Transferability of approaches to sustainable development at universities as a challenge

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Abstract

Purpose – The purpose of this paper is to outline the particular character of the research and development project “Sustainable University – Sustainable development in the Context of University Remits” which lies both in its integrative perspective on universities and the attempt to transfer its findings onto other higher education institutions.

Design/methodology/approach – The paper describes the testing and further development of transdisciplinary research methods (transformative approach, scenario development) for the purpose of both exploring and testing potentials/capabilities for sustainable development of a single institution (case study: University of Lüneburg, Germany) against the backdrop of sustainability concept; and making this kind of development transferable to other universities. The paper offers additional reinforcement of strategic scope/effectiveness by means of reference to findings of higher education research (e.g. relevance of neo-institutionalism)

Findings – There is empirical evidence for successful development of transdisciplinary techniques for sustainability in higher education domains (among others management, research, and teaching – cf. other contributions of this issue). Further, dissemination of the “Lüneburg Approach” by establishing an intermediate level of collaboration between sustainability activists within universities and in higher education policy and administration (e.g. constitution of working groups in northern Germany and at the federal level)

Research limitations/implications – There is a need for enhancing research tools for transdisciplinary sustainability science; deliberating on international transferability (current focus: (solely) German academia)

Practical implication – A systemic approach is indispensable: instead of focusing upon isolated sustainability fields of action” (management, research, teaching, etc.), all-embracing advancement to encompass their strategic relationships and thus synergies.

Originality/value – The paper provides a holistic view of academic organisations addressing the issue of how universities are to be proactive in advancing sustainable development.

Keywords Sustainable development, Universities, Higher education

Paper type Research paper

Introduction

If sustainable development is seen from a holistic perspective, it can be understood simultaneously as a concept, a goal and as a process or strategy:

The concept speaks to the reconciliation of social justice, ecological integrity, and the well-being of all living systems on the planet. The goal is to create an ecologically and socially just world within the means of nature without compromising future generations. Sustainability also refers to the process or strategy of moving toward a sustainable future (Moore, 2005, p. 78).
In line with this understanding, sustainability is relevant for universities in many regards and at many levels: both at the micro-level – universities as sociotopic constructions with political implications – and at the macro-level – the higher education system as a political construct with sociotopic implications (Kehm and Pasternack, 2000, p. 207). Therefore, in the search for promising means of encouraging universities to engage with the concept of sustainable development, both levels are to be taken into consideration.

Through its initiatives “Agenda 21 and the University of Lüneburg” (1999-2001) and “Sustainable University – Sustainable Development in the Context of University Remits” (2004-2007), as well as through the UNESCO Chair of Higher Education for Sustainable Development, the University of Lüneburg has been among the first European universities to view the institution as a whole and to attempt to initiate processes in all working areas which point the way towards the integration of sustainability into each of the different areas in which it is active.

Against this backdrop, a particularly interesting question is to what extent the experiences gained and the knowledge acquired through these projects could be transferred to other universities or could provide support for them. In this analysis, the University of Lüneburg is to be seen as the case for a case study approach.

Transferability of approaches to sustainable university development as a challenge
In order to better understand this transfer and its associated challenges, reference shall be made to the findings of higher education research. This branch of research – in particular, the area of comparative higher education research, which is most relevant to the case at hand – deals with questions which provide important findings in estimating the feasibility of approaches to transfer. Within this field of research, two dominant strands can be identified:

... a predominantly political-economic strand focusing on issues of HE steering, such as governance and finance [...] and a more sociological strand dealing with structural features of the HE system (Witte, 2006, p. 78).

In addition, a number of approaches drawn from neoinstitutionalism are employed, which in all of their main forms (sociological, historical, and economic/rational choice variant) deal with the question of how institutions affect the behaviour of individuals: “an institutional approach is one that emphasizes the role of institutions and institutionalisation in the understanding of human actions within an organisation, social order, or society” (March and Olsen, 1998, p. 948). The individual institutions (micro-level) and the higher education system as a whole (macro-level) form the two points of reference for the following considerations, which are to focus closely on the potential for transfer and illustrate this potential by making reference to the findings of higher education research.

