CSR, Sustainability, Ethics & Governance
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Hans Chr. Garmann Johnsen
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Richard Ennals *Editors*

Higher Education in a Sustainable Society

A Case for Mutual Competence Building

Springer

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Foreword

This book is both a response to a call and a call for a response. For the first time in history, humanity faces a common global challenge: a challenge containing a combination of the degradation of natural and environmental resources, an increasing gap between the rich and the poor, and climate change which demands immediate action.

Coping with this challenge demands joint efforts from several contributors: private enterprises, public services, and government, civic society, and academia. As leaders of a university, we ask ourselves what our contribution should be, and what we should expect from the others.

In an academic institution, this act of "asking oneself" cannot be kept within the top management. Our core activities are research, education, and interaction with society, all of them within the condition of academic freedom. Consequently, we must start by asking our colleagues who daily deal with our core tasks. This book is their response. Or, rather, this book is the first co-ordinated response from some of our researchers, teachers, and other colleagues. It is both our intention and our expectation that this book will nourish and expand the necessary ongoing discourse on what we mean by higher education in a sustainable future. In the end, we want this discourse to make a difference to our research, our education, and our interaction with society.

What makes the University of Agder especially fit to address higher education in a sustainable society? There are many answers to this question, as the reader will learn through the reading of the following chapters. Here let me just mention three:

First, from our own history the university has had a broad area of interaction with the other partners that have to take a share in this responsibility.

Second, thanks to the size and the infrastructure of the university and our campuses, there are short distances between the various disciplines.

Third, the university is located in a region with a business environment that is heavily dependent on nonrenewable natural resources, implying challenges that make the theme of sustainability pertinent.

The university wants to thank both editors and authors for having realised the idea behind this book project. Without your engagement and efforts, it would have been much harder to pursue our strategy, and our obligation, to be a university concerned for the future.

Agder, Norway Dag G. Aasland

Editors' Preface and Acknowledgments

Editing a book like the one we present here is an interesting, and at the same time complex, task that implies bringing many different voices together to form one choir. We have many clever soloists, but they are used to working within different repertoires. Even within the editorial theme, we represent different voices. When we invited scholars to take part in this project, it was an invitation to develop a common repertoire together. The core theme should be sustainability and higher education, but we did not have a ready-made script.

We think this has been an interesting and learning process, and we would like to thank all who have participated in the project. We would like also to thank Samuel O. Idowu for inviting us into the Springer CSR series, and for taking part in our discussion at the Warren House seminar in August 2014, and the University of Agder for giving financial support to the project.

Jon P. Knudsen would like to mention, in relation to Chap. 3: Education and Social Structure, that the writing of the chapter owes much to the Norwegian Research Council grant for the national project "Learning Regions."

An earlier version of Chap. 8 was presented at the Nordic Work Life Conference (NWLC), Gothenburg, June, 2014, and EGOS 2014, Rotterdam, July 2014, Sub-theme 54: Reshaping Workplaces: Workplace Innovation as Designed by Scientists and Practitioners, and at the Gjøvik University College, Workshop on Innovation, October 2014.

Kristiansand and Grimstad, Norway — Hans Christian Garmann Johnsen
London, UK — Stina Torjesen
Richard Ennals

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Chapter 1
Higher Education in a Sustainable Society: Addressing Knowledge Disparities and Enabling Debate

Hans Christian Garmann Johnsen, Stina Torjesen, and Richard Ennals

1.1 Introduction

Sustainability is a comprehensive concept. It addresses the complex relation between and effect of social and economic development. It is a concept that challenges us to see things in relation to each other and in a larger perspective. The sustainability challenge however, comes at a time when sciences and research has expanded but at the same time is more fragmented than ever. We therefore in this book present the concept of mutual competence building related to higher education, as a concept of challenging higher education's engagement with sustainability issues in a cross disciplinary way.

Higher education in general, and universities in particular, have been central actors and arenas for large-scale change in the modern period. Universities developed in parallel to modern societies and the births of nation states in the nineteenth century. Research and science delivered important knowledge to fuel the industrial revolution and modern mass consumption society. Universities and science have also been an arena for critical debate, exemplified with the student movements in the late 1960s and 1970s in North America and Western Europe. This highlights how higher education institutions can become both integrated into societal modernisation, and also arenas for social and political debate.

This double face of science and higher education, as both *instrumental* and *reflexive*, has represented a tension in the development of universities over the centuries. Some have argued that the instrumentalisation of the modern era can only

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be balanced by a human awareness (Husserl 1937; Arendt 1958; Habermas 1972). In this divide, what role should science and higher education play?

In this book we address this issue in relation to *sustainability*. The debate on sustainability has come to the forefront of attention in society, because of an assessment of our current collective way of life as out of balance. Some argue that sustainability is tightly linked to change, either an orderly change where societies undertake the adjustments needed to operate comfortably within the limit of finite resources, or a disorderly change where our failure to adjust triggers ecological or social deterioration. The question we try to address in this book is what role higher education should take related to this debate. We argue that *mutual competence building* in understanding and addressing social and environmental challenges is a key role for higher education.

Mutual competence building (MCB) refers to our ability to discuss and reflect on the complex issues involved in making sustainable decisions. It also refers to our formal knowledge of facts, and our ability to regard alternative perspectives of matters. Thus MCB is the ability to be at the same time both instrumental and reflexive. We believe that the capacity to do that, is not only a personal ability, but a collective competence. The collective competence is materialised in the structure of the dialogues and conversations that goes on in society and in organisations.

1.2 What Is Sustainability?

1.2.1 One Word, Many Interpretations

Sustainability entails, broadly speaking, efforts to ensure that humanity lives well within the limits posed by the finite resources of our planet (World Commission on Environment and Development 1987). In our current state we neither adhere to the limits imposed on us, nor do the majority of the world's population live well. Addressing sustainability implies therefore triggers a discussion of social and economic change.

Robert Engelman holds that we live in an age of 'sustainababble', where there is a problematic profusion of the word 'sustainable', to mean anything from 'environmentally better' to 'cool' (Engelman 2013, p. 3). This makes it challenging to address the concept. In some sectors sustainability is used intertwiningly with 'responsibility' or 'Corporate Social Responsibility', where the latter is the integration of environmental and social concerns into business operations (Steurer 2010). Similarly, in sectors engaged in aid and poverty reduction, sustainability matters are often addressed under the heading of 'sustainable development'.

We note, however, that sustainability includes different concerns from the more narrow efforts to address climate change by reducing CO_2 emissions, the 'medium scale' efforts of addressing interlinked challenges of environmental degradation,

resource scarcity and population growth, as well as more ambitious efforts to rethink how we can best organise our economy and society. Certain levels of social inequality or educational inequality (cf. Piketty 2014) could be regarded as unsustainable. Also aspects of the public discourse, in the form of denial, might lead to unsustainability. This latter category addresses both sustainability at the macro level of states, the economy and production patterns and business strategies, in the form of CSR (Elkington 1997) or creating 'shared value' (Porter and Kramer 2011a, b). It can also be assessed at the level of work organisations, when it may imply meaningful and inclusive and learning workplaces, or that of the personal level. Organisational sustainability refers among other things to inclusion and learning at work as central aspects. At a personal (psychological) level meaning at work is an important dimension (Docherty et al. 2008). Thus we are going to use the concept of sustainability beyond the environmental context.

1.2.2 Searching for Balance

The United Nations report *Our Common Future* continues to be one of the central reference documents in discussions of sustainability (World Commission on Environment and Development 1987). A key feature in this text is the stress on future generations: sustainable development is defined as development that meets the needs of the present without compromising the ability of future generations to meet their needs. This concern resonates with major discussions in Western philosophy. Chapter 2 in this book on sustainability and care gives an insight into some of these discussions. One might ask how we should bring the future into our present thinking, and what should be the trade-off between our use and future use of resources? Ideally we should want to add value to the earth, and not degenerate it. This was already part of the philosophical programme of John Locke in the sixteenth century (Johnsen 2014). Locke argued that one is only entitled to natural resources if there is as much, and as good, left for others. Also in the philosophy of natural order; there is a string of references to balance, both in and between periods. David Hume and Jean-Jacques Rousseau, each in their way, tried to develop philosophies where man is in balance with nature. A further discussion of this is found in Chap. 10. Hume believed in the self-regulating features of nature (including man), ideas that were investigated by Thomas Robert Malthus, and later inspired Charles Darwin and his evolutionary theory. Today we might wish to add discussion of intergenerational relations, in the context of demographic change and an ageing workforce.

The ideas of Malthus form an important yardstick in contemporary debates on sustainability. The underlying anxiety that drives attention to sustainability in the present decade is the dual concern for survival and decent living. The current challenge to live well within the means that one planet offers raises the prospect that we could face ecological and social collapse, or even, in an extreme and long term scenario, extinction of the human race (Peter Ward and Donald Brownlee

2004). There are two types of responses to this profound challenge, where Malthus' ideas appear as a precursor on one side. Malthus argued in 1798 that population growth will eventually outstrip agricultural production, with the result that disease and famine will define the human condition (Malthus (1798) 1966). Malthus was profoundly sceptical, unlike some of his contemporaries, whether society was progressing towards an ever better state. Instead he was concerned with, and highlighted, the dangers associated with likely future trends.

Using this interpretation of sustainability as linked to endurance implies attention to time: the proof of something being 'sustainable' can only be demonstrated after a given period of time. This approach would perhaps need to define a timeframe. If we are looking at actions today, for how long should they be sustainable? Another angle might be to link sustainability to what is reasonable or balanced, including balanced development. But what does 'balance' really mean? For instance, balance means that we avoid extremes. We can pollute a little, but not so much that reproduction of food is affected, or we can accept private cars, but have to balance it with public transport. Balance can also be used as a framework for discussing ethics and the relation between our generation and future generations.

1.2.3 A Silent Spring?

Malthus' concern with contemporary practices and future consequences also lies at the heart of the environmental movement, which has criticised industrial production patterns and the prioritisation of economic growth. In the seminal book *Silent Spring* Rachel Carson documented how the use of chemical pesticides in industrial farming damaged the environment (Carson 1962). The underlying message of Carson's book, that humans have a profoundly negative effect on the environment, inspired much of the environmental activism that emerged in the 1960s onwards in North America and Europe (see also Chap. 10 for a fuller discussion of *Silent Spring*). In a similar vein the Club of Rome study *Limits to Growth* explored how exponential economic growth relates to a planet with finite resources (Meadows et al. 1972). The group projected likely future trends for population growth, industrialisation, pollution, food consumption and resource depletion, and created three different likely scenarios. Two scenarios predicted 'overshoot and collapse' in the environment and the economy by mid-twenty-first century (Ibid).

These studies, and the movement they formed part of, carry an inherent critique of current consumption and production patterns, with several strands within the movement arguing for an overall reduction in consumption and the need to rethink economic growth. There is considerable pessimism, in a manner not unlike Malthus', that a growing and increasingly affluent global population will deplete our resources, and damage the environment to the extent that it will be beyond repair (New Economics Foundation 2013). In turn, sustainability becomes a project about

the "winding down the dysfunctional economic and business models" so as to avoid "ecological overshoot" (Elkington 2012, p. 8, see also full quotation below).

The other major response to the sustainability challenge shares the concern for a possible future ecological collapse, but expresses considerable optimism that we will be able to address the challenges we face through technological innovation. Just as innovation in agriculture and the green revolution, solved the catastrophe Malthus predicted in relation to agricultural output and population, so human capacity for invention will help us move away from environmentally destructive practices. The writings of Jeremy Rifkin exemplify this approach. In his book *The Third Industrial Revolution* he predicts that information technology will help bring about a revolution in energy production, with consumers becoming small-scale producers of renewable energy and sharing this energy, much in the same way as we share digital files (Rifkin 2012).

The outlook of Rifkin and others is less concerned with restraining current consumption and production, and more with exploring new solutions. Major and conventional corporations are potential partners in this quest. Michael Porter and Mark Kramer note, for example, that companies can address society and the environment's challenges as part of their business strategies. It is interesting to compare this approach with Porter's earlier work on competitive advantage. It seems that Porter in his later works wants to influence businesses to enlarge the perspectives that go into their thinking. Porter and Kramer argue that this approach will be the most important driver of innovation and value creation in the period ahead, and that it will likely trigger change in the way market forces intersects with society (Porter and Kramer 2011a, b). They encourage companies to move away from an outdated form of value creation. Companies prioritise short-term financial gains, and ignore the needs of their customers and larger issues that concern the long-term survival of the company. Companies can no longer ignore the strain put on natural resources, customers' welfare, suppliers' challenges and the economic stress levied on communities where the company produces and sells goods. Instead, in the period ahead, companies will need to think in terms of 'shared value'. This will imply creating economic value in a way that also created value for society (Porter and Kramer 2011a, b).

1.2.4 Beyond Social Responsibility

A number of companies have heeded Porter and Kramer's call. Unilever, one of the world's largest consumer goods companies, has adopted tough sustainability strategies: the company pledges to reduce their environmental footprint by half, while still doubling the size of its business. Moreover, 26 major multinational companies, including Alcoa, Toyota, Volkswagen and Boeing, recently launched a framework for mapping likely changes in the international economy in the period up to 2050. The accompanying analysis noted that sustained overconsumption of the earth's resources, as the world population nears nine billion consumers, must bring either a

managed adjustment or painful collapse. The 26 companies outline the challenges that will surface in 14 sectors, including agriculture, transport, energy and materials. A major part of the assessment is a roadmap for how companies can position themselves vis-à-vis these changes, and contribute solutions to key challenges. The changes ahead are presented as important business opportunities. Innovative and flexible companies that can provide solutions are well positioned for long-term growth (World Business Council on Sustainable Development 2010).

These practical manifestations of the technological optimism perspective on sustainability are sharply criticised by observers with a more concerned outlook. For example John Elkington argues:

> Properly understood, sustainability is not the same as corporate social responsibility (CSR): nor can it be reduced to achieving an acceptable balance across economic, social and environmental bottom lines. Instead, it is about the fundamental intergenerational task of winding down the dysfunctional economic and business models of the nineteenth and twentieth centuries, and the evolution of new ones fit for a human population headed towards nine billion people, living on a small planet which is already in "ecological overshot (Elkington 2012, p. 8).

The CSR community continues to grapple with these issues. Peter Dauvergne and Jane Lister argue that many of the recent corporate sustainability efforts are substantial. They include a reorientation of central operations and reworking global supply chains. However, Dauvergne and Lister also argue that the new measures by big corporations limit the potential for finding deeper solutions to pressing environmental problems and, ultimately, reinforce runaway consumption. More radical approaches are needed if environmental collapse is to be avoided (Dauvergne and Lister 2013).

A similar schism, between observers stressing the need for radical alternation in behaviour, and more pragmatic and conventional outlooks, is also visible in politics. In the Norwegian context in questions on energy and climate, for example, mainstream parties and major state institutions and corporations believe that a continued reliance on fossil fuel is possible through advances in carbon capture technologies and other smaller adjustments in the present industrial paradigm (Alstadheim 2010). Niche parties, however, argue for a full scale move away from fossil fuel extraction alongside radical changes in production and consumption (Aftenposten 2014).

Both perspectives, although the radical one most explicitly, often link the need to address environmental challenges with a broader reworking of the way we organise our economy and society. The British Labour MP Douglas Alexander notes for example, in a recent book on future British challenges, that in the current political situation 'more fundamental challenges, in terms of developing a model of capitalism that generates wealth, promotes fairness and protects the environment, remain unaddressed' (Alexander and Kearns 2013). Similarly, and in a more radical mode, the New Economics Foundation (2013) stresses that, in conjunction with changing production patterns, we also need a social transformation where we rethink our ideas of growth, wellbeing and how market forces can be more aligned with social needs. In this way social and political challenges become part and parcel of a larger

sustainability agenda. The failure of the current capitalist model to operate in tune with environmental needs opens up the space for a broader critique of capitalism's failures, most notably the reproduction of inequality and other types of social dysfunctions.

The broader debate can be associated with Thomas Piketty's *Capital in the 21st Century,* and his argument that inequality is a permanent and growing feature of today's capitalism. It can be viewed as yet another argument for the need to rethink of how we organise our economy and society (Piketty 2014). On the other hand, one can argue that market economics is about allocating scarce resources to the best uses, so solutions have to be found within a marked economic system (Nordhaus 2013). One of Piketty's main arguments is that increased investment in higher education is needed in order to increase the value of human capital relative to physical capital, to make a better balance between labour income and capital income.

1.2.5 Addressing the Need for a Critical Debate

The above discussion serves to highlight a key premise of this book, namely that there may be many different interpretations of what sustainability and a sustainable society are. What will this mean in today's society, and for each of us? One approach is, as we have noted above, to say that sustainability is not a fixed position or a well-defined concept, but a framework for a discussion. It is a framework that gives the discussion a certain direction. We can argue that some things are more suitable than something else. For instance, renewable energy is more sustainable than consuming carbon. In this case 'sustainability' has a very concrete meaning. There might be other cases where the meaning is less clear, and more contested. For instance, is urbanisation more sustainable than rural development? Similarly we may argue that the role of higher education in a sustainable society is an equally ambiguous theme. For instance the discussion in Chap. 9 in this book shows how there are different *knowledge regimes* in the discussion of environmental protection. Table 1.1 tries to illustrate that these are different categories. We argue that they differ along to dimensions; the degree of insight into the current situation and the degree of insight into and possibility to influence the future situation.

Importantly, however, we note that disagreements over what, precisely, these efforts should entail are profound, and they increase as we move from the narrower matters to the wider and more ambitious ones. Moreover, a meaningful assessment of sustainability is hard to provide when we look at sustainability in general terms. Some would argue that more rapid and direct action is needed, others that the current system is adjusting and reforming itself. So where do higher education and universities come into this picture? One role the university can have, that is not in conflict with its ethos of free and critical research, is to discuss these standards: what does sustainability mean in a certain area? In order for discussions of sustainability to be useful, they need, we often find, to be conducted within the

Table 1.1 A framework for discussion

	High level of insight into the future situation and available means to influence it	Low degree of insight into the future situation, or few available means to influence it
High degree of certainty about the current situation	Here sustainability is a matter of making consensus and taking decisions of actions	Here one needs to have continuous dialogue in order to create consensus on what to do
Low degree of certainty or contested opinions about the current situation	Here there is a fragmentation in the current knowledge that implies need for developing a common understanding	Here we are simply ignorant and might not yet understand neither what is at stake nor, what to do. Here a critical and creative dialogue is needed

context of one particular sector or area. This informs our stress on the role of universities as collaborators with particular sectors of work life institutions, such as businesses or government agencies.

