The University of Borås as a sustainable university

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THE PRESENT REPORT is no. 31 in the report series *Science for the Professions*. The purpose of the series is to present results from ongoing and finished research projects at the University, as well as publishing contributions in an ongoing discussion about the profiling of science and applied methods within the framework of the idea of Science for the Professions. An annual output of four to six reports is the goal.

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Preface

Sustainable development is a general objective for society on a global scale, and is used as a vision and a tool for policy makers at all levels of government. It is also an established approach to overcome environmental, economic and social challenges when policy makers create, distribute and use resources so that they have the smallest possible negative impact for future generations. Since 2005, all Swedish universities are obliged by law to "in the course of their operations […] promote sustainable development to assure for present and future generations a sound and healthy environment, economic and social welfare, and justice" (Higher Education Act, Section 5). Over the last decade, and not only due to legal obligations, sustainable development has grown into a key strategic area for the University of Borås. This report, *The University of Borås as a sustainable university*, is an explicit manifestation of these efforts.

A significant stepping stone towards implementing sustainable development at the university was when our environmental management system was certified according to ISO 14001 in 2012. Although this has mainly focus on ecological aspects of sustainable development, a core trait of the university's approach is that social and economic aspects are as important. This formed the foundation when the university developed tools to strengthen integration of sustainable development in our education by certifying courses that fulfill relevant criteria. Also, although research at the university has always dealt with issues relevant to sustainable development, it is only during the past years that the university has initiated processes that identify sustainable development a research profile for the whole university. It is invigorating that such attempts resonate well with both researchers and university management.

This is especially important since sustainable development has often been criticized for being too general, all-encompassing and vague. This has been fueled by the inherent complexity of sustainable development where, not only are ecological, economic, and social aspects integrated parts of the whole, but the interplay between these aspects are critical to understand and incorporate in education, research and innovation. This requires

a multi- and trans-disciplinary approach to solve present and future challenges. From this perspective, sustainable development is often a rhetorical device in, for example, external fundraising, rather than something that is actually implemented. This report shows that, at the University of Borås, sustainable development is already integrated into research, education, campus activities and leadership, and it also provides suggestions for further progress in these areas. The report is important for the University of Borås' continued efforts to promote sustainable development at a general level and as a perspective that is integrated in all of the university's activities.

The University of Borås as a sustainable university is also in line with the university's vision, which was recently adopted by the governing board. According to this vision, sustainable development is a self-evident aspect of any university that strives to educate and perform research for the future. Our continued efforts in sustainable development are thus crucial for the university's profile as well as for reaching the overall objective of higher education and research: to provide students with a research based education that prepares them for working as professionals both outside and within Academia. Sustainable development will continue to be an integral part of our research and education, and will be a factor that links our education with research. In short, it will help the university to enhance quality in all of its core activities.

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Abstract

The current text is intended as reflection on the introduction of sustainability into the University of Borås. Furthermore, the aim is to create a resource for discussion, promotion of community values as well as tools for understanding, clarifying and extending sustainability practices within the institution of the University. Following *the managerial model* of the sustainable university, the aim is to formulate a specific vision and accompanying mission of sustainable university. The vision is articulated in chapter 3 and 4 in terms of three models (managerial, community and research centric) and three concepts (sustainability research, sustainability issues and Sustainable Development Goals (SDGs)). In chapter 5, the mission statement of the University of Borås is elaborated given the vision of the sustainable university.

Chapter 6 introduces a specific problem called *the integration paradox*: that sophisticated integration of sustainable development into all practices often leads to less clarity, visibility and accountability. This also appears as a problem regarding the mission statement and this is further developed in chapter 7. Three strategies are developed in order to deal with the paradox. First, SDGs and what we call the "meta-question of sustainability research" are discussed in chapter 8. The third strategy, sustainability issues, is focused in chapter 9 and 10. Here, sustainability issues are utilized in order to connect university-based expertise with local and global needs, the latter expressed as SDGs.

In chapter 11, three strategies currently in use for integrating sustainability into education are presented and discussed: use of SDGs, community oriented activities aimed at raising appreciation/awareness and certification of courses.

Chapter 12 deals with ongoing work related to the information management system ISO 14001. Chapter 13 discusses a particular example of an outreach program and positions this in the context of transdisciplinary research.

Chapter 14 supplies a closing discussion and also the argument that the sustainable university as an evolving institution is to a considerable extent

counteracted through the current system of external funding. Today, researchers have been schooled into loyalty to international disciplinary networks rather than to the local employer. It could be argued that the local University aiming to develop its own strategy for sustainability as well as developing local outreach programs, need more resources for coordinating internal resources.

1. Introduction

As of 2005, Swedish universities are required to work toward sustainable development (SD) including ecologic, economic and social dimensions (SFS 1992:1434, chapter 1, paragraph 5). This challenging legal requirement extends a fundamental idea; that all institutions in society should be engaged in development of sustainability. This approach of rethinking institutions as "sustainable institutions" constitutes a shift from an earlier strategy of the 1990s in which work on SD was centralized to a few institutions, usually environmental agencies. The challenge, then, as it appears to us now, is to *strategically counteract processes in which sustainability is held apart from core activities.* In other words, it is not enough to promote some activities relating to SD. Rather, the whole institution needs to be permeated by the ideals of SD, indeed a daunting task. Every institution needs to actively promote integration of traditional values and practices with paradigmatic notions of SD. The University, upholding multiple complex roles in society appears to us as a uniquely challenging form of institution. On the one hand, universities have been active agents in efficient exploitation of natural resources ever since the Industrial Revolution. On the other hand, this is an institution that upholds ideals of ethics and equity as well as organized skepticism and innovation.

The current text has been developed in the context of the University of Borås (UB) being in the middle of a transformative process toward increasing sustainability practices and awareness. We have come a long way but, still, much remains to be done. The text serves as a reflection on the introduction of sustainability into the University, the making of a sustainable institution. We are concerned with strategic issues: the management of sustainability, community values, connecting initiatives, clarifying ambitions and articulating added value for SD. Our basic idea in writing this text has been to build on research discussing the University as a sustainable institution. This has led to an interest in the concept "sustainable university" which is focused in this text.

The sustainable university is a notion and concept that has been deliberated in specialized literature on SD for about a decade, positioning the

institution of the University as a vital driver toward a more sustainable society. Thinking on the sustainable university has recently become a more clearly discernable movement. In 2011 Plymouth University hosted an influential workshop gathering representatives of 11 universities, those widely recognized as British leaders in sustainability. *The Sustainable University: Progress and Prospects* (Sterling, Maxey and Luna, eds, 2013) followed in the aftermath of the workshop. The book serves as a rich and inspirational exploration of the notion of the sustainable university. Similarly, in the US the Association for the Advancement of Sustainability in Higher Education (AASHE) has been pushing the sustainable university as a highlighted issue for higher education leaders, most recently in the book *The Sustainable University*: *Green Goals and New Challenges for Higher Education Leaders* (Martin and Samels eds, 2012).

Following Velazquez et al. (2006) commitment to the sustainable university can be understood as work within five areas:

- Strategies for fostering sustainability
- Education
- Research
- Outreach and partnership
- Sustainability on campus

The current text is an exploration of strategies for fostering sustainability within UB, essentially engaging with all five of these areas. We aim to give a strategic and managerial perspective on the development of the University of Borås as a sustainable university. Beyond the purpose of supplying a strategic resource, the text is also intended as clarifying concepts and problems as well as supporting discussions. Of primary concern is development of community values relating to the University as an institution ethically and legally motivated to take on the challenges of SD. In the current text, each chapter puts forward one or two ideas for discussion, arguing distinct strategic pathways and instruments. The text of each chapter is purposely held as brief as possible in order to pursue a few arguments, strategies or concepts and then move forward.