(1) For universities, dealing with the idea of sustainable development at both institutional and organisational levels provides an opportunity to understand and face up to manifold and complex challenges. The growing complexity of the factors involved represents a major driving force behind the structural development of universities. The British higher education researcher Barnett (2000) speaks of an “age of
supercomplexity” in this regard. In similar manner to the findings of higher education researchers working together in the framework of the UNESCO Forum on Higher Education, Research and Knowledge, this formulation describes the fact that universities find themselves caught up in the constant interplay of newly arising demands – including that of the globalisation of the higher education system:

Academic work appears to be buffeted by all sorts of external forces. It is subjected to greater managerialism, greater instrumentalism, greater competition, new forms of control and accountability, and so on (Brennan et al., 2004, p. 28; Teichler, 2005, p. 171).

The concept of sustainable development offers the opportunity for a productive encounter with complexity, to the extent that it neither denies this complexity nor reduces it in an unacceptable manner. Simultaneously, aspects such as justice, participation and interculturalism provide points of orientation for a comprehensive approach on the part of the university, which combines with a forward-looking attitude to lead to a desirable form of development for the whole of society.

[...] transition has less to do with that which is passing, than with that which is to come. This is an important shift in mental perspective. It casts aside the notion of institutional development as “transition from” but rather puts great emphasis and weight on the notion of “transition for” (Neave, 2006, p. 1).

At the same time, the idea of sustainability also appears applicable from an organisational perspective: “sustainability can, at the institutional level, be viewed as catalyst for systemic institutional and organizational change” (Wals and Corcoran, 2006, p. 107). Even if universities can be described as institutions characterised by paradoxes and contradictions, these should not be glossed over in the course of efforts to push through change in the direction of sustainable development; rather, they should be actively harnessed in reformist efforts as a kind of structural tension (Kehm and Pasternack, 2000, p. 214). Precisely, due to its explicit open-endedness, the manifold tensions contribute to making a field characterised by reflexivity and openness to experimentation bear fruit:

... a creation of space for transformative learning; [...] for alternative thinking – to cope with uncertainty, poorly defined situations, and conflicting or at least diverging norms, values, interests and reality constructions (Wals and Corcoran, 2006, p. 103).

(2) Transferable case study findings on the integration of sustainability at universities must reflect their organisational specificities; therefore, it is essential to process partial findings on key areas of university activity in such manner that they present as many openings for transfer as possible. Numerous findings from higher education research focus on the organisational specificity of universities, while some authors go as far as to describe universities as “organized anarchies in which the garbage can model of decision making prevails” (Cohen et al., 1972). According to an oft-cited formulation, universities are functionally only loosely coupled systems, which can develop smoothly in isolation from one another: “Functional loose coupling refers to the low level of cooperation and coordination required by teaching and research activities within HEIs” (Weick, 1976). The reason for this is that teaching and research can be considered “unclear technologies”: “Teaching and research are complex processes which are difficult to grasp ... with an ambiguous causal relationship between tasks
and results” (Musselin, 2007, p. 71). This long-established autonomy in content terms has more recently been joined by increasing procedural autonomy, which leads to increased “tensions between normative and operative modi” (Kehm and Pasternack, 2000, p. 209).

This diversity within the university unit is, however, not to be seen merely in negative terms. On the contrary, for desirable sustainable development to take place, it is unlikely that it will be formulated on the basis of current expectations and knowledge:

Rather, it is to suggest that there are some desirable social ends, which cannot be achieved through explicit, linear processes of planning, monitoring and evaluation. If this is true for future economy-related skills-need, it must be doubly so for sustainable development which is a wider concept within which the economy is subsumed (Scott and Gough, 2006, p. 93).

The independence of individual university subsystems can thus also be seen as a defence against instrumentalisation, which has allowed universities to succeed as institutions over the centuries.

Even if, from the perspective of SHE actors, a rapid change of course, in the direction of sustainable development on the part of universities would certainly be desirable, their eccentric and wilful character must be taken into account and adapted to. This carries the consequence for research initiatives in this field that suitably formulated research findings and open-ended models must be held ready to be easily adapted or modified without undue effort by the various people involved in the HEI at the most varied points of the organisation. In this manner, individual university subsystems can set out on the path towards sustainability (such as teaching or administration) while other areas (still) remain stubbornly static:

Loose coupling allows for important transformation to happen in one part of the system without disturbing the other parts, but at the same time it impedes the diffusion of change from one part to another (Weick, 1982).

