>
- Van Opstal M, Hugé J (2013) Knowledge for sustainable development: a worldviews perspective. *Environ Dev Sustain* 15(3):687–709
- van Weenen H (2000) Towards a vision of a sustainable university. *Int J Sustain High Educ* 1(1):20–34
- Wiek A, Withycombe L, Redman C, Mills SB (2011) Moving forward on competence in sustainability research and problem solving. *Environment* 53(2):3–13
- Wilber K (2001) *A theory of everything: an integral vision for business, politics, science and spirituality*. Shambhala, Boston, MA
- World Commission on Environment and Development (1987) *Our common future*. World Commission for Environment and Development