Chapter 2 puts forward specific ideas relating to the sustainable university including an introduction to the comprehensive managerial model originally presented in Velazquez et al. (2006). Building on this model, it becomes vital to start with a unique vision of SD and then develop ideas connecting to the mission statement. We articulate our vision in chapter 3 (three models) and 4 (three concepts). According to the managerial model

of the sustainable university articulation of vision and mission should then be expressed in the organizational structure as well as strategic ideas. In chapter 5, we attend to the UB mission statement in view of our vision of the sustainable university.

Starting with chapter 6 we focus an important and neglected problem concerning universities and SD. We conceptualize this as the *integration paradox*; with successful integration of SD into all activities, we find, in many cases, that linkages and added value related to sustainability becomes indirect, unclear, and difficult to measure. In essence, it is relatively easy to account for the 1990s strategy of having SD related activities held apart. It is considerably more challenging to measure and account for contemporary sophisticated and well integrated practices. Strategies for dealing with this paradox are discussed in Chapter 8–10.

The next three chapters are concerned with current and evolving practices and strategies relating to education, campus and outreach. Chapter 11 presents three strategies currently in use for integrating sustainability into education. Similarly, chapter 12 is concerned with ongoing work related to environmental management system ISO 14001. Chapter 13 relates an example of an outreach program and connects this to an interesting framework, transdisciplinary research, for connecting societal needs with broad expertise within Academy.

In the closing discussion, chapter 14, it is argued that coordinating sustainability at the institutional level, with a high degree of responsibility situated at the University leadership, is a viable strategy. It is also consistent with national legislation as well as expected demands following the revision of ISO 14001. However, this should be contrasted with strategies of recent decades of coordinating at European and national levels, with much attention toward strengthening international (disciplinary based) loyalty networks. Although it is important that researchers acquire and maintain strong international networks, current paradigm of research policy does not seem to financially reward and stimulate the development of the sustainable university as an institution actively pursuing a well held together strategy that combines research, education, campus and outreach programs.

2. The sustainable university

In their introduction to *The Sustainable University: Progress and Prospects* Sterling and Maxey (2013, p. 2) point out that there is "a serious mismatch between the purposive and operational norms of higher education as reflected in practice by most higher education institutions across the world, and the conditions of complexity, uncertainty and unsustainability that we as a global society face, and that our graduates will certainly encounter". Similarly, Lozano (2010) notes that although the University has been an agent of societal transformation for centuries, it has itself remained surprisingly traditional in organization. This has meant "a primary focus on the conquest of nature and the industrialization of the planet, producing unbalanced, over-specialized, and mono-disciplinary graduates" (p. 637). Traditional disciplines were in many cases shaped for the task to assist in effective and large-scale exploitation of natural resources. In this sense, the development of the sustainable university is a way of introducing balance, connecting to the needs of 21st-century societies. Today, we find that systematic research-based approaches have enabled such gigantic consumption of natural resources that we might find a number of "peak"-situations in our near future (peak oil, peak cotton, peak copper etc.). Ecologic, social and economic issues are intertwined in these problem areas and therefore our response must also be based on broad awareness.

Sterling and Maxey (2013) makes a crucial distinction between three different types of responses to sustainability within higher education institutions: *accommodative*, *reformative* and *transformative*. These can be visualized as stages of progression in which the last can be seen to describe practices at the sustainable university. *Accommodative* response is characterized by the creation of separate modules or projects devoted to sustainability. However, for the rest of the University it is business as usual. The *reformative* response involves changes in policy but also frequently realization of the inadequacies of accommodative response. The aim of the sustainable university is therefore "transformation of the sector, for a shift of culture and the redesign of organizational purpose toward sustainability, involving whole institutional change" (Sterling and Maxey, 2013, p. 6).

We have found that the most useful resource for a transformative response is the managerial model suggested by Velazquez et al. (2006). Here, it is argued that the strategic move toward sustainability should start with a vision and a definition of the sustainable university. As SD would take on separate meanings at different universities, it would be important to construct a localized definition. Their own suggestion was:

> A higher educational institution, as a whole or as a part, that addresses, involves and promotes, on a regional or global level, the minimization of negative environmental, economic, societal, and health effects generated in the use of their resources in order to fulfill its function of teaching, research, outreach and partnership, and steward-ship in ways to help society make the transition to sustainable life-styles. (812)

Surveying 80 higher education institutions worldwide active implementing sustainability Velazquez et al (2006) found that few could define their own concept or their specific vision. Building on the survey, a managerial model was constructed (figure 1). This model suggests a shift in culture within five areas which are briefly introduced below.
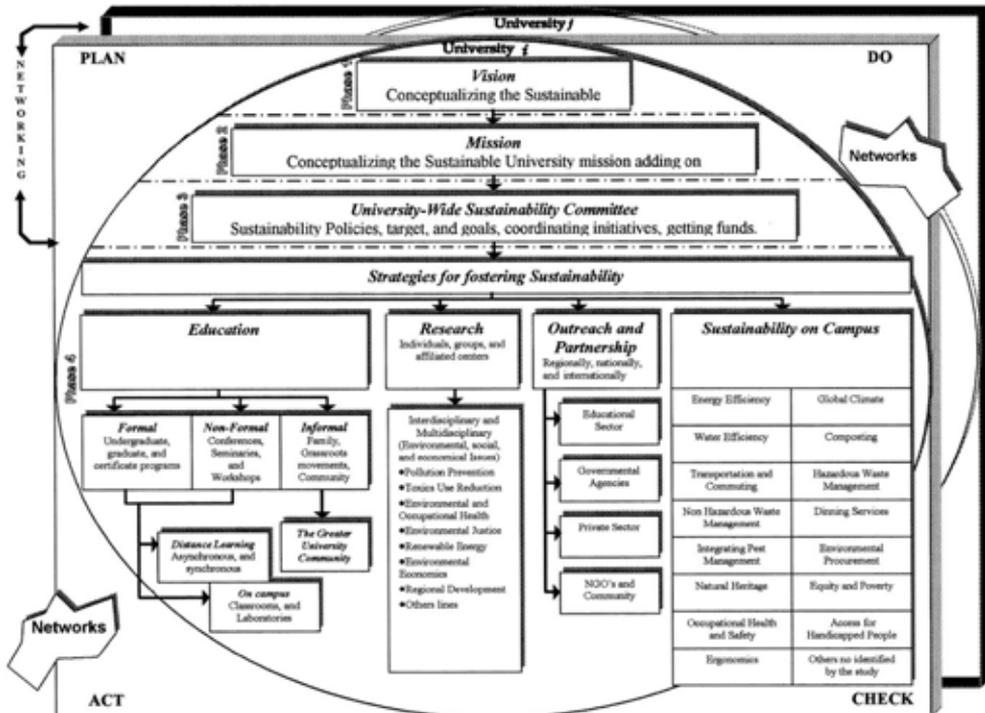

Figure 1: The managerial model suggested by Velazquez et al. (2006), reprinted with permission from authors.

The first area is *strategies for fostering sustainability*. Progress toward sustainable institutions will go nowhere without leadership driven by research-based knowledge regarding what it means to work within a sustainable university. Although the managerial model (figure 1, above) positions this between phase 3 and phase 4, we interpret this as a ubiquitous feature of the sustainable university.

The second area is *education*. This has been a very strong movement internationally ever since the UN initiated the decade for educational SD, starting 2004. In many countries universities have been required to integrate SD into curriculum.

The third area is *research*, arguably the least developed in strategic discussions on the sustainable university. We interpret research as a ubiquitous feature of the sustainable university. This is explained further in chapter 3.