(3) On-target results can only be achieved with the aid of holistic, integrative project-based approaches, as only thus can systemic internal university processes run their course – thus allowing potential obstacles and success factors to be identified.

A number of organisation theory approaches have been used to suitably describe the model of the “group university” which has long been dominant in the German-speaking world. On this basis, the university can be seen as a “living organism” within which self-organisation processes, interaction with and adaptation to the external environment and biodiversity in the sense of diversification can all be found. Alternatively, the university can be characterised as a “symbolic-cultural space” the communicative construction of which as an organisation takes place through an emphasis on norms, values, convictions and rituals on the part of its members. And finally, the university as an organisation can be seen as a “political arena” in the sense of interest-driven interventions, negotiations and conflicts in which control, power, influence, prestige and access to resources are at stake (Kehm and Pasternack, 2000, p. 207).

The systemic core of such descriptions of universities is maintained in the current tendency to see universities from a predominantly functional perspective as an organisation (Pellert, 1999). The ability of universities to react to the challenges they are
faced with through self-driven change and readiness to develop is characterised by the term “learning organisation”.

In terms of transformative processes within the university as an organisation, a whole series of intertwined subsystems can be addressed from a systemic perspective against the backdrop of the guiding principle of sustainability. Sterling differentiates between seven operational dimensions of educational institutions: ethos; curriculum; pedagogy, research, learning and inquiry; organisation/management style; resource management and use; physical structures/architecture; community links and relationships (Sterling, 2004, p. 65). The case study “Sustainable University” attempts to do justice to the complexity of one’s own university by using an integrated approach, in the sense of extrapolating to the level of an abstract, generalising “university system”. As the quest for sustainable university development essentially revolves around learning processes at the various levels of the system, the diverse relationships and interactions of these various dimensions among one another play a central role, and one which is all too often neglected:

(4) In the long term, sustainable university development can only take place successfully if it is presented to universities as an optional possibility, as universities have effective defensive and relativising strategies for dealing with unwished for top-down regulation. There may well be examples in Germany of national political initiatives addressing the entire higher education system (e.g. the introduction of the grade of junior professor), but the paradox remains that universities (with just a few exceptions) are state-owned institutions with a privileged degree of autonomy, or “state institutions at distance from the state” (Pasternack, 2006, p. 156). Particularly when faced with forms of steering in the style of hierarchical state intervention, the higher education system often reacts in a volatile manner – and with a high degree of resilience. This, however, is one of the most significant reasons for its success, as it should not be forgotten that these structural mechanisms allow universities not only to fulfil the diverse range of often contradictory demands made of them, but to build upon them in a productive manner:

Following an organizational perspective, it is not surprising that the university can deal with and even integrate a variety of heterogeneous, and at times even conflicting, demands and purposes (i.e. science, education, politics, economy) (Krücken et al., 2007, p. 16).

Against this background, there is a risk of wasting the chance of seeing universities make a genuine attempt to tackle sustainable development if this is decreed from on high, as universities cannot be considered in isolation from the development of society as a whole. Thus, it is altogether possible that besides their active role as “change agents” they can also reproduce existing conditions: “It is important to distinguish between universities that ‘ignite’ change, those that ‘accelerate’ change and those that ‘block’ change” (Brennan et al., 2004, p. 16).

If thoroughgoing transformation towards the dissemination and acceptance of the ethos of sustainability is to be achieved, it would appear advisable to place our trust in “co-evolution as learning process between institutions and their communities” (Sterling, 2004, p. 49). At the same time, this circumvents the danger of prematurely extrapolating the future exclusively on the basis of questions and assumptions from the present and thus falling into a counterproductive dead-end which could shut off or exclude in advance important but hitherto unidentified alternatives:
Nevertheless, impulses from higher education policy are indispensable in giving a wider impact to activities aimed at encouraging universities to take up sustainability issues. Here, an important contribution is made by declarations stating optional voluntary commitments. The potential effectiveness of (supra-)national higher education policy declarations in Europe is surely best shown by the Bologna Process. This represents the “fastest-moving and most comprehensive process of university structural reforms in Europe” (Kehm, 2004, p. 15), while:

...it has to be kept in mind that the Bologna declaration is not a binding legal contract or policy agreement, but a declaration of intent of the European ministers in charge of HE (Witte, 2006, p. 4).