1.3 The Role of the University

Above we have highlighted the historical antecedents of both the *radical* and the *reformist* or *pragmatic* perspectives on sustainability. This is, in many ways, a long running argument. One novelty associated with these debates is however, the recent growing consensus associated with the actual effects of human activity on the environment. While scientific and political groups have previously been divided over the question as to whether human activity in fact cause climate change and environmental deterioration, an increasing consensus seems to be emerging that our current activities are indeed negatively impacting a range of indicators, including the level of CO_2. The Intergovernmental Panel on Climate Change report on impacts and vulnerabilities has contributed to this consensus (IPCC 2014).

The radical perspective we have outlined above often problematises the modern: the modern world with industrialisation, capitalism and mass-consumption society has created that imbalance we see now (Dardot and Laval 2009). In the perspective of the role of the university, it is important to recognise that even if it has been a place for counter-culture, the modern university is strongly integrated into what we can call the modern project. The problem with system change arguments is that the only thing that can change a system is the system itself, that is: us as a society.

The reformist or pragmatic and reformist argument, as noted above, has also been around for a long time. Indeed the economist has always been aware of externalities; the facts that one transaction between two parties does not necessarily count for all the costs or benefits it creates. The problem of social cost was addressed by Ronald Coase in his well-known article from 1960. The question that economists have asked is what type of transaction structure will be most in line

with a reasonable distribution of social cost. This is also pretty much the argument found in Nordhaus (2013) on how to solve the climate change challenge.

Similarly, the discussion on social inequality and social imbalance is a challenge in the perspective of sustainability. This knowledge has been around for decades. However, it does not imply that there are simple solutions to this challenge, nor that universities can contribute much directly to this particular challenge. There is a parallel and similarly important imbalance issue, where we believe that universities can play a significant role, and that is the imbalance in knowledge. As we increasingly live in a knowledge society, we are increasingly dependent on people's ability to understand and evaluate knowledge. This requires a high level of education.

Regardless of an increasing consensus that human activities are indeed hurting the environment, the manner in which we are to move forward, in order to bring about a more sustainable society, remains a hotly disputed topic. Indeed, as noted at the outset of this introduction, sustainability is an 'essentially contested concept'. Just as with other broad and positively endowed terms (i.e. 'social justice'), the general desirability of which is easy to agree on, but the way to bring this about will be heavily disputed (Gallie 1956; Garver 1978). This is why the role of universities as an enabler of debate is important. Below we outline a table that highlight what kinds of debates and actions sustainability call for.

1.3.1 The Higher Education Discourse

There is a growing literature on the issue of sustainability in higher education. Most contributions are broadly concerned with how higher education institutions relate to the challenges and potential transformations linked to social, environmental and economic pressures. There are, however, two main strands in this literature: discussions of how to make university campuses 'greener' or more sustainable; and discussions of how to alter curriculum and pedagogical approaches so that students can become exposed to sustainability themes.

Both strands share an awareness of the context in which greater attention to sustainability at higher education institutions has emerged. On the one hand the prominence of environmental concerns and sustainable development has been high on national and international policy agendas since the 1970s and a number of initiatives have been taken to mobilise universities as agents of change. Lozano et al. (2013) trace the evolutions of declarations, charters and partnerships that have involved universities. The United Nation Environmental Programme's Stockholm conference in 1972 was an early initiative that recognised the centrality of education in fostering environmental protection (Lozano et al. 2013). The Talloires Declaration from 1990 was also a central initiative. The declaration has been signed by over 350 university rectors and commits their universities to address inequitable and unsustainable production and consumption patterns (Wright 2002). On the other hand, aside from these responses from universities to international policy debates, some authors also hold that universities take their cue from the corporate

sector. They note that a number of major corporations are responding to global challenges such as environmental degradation and social injustice by incorporating sustainability concerns into their core business model. Universities seek to mimic the corporate sector but face, nevertheless, tough challenges when doing so due to more complicated decision making structures and diverse operations (Krizek et al. 2012; see also Ralph and Stubbs 2014). This is argument is further developed in Chap. 14 *Rhetoric about Sustainability in Education: The presence of the words not spoken* in this book.

Stephen M. Wheeler notes that of the two main strands in the literature, the texts debating how to create greener campuses predominate (see for example Barlett and Chase 2013). In-depth discussions on curricula and pedagogy are, by contrast, more infrequent (Wheeler 2012). Two edited books are, however, particularly central to our discussion. The two books comprehensively address the integration of sustainability concerns into a number of academic disciplines. In *Sustainability Education: perspective and practice across disciplines* the contributors explore attempts in the British higher education to incorporate sustainability perspectives into a broad range of fields, including business, nursing law and engineering (Jones et al. 2010). *The Sustainability Curriculum: the challenge for higher education* was first published nearly a decade earlier, and includes some discussion on the incorporation of sustainability into particular disciplines, although touching on far fewer disciplines than the Jones et al. book (Cullingford and Blewitt 2013). The book is, however, notable for debating at a relatively early stage, and in an in-depth manner, some of the major themes that are typically addressed in discussions of sustainability and higher education, including the need for interdisciplinary approaches, and the inherent tension between instrumental and critical aspects when higher education institutions address sustainability.

Our book does not address ways to foster greener campuses, but we seek to contribute to the literature on ways to integrate sustainability into university teaching, and more broadly, to explore how higher education institutions can contribute to wider efforts in society to promote sustainability. Our book draws primarily on experiences from Norway, and this is hopefully a valuable contribution, particularly since the current literature on sustainability in higher education is heavily skewed towards perspectives from Great Britain, Australia and North America (Wheeler 2012).

However, our book builds on and complements prior insights on sustainability in higher education. Several of the authors in this book share Cedric Cullingford's (2013) concern that while higher education certainly needs to engage with, and contribute to, efforts to place society and our consumption patterns on a sustainable track, it also needs to be able to unpack the clichés and media spin surrounding sustainability, as well as the competing, often instrumental and self-serving, agendas associated with sustainability. Moreover, as is highlighted in *Sustainability Education* and endorsed by several of the authors in this book, sustainability in higher education necessitates strong interdisciplinary approaches. It also requires new approaches to teaching: 'active', 'experimental' and 'collaborative' learning seem particularly appropriate (Wheeler 2012; Jones et al. 2010). A range of the

main ideas expressed by our contributors resonates with the existing core literature on sustainability in higher education. At the same time, however, the chapters in this book are unique in that they explore, across a range of disciplines, the notion that sustainability in higher education is best addressed through mutual competence building with society and work life organisations.

1.3.2 Higher Education in a Discursive Perspective

A core idea in this book is that different forms of sustainability are linked. We do not believe that a society that is unsustainable in a political or social sense is able to handle sustainability issues of the more resource or environmental kind. In one sense, economic and social and political development means higher use of resources. On the other hand, one could argue that people, as they become wealthier and more educated, also will be more concerned with environmental issues. One could argue that investment in human capital is likely to imply higher concern with economic, social and environmental conditions in society. Thus, one of the issues this book should address is how we can become wealthier, develop a more human and free society, and increase human capital both in society and in organisations, and at the same time do it in a sustainable way?

As noted above, we do not believe that higher education exists outside society, at an arm's length distance. Rather we regard higher education as part of society, but also an arena that has the capacity to reflect on society. Higher education is not in position to 'change' society, but is in a position to influence society. How then, can higher education and collaboration between work life and social institutions and universities help develop a sustainable society? We seek to say something innovative about sustainability, in a way that can be understood and debated more widely.

The basic premise of the book is that sustainability will always be a contested concept: agreement on what particular changes society should adopt in order to move towards sustainability will be a source of controversy and disagreement (Gallie 1956; Garver 1978). In this situation the role of universities is not primarily to issue instructions on what changes to adopt, but rather to open up dialogue, debate and collaboration between actors on what might be helpful measures as we move forward. In order to obtain this role, however, the university and its scholars need to grasp the basic features of the sustainability agenda generally, and explore in a more in-depth and critical manner relevant questions associated with sustainability within their discipline. Moreover, knowledge of the dilemmas and conflicting interests associated with sustainability can be conveyed to students, so that graduates can engage in debates related to sustainability in an informed manner.

We need at the same time to ask whether universities in their present form can be regarded as sustainable. Have universities played along with modern, technological and instrumental development, and as institutions for mass education, to the extent that they are no longer able to take on the role as a reflexive arenas?

In order to understand the role a university can take in social development, we think it is important to observe the role it has had in modern times. Most observes would argue that there is no "one university model" in the world. There are in fact different ideas about the role universities should play in social and economic development. Going back to the early stages of the modern area (early 1800), there were universities founded by the church, universities founded by industry and agriculture to promote technological development, and universities as general education institutions. Wilhelm von Humboldt was minister of education in Prussia, and founded Universität zu Berlin in 1810 with ideas of a giving students broad training, not least by teaching different disciplines under the same roof. His idea of a university came to inspire universities in the western world. Others, like August Comte, had argued in France for a much more instrumental approach in their thinking about universities. Comte saw universities as instruments for modernisation and economic and social development. Thus, there were, and still are, competing ideas about the role of the university (Johnsen 2014). Humboldt not only argued for broad education, and for integration of teaching and research, he also argued that education should be independent of the state. F. A Hayek has argued that the fact that Germany during the nineteenth century increasingly adopted a much more specialised education system for technology, inspired among others by Comte had later strong negative impact on its development (Hayek 1979). The role that the universities play in society should therefore be of general concern.

1.3.3 Mutual Competence Building

Addressing sustainability means opening up a conversation about what sustainability, and efforts to create a sustainable society, might entail for distinct sectors. Universities are well positioned to enter into and enable such conversations. Clusters of expertise within the university may enter into collaborative relations with industry or other work life institutions. Universities at their best are spaces for critical thinking and 'outside the box' approaches to economic, ecological, social and political challenges; and insights on sustainability that emerge from a dialogue with work life institutions form part of the regular teachings at the university.

Moreover, universities endow their students with the necessary professional and life skills for them to embrace and enact change. The teaching at bachelor and master levels helps students use the skills easily acquired in one field in others. Executive education is likely to be more important as we move forward, as former students upgrade and reframe their skills sets in a period of rapid change. Universities have a role in enabling social mobility, which ties in a broader agenda on equality that we believe is associated with sustainability. Universities can take this role in a multitude of ways. Below we highlight some (Table 1.2).

The table above indicates three core dimensions in the sustainability engagement by higher education: disciplinary understanding, knowledge development and the university/practice relation. For all three, there are roles to be taken at research

Table 1.2 Different dimensions in the discussion of sustainability in higher education

	Concepts of sustainability	Approaches to knowledge development when working with sustainability	Ways to work on sustainability in or with practice
The disciplines perspective	Relating sustainability to different disciplinary discourses	Addressing the underlying dimensions and philosophical underpinnings of different apposes to sustainability	Creating interdisciplinary dialogue with society and business
Implications for teaching on sustainability	Creating engagement around the issue of sustainability	Encouraging engagement and inquiry into sustainability issues	Engage in mutual competence building on addressing sustainability issues
How the university as an institution can work with sustainability	Addressing real strategies and comparing objectives of the university	Facilitating the university as arena for discourse and sustainability and critical discussions	Encouraging research/society engagement, addressing theory/practice issues

level, at the level of teaching, and at the level of institutional strategy. What we want to highlight is that engaging in this field has institutional implications. As will be argued later in this book, just paying lip-service to the sustainability theme is not what we have in mind. Rather, we assume that addressing sustainability needs to imply that universities have to rethink some of their other engagements and strategies.

On the other hand, we do not argue that addressing sustainability means one thing only, nor should it necessarily replace other goals. We should also make it clear that as we see it, addressing sustainability is not a call for more regulation, more legislation, less freedom, more bureaucracy or more centralised decisions. Rather, we believe that sustainability will only happen if people voluntarily see the values of living in a sustainable society, and subsequently behave accordingly. Likewise we believe that the independence of thought, providing knowledge across society and critical, reflective research are the main achievement that universities can provide in a sustainable society. Through this, the university develops mutual competence building.

Mutual competence building is a matter of increasing reflection and insights, in order to make the conversation and discussion both more rational and more advanced and more inclusive. Mutual competence building is a concept that also addresses the competence and knowledge gap, and divides in society. Universities should in particular be concerned with inequality in knowledge in society.

These are objectives that universities have always aimed at. What can we add to this in this book? How will a focus on sustainability imply that we have to rethink these aims, or learn more about them? Using the starting point that sustainability is not a fixed position, but a framework for a discussion, we have invited the authors of this book to reflect on how the concept of sustainability features within their

particularly academic disciplines, and what are the prospects for collaborations with work life and social institutions?

1.4 The Contribution of This Book Beyond Norway

In line with the suggestions above, the contributors to this book explore how sustainability features in their particular fields, and debate approaches to teaching sustainability within their disciplines. The authors highlight how collaboration with society, work life and social institutions can bolster these efforts, as well as ensuring that universities become relevant players or arenas in multifaceted initiatives to bring about a sustainable society. It does not present an overall coherent account of this, nor is that the intention.

The intention of this book is to contribute to a discussion beyond the Norwegian case. This implies a need for context setting. We think that this book exemplifies an institutional setting where there is a high degree of collaboration between university and work life. This is due to both the fact that University of Agder has developed from a university college where its main activity has been professional education, and from the fact of the cultural and institutional context of Norway.

The majority of the authors work at the University of Agder, which is a new, state owned university in southern Norway. Agder region is an interesting area in which to explore the role of higher education in relation to sustainability matters. While Norway overall scores well on rankings of equality and wellbeing, Agder often lags behind. Moreover, a central global sustainability challenge features prominently in Agder. The region is increasingly reliant on income from the oil and gas sector. Local and regional authorities are highly supportive of the sector, and the university is a key supporter and partner of regional business, including, and perhaps particularly, the oil and gas sector.

Agder region also has a large processing industry cluster and a large oil equipment industry. These industry groupings have sustainability as a major theme in their strategy, and have entered into a collaborative partnership with the university in order to strengthen their work on sustainability. Leading companies in the region have formed a CSR network, where dialogue with the university has been a prominent part of the activities. The University of Agder has, therefore, a number of preliminary lessons to offer regarding collaboration with work life institutions in the field of sustainability, and the subsequent chapters will highlight these.

The institutional setting for the university is that of Scandinavia, which is often described as a collaborative social model (Johnsen and Ennals 2012a, b; Hall and Soskice 2001). There has been a discussion if there is a Nordic perspective on CSR (Midttun 2013), and a discussion of the idea of responsible innovation (Ekman et al. 2010) that resonates with a certain Nordic collaborative social model. If that is the case, it could be seen as mainstreaming responsibility and sustainability, rather than treating them as optional extras. For an international audience the Norwegian/Scandinavian model needs to be explained, including what this means for

universities. In Chap. 15 *Higher Education in a Knowledge Society* we compare the structure of higher education in Norway and UK.

Norway has had greater political stability and consensus than other nations. It has remained largely monocultural, for example by comparison with the UK. It has stayed out of the EU, and maintained distinctive development policies. Norway is unusual/unique in not facing current challenges of austerity, which dominate short term thinking in most countries. Universities in Norway continue to enjoy government funding and support. Academic knowledge is respected. Thus Norway has been able to maintain a longer term focus on environmental issues. On the other hand, Norway has an economy that to a large extent exploits renewable resources.

1.4.1 This Book

We could see the book as representing a beacon of enlightenment; at a time when around the world universities are in crisis, on the rocks. Other countries may be illuminated by the beacon. One generic argument which might develop from our discussion is that sustainability can only be defined in a discursive process. That is, sustainability will be a reasonable assessment, a well thought assumption, and a good intention to move towards solutions that take sufficient care of today's need and the future. Any society might have their idea of where this balance point is, and there will be international standards developing. CSR can be seen as industries' attempt to develop such a standard.

This book gives examples of this from Norway. It shows examples of what sustainability might mean in technology, nursing, nutrition, education and management. The point here is not that these are the final answers to the question of sustainability, but examples of discussions where academic institutions try to set a standard. Above we highlight the considerable uncertainty associated with sustainability, and we suggest that we see sustainability more as a framework for discussion. A similar point that emerges from the contributions to this book is the notion of sustainability as a contested concept. In some areas there will be profound disagreement and political battles, over what qualities or goals we should associate with sustainability. In the Chap. 9 on planning, for example, the author highlights how in one particular planning process the relationship between conservation and sustainability was an uneasy one.

Several of the authors point out that addressing sustainability in teaching and research requires an interdisciplinary perspective. Teachers need to bring in perspectives from other disciplines, so that students can grasp the full scale of the sustainability challenge. For example, in teaching on nutrition and health, it is vital to bring in insights from the environmental sciences, or knowledge of the value chains associated with food production. This may have important implications for the individual disciplines. Teaching sustainability, as with working with sustainability issues in practical operations, highlights a key challenge with sustainability: how radical must our responses be? Is it sufficient to address sustainability 'inside

the box' using solutions from the existing technological or operational paradigm, or do we need to strive for original and 'break through' solutions? This is a key dilemma in business and engineering disciplines: are the responses and solutions we are suggesting to students appropriate to the scale of the challenge we face? A variation of this argument looks at the university itself: are we an arena for experimentation on fundamental questions, or is our main rationale a conformist production of professionals?

Similarly, how innovative are universities when they approach the issue of sustainability? In some areas it seems that much of the radical critique that has been presented earlier in their disciplines now has a tendency to be 'rebranded' as sustainability arguments. Is sustainability only a way to rebrand old criticism? Is that a bad thing? Do institutions such as universities have ways of resisting change? How should we go about teaching a radical perspective on sustainability? In the Chap. 2 it is noted that science tends to distance us from this. Chapters 13 *Translating the Global Script of the Sustainable University: The Case of the University of Oslo* and 14 *Rhetoric about Sustainability in Education: The presence of the words not spoken* point to the need for universities to develop ethos. A university must teach and encourage commitment. At the same time however, it must provide the ability to think critically about commitment. In order to offer good responses to the sustainability challenge, we need critical discussions.

We have divided that book into the following five parts:

Part 1: Sustainability in a humanistic and cultural perspective
Part 2: Sustainability in life science
Part 3: Sustainability in technology and planning studies
Part 4: Sustainability and the teaching of business development
Part 5: The sustainable university

We have provided a short editorial introduction to each part.