The fourth area is *outreach and partnership*. The sustainable university should be an agent facilitating the transformation to SD in society. This can be formulated as various outreach and partnership projects with governmental agencies, private sector, NGOs or other community actors. In particular, it is frequently argued that universities have responsibility for assisting work with SD within the local regions in which they reside.

The fifth area is *sustainability on campus*. The primary notion is that all sectors in society must integrate sustainable practices and this also applies to the University. From this vantage point, ideas of energy efficiency and renewable materials are focused. Although the basic ideas are similar from country to country, there are some variation regarding concepts and strategies. In China, the preferred concept is *green universities* (Yuan, Zuo and Hui Singh, 2013). In the US, one notable concept is *sustainable campus*. In Sweden, universities have applied for environmental certification. UB was the third Swedish university to be certified nationally. However, it is important to emphasize that "sustainable campus" is a considerably broader vision than "green campus", including also engagement with social issues such as equity, empowerment and health.

The managerial model, as it is illustrated in figure 1, is a substantial resource for planning and development of the sustainable university. The figure itself constitutes an aggregation of best sustainability practices at numerous universities around the world. As such, it summarizes important features of planning.

The managerial model suggests four different phases and all of these can be said to be permeated by strategies for fostering sustainability within education, research, outreach and campus. The model positions strategies for

fostering sustainability in between these areas and the top-down strategic work. Once again, in our adoption of this model we also include strategic work in the other areas as well. It is notable that the four phases suggested in this model are different in character compared to the stages of progression suggested by Sterling and Maxey (2013: accommodative, reformative, transformative). Velazquez et al. (2006), in emphasizing managerial aspects, are concerned with the movement from top to bottom, starting with leadership. The argument is that the foundation for transformation is found in the vision and mission of the University. Strategic work should, from this vantage point, start with established key notions and then integrate ideas and values of SD. This managerial outlook is crucial as different universities have developed separate traditions and values. In the development of the sustainable university it becomes important to appreciate current strengths and profiled areas and build on these. As a consequence, it is not doable for universities to imitate successful approaches and accommodate best practices. Although the similarities between the sustainability agendas of different universities are many, there are also crucial variations in profiling and resources that necessitate that each University develops an approach of its own.

While this *managerial model* of the sustainable university, or something similar, is absolutely vital, several researchers have argued that it needs to be combined with a bottom-up or participatory approach (Lukman et al., 2009; Disterheft et al., 2012). This is an important aspect of the UB interpretation of the sustainable university, making phase 2–4 more deliberative. Actually, the process leading to this text has been a vehicle for deliberation as draft versions have been presented for the University staff several times during 2013 and 2014. We, have, therefore found it fruitful to elaborate on the managerial model and see the value of combining it with other models of the sustainable university. Such models will be introduced in the next section.

3. The vision: three models

Although we find the managerial model (figure 1) inspirational and fundamental we find a need to add to it in our articulation of the sustainable university. The managerial model is, by necessity, hierarchical and while this supplies structure it can lead to compartmentalization. Obviously, we risk different areas of the model only connecting at higher structural levels. Nonetheless, all models build on simplification, placing focus on some dimensions of the phenomenon while ignoring or downplaying others. Switching focus, it is possible to illustrate the five different areas as highly connected through a stacked Venn diagram. We call this the *community model* as it illustrates interplay between the different areas.

Figure 2: A stacked Venn community model of the sustainable campus with the five areas connected somewhat differently compared to the managerial model), emphasizing overlapping areas of concern and interaction.

This model also illustrates the necessity of powering the sustainable university from the core, balancing top-down oriented steering. We are here inspired by the discussion of developing "a community of values" (White and Harder, 2013) within the University in which topics related to SD are continuously discussed and practices shared. From this vantage point, universities are seen as both communities and organizations. Universities constitutes less rigid systems compared to most businesses and can therefore accommodate specific forms of participatory processes.

> Sustainable development demands a change in mindset, a different culture, a new paradigm, a values-based society... In order to achieve this radical change, University staff and students need to feel they belong, that they share this vision, that they can make a difference; in other words, they need to feel a sense of community. (White and Harder, 2013, p. 147)

However, from our vantage point the important element of research is still not adequately visualized. It is difficult to shift education toward sustainability if researchers have not already moved there. Likewise, outreach programs and the sustainable campus can build on the specific competences available at the University. *The research centric model* positions the systematic utilization of research at the core of the sustainable university, as illustrated in figure 3.
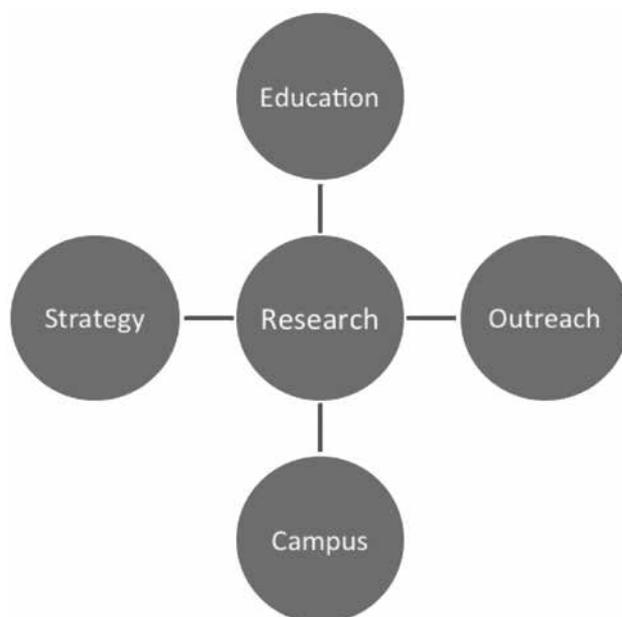
Figure 3: A research centric model of the sustainable university.

There are substantial advantages of also including the research centric model in strategic planning. Taken alone, the community model is a kind of imitation of other successful sustainable institutions. The research centric model allows us to build on the strength of universities, what makes them unique when compared to all other institutions: the systematic production of high-quality knowledge.

It is vital to emphasize that for all five areas there exists an international research base that would allow leaps and bounds for local sustainability practices for all kinds of institutions. Nonetheless, here we find traditional problems of knowledge gaps, with professionals not consulting, or knowing how to access, the most appropriate research. It seems obvious to us that the University is an institution that can base strategic decision-making on research-based knowledge, as an evidence-based practice.[1] Therefore, the sustainable campus can thrive by virtue of access to research on sustainable technologies and practices. Similarly, education is research driven and the added value to society at large through outreach projects comes through the production of high-quality knowledge. Finally, the strategic development of the sustainable university itself can be research driven and the report at hand is a step in that direction.

Most other institutions have been unable to develop an organizational culture committed to evidence-based practice. Therefore, decisions are likely to be taken through consultation with local professionals that mostly have limited access to the most adequate research-based knowledge. The University holds unique potential of acting differently than other sustainable institutions, in a sense, putting forward an ideal for others to follow. Few institutions have in-house research and as a result they are unable to themselves support the transition to sustainability with research-based high-quality knowledge. Universities can support other institutions, indeed serving as a mediator or knowledge broker, but need to deal with the internal/reflexive process as well.