The area of sustainability declarations in higher education now counts a whole series of texts (Adomssent, 2006, p. 14) which have been signed by many hundreds of universities, and optimism would therefore seem to be justified. These documents, all similarly formulated in wording and intention, recall that “the university has a special role in society and is morally bound to create change” (Wright, 2004, p. 14). In addition, the COPERNICUS Charter, which is relevant to the European higher education sector, shows that even if not all of the over 300 signatory universities can be described as active members, then at least a considerable and growing proportion of these universities are moving in the direction of sustainability. In the German-speaking countries, relevant texts include the memorandum “Rethinking Universities” and the “Lübeck Declaration: University and Sustainability”; both underline the path to be taken in the direction of sustainability, where voluntarily assumed commitments play a key role:

(5) Intermediary bodies play an important role in the implementation of aspects of sustainable development. Unlike many other countries, and not least due to its federal structure of responsibilities, the German higher education system presents a lack of entities situated between the State and universities (“intermediary bodies” or “buffer organisations”).

“The German situation is characterised by a high degree of polarisation [...] reflected in the extreme gap between far-reaching policy-change [...] and hesitant national decision-making on implementation” (Witte, 2006, p. 524). This is to be seen as a significant cause for the shift from process control to output control and the associated problems with coherence and consistency at institutional and legislative levels (Kehm and Pasternack, 2000, p. 215).

This lack of such an intermediary level also has a negative impact on sustainability-oriented universities. For the actors involved, the situation thus far has been that of isolated individual fighters, while sustainability-oriented initiatives put forward by representative organisations such as the German Rectors’ Conference or the German Science Council have hitherto received no political support. In order to receive support from these and other organs and institutions, three initiatives have joined forces with the aim of bringing together the universities active in the area of sustainable development into a high-profile network, functioning as a transmission belt in the direction of higher education policy and administration (Adomssent and Michelsen, 2006). The model for this initiative is the working methodology of the Dutch DHO, many members of which straddle both of the said levels – often including the
Ministries themselves – thus ensuring a stronger influence on the drafting of legislation or on research programmes in preparation.

Summary
In sum, it is to be noted that a variety of increasingly global forces are influencing the structural development of universities – “with implications for higher education at the organizational, but also at the societal and political level” (UNESCO, 2003, p. 4). But, in spite of this trend, there is potential room for action – for individual countries and for individual universities (Teichler, 2005, p. 171). Such a proactive perspective, seeing transformative processes not as a reaction to external influences, but rather “as an act of anticipation” (Neave, 2006, p. 1), can be linked to an optimistic view of the shaping of a conceivable future within the scope of the normative, orienting paradigm of sustainable development. The considerable contradictions to be overcome can be thus summarised: “how do we work towards transformative learning in a system that itself is intended to be a prime agency of learning?” (Sterling, 2004, p. 51).

In the following, the Lüneburg Approach shall be presented, with its transformative approach to overcoming the challenges described.

The “Lüneburg Approach”
The research and development initiative “Sustainable University – Sustainable Development in the Context of University Remits” is aimed at integrating the idea of sustainability into a range of areas at universities. The focus is placed on the following question: How can universities actively face up to the challenges associated with sustainable development, and to what extent can targeted structural changes perform a contribution to transforming universities for sustainability?

In order to work through these overarching questions, the whole spectrum of the project was broken down into six sub-projects, which are attributed to three central dimensions (Figure 1).