The contributions offer a number of insights on how universities can enter into collaborative relationships. We lay foundations for cross-disciplinary approaches. The book also links to international research agendas and debates. We try to avoid both over-simplistic conclusions from Norwegian cases, and subservience to Harvard and other large international trend-makers. We encounter reflections on professional interventions. We present sustainability as a mode of discourse, rather than a narrow separate subject. The contents of the book, with the spread of topics, offer the prospect of a human-centred account. The core theme is how the university, both at a strategic level and in disciplinary research and teaching, can build mutual competence building between the university and society in order to meet future challenges.

Part I
Sustainability in a Humanistic and Cultural Perspective

In this part of the book we present three chapters which all discuss sustainability and education from the perspective of personal attitude and behaviour. The argument here is that sustainability is linked to how we see ourselves in different roles, and how we then communicate to others what are important values to hold. This creates social norms. However, it is also important to acknowledge that social norms are already there, and that our interpretation of issues like sustainability, to some extent, is embedded in the historical and cultural forming of our environment.

In Chap. 2, *Sustainability and Care: On A Philosophical Contribution to the Project of Sustainability*, Hans Herlof Grelland argues that care is an inherent element in how we can see the world. It is included in our lifeworld perspective. By using Heidegger and Kierkegaard, Grelland thereby shows how sustainability and care can be argued from a philosophical perspective. This provides a thought-provoking introduction to concern or care, setting the scene for a strategy in philosophical terms which highlights the role of education. "Care implies responsibility, and awareness of this responsibility is the beginning of the change which has to come".

In Chap. 3 *Education and Social Structure*, Jon P. Knudsen argues that the role and effect of education is strongly integrated with social and cultural structures. In order to understand how education works, one has to understand how it interrelates with the norms and structure of the cultural environment it plays into. The chapter calls for a balanced development strategy, where new initiatives are discussed in relation to the social and historical environment it is part of. The focus moves from the university to the region. Of course we cannot assume that all universities are seen as part of regions. Some draw on students and subject matter from a wider world. However, even the regional role of the university, and implications for sustainability, should be explored.

In Chap. 4, *Toward a more Sustainable Pre-service Teacher Education: A Study in Progress*, Claire Vaugelade Berg, Barbro Grevholm, Åse Haraldstad, Bente Velle Hellang, Annbjørg Håøy, Aslaug Kristiansen and Gro-Renèe Rambø argue

that: “A sustainable teacher education includes developing pre-service teachers’ awareness of the advantages and consequences of adopting a critical stance: a stance where one looks critically and self-critically at everyday-teaching practice, and aim at improving it in order to achieve pupils’ meaningful understanding of the subject matter.” The aim is to supply teachers with relevant skills that make them become well-qualified teachers. The role of developing values is a core objective in teacher education, and the chapter discusses how teacher education can develop a model with a good relation between theory and practice. Education is thus presented as providing the basis for sustainability.

Mutual competence building is, in the perspective of these three chapters, something that can be brought into the pedagogical approaches, leading students to reflect on the context and culture that are part of, and are in dialogue with, the environment.

Chapter 2
Sustainability and Care: On a Philosophical Contribution to the Project of Sustainability

Hans Herlof Grelland

2.1 Introduction

When the human population on the surface of this finite earth seems to undermine its own existence in the long run, there is an obvious need for change. Even if the scale of the problem might be overwhelming, including changing political systems, material and economic conditions, habits of behaviour, scientific knowledge, and human attitudes, all on a global scale, the size of the challenge does not remove the responsibility from the shoulders of each individual. An important instrument for change in modern society is education, and the fact that university education has become to a great extent international, gives some hope that it may contribute substantially to the needed change in two ways. One is by providing the needed scientific knowledge through research, and the other by educating its student in a way that makes them both competent and motivated for implementing the necessary changes. On the other hand, I raise the question whether education can work against the human cause by, in addition to providing necessary factual knowledge, also implicitly communicating attitudes implying scientific neutrality rather than personal commitment. This makes it natural to focus on the role of the academic community, its research and its teaching, from the point of view of local and global sustainability.

We can divide the task of creating change into three elements: attitudes, knowledge, and practical means or methods. Nothing will be done without the will to do it, a will that follows from an attitude of concern. But the basis for not only doing something, but doing things that have the right effect, is knowledge. We need to develop relevant knowledge of the eco-systems of the world, of the working of human societies, of economy, and the technological resources available. Then we need to transform knowledge into action. This implies a transformation of the

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present pattern of human activities into a new pattern which is sustainable. This transformation includes changes in technology and production; in transport and communication; but it also implies changes in how we organise society, political systems. The great dreams of mankind have become practical necessities; we do not have a choice if mankind is to secure its future, we *must* put an end to war, to corruption, to suppression, to rivalry over natural resources, to extreme poverty and extreme richness, and to the growing wasting of limited resources.

In this chapter I discuss the attitude aspect of sustainability, focusing on the concept of *concern* or *care*. We need, in the present situation, to change our attitudes and develop a concern, a concern for all human beings and the nature of this earth, now and in the future, a global concern. This is the starting point, and worthy of philosophical consideration. Such a consideration may therefore be one of the contributions of philosophy related to sustainable development.

First, I make some introductory comments. Sustainability in this chapter is not defined, as it would not contribute to the unity of the book to provide another such definition. Roughly, sustainability is supposed to mean a pattern of living and a way of organising global society, such that the present population on the earth does not undermine the life and the welfare of future generations. The insight arising from the contribution of philosophy is that care is necessary for motivating a change of society which care is the natural or ontological attitude, and that not caring is a form of despair. This is important with respect to how the concept and theory of sustainability is taught and communicated.

The necessity of sustainability is assumed, not argued. An existential position advocating care is contrasted with scientific objectivity, but as complementary, not contradictory attitudes. A caring perspective motivates and sustains action; scientific knowledge teaches us what we need to do, and ensures that the action leads to the intended results. The despair implied in not caring is a kind of denial; not of facts, but of responsibility. The implication is that philosophy, for instance the philosophical contribution presented in the chapter, should be taught alongside scientific subjects (natural science, technology, economy and sociology).

2.2 Description

The reply "I don't care" stops any arguments, however persuasive and well-founded in themselves, which are put forward to convince somebody of the important of change. It stops any action, any initiative, and any good intentions. But such a reply is not only possible, it is all too common, and represents one of the real basic obstacles on the way towards sustainability. So, what is it that the person using this expression really "does not" do? It is not a particular action; it is something prior to action; it is an expression of an *attitude*, an attitude which is basically a lack, a negation. It is the lack of something, and that something is another attitude, that of *care*. So what can we say about care?

We should think of care as something beyond the daily attachments of our life. We care about our possessions and the people we are related to, we care about our children or our parents, our friends, or valuables, etc. But all these particular cares are just incidents of a fundamental ability we have, rooted in our being as such, a way of relating at all, to anything at all, to the relation of care itself.

We may obtain a feeling for this deeper sense of the concept by thinking that people may have different attitudes towards the city or the local community of which they are a part, than things and people of their private life. Do I care about the buildings, the parks, the forests, the shopkeeper, the bus driver, the people I pass in the street, or are they uninteresting, foreign to me, providers of certain goods or services, but nothing more? Can we imagine a person that has this basic attitude of careless to the whole world around him, withdrawing into an emotional although not necessarily social isolation? Traditionally, the "foreign" or the "alien" is what is outside the reach of my care, a care which is limited to the homely, the *us*, to whom there is a particular relation of belonging. Alienation, *Entfremdung*, happens when something, maybe the whole world, does not appear as homely and within the reach of my spontaneous feeling of concern and therefore subject to my care, but is left to exist as something outside the reach of such feelings. By considering this, we may become aware of the fact that care is something very fundamental in being a human; the lack of it is a very fundamental lack; it belongs to our *fundamental ontology*. And as such it has been considered by the philosopher Martin Heidegger. We will consider what Heidegger writes about care.

In his main work, *Being and Time* (1927/1998), Heidegger is preoccupied with being; that aspect of a real and existing thing that it exists. We can imagine two exactly equal copies from an industrial mass production line: let us say a spoon. The production line produces spoons one by one, and they are all equal. Let us consider one of these spoons, one which is just produced, and then the next one, which is not produced yet. The two spoons are exactly equal, there is only one difference: the one which is produced exists, the next one does not. The real world with all its parts, including the humans in it, exists, in addition to its parts having their various properties. Heidegger thinks it is important to consider this existence or being by itself, for we have somehow lost the sense or feeling of it.

As a part of this philosophical project of trying to understand, or, rather, in Heidegger's language, *questioning* being, he makes a thorough study of one particular kind of being, the *Dasein*, the "being-there", which is his neutral term for human beings. What does it mean to be a *Dasein*, or more precise, what kind of being is implied in being a *Dasein*? And as a part of this questioning Heidegger introduces the thought that *care* (*Sorge*) is the way *Dasein* is in the world (Heidegger 1927/1998, § 41).

Of course, this is a concept of care which is deeper and more general than all the small cares we have with respect to the passing situations in life, and which comes and goes. But the point is that these small, transient phenomena of everyday life are offsprings of something more fundamental. This point is important because it shows what is at stake when we, apparently, sometimes *lack* the attitude of care with respect to something or somebody.

Heidegger identifies the ways in which *Dasein* (e.g. you; or me) *is* by word-combinations. *Dasein* is a being-in-the-world. It is also a being-ahead-of-itself, in the meaning of always being on the move into the future which becomes the present, a move where *Dasein* is confronted with its own freedom. It is also thrown-ness, its relation to the world is not originally that of belonging to something which is shaped after one's needs and preferences. The world in which I live is not particularly designed for me. On the contrary, it is as if I am thrown into a world as a surprise for both parts, and I need to make this world a *home* for myself. But the world can only be a home if it is subject to our care. Thus it is that my basic relation to this world is that of care. For each of us, as *Dasein*, our being, which is our Being-in-the-world, is *essentially* care.

Heidegger thinks of care is the integral principle of the *Dasein*'s being in the world: "The totality of being-in-the-world as a structured whole reveals itself as care" (Heidegger 1927/1998, p. 274). The idea is that by understanding *Dasein* as being-in-the-world, we have to think of it as a unified whole, not as two separate components, Dasein on one hand, and the world on the other, connected by a relation, the relation of being-in. No, Dasein is, essentially, a being-in-the-world and care is the principle of this unity, it is through care that Dasein is being-in-the-world in a unified way. Thus care is fundamentally different from the objectivation of science, which make a split between the investigating subject and the external world which is the object of scientific study.

Heidegger's language is both highly condensed and based on artistically constructed hyphenised words, like being-in-the-world. His way of using language reflects the problems that ordinary language creates by a grammatical structure which may lead us into, in Heidegger's perspective, erroneous ways of thinking. The unity of being-in-the-world is a good example. The apparently similar expression in current English would be "being in the world", which inevitably indicates an ontology consisting of two objects and a separately defined relation between these. First, we have the world, as an object in itself. Then we have the being, which is thought here not as the property of existing, but a particular being, namely the human subject or *Dasein*. And, thirdly, there is a relation between the two: this human subject is in the world, which it obviously is in an ordinary sense, a sense which totally misses the point.

Heidegger's starting point is Edmund Husserl's phenomenology, which he tries to reconstruct by developing a consistent phenomenological language. The human subject, or consciousness, not being a describable object in itself, is according to phenomenology defined by its intentionality or its directedness towards something, called an intentional object. The consciousness, if not blind, can for example, see, and this act of seeing is directed towards something, the object that is seen; or it can imagine something, and is in this way directed towards the imagined object. However, already this language is suspect already in terms of its own content. Although stating the opposite, the structure of the sentence points to two apparently independent things: the consciousness and the object. If consciousness is defined by its intentionality, the object is a necessary part of its existence, although the object at the same time is different from it. Moreover, the consciousness in its

intentionality is never directed only to a single object. It also has its background, its imaginary supplements which form part of any perception, its memories associated with the objects presents, etc. In short, it is directed towards this unwieldy reality out there which we call the world. Briefly sketched, this is the background behind the word created by Heidegger as more appropriate, a single word, expressing a single unity: being-in-the-world.

As we will consider below, this unity can be split by alienation of the world of this being-in-the-world. But this is the result of a secondary move made by the *Dasein*, which is this being-in-the-world, against an original unity between the subject and the world expressed in the word care. Thus "care is the basic state of Dasein" (Heidegger 1927/1998, p. 293).

2.3 Discussion

Building on this background from Heidegger, we can proceed by reflecting on the phenomenon of lack of care as nothing but a failure to make the world homely for us.

First we may consider how this failure manifests itself. One move is to divide the world into parts, thus defining only a fragment of it as *homely*. We put up borders and walls, physically or mentally, between the fragment of the world to which I belong, and for which I care, and the rest, which is the alien or foreign world. And also dividing other human beings into the group which is "mine", of whom I think that I care, or should care, and, the rest, which is outside my homely domain, the foreigners; the aliens.

An interesting observation is that this division also concerns our relation to nature and to our man-built physical environment. These can also become foreign to us in different ways. Two forms of this kind of alienation are the preferred attachment to either urban life, or to the countryside or the nature. Thus even the love of nature can represent a particularism which prevents us from living out our basic being as care, and which can end up as an obstacle to the development towards a sustainable way of living. It can for instance take the form of an anti-technological attitude, and an anti-urbanism which would be realistic only in a world with much fewer human beings than the actual earth.

Of course, such a division of the world is not always felt to be established by a free choice. In most cases is it is adapted as a part of our cultural heritage, in a small or a large perspective. Heidegger points this out as a case where one adapts the impersonal viewpoint of *Das Man*, the *One* of the society in which one grows up and lives (Heidegger 1927/1998, § 27). *One* does things in a certain way, or thinks in a certain way; at least one does in my culture, in my society, in my neighbourhood, in my family. The everydayness of one's culture leads, in Heidegger's view to a blindness to one's possibilities; one tranquilises oneself with what counts as being simply the given, the *actual*. This indicates that philosophy may have a useful, maybe a necessary, role to play by making people

conscious of the values and choices inherent in the habitual culturally determined ways of life, and, in this connection, ways of seeing things.

Søren Kierkegaard was one of Heidegger's sources of inspiration. In his book *Sickness unto Death* he defines *despair* as "desperately not wanting to be oneself" (Kierkegaard (1849/1983). Despair can exist in many forms and on many levels, also relating to our fundamental existential ways of being. The fragmenting strategy, as an attempt to avoid the relation to the world as care, can be seen as one form of despair in the Kierkegaardian sense. However, it is important to notice exactly how the logic of despair goes, also in this case. Applied to Heidegger's philosophy; *Dasein*, including every human individual, *is* a being-in-the-world. It is not such that one can avoid being a being-in-the-world by not willing to be such a being. If one is in despair by not wanting to be oneself in the form of being-in-the-world, one still *is* a being-in-the-world, but one (desperately) does not want to be it. The same is the case with the way in which *Dasein* is a being-in-the world, namely by caring. It is not such, according to Heidegger's analysis, that one can avoid being caring. It is rather such, that one can (in the Kierkegaardian sense) despair in the sense that one (again, desperately) does not want to be or exist as caring. Not caring is, however, not an option, the caring relation is ontological. Desperately not wanting to be this caring being is an option. The mental strategy for upholding this form of despair is the fragmentation of the world; corresponding to a fragmentation within the human being itself. Such a state of despair is experienced as carelessness.

Heidegger's description of being-in-the-world as caring is different from, and may be considered as complementary to, the scientific, ecological description of the human being as a biological body in interaction with its physical environment. The concept of complementarity was introduced by Niels Bohr (1934, pp. 52–91) It applies to situations where the same object can be observed in two different irreconcilable or incompatible ways, such that each mode of observation must be described by its own concepts, or even in its own language, and the two concepts or languages cannot be combined or logically connected. One example is the human being, where the description of how it is to be human, as experienced by the human being itself, requires a set of concepts logically unconnected to the set of concepts used to describe the anatomy and physiology of his body, including its brain. However, the proper description of human being as a whole includes both these kinds of descriptions. The second of these modes of description, the contribution of science, is necessary for the understanding of humans as part of the ecological system, which in turn is a necessary part of the knowledge needed for forming the right patterns of human activities in a sustainable society. However science itself does not in itself address the question of attitude, which is equally necessary. Here, Heidegger's thought of care as an existential condition of being-in-the-world is a philosophical contribution which is illuminating, and which can fill in the lack of a purely scientific approach.

It is important not to underestimate this particular complementary aspect, in particular when we are faced with the enormous and still growing amount of scientific knowledge available. The question one has to ask in education is whether scientific knowledge may not only represent one of two (or perhaps more)

complementary aspects of the human-environment relation, but tend to dominate the picture. The ideal of scientific objectivity in itself and implicitly teaches the student a distanced and unattached attitude towards the environment. Science is, however, not capable of dealing with any questions of value; scientific thinking is based on Hume's strict distinction between value and facts, and science itself deals with facts exclusively. An education totally dominated by factual knowledge does not only neglect the necessary value aspect of our relation to the world, it implicitly teaches the student to neglect that aspect altogether. The factual orientation of science is its limitation, but it is also its strength, so it should not be changed, but one should be strongly aware of the limitation implied from an educational point of view. It is the natural role of philosophy to deal with and teach the value aspect of our lives, and thus also to reawaken and develop our natural attitude of care, and extend it from the limitations implied by the division of the world into parts, the homely world for which we care, and the foreign and alien world outside, of which may have a lot of knowledge, but no care.

According to Heidegger, the mood of care is ontological. On the ontological level, *Dasein* as being-in-the-world is *essentially* care. That is why I have presented the apparent partial lack of care as a form of despair in the sense of Kierkegaard manifesting itself in the splitting of the world. This means that the apparent lack is not a real lack, but a state of self-denial or alienation in which the appearance of the lack of care is basically illusory. Our ontological way of being-in-the world is still, and cannot be other than care. The role of education is to make this fact visible for us, and hence making the world appear as something for which we care.