When broadening our scope to include not only the managerial model and the community model, but also a research centric model, we are also developing another strategy as to the old problem of steering and coordinating research: how do we at the national level coordinate researchers whose loyalties lie with international disciplinary-based networks? We suggest that it is reasonable in the context of sustainable institutions to allow institutions greater jurisdictions in creating more local loyalty. Contemporary research policy in Sweden and in Europe is almost exclusively

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1 We use the term in a broad sense, including research results from both quantitative *and* qualitative approaches.

aimed at external funding of research teams, not universities or networks of universities. It is possible that a substantial shift of universities towards sustainability would necessitate a paradigmatic transformation of research policy: more funding for University leaderships struggling with the integration of sustainability. This could, we suggest, strengthen interdisciplinary collaboration at the local University. As an extension, this would allow researchers to have a much more concrete and immediate impact on local practices, *to not only be steered toward adding international (academic) value but also toward regional contributions.*

In order for the research centric model to be effective, there is a need for systematic transferability between universities, i.e. diffusion of best practices and the development of transdisciplinary sustainability research. This is an idea that has been promoted by the German University of Lüneburg, an early adopter of the idea of sustainable university (Adomssent, Godemann and Michelsen, 2007). The research centric model should not imply that everything in the sustainable university is built upon in-house research. Rather, the idea is that the research-centric strategy allows evaluation of various theories, models, strategies and solutions from a viewpoint informed by state of the art research, thus creating a setting for superior choices of progress. The most obvious example concerns making choices about upgrading energy systems at the campus. Seemingly, much can be gained by involving researchers engaged in renewable energy. However, there are endless possibilities regarding how sustainability research can connect to projects outside.

In emphasizing the crucial role of research, we are also suggesting that critical scrutiny, the hallmark of scholarship, is vital for developing the sustainable university. Issues relating to SD are typically very complex, requiring sophisticated evaluation of paradigms, perspectives and priorities. Ideally, the three dimensions of SD (ecological, economic and social) are always combined in win-win projects. In reality, there are frequent conflicts between e.g. economic allowances and ecological needs. The most crucial problem of SD concerns the implicit linkage between *development* and *consumption* (Lélé, 1991). Increased consumption may indeed lead to favorable economic and social development, but can also translate into environmental degradation. Without continued critical discussions SD is likely to get lost among the complexities of balancing the needs of various stakeholders.

Summing up our discussion so far, we have identified four separate problems:

- Sustainable activities disconnected from strategic planning,
- sustainable activities disconnected from community values,
- sustainable activities disconnected from research-based knowledge and
- European and national research policy disconnected from the ideal of the sustainable university.

We have addressed these problems through our discussion of three different models. In chapter 5 we will follow recommendations from Velazquez et al. (2006) and use these insights to develop the mission of UB. However, we must first, in chapter 4 introduce three concepts vital for the discussion that follows: *sustainability research*, *sustainability issues* and *Sustainable Development Goals*.

4. The vision: three concepts

In the current chapter, we will further develop our vision with the help of three useful concepts: sustainability research, sustainability issues and Sustainable Development Goals (SDGs). White (2013) note that many academics are distrustful of terms such as "research for sustainable development". Natural scientists often have a purely environmental focus and have difficulty connecting to the larger issues of SD. Similarly, social scientists may take issue with the notion of "development", finding difficulties with the economic paradigm of corporate/colonial progress implied. White (2013) argues for the use of a broader and more neutral concept: *sustainability research*. This concept signals "an area valid to all disciplines and epistemologies, including natural and physical sciences, social sciences and arts and humanities" (p. 171).

Sustainability research can be seen as strategically connected to a number of *sustainability issues*. Any given sustainable university will pursue a variety of such issues as these are derived not only from global/national priorities, but also from a combination of local imperatives and available research specialization at the University itself. The sustainability issues, therefore, have a specific localized character while at the same time being clearly connected to national and global agendas. Furthermore, research on sustainability issues is characterized by a specific research process. White (2013, p. 173) proposes eight attributes, although not all of them may be visible in every piece of research:

- Interdisciplinarity
- link between theory and practice
- local impact but global relevance
- participatory approach
- link to learning
- employment of different knowledge forms
- inclusion of knowledge mobilization (outreach programs)
- reflective process of self-assessment

White (2013) argues that sustainability research invites contributions from all disciplines. However, many disciplines have difficulty in identifying their role. Here, the notion of *sustainability issues* is valuable in order to highlight and clarify various connections. Typically, disciplinary specialists are unfamiliar with key discussions within sustainability research. It is often empowering to allow sustainability specialists at the University to work across multiple areas, both identifying and connecting valuable contributions.

Sustainability issues can serve as an instrument for clarifying linkages between expertise and local and global needs. In this report, we suggest that work with sustainability issues can be connected to the SDGs that for many years have been developed by the United Nations. This has been a long and difficult process with an ambition to formulate "an integrated, indivisible set of global priorities for sustainable development" (Open Working Group Proposal for Sustainable Development Goals, 2014). The ambition has also been to produce a limited amount of goals relevant for global as well as local strategic work on SD. The current proposal includes 17 goals (SDGs) and these are listed in appendix 1.

The strategic ideas outlined in this text are inspired by discussions on sustainability research, sustainability issues and SDGs. Similarly to White (2013), we take issue with the strategy of developing a separate discipline, *sustainability science* (Clark, 2007), as this implies that the strategic effort towards researching SD tends to become an isolated feature within Academy. Moreover, sustainability science could easily develop into a big science network that would disempower local universities. That said, it is probably necessary for the sustainable university to also have some specialized expertise within SD to support the diverse research areas.

5. The mission:
sustainability research for the professions

Phase 2 of the managerial model (figure 1) concerns the development of a mission. Velazquez et al. (2006) suggests that the "ultimate goal of university members who advocate sustainability is amending, or creating, the university mission statement to include sustainability as one of the core values of their university" (813). The mission statement of UB is "science for the professions". Our ambition is, therefore, to uphold educational and research programs based on high scientific standards but, crucially, connected to the challenges situated in everyday practice of professions. In exploring this research focus, we find complex research needs that seldom can be satisfied by the single disciplinary lens. Therefore, as will be discussed in forthcoming chapters, "science for the professions" implies a multidisciplinary approach with a trajectory toward interdisciplinary or transdisciplinary processes.

These overreaching perspectives on the role of research-based knowledge and how it connects to the practices of professions have been developed for close to two decades. This mission serves as a foundation for a core set of values for the community of researchers, teachers and administrative staff. As discussed earlier, sustainability is multifaceted in character. Sustainability research should therefore be pursued with various forms of multidisciplinary, interdisciplinary or transdisciplinary projects. As we at UB perform research for professions we must also recognize that all professionals are or will be involved in building the sustainable society of tomorrow. We have therefore in recent years continuously developed course packages in our educational programs that focus, explain and critically scrutinize SD. Similarly, internal priority has been given to research initiatives with a multidisciplinary focus on sustainability.

Professions are sometimes categorized according to breakthrough time period. UB has programs for traditional professions such as engineers and teachers with a long history of academic schooling. There are also programs for the so-called welfare state professions that appeared after World War II, such as nurses and librarians. Other programs take on the challenges of young professions such as IT professionals and textile designers.

All of these professions are involved in the building of more or less sustainable practices. It is therefore vital that "science for the professions" includes "sustainability research for the professions". This concerns campus, supplying a benchmark environment that students and other visitors may become inspired by. Even more important, sustainability research must also be a valuable part of the education programs as well as outreach activities to our alumni. Sustainability issues will not go away and universities should take into account that related competencies are likely to become increasingly important during the careers of the graduates.

Phase 3 of the managerial model concerns the development of an organizational structure that reflects the commitments of the sustainable university. In recent years, UB has indeed developed a strategic organization for fostering sustainability. However, as of writing Spring 2015, UB is undergoing a major organizational restructuring and in that context it becomes possible to further integrate values of SD.