The central question can be broken down into a number of sub-questions:

1. How can interdisciplinary working methods be implemented in teaching, and to what extent are interdisciplinary courses part of the “basic armoury” of a sustainability-oriented university?
2. How is the university as a living environment to be shaped so that it can open up educational opportunities for sustainable development – as a space for experience – and potential for structural changes for sustainable development – as a space for intervention?
3. What should integrative sustainability management for universities look like, and what contributions can external sustainability reporting make in this area as an instrument?
4. What specific factors are involved in the use of energy and other resources at universities, and by which means can sustainability-oriented behaviour be achieved in the areas of energy and mobility?
5. How can the idea of sustainable development be communicated in the university as knowledge factory, and how can perspectives be widened by development theory and cultural theory discourses?
The first two questions are to be assigned to the area of learning and living environment and remind us that the reformulation of these core tasks is part of the transformation of the university as an entire organisation. The questions on sustainability management and use of resources suggest that the targeted improvement of sustainability performance is among the key management tasks at universities. Systematic engagement with university communication processes – which are essential for the dissemination of the idea of sustainability and which are aimed at critical reflection on the concept as a whole – is a further emphasis for the project. Communication and participation are key principles for the implementation of the idea of sustainability in the university context; the task is to raise the issue of the development process towards a sustainable university, to discuss it and develop common practical steps towards its realisation.

The sustainable university project can be characterised as a research and development initiative in which the case study as a research method has been selected as the central approach. A case study represents a comprehensive research strategy which takes account of qualitative and quantitative aspects and is based on multiple sources of knowledge and data evaluation (Yin, 1984). By employing a multi-level approach, it becomes possible to make reference to the case in its fullness and complexity throughout the entire process of analysis, while influencing factors and framework conditions can be analysed in detail, leading to more precise and thoroughgoing knowledge (Kyburz-Graber, 1999; Mayring, 1996). Case studies are a specific research design in that they investigate the complexity of human actions in their social context and can be relevant to both individual and collective forms of action (Flick, 1995).

A number of case studies are available in the area of sustainable university development. A wealth of examples are to be found in Leal Filho (2000), Corcoran and Wals (2004) and the various issues of the *International Journal for Sustainability in Higher Education*. However, these are predominantly descriptive approaches which do not go much beyond “storytelling”. Corcoran *et al.* (2004) have criticised the lack of analytical depth of such approaches:

Current case-study research in the context of sustainability in higher education does not problematize practice. [...] Stories of success are reported, but the data supporting these successes are not available for the public critique. Such success stories may mask the problems experienced by the institution in implementing sustainability. Case-study research
in sustainability in higher education rarely includes information on the theoretical approach
to the methodology or on the methods used to gather the data. We argue that such case-study
research would be more effective in bringing about change if it were better theorized and
documented.

Similar arguments are also expressed by Fien (2002): “few studies have thought to go
beyond description to include a critical and theoretical analysis of findings or to
ground explanations in social or organisational theory.”

The case study approach would appear fundamentally suitable in examining
sustainable university development. Nevertheless, existing approaches must be
expanded in order to do justice to this complex range of problems. The lack of a
theoretical foundation; the failure to draw generally applicable consequences from
primarily descriptive reports; and the failure to provide externally verifiable data are
among the most serious criticisms levelled at existing case studies on sustainable
university development.

Therefore, the Lüneburg “Sustainable University” project has expanded the case
study approach to include transformative aspects, in order to view transformation
processes from two different levels: on the one hand, the development of the case
should not only be described, but developments should also be anticipated on the basis
of an explanatory system analysis which allows the development of possible scenarios.
On the other hand, the issue of special transferability should be consciously considered
in the analysis. With the aid of such a detailed analysis, it should be possible to reach a
degree of general validity that enables knowledge transfer from the studied case to
other cases in different contexts.

A contribution to interdisciplinary and transdisciplinary sustainability
research
In light of the research topic and the focus on shaping change at universities to the
benefit of sustainable development, the “Sustainable University” project can be
described as an actor- and problem-oriented project, and as a discipline-spanning
project. In order to do justice to the diversity of different subject perspectives, a
differentiated approach is used in the research process – neither making abstract,
metatheoretical generalisations nor giving precedence to any one dominant discipline.
The project has an explicitly interventionist character (c.f. the various contributions to
this volume) as it intervenes in current issues and discourses on universities and
sustainable development. Thus, the project as a whole can be classified as sustainability
research dealing with questions of securing the conditions for societal development in
the long term. Through its orientation towards the normative principle of sustainability,
sustainability research is not only distinct from environment research, for example, in
content terms, but it is also distinct in terms of its research methods and organisational
aspects. Sustainability research is based on a new relationship between science, the
public sphere and practice, and must fulfil quality criteria distinct to those applied in
pure subject-based research (Brand, 2000). In sustainability research, three fundamental
levels can be distinguished, with relevance to research the:

(1) analytical level, aimed at the creation of systems knowledge;

(2) normative level, at which target knowledge is developed; and
(3) operative level, at which transformation knowledge is generated (Nolting et al., 2004).