As an example, I will now describe a pedagogical experiment from the University of Agder in Norway. The experiment was done as a part of the teaching of a course in air pollution and atmospheric physics and chemistry in a bachelor-level engineering study programme. The course consisted of a science part, describing the chemical-physical processes of the atmosphere, and a technical part, describing how different kinds of pollution influenced on the atmospheric system and the human environment. After this course, the students would go on to learn about the technology available for reducing the emission of polluting agents. In the course, the description of the atmospheric system was taught in a standard way. However, the teachers included in the curriculum a part with the specific aim of developing the sense of care and responsibility in the students. One standard way to do this would be to offer a course on environmental ethics, which was also done in this case. But, as often experienced, the knowledge of ethical theories and principles did not in itself really influence on the attitude of the students. It is rather such that the standard way of teaching ethics assumes a concern in the students. So, a different approach was tried. The students were presented with a short survey of the cultural history of human-air relation. Examples are the breathing exercises of yoga, or the creation myth of the Bible, where God is said to have breathed life into man's nose. It was pointed out that a metaphoric or mythic use of air as a concept or phenomenon expresses the human being's existential relation to the physical air. This teaching was complemented by some very simple breath exercises, with the aim of making the students consciously aware of the experience of breathing, both in

clean and in polluted air. This part of the teaching stimulated the students to reflect and develop a feeling of the value and importance of clean air. By doing this together with other students, they also became aware of the fact that the atmosphere is a shared resource, and the protection of it is a common interest. The experiment turned out to be successful, according to the reports of the students, but of course it was of limited value, since this was only done as a small intervention in a science course. It is mainly an indication of certain possibilities.

It should be noted, that the experiment was not aimed at influencing or manipulating the emotions of the students in any direct way. It was rather based on the important fact, pointed out by Heidegger, that our sense of care is ontological. However, this way of teaching gave room for the students to develop their own attitudes. They experienced that this part of their world experience became relevant and allowed, also in a professional context, and this stimulated their own sense of care.

This aim can very well be unified with scientific knowledge. A theory, including the theories of Physics, Chemistry, Biology, and other sciences, is a way of revealing the world to us. Although the knowledge communicated through these theories is factual, the world as revealed *through* this knowledge is still the world, in the meaning implied by the expression being-in-the-world, i.e. the world to which our basic ontological relation is that of care. It is only (and it may be difficult enough) to reawaken our awareness to this fact. However, I would not recommend trying to cover the complementary aspects of scientific objectivity and the ontological relation of care in the same exposure. Rather, a comprehensive scientific education should be complemented by a philosophical education, aiming at an understanding of the ontological stature of care and the illusory and despairing attitude of carelessness, including the objectivity of science. It would represent an important contribution of philosophy, in this case the philosophies of Heidegger and Kierkegaard, to an education aiming at a development towards sustainability. Care implies responsibility, and awareness of this responsibility is the beginning of the change which has to come.

2.4 Conclusion

In a university educational system promoting sustainability, philosophy has a role to play, in this article exemplified by Martin Heidegger's philosophy of *care*. A fundamental problem in our environmental thinking is our mental division of the world into two parts, of which one is thought of as being outside our responsibility and sense of care. Such a division, which represents a form of despair in the meaning of Søren Kierkegaard, is basically illusory and highly destructive in its consequences. As an example of mutual competence building, this chapter has shown the importance of being open to new experience and reflections. A philosophical analysis of the attitude care, as an ontological feature and a condition for

the sense of responsibility, is presented as complementary to a scientific attitude which is necessary to provide us with the objective knowledge needed for the formation of a sustainable society. It is concluded that a unification of these complementary aspects is possible and desirable.

Chapter 3
Education and Social Structure

Jon P. Knudsen

3.1 Introduction

This chapter deals with education and sustainability in a social structure perspective. The assumption is that, in order to reproduce itself as a viable society, a region has to maintain a balanced pattern of development through time. In doing this, education is thought to play a decisive role. How this is brought about highlights the need for a clarification of the ambiguous concept of sustainable development. The case presented, the county of Sogn og Fjordane, Norway, in this respect offers an illustrative case. The chapter shows how mutual competence building is related to social structure. It also demonstrates that there are different forms of modernity.

Almost rural in character, with demographic zero-growth, and with very high scores for quality of life and level of living indicators, the region at first glance appears as sustainable from an environmental perspective. But in a country with strong economic and demographic growth this means that the region is lagging behind in cultural, political and economic importance and impact. From a perspective concerned with the future viability of the region as a thriving society, this could be judged unsustainable. As a county that deliberately has chosen education and cultural markers as its preferred strategies of modernisation, Sogn og Fjordane has attained remarkable educational results, and also a large degree of cultural self-confidence. However, these results do not seem to become absorbed by the regional economy, thus the educational capital is being exported or drained from the region. Again, this should be considered unsustainable from a system perspective.

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To what degree and in what respect a society can be labelled sustainable, is in itself rather confusing, different parameters lending themselves to contradictory interpretations. I will try to sort out some of these lines of contradictions, and I will do so by focusing on education as it relates to the social structure of the region in question. In doing this I will be more interested in education as a chain of institutions than in higher education as a specific step in this chain, because I see the mutual relationship between education in general and social structure as a more formative relationship than the isolated role that higher education may have on social structure. Dealing with education, I rely on an input- output-model. Using empirical material from the county in question, I argue that the educational profile of the region has been of paramount importance to its construction as a sustainable society, from a level of living and a quality of life perspective. On the other hand, by the way in which education has been crucial to these endeavours, it has also had the side effect of putting the region in a possible situation of regional lock-in, in which the further development of the region may be threatened.

The discussion points to the role of education in the construction of regional structure and identity, but it does not pursue this to its full length. Rather it questions some relations between knowledge, educational system and regional development, as we normally portray them. These relations can briefly be sketched as follows. Formalised knowledge, as it is developed and institutionalised through the educational system, will increasingly form social and working life, and function as a port of entry to professional qualification. Because working life, regardless of sector, will increase its requirements regarding education, countries and regions losing out in the educational race will eventually also be unable to compete as societies for future innovation, well-being and development. Thus they will not be able to reproduce themselves as sustainable social systems.

This view can be referred to as an overarching, international ideology strongly advocated by organisations like the OECD and monitored in detail through quality surveillance systems like PISA (Programme for International Student Assessment) and TIMSS (Trends in International Mathematics and Science Study), to mention only two. In Norway, this ideology has been made regionally explicit through a governmental green chapter on education and regional development (NOU 2011, p. 3). My discussion questions the justification of such a simplistic model by analysing a case where education seems to perform rather differently.

3.2 Description

3.2.1 Some Facts About Sogn og Fjordane

A brief overview of basic data for the county of Sogn og Fjordane offers a confusing picture. On the one side the county is a demographic and economic laggard. Taking the long time span perspective, the county's share of the national population has dwindled from 6.0 % in 1801 to 2.1 % in 2001. No other county presents such

catastrophic figures. Today, this trend continues, the county being rescued from further decline only by a substantial international migration surplus. The county has no urban structure by international standards. The three main towns, Florø, Førde and Sogndal are all small centres with fragile commuting catchment areas.

The county performs slightly above the national average for business innovation, mainly as a result of hosting a handful of globally controlled smelters, but the share of R&D activity in the private as well as in the public sector is very low (Gundersen 2002). The composite NHO (Confederation of Norwegian Enterprise) business performance index weighing together private sector profitability, company growth rate, business birth rates and business impact on the regional economy, portrays Sogn og Fjordane as the poorest performing county in Norway, together with Finnmark (Vareide 2011). The county has since the regional development policy scheme became national in 1961, been one of its main recipients (NOU 2004, p. 2).

On the other hand Sogn og Fjordane should be regarded as a successful region. Living conditions are among the best in the country, if we take its various aspects together. The county is blessed with national top scores for longevity and general health conditions. Unemployment is almost negligible, as is the number of social security clients and the crime rate. The county also seems to have absorbed the consequences of recent lay offs in the labour market (NOU 2011, p. 3). The housing market is affordable, and the rate of economic equality is high. Even in economic terms, the picture is mixed. The regional product is on the rise, as is the income level of the households.

Most remarkable, though, are the county's excellent scores for anything related to education. School results are the best in the country, both regarding primary, secondary and upper secondary education (Steffensen and Ziade 2009). Transition rates from one educational level to the next are way above the national average. The county also takes the national lead in sending students to teacher training education, and Sogn og Fjordane is also where teachers to the largest degree experience common esteem for their profession (Knudsen 2014).

Such scores for various variables, as referred to above, do not normally go together, empirically as well as theoretically. We have a region at hand that has failed from a demographic perspective, and partly also from an economic perspective. From a living condition perspective, however, the picture is the opposite one. Those living here lead excellent lives.

We know of this apparent contradiction from previous research, namely that variables for quality of life fare better than should be expected from an economic point of view. Because this phenomenon appears in a westerly located band stretching from south of Stavanger through the coast and mountain regions all up to east of Trondheim, it is called The Western Paradox (Elstad 2011). As the other counties in this region are more urban in character, the phenomenon is especially visible in Sogn og Fjordane, with its rural structure.

A more specific paradox can be derived from the Western paradox, namely that there seems to be no apparent connection between the esteem for education in society and the concomitant socio-economic results generated in the same society. Nowhere is this mismatch more clearly detectable than in Sogn og Fjordane. Should the recommendations from OECD and the PISA-ideologists be taken seriously,

Sogn og Fjordane would have been a national laboratory for the future and not, as today, a region lagging behind the rest of the nation.

The case thus offers the opportunity to investigate the role of education and knowledge in a regional context. We are able to discuss what the role of education has been in the development of this region, and we can look into why the socio-economic consequences have failed to comply with mainstream theory. As such, the discussion may add to our understanding of the role of education in the construction of a region, and as a practical critique of prevailing modernising theory and its related political programme.

3.2.2 The Various Spheres of Modernisation

In the contemporary debate knowledge is often presented as the main key to economic growth and development. The godfather of institutional economics, Douglass C. North (1994, p. 362) categorically states that "the speed of economic change is a function of learning." More recent commentators add to this an understanding of the relationship as a local or regional symbiosis (Fritsch and Warwych 2014; Lorentzen 2007). This line of argument is most often, though, related to higher education and research (Florida 2002; Gertler 2004; NOU 2011, p. 3). The general knowledge base in society is more seldom taken into consideration, unless it fosters a general ability to creativity and learning behaviour (Florida 2002; Lundvall 1992; Mariussen and Virkkala 2013).

The above references rather directly link the level of knowledge development to an ability to create economic growth, as well as economic change and development. Tomorrow's welfare is, so to speak, a function of our capacity to develop and put to use relevant knowledge. This knowledge is shaped and brought to us by institutions as schools, high schools, universities and institutions for research and development.

This idea of an almost linear connection between education and economic growth can be discussed in different ways. First there is a question whether all kinds of knowledge add equally to growth and wealth creation. Second there is reason to ask if such knowledge needs to be formalised. Third we can enquire into the relationship between education and economic growth as modernising strategies. Finally we should question whether these processes necessarily need to occur intertwined in a given regional setting.

I will return to the last question towards the end of the chapter. To take the third question first. There is a vast literature on what we label multiple modernities (Eisenstadt 2000). The debate related to the issue has many facets, but a common denominator could be that modernity as a historical phenomenon has occurred differently according to geographical context. Some authors single out three main paths in European modernisation: economic, political and cultural (Todd 1990; Østergaard 1992).

If we take modernisation to be a genuinely European undertaking, we can identify its economic axis to be the Western European city-belt stretching from

Northern Italy to England until the definite breakthrough came with the industrial revolution at the English pole of the axis. This line of modernisation was then subsequently exported with British colonisation to overseas territories. Today we thus understand the global capitalist system as a legacy of Anglo-American culture and thinking (Albert 1993; Todd 1998).

Political modernisation was largely a French speciality through the project of Enlightenment. Among much more, this is where the thoughts of the constitutional division of powers were conceived. Political modernisation was nevertheless an undertaking with strong links to economic modernisation, and we may justly speak of the historical coining of the Western institutional system as a compromise between French political thinking and British pragmatism (Hirschmann 1976). Enlightenment did more than bring about new political ideas. From France we also got the secular critique of religion and a new fertility pattern, which marked the onset of the demographic transition so typical for modern societies (Todd 1990).

With Østergaard (1992) we can understand the German, and to a lesser extent the Nordic, cultural realm as the romantic path in modernisation. It was here that common literacy gained foothold through the general operation of early emerging national school systems nurtured by the concept of *bildung* as an ideal, even for the common man. It is well documented how literacy was an earlier and better distributed social phenomenon in Germanic-speaking parts of Europe than was the case in France and in Britain (Todd 1990, pp. 131–144). The roots of this tradition stretch all the way back to the Reformation, if not even longer.

The purpose of this brief sketch is to illustrate how modernity in different geographic contexts takes different points of departure, and touches upon quite different sectors of society. Modernity in England took off with little support from the educational sphere. The German variety of modernity shaped a vital school system, but no parallel industrial revolution. French modernity thematised political institutions and the existential condition of man, but, as regards knowledge, in an elitist way and with no concomitant economic revolution following the English model.

These are not the only recipes for reading the geography of European modernisation. Within the tradition that has come to be labelled Variety of Capitalism (VoC), grouping countries and regions according to how the economy is institutionalised and regulated has resulted in distinct categories, offering schemes for how the economy interact with other societal spheres in systematically varying patterns (Albert 1993; Amable 2003; Hall and Soskice 2001; Hancké et al. 2007; Todd 1998).

In the mainstream VoC terminology (Hall and Soskice 2001; Hancké et al. 2007), the Anglo-American societies are characterised as *Liberal Market Economies* (LMEs) marked by their liberalist institutional design whilst Germany and the Nordic countries are classified as *Co-ordinated Market Economies* (CME) by their economies being more strongly regulated by the state and the civil society, not the least by the labour market parties. One of the sectors thereby appearing differently in the two systems is the educational sector. LME societies tend to favour broad and general educational tracks for qualifying the labour force, whereas

most CME countries to a larger degree tend to organise educational tracks, especially from the (upper) secondary level and onwards as a shared duty between private firms, enterprise confederations, unions and authorities (Friel 2005; Teague 1997). In broad terms education can thus be understood as institutionally more differentiated in the LME context, and institutionally more integrated in the CME context.

Lately scholars have asked if globalisation has made the LME model more hegemonic, and thus influenced CME countries to become more LME-like. Nordic countries, with Denmark as the foremost case, thus appear with markedly more LME-like institutional traits over the last few decades (Schneider and Paunescu 2012). These changes however do not annihilate historically established patterns. It can be argued that Denmark and the southeastern part of Norway, structurally and institutionally, have more in common with Anglo-American societies, whereas the rest of Norway displays similarities with Germany and Sweden (Todd 1990, p. 63; Knudsen 2011). Wicken (1997) argues that regional industrial development historically followed an English pattern of large scale structural and residential changes in the Southeast, while in the western part of the country it took a more incremental turn, based on organic patterns reflecting rurality, social equality and existing kinships.

These questions go to the heart of the theories on the structural impact of a regionally differentiated and historically reproduced family system in Europe, brought forward by the French historian and demographer, Emmanuel Todd (1987, 1990, 1998, 2011). However, before going into the details on Todd and his relevance to the subject, something has to be said about formalised knowledge as a cause of economic growth and development.

Immediately most of us think of knowledge, especially of relevance to economic and industrial growth and renewal, as formalised knowledge. This knowledge stems from universities and laboratories, and it is passed on to new generations through formalised procedures. It is written in particular styles and takes forms as patents, manuals and text-books. Possibly, most of the knowledge that shapes and underpins our economy is of a different kind. It is tacit, or rather it is mediated in the form of practical interaction between suppliers and producers, customers and workers. It is transmitted from place to place or across generations through practical learning and the social fabric of society.

Innovation research has advocated that this latter form of knowledge creation plays a crucial role in economic renewal, not the least in its incremental form (Isaksen and Nilsson 2013; Jensen et al. 2007). Nevertheless, national and international statisticians and policy makers mostly seem to be concerned with formalised knowledge and formalised innovation. That is why our understanding of how innovation takes place in society is still highly unreliable.

It is generally observed that LME societies have a mode of innovation that is more dominated by formalised knowledge and radical innovations than CME societies, which are more liable to pursue innovation through tacit knowledge and incremental innovations. There is no reason to believe that the latter strategy should be of a low road character. The economic results for Germany and the Nordic

countries speak for themselves. Many scholars maintain that a combination of knowledge regimes will give the best overall outcome (Isaksen and Nilsson 2013; Isaksen and Karlsen 2012; Jensen et al. 2007). Neither is it the case that a high degree of non-formalised knowledge application and a largely incremental innovation profile is in opposition to sophistication in production and products.

3.2.3 Emmanuel Todd on Modernisation

The social and cultural structures of a given society can to some extent be compared with a geological structure, where practices add to practices in layers, so that older layers either are directly visible or condition the formation of newer layers (Massey 1984, p. 118). Sometimes the influences of older structures are particularly salient. Languages offer such a case in which the linguistic development cannot be duly understood apart from the history of the language in question. And even when languages borrow words and change pronunciations from decade to decade, from century to century, the basic grammar tends to be rooted in a history older than our collective memory. Much of the same holds true for religious systems and for other cultural forms as well. As such the European cultural mosaic still presents us with remnants of ancient structural variations (Hofstede 1991; Schultenover 1999).

Todd has laid the formation for analysing this mosaic in his book *L'Invention de l'Europe* (Todd 1990), supplemented with earlier and later works on European and global culture (Todd 1983, 1987, 1998, 2011). What he does is to offer a key to the analysis of the social configuration of culture, by starting out with how two basic values, authority and legality, are constituted in the making of the social fabric. He does this by looking at social reproduction in which the family structure becomes the systemic foundation as cultural norms and values are basically formed and mediated in primary socialisation. What is learned in *micro,* in the family, will largely be congruent with how we behave in *macro,* in the political and economic spheres.

By putting such emphasis on the family Todd should be placed in a rather recent tradition for reinterpreting the family as a highly diversified phenomenon in the European context (Fauvre-Chamoux 2009; Hajnal 1982; Laslett 1965; Ruggles 2010; Todd 1990; Solli 2003). In this tradition the widespread misunderstanding that some kind of common extended family used to dominate Europe, until it was replaced by an equally common nuclear family along with the advent of modernity, is done away with. Based on the works of Peter Laslett and Frédéric Le Play, as on his own research, he maintains that several, highly different, family types have had a largely stable geographical repartition through history, perhaps for millenia. What is typical European is this mosaic of regional and typological hegemonies and not any transition from an extended family type to the nuclear family (Todd 1990, 2011; Fauve-Chamoux and Ochiai 2009). This conclusion is however in opposition to those claiming that socio-economic factors represent the main factors in shaping past and present family patterns, globally as regionally (Ruggles 2010; Solli 2003).