6. The integration paradox: accommodative response is more visible

Before the current policy emphasis on SD, the primary task of research was to pursue detached observation of environmental problems. In other words, the focus in the 1960s, 1970s and 1980s environmental research policy was on "end of pipe" monitoring of pollution. Starting in the 1990s, the policy agenda of sustainable development allowed research resources to shift to construction of sustainable infrastructures and institutions. Initially, this became a kind of *accommodative* response, as identified by Sterling and Maxey (2013). With time, as we pointed out at the outset of this text, the ambition has more recently been *reformative* and *transformative* responses: to have the values of SD integrated into the core of all activities, including all research projects.

This emphasis on *integration* rather than separate and clearly defined activities implies two separate challenges. The first is obvious and practical; integrating the values of SD: balancing the needs of present situations with the limits of our natural environment as well as the needs of future generations. A prerequisite for handling this challenge is substantial educational and strategic initiatives. As have been argued in this text, strategic work situated at the University is one of the most fundamental factors in the development of sustainability research.

The second challenge is connected to what we call the *integration paradox*. As long as projects relating to SD are *separate* from other activities they are *clearly visible*. However, integration tends to disguise sustainability. By proceeding with strategies focusing on integrating SD into all activities, there is a risk that vital dimensions appear invisible. Therefore, increased sophistication of processing these ideals may create difficulties in *articulating* work on SD. The integration paradox can be present in many activities within different types of research areas. It is acutely present in the case of research projects that have an indirect (rather than direct) and implicit (rather than explicit) connection to the ideals of SD.

In chapter 7 we will elaborate on the integration paradox in connection with the UB mission statement. In chapters 8–10 we will suggest three different strategies for dealing with the integration paradox.

7. The integration paradox and the mission statement

As introduced in previous chapters, UB has for many years worked with the overreaching mission statement "science for the professions", aiming at innovating traditional theory of professions, in the process strengthening the identity and societal role of certain key professions. Given this, we find that one of our main tasks in the context of SD is to contribute to the shaping of professionals that will be involved in building a sustainable society for future generations. Therefore, an important development of our overreaching vision is to elaborate on "sustainable development for the professions". It is important to emphasize that this implies a contribution to SD that is indirect, i.e. we support actors that are involved in the actual, direct, building of sustainable states. However, all sophisticated indirect contributions alert us to the integration paradox, i.e. certain difficulties in talking about the actual contribution made. In the case of education, it is possible to deal with this obstacle through the introduction of indicators, measuring the amount and quality of education infused with SD.

The integration paradox appears not to be a problem for all professions. From a SD perspective, professions can be divided into those on the one hand constructing artifacts and on the other hand supporting people. At the UB, engineers and some textile professionals are example of the former. In these cases, education and research can attend to the ideals of SD by contributing to the development of more sustainable artifacts. Such has been the research focus on renewable energy and recycling of waste at the University. Textile research has focused sustainable materials as well as the development of reuse of textiles. In these cases, their connection to various global/national/local needs is indirect but obviously present: *explicit*.

The situation is different for research involving professions supporting people. Examples of such professions are teachers, nurses, librarians and IT professionals. As such professionals are not highlighted as builders of unsustainable artifacts, their activities vis-à-vis the evolving sustainable society is vague. The researcher and educator working with sustainability may be more concerned with development of values and ethical conduct. Although they may not be part of the construction of artifacts, these pro-

fessionals will during their careers make constant choices that relate to the development of a sustainable society. Naturally, this element is also vital for professionals such as engineers, but it is in more focus in the context of professions supporting people who may take important decisions on how work will be organized, how people will help each other, search for information and acquire new forms of technology.

In the context of these "softer professions", we also find difficulties for universities supporting with education and research. In this situation, it is quite natural that many actors response to the integration paradox with "everything we do is SD". Given easy reference to a specific SDG, and the ideal of integration, then "everything we do" seems to be an excellent response. However, the problem with this position is that it often presupposes business as usual and a non-engagement with the ideals. The response to the integration paradox should therefore imply an effort of clarifying explicit contributions, and here the strategy of *sustainability issues* together with SDGs and what we call "the meta-question of sustainability research" is highly useful. This will be elaborated in the next chapters (8–10).

8. Clarifying through Sustainable Development Goals and meta-question of sustainability research

UB has developed several research areas: Library and Information Science, Business and IT, Sustainable Care Improvement, Teacher Education and Education Work, Resource Recovery and Textile and Fashion. In addition, each research area is supported by all together nine research programs that develop multidisciplinary approaches and several of these include focus on SD. For some of these, the connection to SD is very clear, explicit and direct. In other cases problems with the integration paradox are quite notable as there are obvious linkages although these are as yet not clearly articulated. The added value to SD can still be quite valuable but be implicit and indirect.

Such connections can, at least as a first step, be clarified by referring to the 17 SD Goals (SDGs) suggested by the United Nations Open Working Group Proposal for Sustainable Development Goals (2014, see appendix 1). SDGs have been developed through a long and arduous process, still not finalized. However, the tentative proposal by the open working group can serve as a guideline for current work within all kinds of institutions. For the research areas at UB, it is somewhat clarifying to connect with SDGs:

- Library and Information Science as well as Teacher Education and Educational Work can both make general references to SDG 4: *ensure inclusive and equitable quality education and promote lifelong learning opportunities for all.*
- Resource Recovery, Textile and Fashion as well as Business and IT can be connected to SDG 12: *ensure sustainable consumption and production patterns.*
- Sustainable Care Improvement is clearly attuned to SDG 3: *ensure healthy lives and promote well-being for all at all ages.*

However, having made these connections, we believe it is insufficient to merely connect research areas with such broad goals. SDGs can facilitate development of strategic work but researchers need more specific guidelines as well. These problems of articulation and clarity will be pursued further in chapters 10 and 11 with the help of ideas connected to sustainability issues.

The UB strategy is to successively develop and strengthen perspectives such as those mentioned above within the research programs. As part of a sustainable university, it is important that involved researchers continuously pose what we call the meta-question of sustainability research:

How does my research promote a sustainable development of society?

As researchers from different fields respond to the "meta-question" it becomes possible to link different research programs and, thus, renegotiate the general direction of research at UB. As various programs with separate epistemological foundations converge we expect a further development of the notion of the sustainable university.

Systematic work with the meta-question appears crucial for developing the combined framework of the three models outlined in chapter 3. From a top-down perspective, it is a mild but effective form of steering and coordination to require all research programs to reflect on the meta-question. At the same time, this strengthens the research centric dynamic at the University as well as a common value base.

Horizon 2020 supplies an important funding context for research programs at all European universities. We appreciate that it is challenge driven with a strong focus on innovation. The research areas and programs at UB can contribute to numerous challenges. However, the potential is perhaps greatest in the combination of expertise from different research programs. As researchers elaborates on their response to the meta-question of sustainability research, they become better equipped to align research with the challenges of Horizon 2020.

The response to the meta-question of sustainability research can come in many different forms. In the next chapter we will pursue a specific strategy in handling the integration paradox.

9. Clarifying through sustainability issues: an example

In the following, we expand on the notion of *sustainability issues* as a vehicle for handling the integration paradox and responding to the meta-question of sustainability research. We will give an example of how we can utilize this strategy within one research area: Library and Information Science. This is a research area that often is challenged by the integration paradox. We will not supply a list of ongoing initiatives; rather speculate on possible sustainability issues that can be developed in the future given global/national/local needs as well as available expertise.