As a rule, sustainability research is thus transdisciplinary research. The characteristics of a transdisciplinary research process – besides the complexity and dynamics of the research question – include respect for diverse perspectives, careful regard to the consequences, and embeddedness in the “real”, i.e. the societal context (Smrekar et al., 2005).

As understandings of transdisciplinarity often differ considerably, a definition of the key terms should be provided at the outset in order to make clear how transdisciplinary is understood in the present contribution. Unlike discipline-based research, multidisciplinary research deals with a research topic that addresses a number of disciplines and the various partial aspects of the problem are studied by the different disciplines using their respective methods. These partial findings can then be compiled to reflect different facets of the topic. When this process goes beyond a “mere juxtaposition of discipline-bound particularities” (Mittelstraß 1987, p. 155), we may speak of interdisciplinary research, in which a problem is studied involving two or more disciplines and in which an interface is created. By integrating a range of disciplinary perspectives, theories and methods, new knowledge structures are built up. Furthermore, the knowledge acquired in tackling and solving a problem in common can be taken up within the respective disciplines. The approach of transdisciplinary research goes beyond the boundaries of academia, tackling and solving problems from outside of the realm of academia through cooperation between academics and practitioners, in an integrative manner.

An ideal transdisciplinary sustainability research process (Figure 2) would encompass the following aspects (Bergmann et al., 2005):

1. The first step is to establish a structure for analysing problems and involving the relevant actors. The starting point for this should be a practical problem. The composition of the research team depends upon the specific formulation of the question.

2. In the next step, the project is implemented in accordance with defined methods. After the question to be researched has been broken down into a series of sub-areas (differentiation), new knowledge is generated and existing knowledge is extended or transferred through discipline-spanning and cooperative work.

3. The third step is that of evaluation: this new knowledge must be appropriately brought together (integration 1) and then applied in academia and in practice (integration 2) so that innovative processes – in the sense of transformative development – can take place.

In particular, the problem breakdown and the later integration of the generated knowledge can be considered to be the key challenges of transdisciplinary research and its evaluation. The challenge of transdisciplinary processes lies in overcoming a high degree of complexity. The issues to be resolved generally cut across disciplinary paths to a solution, and the methods of analysis must be flexible to adapt to the constellation of the task. Complex problem situations encompass factors which are not necessarily predictable, which give rise to uncertainty, and which may lead to some of the sub-objectives finding themselves in a contradictory relationship with one another.
The difficulty for action lies in the fact that although objectives are stated, they are unclear and cannot be used as guidelines for action without further work (Dörner et al., 1994). Structuring complex problems implies the challenge of carrying out a differentiation, without being able to rely on simple cause-effect mechanisms.

In the framework of the research and development process, such describable phenomena must be broken down into meaningful sub-projects. Breaking down the problem into sub-areas is a necessary step, but hardly an easy one. The division of the problem must take account of the need for integration at a later stage, and the individual sub-areas must be placed in a relationship with one another so as not to mutate into isolated satellite systems, but rather, so that they can exist in communication with one another and contribute to solving the overall problem. Furthermore, a research team working in a transdisciplinary manner is a heterogeneous group, and the success of the communication process within the group comes up against a range of challenges (Godemann, 2005).

Transdisciplinary research deals with issues of societal practice which can only be solved through the cooperation of academics and practitioners. In the “Sustainable University” project, a more precise definition of this understanding of trandisciplinarity is required, as in this case, it is impossible to make a clear distinction between “academia” and “societal practice” – as the university itself is the subject of the research. The participants in this system are, on the one hand, the academics who are involved in the research and development process; but they are also practitioners, for example as teaching staff at the university. It is easier to define students as experts for the area of

**Figure 2.** The transdisciplinary research process

*Source: Adapted from Bergmann et al. (2005, p.19)*
“studying” and thus representatives of practical action. Given this particularity, the project works on the premises of transdisciplinary research, attempting to bring practical problems from everyday working and studying together with scientific issues, and working on them with the appropriate methods.