Todd has in this regard much in common with Hofstede, but distinguishes himself from the latter by explicitly stating which mechanisms are in operation for moulding cultural behaviour. Todd furthermore chooses to present his cultural forms as composite typologies, whereas Hofstede (1991) presents them as single dimensions. Geographically he presents an empirical catalogue of the basic family types and some variations of these for 483 units of analysis, basically congruent with the EU NUTS 3 units (Todd 1990). For Norway this means the county level. Figure 3.1 illustrates how this pattern can be mapped in Western Europe.

We normally conceive of the nuclear family as the modern family type. This is the same family type that we historically find as dominating most of England, Scotland, the Netherlands, Denmark and the overseas English-speaking territories. The reason for this, Todd (1990, 2011) claims, is that it was hegemonic in regions where the modern capitalist system had its breakthrough and where liberalism had its strongholds. We therefore conceive of it as equally modern as the economic system it once brought into being. Although this family type may be spread as an ideal along with modernity, there is no automatic link between the nuclear family and the economic modernisation per se. Germany and Japan are good examples of societies having run through modernisation based on a more hierarchic family pattern, but then consequently also with a more organic type of modernisation (Todd 1983, 2011). There is a parallel here between Todd's cultural typology and classification of economic systems presented by the VoC-literature where the LME countries mainly go with the absolute nuclear family and the CME countries are dominated by the stem family (Hall and Soskice 2001; Todd 1998).

For Norway Todd (1990, pp. 62, 420–430) claims a dual pattern, The Southeast, comprising the Agder counties, Telemark, Vestfold, Buskerud, Oslo, Akershus and Østfold, belong to the terrain of the absolute nuclear family, whereas the rest of the country belong to the domain of the stem family. This division is then offered as the main factor accounting for the multitude of cultural cleavages between these two parts of the country.

While the cultural cleavage between east and west in Norway is well documented (Rokkan 1967; Øidne 1957), the postulate of a demographically divided country requires some discussion. Most observers agree that family patterns vary substantially within and across regions. The problem is that these variations often are of a very local nature thus offering confusion to the interpretation of them (Sogner 2009; Solli [2013] 1995, 2003; Østerud 1978). A prevailing view seems to be that such data should be aggregated geographically and analysed in long time spans to give meaning (Charles et al. 2008; Hajnal 1982; Janssens 1993; Lesthaeghe 2010; Moring 2003; Lundh 2013).

For our purpose what is important is to place Sogn og Fjordane into the family typology. We clearly see from Table 3.1 that this county is the one mostly dominated by the stem family. There is a distinct pattern where multiple family households, as an operationalisation of the stem family type, has its stronghold in Sogn og Fjordane. Even if the number of such households is dwindling, the relative position of Sogn og Fjordane is maintained over almost two centuries.

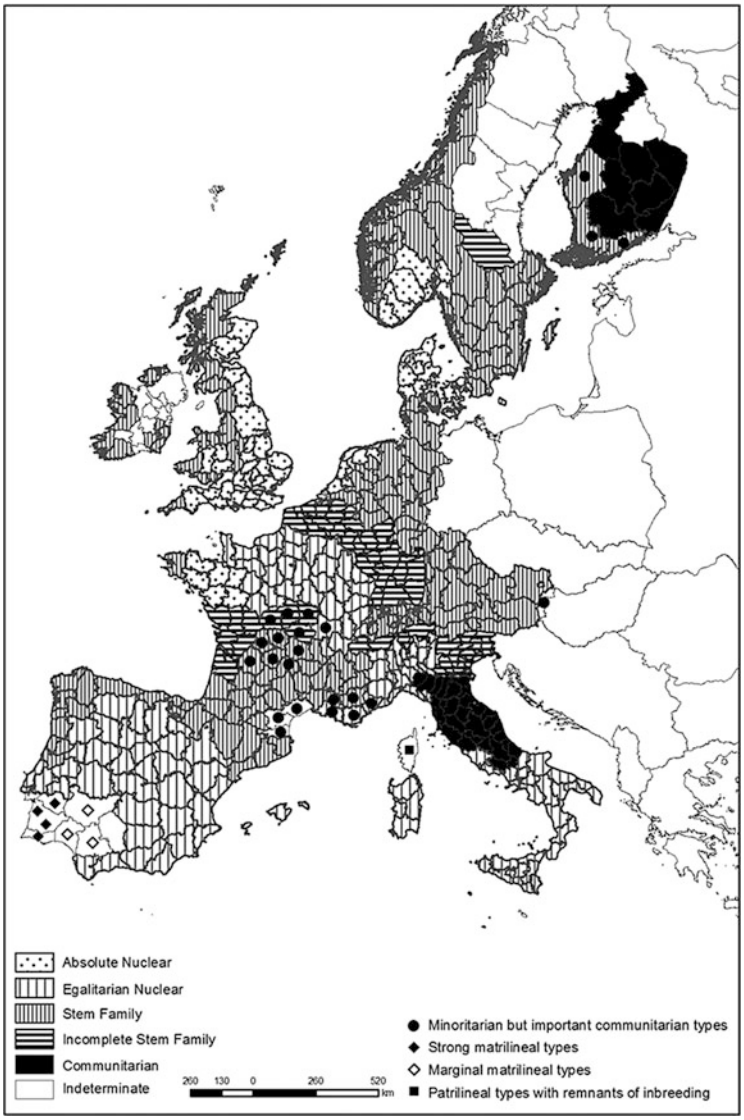

Fig. 3.1 Emmanuel Todd's (1990) map of family types in Western Europe [*Source* Adapted by Duranton et al. (2009)]

3.2.4 The Basic Family Typology

Todd (1990, pp. 29–68) identifies two basic factors that define the family types: The degree of equality within the family: the horisontal dimension, and the degree of authority within the family: the vertical dimension.

Table 3.1 Relative number of extended families by county

	Top three values			Lowest three values			National mean
1801 Multiple family households in percentage of all farming and fisherman/farming households	15.7 Sogn og Fjordane	15.5 Hedmark	15.0 Oppland	6.4 Nord-Trøndelag	5.6 Østfold	No data Oslo	Not calculated
1960 Multi-family households. Per cent of all households	4.6 Sogn og Fjordane	3.5 Troms	3.2 Sør-Trøndelag	1.1 Østfold	1.1 Akershus	0.9 Oslo	1.8
1970 Number of persons living in households with relatives. Per cent of all persons	8.8 Sogn og Fjordane	6.3 Troms	5.7 Finnmark	3.2 Buskerud	2.7 Østfold	2.6 Akershus, Oslo, Vestfold	4.0

1801, 1960 and 1970. Percent

Sources Solli [(1995) 2013], Appendix, Tabell B-9 Folketellingsdata 1801. 1960: Households and family nuclei, Table 1. Census data 1970: Families and households, Table 17. Oslo: Central Bureau of Statistics of Norway

Where children are treated as equals, the family will socialise them to equality as a norm. The culture will then tend to pass this value on from one generation to the next. Alternatively, a family in a setting where children are treated unequally will be raised to accept inequality as a normal feature of culture. Todd points at institutions and rules pertaining to heritage as an empirical sign of how these values materialise. Where the family builds on authority, this will also be mirrored in the culture. Todd ties the dimension of authority to the relationship between generations. Wherever three generations live together, he takes it as a sign of authority. Wherever children leave home (early) to set up their own household, he takes this as a sign of a social system where vertical authority is downplayed as a norm. By combining these two variables Todd (1990, p. 33) establishes the basic European family matrix, as illustrated in Table 3.2.

Todd is not the only author to point at the formative power of the mutually excluding dimensions of authority and equality on culture. Hofstede (1991) acknowledges the familiarity between Todds typology and his own dimensional system, while Mamadouh (1999) points at the resemblance between his model and the grid-group-model of Aaron Wildavsky. What distinguishes Todd is the ability to account for the mechanisms that create and uphold these dimensions.

In this context I will concentrate on the two family types found in Norway and on their characteristics:

- *Absolute nuclear family*. A couple form their own household. The family consists of two generations, thus excluding grandparents. Location of dwelling is based on pragmatism. Children are stimulated to develop their inequalities as an individual resource. Heritage is often institutionalised through a will. This is the most individualistic of the four family types, maximising freedom.
- *Stem family:* A couple forms a family, and one of the partners (normally the elder son) brings his spouse to the household of his parents. The family then consists of three generations. The elder son subsequently inherits the parent (landed) property, while the rest of the children are compensated otherwise. These (younger) children are free to start their own two generational families or to marry into other three generational households. This is the family type maximising authority.

But how dominant are these family types today? We must be aware that even in premodern time a regionally hegemonic family type never applied to all. For demographic, life span, social or economic reasons only a minority of families are able to practice a fully fledged three generational household. Solli [(1995) 2013] offers a threshold value below 20 % for his 1801 identification of the stem family

Table 3.2 Todd's family model

		Equality	
		Yes	No
Authority	Yes	Communitarian family	Stem family
	No	Egalitarian family	Absolute nuclear family

core areas in Norway. Sogner (2009) draws similar conclusions from a more local, historical material in the northeastern part of the country. Moving to the census data for 1960 and 1970, we will have to set these values even lower than for older data.

We here encounter a well-known phenomenon. What is taken to be typical for a given social practice in a region is actually performed by a small and often dwindling minority. Grace Davie labels it vicarious practice when the few believe, practice or perform on behalf of the many (Berger et al. 2008). In this case we should see this phenomenon as something more than a mere consequence of demographic and economic change; it should be seen as an institutional trait of differentiation in its own right.

In a society undergoing specialisation, reproduction and maintenance of cultural forms represent no exception. Davie (Berger et al. 2008) makes her case from studying religion, which has passed from being a quasi-ubiquity to be something maintained by the fervent few, so that it can be in place when needed in times of hardship and rites of passage for the rest of us. In Norway a similar argument can be made about rural settlement patterns and regional policy spending. Their rationales could well be sought in a notion of upholding a diversified settlement structure in a sparsely populated and spatially speaking large country. The stem family ideal thus connects to Norwegian history, not least in its rural past, and the concomitant nation building project of the various Westerly based counter cultures (Knudsen 1986; Rokkan 1967; Øidne 1957). In this way the stem family practice could be labelled a form of vicarious living approved by the many, but performed by the few. As such it has its imprint of being a reminiscence, but it could also be seen as a model for sustainability, pointing at an alternative social model to which the county in question comes closest.

What is also clear from studies from various parts of Europe is that, although the number of three generational households is falling, the practical and symbolic interaction between generations, in its core regions does not seem to undergo the same erosion that hits the actual household formation. Thus, surprisingly much of it finds new social forms in urban environments (Charles et al. 2008; Janssens 1993). Duranton et al. (2009), to their own surprise, thus find that the Toddian historical family patterns offer more statistical explanation for contemporary interregional disparities in Europe than do other plausible variables.

3.3 Discussion

3.3.1 Hierarchy and Equality

Sogn og Fjordane is, as demonstrated, a core area for the stem family, by Todd labelled a family type tolerating hierarchy and inequality. This does seemingly not fit in with the general image of Sogn og Fjordane as a region of social and economic equality.

We then have to repeat that the institutional focus in Todd's theory is the family and its structuring properties. Todd (1990) furthermore discusses how the family types interact with land ownership and reasons as follows: Within the stem family the ideal is that a farm should be passed on undivided from one generation to the next, so as to stay in the family line. In many stem family societies this is being institutionalised through legislation regulating heritage to landed properties. This is also the case in Norway. The results are nevertheless paradoxical, as this practice freezes the social structure. Where properties are in few hands and the society takes on feudal traits, such a structure will be reproduced. Where properties are many and small, and the social structure is marked by equality, such a structure will also be reproduced.

We can therefore assume that the authoritarian position is then either reserved for the micro level, the family father, or for the macro level as the state and the church. There is therefore a disposition for verticality in the value system that is hard to do away with without breaking the cultural codex. This need for verticality, which is met at the micro and the macro levels, is subsequently missing at the meso level where a striking structure of freedom and equality reigns the arenas. This local and regional free space, I suggest, is where the cultural, political and economic strive of the Western periphery find its *loci*. And to compensate for the missing link in the chain of verticality, a new figure is invented to form the personalised pivots of the mobilisations, the modern community chieftain (Høydal 1995).

The chieftain is an important person in stem family societies, because he is mandated by the social structure. Where the stem family reproduces equality, the role as chieftain may apply to all free men (and more rarely women). Each man is a potential chieftain. In the tradition following Rokkan, we can speak of the free role of chieftainship as a marker for Germanic societies (Flora 1981). This role is crucial to the political and cultural mobilisation taking place in Norway from the latter part of the nineteenth century. In Sogn og Fjordane, where ownership of land, except for Inner Sogn, is characterised by a fragmented structure displaying a multitude of small units, the institutional consequence is that cultural initiatives are carried through as mobilisation from below, more as in a web than as initiatives located in defined geographical and social centres.

Referring to the numerous popular movements so typical for this part of the country, we should speak of a socially ambulating chieftainship. This role can be given to anyone who is judged capable and trustworthy, it is individually accorded and unofficial in character. As such it bears the marks of being a leadership role of the Weberian charismatic type. There are few material rewards attached to the role, neither for the chieftain or for his family, other than a good reputation. The chieftain is *primes inter pares*, and assuming the role of chieftainship has no structural consequences for the person in question, for his family or for society. The chieftain rises out of the crowd for a role that is going to follow him in his lifetime. The role is accorded by the people and will return to the people.

I propose to label this structure *hierarchic egalitarianism*. This term mirrors the contradictory aspects of the structure and its propensities towards a vertically oriented value system framing an egalitarian economic and social structure,

where the meso-level suddenly opens up a community-based space of freedom. The degrees of freedom accorded in such societies should however not be exaggerated. Within the family we must assume that the hierarchic structure follows the three generational pattern, so that the level of individual freedom may be lower than in societies where the absolute nuclear family prevails, and where the barriers to individual mobility and self-realisation are fewer.

These social peculiarities are crucial to the understanding of the western popular movements already referred to. It is also in this perspective that we will have to understand the school system and the role of the teachers in this system. The western teacher is a chieftain conveying *bildung* in the local community integrating an international universe of knowledge, a competing nation building project and a regionally based cultural mobilisation, and all of this with the school system as an institutional basis (Høydal 1995).

Often roles will be accumulated. The chieftain could then be a teacher, a parish clerk, a farmer and a mayor to take just one possible combination. He is then understood as a community chieftain. By cumulating roles, the organic aspect of society is underlined. Societies marked by hierarchic egalitarianism could well be understood as less differentiated by the intertwining of various spheres of practice. This is then not only a legacy of the past, but could also be seen as a strategy and resource for an alternative way of meeting with modernity. In rural Sogn og Fjordane, modernity is, so to speak, constituted through organic co-operation (Fløysand and Sjøholt 2007; Wicken 1997). In this the region in question marks a different course from other parts of the country.

We can assume that the generally accepted chieftainship has served as a model to develop and maintain the western social structure with its related cultural expressions. At the same time we should ask whether or not the lack of institutional differentiation, along with a low level of urbanisation, has had a negative effect on the diffusion of the western counter-cultures, especially for those cultures most strongly rooted in Sogn og Fjordane as there were no urban structure and no national institutions in place to handle them. Sogn og Fjordane is definitely a heartland for some of these cultures, but then a heartland where the heart, understood as an organisational pivot, is missing. In this the county for good or for ill reflects its uniqueness, with hierarchic egalitarianism.

This point affects the way in which the educational system operates in the county. First it is difficult to distinguish the school system as a separate institutional sphere or field, because it happens to be so strongly interwoven with the organic modernisation of the local communities and of the region. Education is not a specific function performed in secluded places and time slots. It is, together with the second national language, Nynorsk (literally: new Norwegian), the coat of arms for the regional construction of identity. The multitasking chieftains exemplify this point further. Second, when it comes to the university (college) level, this was simply missing for long periods of time. Despite being famous for its high educational achievements, its esteem for education and its propensity to feed the teacher training colleges of the country at disproportionally high rates, the county had a teacher training college in the small village of Balestrand only for the short period

between 1863 and 1880. In 1972 a new teacher training college was opened in Sogndal. In 1994 it formed part of the Sogn og Fjordane University College, which today is a small university college having some 3,800 students. The heartland finally got its heart, but then a weak one. To stretch the metaphor, the county still seems more fed by its blood vessels than by its heart.

A common way to characterise institutional development, as found in Sogn og Fjordane, will be to label it underdeveloped or incomplete. It may however give more meaning to see it as a specific case of modernity within the perspective of *multiple modernities* (Eisenstadt 2000). If we then couple this notion to the debate on how institutional processes are shaped, we should first note a tendency to distinguish between formal and informal institutionalisation, and eventually also to see a *trade off* between the two ways of institutionalising. Formal institutions will typically be legally or politically based, whereas informal institutions operate within the frames of culture and trust. Formal institutions can to some extent compensate for lack of social capital in a society, while informal institutions by mobilising local culture can achieve results that otherwise would require formal institutions to materialise (Fukuyama 2000).

One advantage with informal institutions is that they are believed to operate at low transaction costs. Instead of putting up specific institutions to cater for societal needs, the same needs can be met by the use of trust where possible. Trust then functions as a social lubricator, securing cheap and efficient performance. A low degree of formal institutionalisation should then not be taken as a sign of lack of modernity, but rather as a sign of an alternative modernity at operation.

Trust is generally identified as raw material for building social capital (North 1994; Putnam 1995). According to World Value Survey data, Norway is on top globally when it comes to the general trust level (Inglehart 2000, p. 90). It could be argued that this national feature leads to lesser needs for formal institutionalisation. Consequently it could also be argued that we ideal typically could find more trust in a rural community dominated by hierarchic egalitarianism, than in an urban society within the realm of the absolute nuclear family. It would then be theoretically possible to explain the *heartland without heart*-model as upheld by trust and decentralised ideological maintenance.

Empirical data for trust as presented through Norwegian survey data do however fail to substantiate such an assumption. Both for regions and for a cross-regional, urban-rural gradient, there seems to be almost no geographical variation in the trust level. Some authors concentrating on social capital and third sector penetration find that trust seems to be slightly more present in rural than in urban areas, but do not find any variation in trust level across regions (Wollebæk and Sivesind 2010; Wollebæk and Selle 2007). An alternative interpretation of trust could thus be that it is more of a national resource than a property of some specific regions and family types.