Library and Information Science (LIS) investigates a wide range of social, economic and environmental aspects relating to the quickly developing information sector. Libraries and archives, as well as other types of memory institutions, are tasked with maximizing accessibility and findability within the context of a dynamic information landscape. Given the current exponential growth of information there are acute problems in meeting the demands of sustainable institutions. LIS can be seen as supplying research support for the sustainable information sector. However, libraries and other memory institutions, as well as quickly evolving social media, also serve as basic resources for accessibility to information on SD. The bottom-up participatory activities so heavily emphasized within *Agenda 21* are only possible with information services that can facilitate public engagement. Thus, a general response to the meta-question would be that LIS research aims to make fundamental contributions to an understanding of how information institutions, professions and services can support debates and activities on SD. The key institution of the library need not only be sustainable as institution but also contribute to sustainability.

This response can be further elaborated with the help of sustainability issues. With table 1, below, various sustainability issues are connected to the expertise of research groups as well as to global and local needs. The global needs refer here to the 17 SD Goals (SDGs) suggested by the United Nations Open Working Group Proposal for SD Goals (2014). We do not intend to supply an exhaustive list but rather suggest a few examples of

SDG	Local needs (community)	Local special expertise	Sustainability issue
Strengthen the means of implementation and revitalize the global partnership for SD (SDG 17)	Local Agenda 21 initiatives	Digital resources and services	Publication, curation and dissemination of information related to SD
Ensure inclusive and equitable quality education (SDG 4)	Citizen-based activities related to SD	• Information practices • Social Media Studies	Increasing SD related citizen-based activities in social media platforms
Ensure sustainable consumption and production patterns (SDG 12)	Increased sharing of common resources	• Libraries, society and culture • Digital resources and services	• Lending as a countermovement to consumption • Reuse of digital resources • Resource aware/efficient coding
Make cities and human settlements inclusive, safe, resilient and sustainable (SDG 11)	Local city planning based on sustainable ideas and technologies	• Digital resources and services • Social Media Studies • Libraries, society and culture	• Citizen-based activities connected to city planning • Cultural planning for sustainable urban development

Table 1: Sustainability issues connected to the research area Library and Information Science.

how the conceptual frame of sustainability issues can support clarification of specific contributions to SD.

LIS research at UB is currently organized in three research groups and one research program. Each of these can develop a specific angle on sustainable information. An important subfield of LIS is information ethics which can serve as a general resource for several research groups.

The research group *Information Practices* has so far not developed specific projects aimed at SD. However, there is a huge potential in utilizing concepts such as *information practices for sustainability* in order to discuss how people co-construct daily activities. It is often in the practical decisions we make every day that that constitute the negotiation between ecological and economic benefits. By pursuing information practices for sustainability as an integrated part of professional life, fundamental shifts can be created concerning ecological footprints. There are also openings for investigation of public engagement in projects relating to the movement of SD.

The research group *Digital Resources and Services* are already involved in several projects relating to conservation of cultural heritage, reuse of information resources, accessibility of information, open publications, open access, open data and the development of e-books. There are also linkages

to information management of indicators for SD. It is of strategic importance that information on a wide range of indicators are collected and managed in ways that enable accessibility as well as comparative processing. All of these have an underlining connection to SD and these can be further clarified through articulation of sustainability issues.

The research group *Libraries, Society and Culture* has explored libraries as institutions of lending rather than consumption. A PhD thesis is currently being concluded working with the example of tool libraries. Another important strand has been research on cultural planning and city planning as a resource for building a sustainable society. Other vantage points that can be explored are green librarianship and public libraries as information brokers on SD.

The research program *Social Media Studies* develops research on social media, including corporate responsibility and there is substantial potential of linking to SD. Naturally, social media studies can investigate how platform such as Facebook, Twitter and YouTube can facilitate public engagement and communication of ideas for SD. Recently, there has been interesting research on *crowdsourcing* as a resource for solving societal problems. Similarly, local projects connected to SD can be supported by *crowdfunding*. Since social media platforms have been around for such a short time (little more than a decade) our knowledge on how they can be utilized as resources for public engagement on societal issues is sparse.

The example of LIS research connecting to SDGs through the device of sustainability issues has been used to make the connection with SD more visible. Several other research areas at UB could be utilized to discuss the fruitfulness of sustainability issues. For instance, the research program *Research and Capability on Inclusion and Welfare* can support sustainability issues linked to numerous SDGs aimed at inclusion (SDG 4, 8, 9, 11 and 16). Working with sustainability issues it becomes possible to give more distinct and well-articulated responses to the meta-question of sustainability research. In the next chapter, we will show how sustainability issues can be utilized in relation to a large cluster of research activities at UB.

10. A cluster of sustainability issues

The region surrounding UB has a long and strong tradition of working with textiles. Even today this region remains the Swedish leader in design, production, marketing and distribution of textile goods. The history of UB is closely connected to this tradition and the University houses one of Europe's leading research and education environments in this area. This carries a specific responsibility that is local and national, perhaps also European. As an extension, there are unique research opportunities as well as ethical imperatives connected to textiles and SD.

We are already seeing, and expect to see further, development of a cluster of sustainability issues surrounding textile related research. Table 2 illustrates some possibilities of utilizing sustainability issues.

SDG	Local need	Expertise	Sustainability issue
Promote sustained, inclusive and sustainable economic growth, full and productive employment and decen work for all (SDG 8)	• Continued development of textile industries • Development of renewable energy forms	• Resource recovery • Sustainable – consumption Research Group • Textile materials	• Recycling inorganic and organic waste material into energy • Recycling waste material into new material • Social aspects of waste • Reduction of waste
Ensure sustainable consumption and production patterns (SDG 12)	• Continued development of textile industries • Reduction of waste	• Textile management • Textile materials • Textile design • Smart textiles	• Sustainable materials • Sustainable fashion industry • Efficiency of textile production • Efficiency of textile distribution

Table 2: A cluster of sustainability issues connected to UB expertise on textiles and global/national/ local needs.

Evidently, research leading to recycling of textiles exhibit direct sustainability impact. Nonetheless, the strategy of utilizing sustainability issues does provide further clarification through articulation of implicit linkages to SDGs. In addition, projects relating to sustainable consumption exhib-

it a wide spectrum of direct/indirect themes. Here, sustainability issues appear useful in order to make connections more visible.

As sustainability issues are formulated, it becomes easier to link different research approaches with each other as well as connecting with actors outside Academy. For instance, some of the sustainability issues identified in connection with the research area Library and Information Science (chapter 9) now appear to have bearing on sustainability issues related to textiles. While it was possible to identify sustainability issues connected to accessibility of information and participation in discussions, such issues are vital for recycling and sustainable consumption of textiles.

In the closing parts of this text (chapters 11–13), we will present some ideas relating to UB-activities regarding education, campus and outreach.

11. Education on SD at the University of Borås

In this chapter, we will review three different strategies that either are currently used or can be developed for integrating sustainability into education. First, in a general sense, our education programs should connect to several SDGs:

- SDG 4: Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all.
- SDG 5: Achieve gender equality and empower all women and girls.
- SDG 8: Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all.
- SDG 10: Reduce inequality within and among countries.
- SDG 16: Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective and accountable and inclusive institutions at all levels.

Although connections to SDGs are clarifying and energizing, it is important to not misinterpret them as goals separating social, economic and environmental dimensions. Each SDG is carefully constructed to integrate these aspects. UB aims to have all educational programs include at least one substantial part where all three dimensions of SD is reviewed and discussed. In the long run, we expect several of our programs to be permeated by a multitude of SDGs as well as connections with sustainability research.

Second, we promote activities aimed at raising the level of appreciation and understanding of SD. We have in recent years arranged numerous workshops and seminars devoted to various aspects of sustainability, often with nationally prolific invited speakers. Such activities have been open for both staff and students. Through these meetings, and in numerous other ways, teachers are encouraged to integrate and develop sections of courses and programs to include SD. Similarly, activities specifically directed toward students are expected to increase the demand for this kind of course content.