University-wide data gathering and analysis

The stated research interest of the “Sustainable University” initiative covers the university as whole. Thus, over the full duration of the project a diverse range of research methods were applied to answering these questions, held together by a comprehensive research design. With the objective of sounding out, the current situation with regard to “sustainability and higher education” at the University of Lüneburg, and of obtaining a common empirical basis for all of the individual stages of the investigation, an online survey was held in summer 2005, entitled University on the Move. In concrete terms, this census-scale survey aimed – among other things – to discover the level of awareness of the concept “sustainable development” at the University of Lüneburg, and to find out whether the basic ideas of the concept were accepted. In order to discover where students, teaching staff and administrative staff saw potential for further steps in the direction of the “Sustainable University of Lüneburg” questions on the areas of learning, living and university organisation were studied closely. Further, questions asked about respondents’ expectations of the role of universities in general, in relation to their assessment of their own university. The survey was particularly interesting as a reflection of the University’s different campuses[1], but also through the search for divergences between students, teaching staff and administrative staff.

The survey took place by means of an online questionnaire. The choice of an electronic survey was motivated by logistical considerations: by this means, over 11,000 members of the university at the four separate campuses were reached without undue effort.

The base population for the survey encompassed all members of the University of Lüneburg. Because of the high degree of heterogeneity of the members of the university, random sampling or stratified sampling with an acceptably low number of respondents appeared impracticable – ten departments, many of which are very small, with potentially different departmental cultures and different status groups, would have to be addressed.

A comparative analysis of the respondent groups and their distribution within the base population shows that the survey is subject to certain limitations in terms of its representative nature. With 2,110 participants, it is true that a large number of members of the university were motivated to participate, as intended, but the response rate as a proportion of the total population varied considerably around the average rate of just over 19 per cent (Table I).

For the questions on the understanding of sustainability, both awareness and understanding of the term “sustainable development” were surveyed, as was agreement with fundamental issues of sustainable development.

About 86.8 per cent of respondents had heard of the term “sustainable development”: among respondents from the Department of Environmental Sciences awareness stood at 100 per cent, whereas the term is least current in the departments of Automation Technology (68.0 per cent) and Social Studies (61.7 per cent). Comparing the status groups, there is less awareness of the term among the students (85.5 per cent) than there is among staff (professors: 100 per cent; scientific assistants: 98.8 per cent;
administration: 86.9 per cent). Men (89.2 per cent) demonstrated a slightly higher awareness of the term than women (85.8 per cent). Figure 3 shows what the respondents associated with the concept of sustainable development in concrete terms.

It is no surprise that there are significant differences between members of the different subject departments: 97.2 per cent of environmental scientists associate “considering future generations” with the idea of sustainability; fewer respondents from the business law department (63.3 per cent) and from civil engineering (58.3 per cent) made this connection. While only 13.3 per cent of respondents from the business law department saw global justice as an element of sustainable development, this proportion stood at 39.1 per cent among educational scientists and at 74.2 per cent in the environmental sciences. 23.5 per cent of respondents from automation technology

<table>
<thead>
<tr>
<th>Status Group</th>
<th>n</th>
<th>N</th>
<th>RR (percentage)</th>
</tr>
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<tbody>
<tr>
<td>Students</td>
<td>1,787</td>
<td>10,295</td>
<td>17.4</td>
</tr>
<tr>
<td>Professors</td>
<td>36</td>
<td>171</td>
<td>21.1</td>
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<tr>
<td>Scientific assistants and other teaching staff</td>
<td>131</td>
<td>226</td>
<td>58.0</td>
</tr>
<tr>
<td>Administrative and technical staff</td>
<td>125</td>
<td>382</td>
<td>32.7</td>
</tr>
<tr>
<td>Not stated or not directly classifiable members</td>
<td>31</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>of the university</td>
<td>125</td>
<td>382</td>
<td>32.7</td>
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<tr>
<td>Gesamt</td>
<td>2,110</td>
<td>11,074</td>
<td>19.1</td>
</tr>
</tbody>
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Notes: n – absolute number of responses; N – absolute population; RR – response rate in percentage

### Table 1.
Distribution by status groups

![Figure 3. Understanding of sustainability among the respondents](image-url)
associated sustainable development with economic growth, while only 6.0 per cent of respondents from cultural studies held the same opinion.