3.3.2 Counter-Culture and Modernity

The presence of cultural markers for the opposition between Western and (South-) Eastern Norway is well documented by scholars (Rokkan 1967; Øidne 1957; Todd 1990; Knudsen 1986). The western cultures are commonly referred to as counter-cultures as they represent an oppositional stance towards dominating, Oslo-based cultures and because they tend to have their strongholds in western rurality. They are represented in all social classes and in all parts of the country, but typically overrepresented in the West and then again among what we somewhat academically incorrect could refer to as ordinary people. I then leave aside an interesting, but in this context too far-fetched, debate on elite aspects pertaining to some of these cultures (Hoel 2009).

Two remarks should be made. First, these movements should be understood as modern, in that they mobilise people and interpret ideologies to meet with modernity (Furre 1990; Hoel 2009; Todd 1990). Second, these cultures are unevenly distributed as geographical markers. When it comes to Sogn og Fjordane, the position of the Nynorsk language is the most salient feature. Both as an official, administrative language and as a language used and taught in school, we talk about almost full coverage.

We thus deal with a situation where the counter-cultures alternate geographically, and where the linguistic marker plays a specific role in our case. Language is a more basic formative category than other counter-cultures as it constitutes the framework for symbolic interaction among people and also serves as a vehicle for socialisation and learning. Language is thus intimately linked to schooling and education. Institutionally speaking a language is nurtured and cultivated by the most egalitarian of all institutions of modernisation, the local community schools with their teachers. It is therefore natural to argue that the school system will be the harbour for maintaining and developing language as the favoured cultural marker. We can thus postulate that the school system will have a stronghold, where a language is fought for and has its strength.

3.3.3 From Culture to Education

The school system is the foremost institutional tool for the dissemination of literacy and knowledge. At the same time, this system is in a double position between the input- and output-side of politics. On the one side it is formed by the values of the communities in which it operates, on the other it is formed by the national project that has mandated it. No wonder that education and schooling are crucial to any nation building project. As such schools become the foremost agents of modernisation, strategically placed between national ambitions and regional preconditions (Todd 1987, 1990). In the case of Sogn og Fjordane, it is impossible to imagine the

school system without this regional input-dimension. The case is becoming even stronger because the region has few other formal institutions to make itself visible.

Todd (1987, 1990, p. 131ff) ties the emergence of literacy and educational systems to the stem family in its German and Nordic varieties. The Lutheran Catechism emphasises the family as the arena for education, and Todd points at the stem family as a structure for this task by giving the head of the family the authority needed to perform the duty, a duty that very soon becomes integrated with a community school system. Within the absolute nuclear family, this mission becomes weakened because the family structure fail to accord it the same degree of (religiously based) authority. This should thus be taken as the theoretical starting point to deal with the German/Nordic supremacy on the Anglo-American world for the cultural part of modernisation. Two different family types present two different images on schooling and on how the school system integrates with society.

Another observation here will be that the kind of modernisation that takes place through education is analysed with little reference to the historical role of universities and related research. Closing in on our Norwegian case, we will soon find the place for universities, but then with their scholars acting as partisans for opposing educational ideologies. Very early the Norwegian school system became prone to conflicts similar to those found within other parts of cultural and political life. Again we meet the phenomenon of one country with two opposing cultures, this time within the field of pedagogy. On the one side we find a nationally and idealistically oriented *bildung*-ideology. On the other side we have an Anglo-American oriented and explicitly modernising ideology emphasising empirical testing and verifiability (Dale 1999; Helsvig 2005). These two ideologies found different cultural and regional ground, and their contested issue was the national school system and its pedagogical content. The idealists counted as their combatants mostly representatives from the western counter-culture. Among these the most important was Erling Kristvik (Slagstad 1998; Vaage 2004). Slagstad sees him as one of Norway's first important sociologists, while others (Dale 1999; Helsvig 2005) have a more negative evaluation of his importance. Dale (1999, p. 439) goes as far as denigrating his idealistic position as obsolete, harmful and anti-democratic.

Kristvik presided at the teacher training colleges in Volda and in Trondheim. Even geographically he thus stood aside from the pedagogical development that from the 1930s and onwards took place in Oslo, more specifically at the Pedagogical Research Institute (PFI). As far as we can find a geographical centre for Nynorsk in Norway, the semirural communities of Volda and Ørsta, just north of the Sogn og Fjordane county border, come closest. Kristvik's analyses as his pedagogical thinking are directed towards rural living. His ambition is to grasp the essence of the rural community as a social configuration, especially as found in western Norway, and to use it as raw material for a national pedagogy. With Helsvig (2005, p. 102) we can identify this as a pedagogical programme rooted in

> "the creed of christianity and national identification as an integrating and nation-building factor to overcome social and economic cleavages" (My translation). Confronted with an American-inspired research programme at PFI, "a confrontation [emerged] between the extension of two dominating traditions within the wide Norwegian left-/liberal movement that grew from the end of the nineteenth century: a popular national and a liberal-progressive" (Helsvig 2005, p. 103) (My translation).

Dale (1999) further criticises Kristvik for his emphasis on the input-side when analysing social and political factors, and his subsequent neglect of output-aspects, namely policies for school development. This criticism should be paradigmatically seen. In the organic tradition it will always be more crucial to qualify the nature of society than to specify the policy output. It is impossible to imagine the coining of policies detached from a thorough analysis of politics, since the input-side of politics is thought to decide its output-potential. In the more pragmatic and experimental PFI universe this was not necessarily so. Here it is presupposed that the output-side of politics can be detached from *politics* in its broad sense, as *policies* that can be implemented regardless of context. Kristvik emphasises the institutional context. This he does in line with the tradition from the classical political sociology. Todd follows suit. We easily see that these two opposing perspectives on politics also have bearing on the possible role of universities and research in dealing with educational questions, the PFI position lending itself to a far more instrumental take on education as a field of practice and policy-making than the Kristvik position.

A given political culture will always be decisive for the range of institutional solutions at hand. The lesson from Norway is clear. Here regionally anchored perspectives have given ammunition to a political battle on the shaping of institutions. This is well-documented for the school-system (Dale 1999; Hagemann 1992; Helsvig 2005), but the same holds through for other sectors of society as well (Wicken 2004). In this perspective culture precedes institutions, meaning that culture matters more to institutions than vice versa.

Kristvik was well acquainted with the scientific debate of his time (Slagstad 1998). Among his sources of inspiration we find the French demographer Frédéric Le Play and his works on family and kinship in European societies, and Kristvik draws on Le Play for his own theories (Vaage 2004). Here is common ground for Kristivik and Todd. They both process the insights from historical demography, and they conclude identically on the specificity of western Norway, Todd analytically, Kristvik in addition as an ideologue. In two short, popular articles published at the outbreak of World War II he offers in condensed from his vision of society, the child, the school system and cultural striving

> Finally, the child is not first and foremost an ego, an isolated self, but a member of a household, a family-line, a rural community, a people. A higher, wider and stronger life makes the child a cell in a larger organism, and it is this organism that lives within the child's mind and appears through superior contributions than those sparked from the individual itself. (My translation) (Kristvik 1940, p. 311)

Here we have it all, the organic view of society, the biological metaphors and the three generational family. The rural west has been codified by one of their own. The tool to take society into the future is the school system, but as he writes this seems:

"...purposeless as long as the school has ceased to be an organ for a society in shape." (Kristvik 1940, p. 312) (My translation).

3.3.4 Educational Output

So far I have argued that there can be a special nexus between the social structure found in Sogn og Fjordane and the position for schooling and education in the county. It is fair to assume that excellent school performance mainly derives from the school system being integrated with a social structure, of which it expresses and mediates the basic values. To which extent we can talk of a regionally conceived pedagogical paradigm or of a regional recognition in one of two national paradigms, is open to interpretation. I suggest that it can be useful to label one of the paradigms *the embedded school* to point at its resemblance with the CME-category in the VoC-scheme. The other paradigm could then be labelled *the differentiated school* and attached to the LME-category in VoC-terms. These categories should then again be linked to the two family types as proposed by Todd (1998) in his book on family types and the related forms of capitalisms.

The first paradigm then copes with the idealistic and Continental tradition in dealing with modernity, while the other goes along with Anglo-American liberal pragmatism (Helsvig 2005). The first one is in this context linked to hierarchic egalitarism as its social configuration, while the second presents itself as a pedagogical scheme for the realm of the urban Southeast. If we take what we know from regional school performance in light of such a scheme, it should only be logical that we find the best school results in the core areas of these paradigms, which means in the rural West and in middle class urban areas, especially in the capital region of Oslo and Akershus, as illustrated in Table 3.3. In both these cases parents, pupils and students should be able to recognise the school system as reflecting their own mores, values and ideas (Knudsen 2014).

Outside these core regions, in an outer periphery of the East, in the South, in Northern Norway and in the low status urban areas, we should explain poor educational results as an effect of a double peripheral position. In such contexts parents, pupils and students will recognise none of the two school paradigms as theirs. In such contexts it could also be argued that it does not help much to allocate more resources to education as the main prerequisite for success is missing, a pedagogical programme built on a regionally acknowledged social order. It may be argued that such regions experience a kind of systemic colonisation where the legitimacy of the institutional order is sapped in the first place. It should be stressed, however, that this is a structural argument, and not one that should prevent us from allocating resources to individuals displaying specific needs.

The answer to the problem should then consequently be to reinvent the educational system in regional terms, and as integrated with other spheres of society. This is parallel to how a similar problem, that of enhancing advanced research and economic growth, has been dealt with through arrangements like Centres of

Table 3.3 National test results

County	Observed values
Oslo	3.68
Sogn og Fjordane	3.59
Akershus	3.56
Troms	3.46
Møre og Romsdal	3.45
Rogaland	3.45
Sør-Trøndelag	3.44
Hordaland	3.43
Vestfold	3.43
Buskerud	3.41
Oppland	3.39
Aust-Agder	3.38
Hedmark	3.37
Vest-Agder	3.36
Nord-Trøndelag	3.34
Nordland	3.34
Østfold	3.33
Telemark	3.33
Finnmark	3.32

Source Skoleportalen. Grade 9. Average performance level. Aggregated mean, reading and mathematics. 2010–2014. Lowest value = 1, best value = 5. National mean = 3.44

Expertise and Centres of Excellence. After Porter (1990) it is generally accepted that world class excellence is best dealt with nationally by, through various policy measures, stimulating regional institutions and forces to mobilising regional co-operation as well as competition. Why should not the same hold true for all of the educational chain?

3.4 Conclusion

The initial observation sparking this chapter was the observation that Sogn og Fjordane performs poorly on indicators for regional economic development, while the county scores very high for the goals that the same economic development is supposed to generate, welfare and well-being. This could be analysed in several ways. One explanation could be that education both mirrors and affects level of living and quality of life, in ways which fail to be registered by our most commonly used indicators for how education relate to economic growth and innovation.

It is fair enough to argue that CME-related modes of innovation have their merits, and that these fail to appear in the statistics, but these modes of innovation

should nevertheless produce economic results at an aggregated regional level. It would then have been possible to argue that the western mode of industrialisation based on organically learned innovation in a rural setting should bring about demographic and economic results. Then we could also defend an equation showing that an excellent educational system and a thriving system of innovative and growing firms go together (Lorentzen 2007). We can produce such a line of argument for smaller communities also in Sogn og Fjordane (Fløysand and Sjøholt 2007), and we can do it for minor subregions along other parts of the West Norwegian coast (Reve and Sasson 2012), but we cannot for Sogn og Fjordane as an aggregated regional entity.

If we change the question from one of economic to one of human capital, we can define Sogn og Fjordane in the role of a net contributor to national value creation. The negative domestic balance of migration could then be read as an export of human capital to the rest of the country. Thus an excellent educational system in place could be seen to fall victim to a low ability of regional competence absorption. This we again could substantiate by pointing to a low degree of urbanisation and to small regional markets. Thus the question of whether Sogn og Fjordane offers a case of sustainability, coupling education and hierarchical egalitarianism, or whether it offers a case of lock in by an obsolete coupling of these two factors, remains open for debate.

Duranton et al. (2009), who otherwise support the Toddian theses, find, contrary to Todd (1998) that educational success prevails in the LME-context on a regional level. There are many ways to interpret this finding. One could be to question the selection of educational variables. Another could be that a systematic shift has taken place over the decades in how education couples to society. The findings of Duranton et al. (2009) could then be an artefact of the fact that the educational paradigm today is Anglo-American and that the global language of knowledge and education is English.

It is tempting to prolong this line of thought with an observation of how New Public Management (NPM) and control mechanisms related to NPM, mechanisms that have been developed in the LME context, have penetrated educational thinking and practice in all of the OECD realm. These control mechanisms stem from countries showing medium trust levels and a low tradition of work place involvement (Inglehart 2000; Hall and Soskice 2001; Friel 2005). We should therefore suspect them of having a harmful side effect of eroding the high level of trust presently found in Norway, and thus also contributing to a less sustainable society from a social point of view.

It is symptomatic that we have a vast literature on how institutions affect society in general terms. At the same time we have surprisingly little knowledge of how to construct and design institutions for creating regional growth and development in the broader sense (North 1994; Rodríguez-Pose 2013). Taken to the educational sphere, it is not very plausible that we can decompose a thesis of the knowledge society, meaning a thesis that the competitive force of the future is conditioned by how we today instrumentally design the educational system, so as to predict its

effect on the economy. All such attempts have at best been tentative and speculative.

Instead of pursuing such an effort, we should rather concentrate on observing and analysing how knowledge production and *bildung* take place as historical and geographical practices. Turning again to the Norwegian case, we will find two examples of successful educational systems. They both appear as regionally delimited, and they are fostered by two opposed ideological positions on modernity. What we also see is that regions failing to have a specific regionally based educational paradigm, perform poorly on most indicators. For the university sector the future task could then be to foster a spread of paradigms, each responding to the specific educational prerequisites and needs as they are found regionally. The possible outcome would then be to open up more robust and diversified educational pathways, with the hope of creating more sustainable social systems for the future.

Culture is structure. Structures are formed and passed on as cultural forms. When we enter into the understanding of these dynamics, we are also able to better understand how education and sustainable regional forms of development can condition each other.

Chapter 4
Toward a More Sustainable Pre-service Teacher Education: A Study in Progress

Claire Vaugelade Berg, Barbro Grevholm, Åse Haraldstad, Bente Velle Hellang, Annbjørg Håøy, Aslaug Kristiansen, and Gro-Renèe Rambø

4.1 Introduction

This chapter presents some basic ideas and discussions in a current research project at the University of Agder, Norway. The project aims to develop more holistic and sustainable teacher education by throwing light on present gaps, suggesting bridges, but also considering the gaps as resources for inquiry and new insights. The research group is interdisciplinary and consists of four research cases within the following disciplines: Mathematics Education under the leadership of Claire Vaugelade Berg and Barbro Grevholm, Norwegian under the leadership of Bente Velle Hellang and Gro-Renèe Rambø and Pedagogy running by Åse Haraldstad, Annbjørg Håøy and Aslaug Kristiansen. The chapter shows mutual competencies building. Pedagogical research and teacher education in Norway is undertaken in close collaboration with these institutions. This strong collaborative element is an important implicit part of the argument. The chapter also explores another vital

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dimension of mutual competence building, namely that of collaboration across disciplines.

From a sustainability perspective, education in general can be of vital importance, both in terms of maintenance and of renewal of a human society. Here teachers might play a decisive role when it comes to guiding, cultivating and teaching young people, and developing their sense of humanity. John Dewey suggests that education and communication are basically necessary to form a community. He writes that a community and social group sustains itself through continuous self-renewal "... and that this renewal takes place by means of the educational growth of the immature members of the group" (Dewey 1916, p. 9). Thus, education as sharing of knowledge with new generations becomes a significant part of a society's sustainability, broadly defined as "the capacity to endure". "For humanity, sustainability is the potential for long-term maintenance of well-being and has environmental, economic, and social dimensions" (Furniss 2011, p. 40). In addition to its contribution to maintenance and endurance of the well-being of humans, education may be considered a society's platform, where further questions about how to live to ensure sustainability for humanity in a larger scale can be addressed.

Promoting the well-being of humans, according to the Ontario Ministry of Education, means helping students to build the knowledge and skills associated with positive well-being and becoming healthy, active and engaged citizens (http://edu.gov.on.ca/eng/about/wellBeing.html, 9 September, 2014). At a micro level a precondition for developing the whole student is a caring environment. People's strength, according to Nel Noddings, is better cultivated in an environment of caring, not of competition. It is a fundamental relational approach, and she uses the word caring in a broad sense: To care for the persons next to you, for the pupils in the classroom, to care for strangers, animals, plants and the Earth (Noddings 1984, 2002). In order to develop a caring environment, the teacher's qualifications are of vital importance. The philosopher Hannah Arendt notes, in a similar vein as Heidegger (see Chap. 2) that teacher education should entail knowing the world and caring for it. On this basis, the teacher can introduce the children to its richness: "... pointing out the details and saying to the child: This is our world" (Arendt 1993). Arendt's formulation "our world" involves an invitation to become able to feel part of it. To care calls for participation and for acting responsibly within a world that is cared for. To educate involves a broad responsibility. It includes the life and development of the child, as well as preservation and renewal of the society. Gillen D'Arcy Wood claims that sustainability (studies) "is driven by an ethics of the future. The word itself, sustainability, points to proofs that (...) can only be projected forward in time. To be sustainable is, by definition, to be attentive to the future" (Wood 2012, p. 14). It includes being attentive, and caring for the wellbeing of future generations (Constitution § 110b, Stueland 2014). In this connection education plays a basic role in terms of renewal of a human society (UNESCO 2014).

In our context, sustainability refers to pre-service teachers' recognition of becoming the professionals of the future, and having the necessary and relevant research-based background and ability to face challenges, investigate problems emerging from their teaching practice, and making judgments based on the basis of sound evidence. Furthermore becoming professionals implies developing a

careful understanding of their teaching practice, and being able to justify their decisions and compare their approach with colleagues. A sustainable teacher education includes developing pre-service teachers' awareness of the advantages and consequences of adopting a critical stance: a stance where one looks critically and self-critically at everyday-teaching practice, and aims at improving it in order to achieve pupils' meaningful understanding of the subject matter. We aim to supply teachers with relevant skills that make them become well-qualified teachers with a lasting professional competence, who will stay in their profession throughout their working career.