Third, we have developed a procedure for nominating, testing and final-

ly certifying courses as sustainable. Courses awarded diploma must fulfill a number of strict criteria, such as:

- SD must be integrated into goals and content of course.
- SD must be included in the course examination.
- Students are given opportunities to reflect and discuss SD.
- Conflicts relating to various forms of goals, e.g. economical vs. eco-logical, are emphasized and discussed.

These criteria, and the requirements connected to them, tend to create course agendas in which SD and sustainability issues are reviewed critically and in-depth. The road toward increased sustainability is thereby presented as complex and connected to numerous, sometimes conflicting, perspectives. Given above-mentioned criteria involving multidimensional perspectives, we do not certify high-quality specialized courses such as within resource recovery or energy efficiency. Neither do we find courses that solely focus social or economic sustainability to have sufficient richness. Certification of courseware is not only connected to certain requirements but must also be viewed as a system of rewarding integration of SD within a wide range of different courses.

12. Sustainable campus at the University of Borås

The UB environmental management system is well-developed and since Spring 2012 certified according to ISO 14001. Hereby, we set goals to progressively reduce carbon dioxide emissions including the establishment of sustainable traveling. The certification involves establishment and maintenance of procedures that pushes for constant and never ending improvement. As a consequence, there have been continuous changes regarding the way decisions are made as well as the actual practices within the organization. As a result, we have seen reductions in consumption of energy as well as a pattern interrupt in numerous practices in everyday life, most notably in the way that we travel. Unfortunately, we have found that the national railroad system is not yet up to standards for sustainable travel. Therefore, we also, at times, make use of air travel when traveling short distances.

In our work with ISO 14001 we have also worked with the broader frame of "sustainable campus" rather than "green campus". The sustainable campus includes a good working environment and continuous work in developing and establishing trust-based relationships among all the professions involved. It is important to strategically work with a "community of values" (White and Harder, 2013) within the framework of the sustainable university.

We are, continuously, refining rules, regulations and routines for recycling of waste products and avoiding non-reusable materials. In the process, we are advising restaurants within the campus area to serve and give priority to vegetarian alternatives. Sun cell technology is utilized in the newly developed part of campus and we are planning for installation of such renewable energy technology in more campus buildings.

As ISO 14001 is currently being revised we must also accommodate the evolving focus regarding standardization. According to the official homepage (http://www.iso.org/iso/iso14000), the updated version is expected to be finalized by the end of 2015. We can expect more emphasis on organizational leadership and how environmental management is promoted by the heads of departments. This is certainly in line with the strategic ideas developed in this text. Furthermore, the new standard places a higher emphasis

on environmental performance relative to earlier focus on quality management system. Again, this is something to be welcomed in the perspective of our current strategic work.

13. Transdisciplinary research and an example of an outreach program

In closing this text, we would like to suggest that ideals of transdisciplinary research are fruitful for outreach programs. Arguably, the needs of the local stakeholders regarding sustainability are often so complex that approaches from one discipline appear insufficient. Although multidisciplinary and interdisciplinary formations are very useful, it might be even more valuable to attempt transdisciplinary methods.

Transdisciplinarity was first suggested by Swiss philosopher and psychologist Jean Piaget in 1970 as a strategy for reconnecting research to the profound challenges of modern industrial societies (Nicolescu 2010). Several philosophers have separately from each other developed both theoretical and methodological tenets, frequently with direct parallels to discussions on SD. Piaget argued that disciplinary knowledge has evolved in a dysfunctional manner, driven by disciplinary rather than societal needs. Moving further with this argument, Nicolescu (2010) identifies a problem in the detached viewpoint of science; strictly separating the researcher from nature, ignoring that the dissection and manipulation of nature in the long run creates change and damage. Obviously, strategies of countering these tendencies connect well with the project of SD. Mittelstrass (2000) argues that transdisciplinarity involves "solving problems external to science, for example... concerning the environment, energy, or health, as well as a principle that is internal to sciences, which concerns the order of scientific knowledge and scientific research itself" (p 3). As noted previously, the idea of transdisciplinary sustainability research has been pioneered by the University of Lüneburg, Germany (Adomssent, Godemann and Michelsen, 2007). Before introducing this idea, we should briefly review the differences between multidisciplinary, interdisciplinary and transdisciplinary research.

Multidisciplinary research typically results in anthologies as different researchers investigate the same phenomenon from their own disciplinary theories and methods. In essence, perspectives are placed beside each other and do not interact. Interdisciplinary research involves some form of interaction between researchers with different paradigms. Transdisciplinarity "concerns that which is at once between the disciplines, across the different

disciplines, and beyond all disciplines" Nicolescu, 2010, p. 22). Mittelstrass (2000) argues four characteristics of transdisciplinary research that can be briefly summarized as:

- It is integrating, resolving the tensions between disciplines at a higher level.
- It does not replace the disciplines although it removes impasses between disciplines.
- It reaches beyond disciplines and fields for solutions, understanding that the world is today a product of science and technology.
- It is a research principle that can produce theories of its own.

The Lüneburg-approach builds on the work on transdisciplinary research by Bergmann et al. (2000) which describes an ideal transdisciplinary sustainability research process consisting of three steps. *In the first step*, a structure is developed for including relevant actors, suggesting practical problems and analyzing problems. Quite crucially, the research team should be composed in such a way that the necessary competencies for solving the practical problem are represented. *In the second step*, the methodology of Big Science is utilized as the practical problem is broken down into numerous subareas and researched separate from each other, often in purely disciplinary settings. The first and the second step of transdisciplinary research can therefore be said to mingle features identified with disciplinary, multidisciplinary and interdisciplinary research. *The third step* consists of implementation and evaluation. It is important to emphasize that new knowledge is then put to work both inside and outside of Academy, leading to transformative processes on both sides of the fence.

This method of transdisciplinary research is particularly appropriate for outreach projects, starting with specific practical problems. However, universities must also build up basic competencies for researching the complexities of SD. This means the construction of disciplinary, multidisciplinary and interdisciplinary formations of high-quality research programs that in different ways are connected to the emerging research-based networks on SD. As alluded to earlier, the priority placed on research on SD within the EU *Horizon 2020* can be seen as a powerful steering instrument for the whole European research area.

According to our mission-statement, as it is elaborated in this text, we support the development of sustainability professions with research-based knowledge. We have also discussed the way that sustainability issues can serve to clarify the connection between various research areas. Ideally, dif-

ferent forms of strategic work can come together in outreach programs characterized by transdisciplinary research.

So far, we have attempted one project that broadly reflects the ideals of transdisciplinary research. Together with Borås commune and several other local actors, UB is pioneering the building of a sustainable neighborhood area. The partnership involves development and rebuilding of Norrby according to the ideals of ecological, economic and social sustainability. This is a nationally unique project that also is coordinated with the construction of a new educational program for sustainable city development as well as an externally funded research project.

The development of Norrby becomes, in this way, a resource for bringing together actors inside and outside of Academy. It also appears possible to co-construct, simultaneously, education and research.

14. Concluding discussion

At the outset of this text, we discussed the five areas for the sustainable university: strategy, campus, education, outreach and research. Following the managerial model of Velazquez et al. (2006) we developed our vision of the sustainable university. This included articulation of three different models for understanding work toward the sustainable university: the *managerial*, *community* and *research centric* models. Our vision was also based on three different concepts: *sustainability research*, *sustainability issues* and *Sustainable Development Goals* (SDGs). We found it innovative to develop ideas regarding vision as well as our mission related to these perspectives.