The respondents were asked to agree or disagree with five statements which touch upon the basic issues of sustainable development and allow conclusions to be drawn as to the level of acceptance of sustainability, as shown in Figure 4.

The following differences were observed between the various subject departments: members of the Department of Environmental Sciences agreed to all of the basic statements on sustainable development at an above-average rate. For example, 94.8 per cent agree with the assertion that the relationship between industrialised and developing countries should be altered in favour of the developing countries. Members of the Department of Educational Sciences agreed with some statements at an above-average rate. On the other hand, members of the Departments of Automation Technology and Civil Engineering in particular generally demonstrated a below-average level of agreement.

Conclusion

The survey results (only been partially presented here – for a more comprehensive breakdown of results see Adomssent et al., 2007) together with the detailed descriptions of the various contexts from the perspective of the sub-projects, as well as the findings of the previous project, are of central importance. The most recent developments at the University (including a merger with a polytechnic) provide a complementary perspective on the contextual conditions and, together with the views of the actors involved, have allowed a deepened understanding for the complexity of the framework conditions.

The selected procedure, following the Lüneburg approach, can be directly classified as belonging to the procedural model of transdisciplinary sustainability research, as developed by Bergmann et al. (2005). This procedure is capable of delivering detailed answers to the question of how the transition from knowledge generation to knowledge integration can be brought about.

Figure 4.
Level of agreement with basic issues of sustainability

Nature should be protected even when there is no known benefit to mankind

Global problems such as the greenhouse effect and loss of biodiversity can only be solved through technological progress

People alive today cannot take responsibility for future generations.

We should not consume more resources than can be renewed by natural means.

The process of give-and-take between industrialised and developing countries should change in favour of the developing countries
• The triangulation of quantitative and qualitative methods in surveying the current situation at the level of the various sub-projects allows a comprehensive perspective of the complex issues bound up with the “sustainable university”. In the course of the sustainable university project, the comprehensive overview built up in this manner corresponds to the second stage of the transdisciplinary research process (Figure 2). This includes analytical recognition of causal relationships and structures; at the same time, intervention takes place at the level of the sub-projects, which are inflected on the basis of the findings produced thus far, and can be seen as tests of the “university system”.

• The third step of evaluation in the “Lüneburg Approach” consists, in a first stage, of knowledge integration into a model of sustainable university development which is specific to the University of Lüneburg, but which considers the underlying causal system of universities and thus provides transferable findings on more generally applicable factors. In a further stage, which has not yet been definitively completed, the temporal dimension of possible transformative developments is being assessed in the form of qualitative forecasting processes. The scenario method shall be applied in order to better estimate the scope and effects of different developments, and to identify significant influencing factors for the future.

The decisive step for transdisciplinary research – namely, transdisciplinary integration – is driven by system analysis, aided by the restricted scope of the individual sub-projects and the common development of scenarios (Keil, 2005).

By classifying the present research initiative as sustainability research, the methodological framework and transformative approach have been dealt with. Thus, intensive involvement of all concerned shall enable solutions to be put together – solutions which are not conceived with little regard for practical application, but which are ready to be implemented and feasible. A further advantage lies in the fact that transformation processes are actively considered in the analysis. At the same time, generally applicable connections are identified, and thus the problem of transferability is tackled proactively.

For the future, the question posed for all of the research levels and contents studied shall be that of how interdisciplinary and transdisciplinary research can be successful, and how discipline-spanning communication can take place in order to tackle complex issues in a comprehensive manner. In this process, one important question shall be that of what criteria will look like for evaluating and measuring interdisciplinary and transdisciplinary research processes. This calls for a suitable quality assessment mechanism, in turn, necessitating the development of appropriate indicators. And in doing so, it is not only the research process which should be examined under the magnifying glass, but also interdisciplinary university teaching and knowledge transfer. The development of such instruments does not only make it possible to measure how far universities have progressed along the road to the sustainable university. Indeed, systematic analysis and engagement with this kind of project experience promises to make an important contribution to the continued development of interdisciplinary and transdisciplinary research methodology.

Note
1. The University is divided into four sites, one of which is more than 50 km outside Lüneburg.
References


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