In Norway there is historically a strong tradition for public education all the way from primary school to the university level. After a reform in higher education (1997), teacher training colleges were included in the university structure, and thus, introduced to a university culture. A rather durable ideal has been that the school should be an open arena, where pupils from different backgrounds and social classes freely could take part and form a community. Thus, we find a high educational level throughout the population of Norway, regardless of social and economic background. This education model promotes important values closely linked to our broad understanding of sustainability. It promotes *equity*, in its possibility for all inhabitants to have an education and preparation for future work and income. At its best, it provides the inhabitants with knowledge, and at the same time a critical and analytical approach to this knowledge, basic skills that are needed to establish and maintain a functional and sustainable *democracy*. Both equity and democracy are main concepts in a sustainable society where people are able to live together, sharing common aims, beliefs, aspirations and understandings, and it addresses the content and importance of pre-service teacher education.

In light of a continuously changing world context, one of the most significant questions in our educational sustainability perspective is what kinds of competencies should be developed during pre-service teacher education, and how. What kinds of competencies and skills will turn out to endure, to be sustainable and ensure that the teacher stays in his/her profession? The aim of this chapter is to present some preliminary answers and suggestions to these questions, and present the way we approach them.

A challenge is to identify some "shared values" that both the teacher education and the society can commit to. We believe that developing teacher education as sustainable implies inviting our pre-service students in engaging in research and inquiry. As the professional knowledge and skills needed are not static, but dynamic, prospective teachers need to be prepared for change and development, and to be able to build new knowledge, for example from research, on their earlier knowledge. In our project we wish to support and develop an educational programme that nurtures students to become professionals who are curious, and engage in exploring, questioning and developing critical and independent insights into their profession, in other words we aim at enhancing our students' capacity to become *inquirers* (Jaworski 2006). In this context, the concept of *sustainability* is closely related to that of *inquiry*.

4.1.1 A Research Based Teacher Education

In Norway the demand for research-based teacher education has been explicit since the curriculum from 2003 (Ministry of Education and Research 2003). We believe that through developing awareness of the deep interconnection between and complementarity of theory and practice, pre-service teachers will develop an interest and an understanding of the research process and its importance and benefits for their future practice as teachers. This implies recognising the need for asking relevant and researchable questions, choosing a suitable theoretical approach, conducting experiments while observing, noticing, and collecting appropriate data, and finally analysing and evaluating information. Furthermore we see "inquiry" as a core dimension in our project, where inquiry is understood both as a tool and as a stance (Berg 2011, 2013a, b; Berg and Grevholm 2012; Cochran-Smith and Lytle 1999; Jaworski 2006, 2008). This approach is consistent with The National Guidelines for Teacher Education Programmes received from the Norwegian Minister for Education:

> Pursuant to the Act relating to universities and university colleges, the primary and lower secondary teacher education programmes are to be research-based. Their anchorage in research must be both implicit and explicit. This entails the education programmes teaching about and engaging the students in scientific working methods, critical thinking and recognized, research-based knowledge. Research-based learning processes are to advance the students' independence, analytical skills and critical reflection so that they as teachers are able to make use of new knowledge and further develop both themselves, their profession and their place of work after completing their education (Ministry of Education and Research 2010b)

Further, The National Curriculum Regulations for the Teacher Education Programmes claim:

> The Regulations aim to ensure that teacher education institutions provide integrated, professionally oriented and research-based primary and lower secondary teacher education programmes of high academic quality (Ministry of Education and Research 2010a)

In addition to emphasising the importance of integrating teaching and discipline-based research, the Minister for Education refers explicitly to the need for offering pre-service teachers pedagogical and specific subject content knowledge which enables them to become well qualified research-based practitioners in the future. For example, the specificity of mathematics as subject-matter has been addressed elsewhere (Berg 2013a, b).

We understand the Minister for Education's claim as a demand for preparing our pre-service teachers to a professional attitude where life-long learning is a core element: a sustainable teacher education. This was further underlined in June 2014 when the Ministry of Education and Research in Norway decided to extend teacher education from 4 to 5 years (from 2017), and even more important: to integrate a master's degree into the teacher education. The Minister for Education, Torbjørn Røe Isaksen, states in a press release:

> The teacher education programmes and the teacher profession in Norway need to an extended degree be characterised by broad insight, research and developmental work.

> As a master's student, prospective teachers will learn to know where to find and how to use research-based knowledge. Through an education which focuses on research-based knowledge, the teacher will be better skilled to prepare his/her own teaching. This is not just another year of pre-service teacher education. The master's degree is research-based, says Thorbjørn Røe Isaksen (Ministry of Education and Research 2014)

In our project, a research based teacher education can be seen as a main organising theme for the three disciplines. It involves a particular focus on educating inquiry-oriented future teachers (Toom et al. 2008).

In the following we explain how we adapt the thought of research and inquiry into each of the three disciplines, in order to fit our aims in teacher education, and to an extended degree to promote a sustainable teacher education. The concept of sustainability is understood in a broad sense, beyond environmentally related issues: "At the university, sustainability goes beyond reducing our footprints and environmental impacts: it is about improving prospects and quality of life for students and staff, and in the local, national and global communities we serve" (Ryan and Tilbury 2011, p. 2). This involves ideas and values like caring for, responsibility, equity, democracy and inquiry. The description of the following cases is centred on three gaps, where we think that the teacher education programmes contain possibilities in a more sustainable direction.

4.2 Description

4.2.1 Mind the Gap(s)!

As teacher educators we often experience three different gaps in teacher education: transitions between entering the university as a newcomer, and developing gradually an identity as a professional teacher. We see a fundamental shift from considering the students as receivers of knowledge to recognising them as producers of knowledge and as valuable participants in a research process (Healey and Jenkins 2009), and we consider these transitions as potential growing points, where questions can be raised and new knowledge emerge. In the following we explain some of the challenges which might arise from these gaps.

Firstly, there is a transition at the very beginning of the programme. The novice student needs to change perspective, from being a student herself, to developing a teacher approach. This includes a change of perspective toward a professional identity. Secondly, there are transitions within the study programme of teacher education, as a result of a model where several subjects are taught in during each semester. Here, we focus on these kinds of transitions within the first year, like between subjects in first and second semester. An important question in approaching this gap is whether the students experience continuity or differences within the education's progression. Thirdly, we know from research (Hertzberg 1999) that there is a gap between the teaching of a subject/discipline within the frame of the teacher education programme and the students' experiences in relation to their own teaching during the pre-service practice: The students ask for

ready-made teaching activities, whereas the pre-service teachers want students who reflect themselves. The students request subject specific knowledge which they can use unchanged in their pre-service practice, whereas the pre-service teachers stress that what they aim at as a result of their teaching, is to enhance their students' capability to judge themselves how subject specific knowledge can best be taught as teacher professionals, facilitating their different future pupils.

In taking a closer look into these three gaps, from our different subjects' orientation and aims, we try to uncover possibilities for developing pre-service teacher education in a more sustainable direction by implementing research and inquiry as method and attitude during education. In a broader sense, we seek to contribute to the National Guidelines' description of the education's institutional responsibility and organisation:

> The Teacher Education Programmes must be organised so that they promote the integration of theory and practice training, academic progression, consistent professional orientation and a research basis. The Education Programmes are to make it possible to have collaboration between teacher educators at the teacher education institution and in teaching practice (Ministry of Education and Research 2010b)

4.2.2 Leaving School and Entering the University

The case or the study focuses on the transition from being a pupil in a primary and high school to become a novice student in the teacher training programme. It is said that when a Norwegian student enters a teacher education programme, he or she has experienced approximately 12,000 h of instruction with up to 50 different teachers, before even starting at university (Terum and Heggen 2010). We assume that these experiences have caused these students to develop certain views on both schooling and teachers. According to Robert Bullough (1991), teacher educators typically ignore new student's prior knowledge about teachers and teaching, and the prior knowledge of teaching could serve as a filter through which students respond to teacher education (Robert Bullough 1991, p. 43). There are signs that suggest that this knowledge too, can have an impact on other transformations. Schaefer and Clandinin (2011, pp. 292–293) show that beginning teachers "live by" histories "composed on their personal landscapes prior to beginning teaching". They write further: "Without knowing what has brought teachers to teaching, or what their imagined stories of teaching are, we wonder if we will ever know what might keep them in the profession" (Schaefer and Clandinin 2011, pp. 292–293).

We think that in order for beginner students to be able to learn and facilitating self-awareness, they must be connected to their experiences. In short, our aim for the study is to make these experiences conscious ones, to bring in new perspectives and together with the students widening the perspective through processes of narrative inquiry. A narrative inquiry is open to critical searching and investigations, and as such open to larger questions of meaning, matters of existence, and about worthy forms of life and thus, thereby to see things in a wider context or perspective. According to Clandinin (2007) narrative inquiry makes it possible to

explore "personal meaning, love, hate, aesthetic considerations, religious experience and narrative coherence of individual lives" (Clandinin 2007, p. 44). As such a narrative approach may be an arena for navigating doubt: "At the hearth of inquiry is the asking of questions", Petra Munro Hendry (2010) writes, and inquiry begins with doubt (Munro Hendry 2010, p. 73). The asking of questions can be stimulated by puzzling phenomena, sudden gaps in knowledge and difficult edges that are hard to overcome. They are all places where new insights can be born. We aim at providing the students with the necessary space for inquiry and for developing their ideas and their professional stands (Clandinin 2008). According to this methodology, we attend to the living, telling, re-telling and re-living of stored experience. In our project the students are invited to re-tell and re-interpret their experiences together. According to Ricæur "learning to tell others about oneself, is also learning to tell about oneself in a different light" (Uggla Kristensson in Ricoeur 2011).

In 2012, 2013 and 2014 we have collected student narratives, about 180 each year. The beginning students were asked to write about a significant event from their previous school experiences. The narratives were analysed and sorted into different plots that were further discussed among the students. By sharing their own stories with their co-students, reflecting on other student stories and retelling the stories from the perspective of other persons, new perspectives might emerge that could make their story "thicker" and more robust. Right now we are analysing data from the sharing and rewriting process.

The knowledge basis for this narrative research project is interpretation and a social foundation of knowledge (Buber 1958; Ricoeur 2011). Knowledge is developed through participation, interpretation and discussion. The researcher is moving between being in an outsider position to being in the middle of the crowd as an eyewitness and participant (Buber 1978). The knowledge in the project is discussed along three dimensions: Temporality, sociality and space (Caine, Estefan and Clandinin 2013). We consider these dimensions also to be relevant for a sustainable framework of thinking about education. Regarding time: in the situation here and now, the student is looking back to previous experiences but at the same time is looking toward the future: What kind of teacher do I wish to become? Changes in the histories are based on believing in the future. The student is located in a landscape, a place, which implies a particular perspective. The following questions can be asked: From which position is the thinking developed? What do you see if you move to another position? To enter a new landscape involves walking with people. The relationship toward the other, and toward the surroundings, raises ethical consideration about trust, equality, dialogue, reciprocity and sustainability.

Narrative knowledge is able to connect fragmented experiences, and to handle great complexity. Our assumption is that a narrative approach enables us to reflect on doubts, as well as to bridge some gaps between personal knowledge and professional knowledge. Narratives are able to address questions about the future. As such, we consider a narrative approach to be a facilitator for students to develop a robust professional teacher identity: not only at the beginning of the educational

programme but also all the way through it (Hermandsen and Rendttorff 2002, p. 20).

4.2.3 From the First Semester Courses to the Second Semester Courses

The beginner teacher student enters two different courses in the first semester: One is freely chosen, the other one is called "Pedagogy and pupil related skills" and it is obligatory. The course includes educational theory, as well as practical work in schools. In the second semester they switch and study Mathematics Education and Norwegian. In these courses two the students spend some weeks teaching in schools. We were interested to know more about the transition between the two semesters: Do the students experience a gap regarding basic ideas, content and approaches to the profession?

The concept of coherence is central in this discussion. Coherence is explained as a tight integration among courses, and between course work and clinical work in schools (Grossman, Hammerness, McDonald and Ronfeldt 2008). It means that courses are designed to intersect with each other, tightly interwoven with the advisory process and students' work in schools. Grossman et al. studied the relation between the students' perceptions of coherence. They also suggested a number of structural features of the teacher education, to help develop a stronger relation between the fieldwork and coursework, and define this interaction more closely. According to the National Guidelines (Ministry of Education and Research 2010b), "pedagogy and pupil related skills" should be used to integrate and make coherence and consistency within teacher education.

In a pilot study in spring 2014 we conducted a focus interview with a group of students that had entered the spring courses. Our main questions were about whether they recognised a research basis for each subject, and how this was utilised in different ways during courses and clinical work in schools.

Data from focus group interview with the students indicated that the content of the subjects are experienced as research based, both in lectures and syllabus. Some of the theories they had learned in pedagogy were tried out in their field work as they were asking: "What works?" Didactic concepts from pedagogy were also emerging in mathematics, and they were asked to inquire, to find out and to search for alternative perspectives and solutions. The preliminary findings revealed that at a pragmatic level or at "how to do" level the students were able to create coherence and to find some overlapping ideas.

The result from the pilot study was more positive then we had expected beforehand. On the other hand these preliminary results also indicate that there are challenges, especially when we come to more academic knowledge. We think that in the future more research should be conducted in order to deepen the findings and the questions, in order to promote well-integrated and coherent, research based

and professional oriented teacher education. The students' own evaluations and reflections are of vital importance for improving the situation. Such an effort may further lead to re-thinking and to critical reflections about the education programme in general.

4.2.4 From Research to Subject Didactics in the Subject 'Norwegian': Theory and Practice

The objectives of teacher education (TE) study programmes are multifaceted. On one hand, they aim to educate qualified professionals, in the sense that they meet those demands and expectations that are expressed in curriculums, regulations, laws and plans. Furthermore they seek to match expectations to the professional roles that are found in the specific culture in which the profession exists. In addition to this, supporting the personal development of the individual who is on her way into the role of this profession academically is highly valued. In some sense, the academic subject specific knowledge on one hand, and the practices of the professional role on the other, could cause challenges for students following teacher training programmes. These challenges are caused by experienced contradictions between what the students find to be important and necessary academic knowledge, and their experiences from pre-service practical training during their education (Hertzberg 1999). This is commonly referred to as the gap between theory and practice.

In 2010 and 2013, broad evaluations of the study quality in the Norwegian teacher education programmes were conducted by SINTEF (Finne, Mordal, and Stene 2014), on behalf of the Ministry of Education and Research The conclusions from these evaluations correspond with the description above, and in addition, there is no progression in overcoming the gap from the first to the second evaluation, although this was an explicit intention in the teacher education reform in Norway in 2010 (Ministry of Education and Research 2010a) The report from 2013 describes theory and practice in the teacher education as different circuits that are not able to take advantage of the learning potential existing in the relationship between them. Especially two different challenges have been emphasised: the co-operation between the practice field and the education institutions, and the relationship between theory and practice, which the report refers to as the "theory—practice gap" (Finne et al. 2014, p. 63).

The relationship between subject specific knowledge that is conveyed and processed during the study programme, and the profession the students are on their way into, is important. In a pilot study conducted in December 2013, a commonly expressed opinion among second year teacher students was that subject specific knowledge and research was less important than teaching methods and pedagogical strategies. As one of the students responded to a question related to the connection between subject specific knowledge provided during education and

experiences from the field of practice: “I think that some of the subject specific knowledge is irrelevant, since we do not need it when we are going to work as teachers. What we need is more pedagogy!” On the other hand, university teachers argue that updated subject specific knowledge and research is fundamental for maintaining a sustainable teacher education. In this study we draw the attention towards how on campus teaching in ‘Norwegian’ contributes to bridging the gap between the academic content of the programme description in ‘Norwegian’ and reported experiences from the students’ practical training. Experiences of connections or disconnections between theory and practice are important for the further development of a professional identity as teacher.

In all parts of the subject ‘Norwegian’, literacy and communicative competence are main issues. To examine the transition between research-based specialised knowledge in these fields and expected competencies linked to future teacher practice, we will focus on how students recognise and understand connections between subject specific theoretical knowledge, subject specific didactics and experiences from the field of practice during pre-service teacher education. In particular we focus on one of the mandatory assignments that the students are required to do during the Norwegian subject study in the primary teacher education (years 1–7). The assignment is a text project, running over a week. It comprises lectures, group work and individual writing on the basis of authentic texts written by pupils in primary school. These texts are subject to inquiry-based analysis on all kinds of text levels, addressing subject matters highlighted in the curriculum plan and focused on in previous on campus teaching. These analysis levels range matters like coherence and grammatical constructions, genre competence, communicative function and writing skills in general. The work is process oriented, as the students in each group present and discusses their text analysis observations, and on this basis all students produce one or two written individual text responses. The responses and the original texts are then handed back to the pupils. In order to conduct this project, co-operation between the field of practice and the more theoretically grounded on campus training is vitally important.

By focusing on how the students reflect upon this co-operative project, we hope to contribute to an understanding of how educators in teacher education study programmes can support development of an active and critical attitude towards research and school related practice. In the pilot study from December 2013, several of the students mentioned this project specifically when they were asked to evaluate the importance of on campus training for their future role as professional teachers. As one of them said: “Grammar teaching was good for being able to evaluate texts written by pupils, and the work gave me some input related to subject didactics”.

In our project we are using standardised questionnaires with open answer alternatives to survey how students returning from their last pre-service practice period during their ‘Norwegian’ studies understand and reflect upon relationships between research, on campus-teaching and activities from the field of practice. We will also conduct focus group interviews, in order to have the possibility to go in depth on central issues concerning these aspects, making sure that our data is really focused on our specific subject, ‘Norwegian’, and not confused with other more

general opinions. A third approach will be to conduct interviews with in service teachers providing the pupils' texts as well as university teachers leading the text project. Our overall goal is to contribute to developing awareness of the deep interconnection between and complementarity of theory and practice, by shedding light on if and how pre-service teachers seem to develop an interest and an understanding of the research process and its importance for a sustainable future practice as teachers, by using inquiry based methods themselves.