The current text is intended as a guideline for further strategic work as there are many steps to be taken before reaching the *transformative* stage, as outlined by Sterling and Maxey (2013). Currently, UB has moved out of the initial *accommodative* stage and into an advanced period of the *reformative* response. This is evidenced by lively activities in all five areas (strategy, research, education, campus and outreach). Although all of these areas are of equal importance, we have in this text emphasized research and research-based decision-making. It is, after all, the presence of researchers active at various research fronts that marks the difference between the University and other institutions engaging in the *reformative and transformative response*.

Some of the theoretical discussions in this text appear to us to be innovative. These relate to the articulation of the research centric model, the combination of the three different models as well as the discussion on the University as an active coordinating agent. We have not seen earlier discussions on the integration paradox and the meta-question of sustainability research is also innovative. In addition, we have attempted to develop the relatively new notion of sustainability issues, specifically by connections to SDGs. Although the most immediate value of the current text is to support the reformative stage of current work on SD at UB, It is the hope of the authors that some parts of the text will be useful for other universities as well.

We would like to close the text by arguing for a shift in research policy to stimulate transformation to the sustainable university by allocating spe-

cific funds to universities. Until recently, the role of the universities in the societal macro project of SD has been surprisingly neglected both in policy documents and in the scholarly literature. The canonical text of *Our Common Future* (World Commission on Environment and Development 1987) did not concern itself with the institution of the University and had little to say about the role of research. Granted, researchers were appreciated for having placed environmental problems on the policy agenda. However, for the future, researchers were primarily seen as tools for developing renewable energy. It was noted that a large-scale switch to acceptable levels "will require a programme of coordinated research, development, and demonstration projects commanding funding necessary to ensure the rapid development of renewable energy" (p. 21). Although coordination of research is here seen as crucial, the United Nations was not and is not in a position to coordinate. Overall, regardless of aims, coordination and steering of research has been found to be difficult. Moreover, the realization that SD necessitates engagement from the whole academic community has emerged quite slowly. Visions of sustainable futures deal with transformation of not only technology but mindsets of professionals in all walks of life. The primary challenge for the University appears to be promotion of paradigmatic shifts to include sustainability in a wide range of disciplines as well as professions connected to them. Having said this, paradigms are not easy to budge and, again, coordinating research has historically been shown to be difficult.

Attempts at steering and coordinating research in order to attain expressed policy goals goes back to the 1930s and the Soviet five-year plans (starting in 1928). Such ideas were picked up and promoted by the British physicist Bernal (1939), suggesting that science could be controlled and geared toward solving humanity's greatest challenges such as famine and poverty. Instead, "Bernalism" was implemented as a key vehicle within research and development of weapons during World War II, eventually leading into the Manhattan project and the nuclear age (Jones, 1981). This trend has continued in the postwar era with a transition into so-called *Big Science*, researchers becoming part of highly coordinated large-scale teams where different specialists apply themselves to separate pieces in the larger puzzle (de Solla Price, 1982).

This development has served to deemphasize the strategic role of the University. With time, the University appeared more as a hotel than a home for specialized research teams struggling for position within global networks and hierarchies. In the 1960s and 1970s national governments,

such as Sweden, initiated another strategy for coordinating research, often called "sectorization", by moving substantial faculty funds to various agencies (Elzinga 1980). This removed substantial agency from the University, essentially creating a subsidiary system that rewarded disciplinary excellence and networking rather than loyalty to the local place of employment.

Starting in 1984, the European Commission initiated five-year framework programs in developing a European Research Area. The first five-year plan had a budget of €3.75 billion (Stubbs 2007). The budget grew substantially with each five-year period and for the sixth framework program, 2002–2006, the budget was close to €18 billion. Starting with the seventh framework program, 2007–2013, the Commission switched to seven year plans, now with a budget of over €50 billion. The eighth framework program, dubbed Horizon 2020 has an estimated budget of €80 billion, making this into a very powerful instrument for research policy. This is a signal that few European universities can ignore. Nevertheless, the heavy increase in European research funding is directed at highly networked *research teams* rather than local excellence at *universities*. In addition, European funding is usually incomplete, thus demanding further commitment from what would otherwise have been strategic resources for the local University. *Altogether, the development of centralized agents (nationally and European), pursuing their own research policy agendas, has served to substantially weaken the institution of the University as a self-coordinating actor. Arguably, the heavy emphasis on shifting resources and agency to external funders has delayed necessary strategic development of universities as sustainable.*

As universities become more active in self-coordinating sustainability activities, we find it reasonable that they would be allowed a certain return of faculty resources lost in previous decades. The research centric model implies that the sustainable university has access to resources that make them somewhat resilient to agendas of external actors. Currently, agendas of empowering local universities to stimulate sustainability research are somewhat in opposition to national and European financing systems.

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Appendix 1: SD Goals (SDGs) according to the Open Working Group Proposal for SD Goals (2014)

1. End poverty in all its forms everywhere.
2. End hunger, achieve food security and improved nutrition and promote sustainable agriculture.
3. Ensure healthy lives and promote well-being for all at all ages.
4. Ensure inclusive and equitable quality education and promote life-long learning opportunities for all.
5. Achieve gender equality and empower all women and girls.
6. Ensure availability and sustainable management of water and sanitation for all.
7. Ensure access to affordable, reliable, sustainable and modern energy for all.
8. Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all.
9. Build recipients infrastructure, promote inclusive and sustainable industrialization and foster innovation.
10. Reduce inequality within and among countries.
11. Makes cities and human settlements inclusive, safe, resilient and sustainable.
12. Ensure sustainable consumption and production patterns.
13. Take urgent action to combat climate change and its impacts.
14. Conserve and sustainably use the oceans, seas and Marine resources for SD.
15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.
16. Promote peaceful and inclusive societies for SD, provide access to justice for all and build effective and accountable and inclusive institutions at all levels.
17. Strengthen the means of implementation and revitalize the global partnership for SD.

The current text is intended as reflection on the introduction of sustainability into the University of Borås. Furthermore, the aim is to create a resource for discussion, promotion of community values as well as tools for understanding, clarifying and extending sustainability practices within the institution of the University. Following the managerial model of the sustainable university, the aim is to formulate a specific vision and accompanying mission of sustainable university. The vision is articulated in chapter 3 and 4 in terms of three models (managerial, community and research centric) and three concepts (sustainability research, sustainability issues and Sustainable Development Goals (SDGs)). In chapter 5, the mission statement of the University of Borås is elaborated given the vision of the sustainable university.

Chapter 6 introduces a specific problem called the integration paradox: that sophisticated integration of sustainable development into all practices often leads to less clarity, visibility and accountability. This also appears as a problem regarding the mission statement and this is further developed in chapter 7. Three strategies are developed in order to deal with the paradox. First, SDGs and what we call the "meta-question of sustainability research" are discussed in chapter 8. The third strategy, sustainability issues, is focused in chapter 9 and 10. Here, sustainability issues are utilized in order to connect university-based expertise with local and global needs, the latter expressed as SDGs.

In chapter 11, three strategies currently in use for integrating sustainability into education are presented and discussed: use of SDGs, community oriented activities aimed at raising appreciation/awareness and certification of courses.

Chapter 12 deals with ongoing work related to the information management system ISO 14001. Chapter 13 discusses a particular example of an outreach program and positions this in the context of transdisciplinary research.

Chapter 14 supplies a closing discussion and also the argument that the sustainable university as an evolving institution is to a considerable extent counteracted through the current system of external funding. Today, researchers have been schooled into loyalty to international disciplinary networks rather than to the local employer. It could be argued that the local University aiming to develop its own strategy for sustainability as well as developing local outreach programs, need more resources for coordinating internal resources.

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