4.2.5 Research-Based Mathematics Teacher Education

Inquiry-based mathematics teacher education (IBMTE) is a research project currently running at the University of Agder. Its aims are to strengthen mathematics teacher education at UiA by making explicit the link between theory (results from research in mathematics education) and teaching practice, and by emphasising and bringing to the fore the specificity of mathematics as subject-matter while developing students' awareness of the importance and the relevance of the use of semiotic representations (Berg 2013a, b; Duval 1995, 2006). We see these aspects as crucial for future mathematics teachers and the idea of inquiry is used as a means to achieve these goals. We see "inquiry" as a core dimension in the project, where inquiry is understood *both* as a tool and as a stance (Berg 2011, 2013a, b; Berg and Grevholm 2012; Cochran-Smith and Lytle 1999; Jaworski 2006, 2008). Inquiry is not a new concept in education, but is has been used in many different ways over the years (Skovsmose and Säljö 2008). If we take mathematics as an example, inquiry as a tool implies asking questions, recognising problems, investigating, exploring and seeking answers while making hypothesis explicit, and thereby engaging in an inquiry cycle (Berg 2013a, b). Inquiry as a stance means adopting a critical attitude to one's own development, as a means to raise awareness of the specificity of mathematics as subject matter.

In the project, inquiry is used at three levels: at the first level, *inquiry in mathematics* as pre-service teachers engage in exploring and solving mathematical tasks, at the second level, *inquiry in teaching mathematics* as pre-service teachers reflect on ways to enhance and develop further their teaching practice, and finally inquiry at the third level aims at capturing *inquiry into pre-service teachers' professional development* as they are encouraged to reflect on their experiences as researchers (Berg 2013a). These three aspects clearly illustrate the interdisciplinary nature of the didactics of mathematics, where the subject mathematics is central, but issues of teaching and learning (communication, language, didactics and pedagogy) are interwoven in the discipline.

In addition the IBMTE project seeks to facilitate the transition from being a student teacher to becoming an in-service teacher (Grevholm 2003, 2010). These ideas are implemented in a course in teacher education at UiA where second-year students are invited to conduct a small scale study on a chosen theme. During fall 2013 pre-service students had the possibility to choose between the three following

themes: pupils' difficulties with words problems (Selter 2009), pupils' difficulties with finding and using patterns in linear generalizing problems (Stacey 1989), and finally the use of diagnostic tasks: their advantages and limitations (Brekke 1996). Pre-service students are invited to formulate relevant and researchable questions, to collect and analyse data, and to write a research-based essay where they report on their study and summarise their experience as researchers. The aim is to capture and trace the students' professional development, and to identify aspects enhancing and facilitating the emergence of their identity as mathematics teachers.

4.3 Discussion

By implementing the idea of sustainability in teacher education we aim at raising pre-service teachers' awareness of the complexity of the practice of teaching. Through the four different research cases described above, we seek to promote a research based teacher education that prepares the future teachers to keep curiosity and to learn all the way through their lives. In this chapter we suggest that inquiry as a tool as well as a stance can be beneficial in the process of educating future teachers with the autonomy required to meet future changes and complexity. By the three subjects' approach to the gaps, our aim is to explore and investigate how we, as teacher educators, may facilitate the transitions between them by building bridges and by improving students' professional qualification.

Even though our projects are still in progress, this does not prevent us from recognising central features and questions arising, which could be fruitfully developed in what we consider to be a sustainable teacher education. As mentioned above, we recognise that pre-service students meet several transitions during their education. The first transition concerns leaving school and entering university. This implies getting used to another culture of studies and knowledge. As teacher educators, a way of facilitating this transition is to be aware of using and building on students' previous knowledge, and not to expect pre-knowledge in areas where it does not exist. One way of achieving this could be to encourage the students to write about their experiences, as a means to develop a professional language and to get deeper opportunities to reflect on their own learning (Grevholm, Berg, and Johnsen 2006). Our results so far indicate that students seem to value this aspect as a good learning opportunity. Another transition refers to the phase when students leave university, and go to schools as part of their in-service practice training. This can be an overwhelming and stressful experience for students, and a careful preparation in seminars with the teacher educator may be a good support for them. Through reading research articles on teaching and discussing them in seminars, students can get some preparedness for what is coming in class. Another difficult transition is when the students are leaving university and entering into the profession. Sometimes the conditions in school can be a shock to the new teacher (Grevholm 2004) and support from a mentor in school is valuable as well as some preparations in the end of the university studies. Caring aspects in mathematics

education have been discussed recently by several authors (Sztajn 2008). To bridge all of these transitions we consider a research-based approach to be beneficiary. It is based on the notions that the knowledge base of the study programme is dynamic, and that student teachers are active processors of knowledge (Zeichner 1983, p. 7).

The demand for research-based teacher education in Norway has been introduced late compared to other university education programmes that have always been expected to be research-based (Grevholm 2004). This might have been caused by the fact that teacher education in earlier days took place in special institutions and not at the universities as it is today. Another factor could be that teaching was considered to be an art and the artist builds on talent and practice rather than on research and theory. This gap between theory and practice it still present in both teacher education and in teachers' professional life. It is not a straight forward process to bridge this gap between theory and practice. A research-based teacher education could include aspects linked to methodological, theoretical and practical knowledge. Included in this would be the use of research-based course literature, promoting work forms which offer a view of knowledge and methods like those used by researchers, engaging students in research work as part of the education through inquiry, systematic work and public presentation and debate, enabling them to reason, argue and defend their own conviction (Grevholm 2004, 2006).

Teachers who get the ability to actively create and design their own teaching will be able to develop and follow new demands in society, and to enter a life-long learning process, which is necessary in a quickly changing society. The concept of sustainability is inherently linked to the future. The impossibilities of predicting the political, societal and technological demands and challenges teachers will meet in 20 or 30 years calls for our deepest attention. Therefore our aim must be to find ways of offering the students rich learning experiences, creating a solid platform from which they will be able to develop further their expertise as teachers, and adapt to the world of tomorrow.

4.4 Conclusion

Our inter-disciplinary approach has brought together teacher educators from different faculties: mathematics education, pedagogy and Norwegian, all crucial subjects in the teacher education. Together we seek to develop a coherent and relevant research-based education for our pre-service teachers, where our interest in inviting students as inquirers and researchers originated from our exploration into ways of making meaningful and explicit the relation between teaching and discipline-based research. This inter-disciplinary approach implies a broader field of knowledge and experiences that might contribute to better understanding and clarifying of the complex problems we are studying.

Sharing different viewpoints, contributions and scientific traditions opens up a better understanding of the uniqueness of each discipline/faculty. The co-operation provides a possibility to articulate tacit knowledge and therefore it can be a

continuous source for enthusiasm, curiosity and inquiry. Regarding improvement of teacher education, a common research approach means a commitment that is drawing in the same direction. Such a common commitment can facilitate the students' teaching and learning processes by creating better coherence and integration of different knowledge traditions. The co-operation might also contribute to a development of positive attitudes among students toward different knowledge traditions, to give a better understanding on how they, from different angles, are able to throw light on different aspects of a problem or challenge. This might contribute to laying a better foundation for the student's qualification for meeting future challenges in their professional lives. The inter-disciplinarity does not only provide new knowledge, it provides *different* knowledge, thereby reflecting on the part of the teacher educators the dynamics and complexity of teaching itself. Such co-operation amongst teacher educators might lay the ground for building a more coherent teacher education with an explicit common goal and understanding.

The explicit focus on the connections between the research-based approach in teacher education and teacher's everyday work in the field of practice, the gap between theory and practice, links well to expressed opinions about what teaching in a modern world comprises: "Teaching in today's world needs dynamic competences and a high level practice calls for the kind of inquiry-oriented approach that reflects the general level of research-based teacher education." (Toom et al. 2008, p. 13). This is our contribution to the always recurring question on how to achieve more sustainable teacher education, in a complex world where sustainability, in all its different meanings, insists on being "a moving target, a distant goal, not a permanently achievable plateau of being" (Slovic 2012, p. 187).

Part II
Sustainability in Life Science

In this part we discuss sustainability from the perspective of life science. Life science is directed towards helping people live a decent and healthy life, including getting the care and conditions that make this possible. Sustainability would here imply seeing welfare and health services in a sustainable perspective, reducing the potential conflicts between giving people a good life and sustaining the environment. In this part we have two chapters.

Chapter 5, *Sustainability in Nursing Education*, Åshild Slettebø argues how sustainability can be integrated into nursing training and education. A key here is for the students to be able to develop a comprehensive perspective on nursing. The chapter uses different definitions of sustainability, linked to an account of responsibilities of nurses. It has a useful discussion of practical examples on how nursing education can have a wider impact in universities, in terms of sustainability.

In Chap. 6, *Sustainable Diets*, Elling Bere argues that in order to discuss sustainability in nutrition, not only food and health issues should be in the equation, but also how the food is produced. Diet is about sustaining life. Eating patterns have changed over history. New Nordic Diet is an example of development in this field. Bere discusses how this relates to education in universities.

Mutual competence building is, in relation to these two chapters, both a question of developing skills, and also a question of developing competence in judgment, being able to see single actions in a broader perspective. To be competent to see and understand the consequences of one's actions implies having cognitive and affective abilities to handle the information.

Chapter 5
Sustainability in Nursing Education

Åshild Slettebø

5.1 Introduction

In this chapter the concept of sustainability in nursing as a health care service, and in nursing education, is described. First sustainability as a concept and phenomenon is defined, before a discussion of the relationship to nursing is provided. Then sustainability, and its possible consequences for nursing education, is discussed, including the need for an emphasis on responsibility in both nursing education and nursing practice. The chapter highlights the close interactions between higher education and the provision of care by nurses in hospitals and elsewhere. A key point in the chapter is the notion that because the environmental footprint of nursing practices is considerable, it is particularly important that the education sector is able to identify new best practices and convey these to new generations of nurses.

Sustainability is a concept related to nursing and nursing education in several ways, including sustainability regarding climate change, and nurses' responsibility to take environmental issues in consideration when planning nursing (AACN 2011). Others discuss sustainability as a phenomenon which should be emphasised when planning nursing education in a changing world of health care systems (Mannix et al. 2006). To have an educational system which takes into considerations how to develop clinical nursing education requiring practice in different clinical areas when the health care system changes to outpatient clinics, and not have patients staying in the hospital for several days. Mannix et al. (2006) then discuss how to have sustainability in nursing education fulfilling government requirements. Goodman (2011) discusses sustainability in nursing education as environmental responsibilities in the nursing curriculum. His thoughts are

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elaborated in the next part of this chapter on sustainability and consequences for nursing education.

In the introduction to this book a range of approaches to sustainability was outlined. In the context of nursing, it may be useful to highlight some additional basic definitions here at the outset of the chapter. In the Oxford Dictionary of English (2003) 'sustainable' is defined as coming from the Latin word 'sustinere' consisting of sub- meaning "from below" and tenere meaning "hold". Sustainable has two explanations of meaning: "able to be maintained at a certain rate or level" and the second explanation where sustainable means "to be able to upheld or defended". An example of the first meaning is to have a "sustainable economic growth" and for the second meaning could be to have "sustainable definitions of good educational practice" (Soanes and Stevenson 2003, p. 1779). Moreover, sustainability may be defined generally as the ability "to bear something, to keep from failing, to strengthen, to encourage, to keep up, to prolong or to maintain" (Keating et al. 2010, p. 150). This definition is in line with the dictionary definitions. The World Commission on Environment and Development also holds considerable relevance in the context of nursing: "sustainability is a development that meets the needs of the present without compromising the ability of future generations to meet their own need" (World Commission on Environment and Development 1987, p. 43).

The central common theme in these different definitions on sustainability is the duration of the possible task. It should be implemented in such a way that it has the possibility to last for a long period of time and not consuming resources in such a way that it will end quickly. The World Commission on Environment and Development focuses on development of societies in general, including environmental, social and economic aspects. Nursing forms a central part of social and economic activities in any society, and it has considerable environmental impact. As such the key concerns expressed in the World Commission on Environment and Development (1987) report is as central to nursing as to any other sector.

5.2 Description

In nursing, one suggested definition is as Anåker and Elf (2014) elaborated through a concept analysis:

> The concept of sustainability in nursing can be defined from a core of knowledge in which ecology, global and holistic comprise the foundation. The use of the concept of sustainability includes environmental considerations at all levels. The implementation of sustainability will contribute to a development that maintains an environment that does not harm current and future generation's opportunities for good health (Anåker and Elf 2014, p. 7)

They discuss six different defining attributes of sustainability in nursing: Ecology, Environment, Future, Globalism, Holism and Maintenance (ibid.). With Ecology the focus is on preserving an ecological balance in a manner which avoids

depletion of natural resources. It is closely linked to Environment which in many ways is part of the sustainability concept. International Council of Nurses (ICN) has in their Code of Ethics for Nurses (2006) a point emphasising the environment: "The nurse also shares responsibility to sustain and protect the natural environment from depletion, pollution, degradation and destruction" (p. 37). This point in the ethical code for nurses shows the responsibility the nursing profession claim for themselves what nurses should be aware of and respect when they plan nursing intervention and nursing systems in the health care sector. Nurses have a role in taking care of the environment all over the world.

The World Health Organisation (2013) uses sustainability in close connection to an understanding of environment as essential part of future possibilities also in health care services. As already explained, the focus of the World Commission on Environment and Development (1987) is a perspective on the future as a central element in the definition of sustainability. It is important that nurses are aware of their responsibility for future generations, as well as their own generation when planning nursing and health care. Nurses often focus on the particular patient and his or her needs here and now. However, they have also a responsibility to take future generations and also a global perspective into consideration when they perform and plan nursing care activities.

In the definition from Anåker and Elf (2014) globalism is another defining attribute of sustainability. To see nursing as responsible at a global level, and not only local, is essential for understanding nurses' responsibilities as professional health care workers. ICN (2007) wrote a Fact Sheet regarding Nursing Self Sufficiency on the global responsibility and sustainability of global nursing shortage. Here they discuss the fact that sustainability in nursing implies a global focus on migration and shortages of nurses. Health care planners should plan for education of necessary health care workers as nurses in each country, and not plan for recruiting nurses from developing countries. This is because of the importance of avoiding a brain drain from developing countries which need the nurses they manage to educate themselves. This is another aspect of sustainability and globalisation. To work sustainably is to have a global focus on different aspects of nursing professional's responsibilities.

Included in the definition is holism as a central key attribute in sustainability in nursing. Holism is recognised as a key element in nursing by for example McEvoy and Duffy (2008). They find that holistic nursing care requires sensitivity and knowledge of mind, body and spirit for the patient, that means understanding the "whole" surrounding the patients conditions and to harmonise his or her condition. They conclude their concept analysis with the definition of "holistic nursing practice" as:

> Holistic nursing care embraces the mind, body and spirit of the patient, in a culture that supports a therapeutic nurse/patient relationship, resulting in wholeness, harmony and healing. Holistic care is patient led and patient focused in order to provide individualised care, thereby, caring for the patient as a whole person rather than in fragmented parts (ibid. p. 418)

McEvoy and Duffy (2008) have a focus on nursing practice and as such define holism regarding the individual patient. To be critical to an individualised holistic understanding in nursing, this understanding of holism does not include a global or environmental view on nursing responsibilities.

In a sustainability view, holism includes having the "whole" picture clear in mind, not only the particular patient but also the environment locally and globally around the patient, his or hers relatives and the health care system as such. Holism in general is defined by Oxford Dictionary of English (2003) as

> the theory that parts of a whole are in intimate interconnection, such that they cannot exist independently of the whole, or cannot be understood without reference to the whole, which is thus regarded as greater than the sum of its parts (Soanes and Stevenson 2003, p. 828)

Holism in this understanding includes environmental aspects affecting nursing practice. Nursing is not an isolated profession excluded from rest of the world or health care systems, and as such they should include environmental as well as global issues in planning nursing professions responsibility to the society.

The last defining attribute that Anåker and Elf (2014) found was Maintenance. This is closely linked to the attribute Future. Sustainability includes that the development or task lasts for a long period of time. It should be maintained to continue for a long time (Keating et al. 2010). For nursing to be sustainable it must be planned so that the work force of nurses, the distribution of nursing personnel and the content of nursing care are organised to last for the future. This includes a perspective on ecological and environmental factors in the surroundings of nursing and nursing education.

A focus on environmental factors is an element that occurs prior to sustainability, and is defined as an antecedent of the concept of sustainability. Most people today accept that we see climate change due to greenhouse gases in the atmosphere. Climate changes include among others frequency of extreme weather events, lack of ground water and polluted rivers, limited food availability, rising sea levels and melting of ice at both the Northern and the South poles (Anåker and Elf 2014; Solomon et al. 2007). To be aware of these changes and on the environment is required in order to handle sustainability. In the health care sector this means being aware of energy efficiency, green-building design, food, waste, toxins and transportation (Anåker and Elf 2014). As part of this, the other antecedents of sustainability is, when being aware of environmental challenges with climate changes, to have confidence in the future, an attitude of responsibility and willingness to change. Nurses, as a big group of health care workers, can make a difference when they take a global and holistic responsibility to impact health care services in acting for a sustainable service to the public.

A practical example of how nurses may have impact on environmental sustainability is handling of waste. Nurses handle pharmaceuticals during their everyday practice in the health care sector. To have a conscious and responsible way of treating waste after, for example, injections or of throwing away outdated medicine are important in order to fulfil a responsible and sustainable nursing practice. Nursing students should learn how to dispose of waste in a secure and safe manner.

It should be safe both for the persons involved, but as well for the environment. Other materials that nurses handle are biomaterials such as blood products, which also should be disposed in a secure manner for the patient, the nurse and the environment.

Another example of issues relating to nurses' responsibilities for environmental sustainable practice is use and not least reuse, of disposables that may be reused. To be aware of economic and ecological aspects of disposables used in nursing practice is an important aspect of sustainable nursing practice. It is not only within the health care system which nurses should act responsibly. It is vital to start in the educational system, in order to affect future nurses' attitudes toward a sustainable nursing and health care system.

5.3 Discussion

5.3.1 Sustainability and Consequences for Nursing Education

In an article on sustainability in nursing education, Goodman (2011) discusses the importance of the changing nursing curriculum, taking climate changes and sustainability into consideration. He states that changing the nursing education in order to address goals that prepare graduate nurses for understanding sustainable health care services is imperative. Transmission of skills and knowledge is not enough, developing attitudes towards understanding the impact climate changes have on health is necessary as well. Goodman (2011) claims the link between 'sustainability, climate change and health' and discusses with references to Sterling (2001) "Education for Sustainability", with a focus on education as transformative rather than being only transmissive, where knowledge only is transmitted to the students, and they learn how to do but not how to change.

Sterling (2001) claims that education has different roles in society, such as a socialisation function including replicating society, culture and citizenship; a vocational function preparing nurses for employment; a liberal humanist function where development of the individual and personal virtues and last a transformative function where the students are encouraged to develop a fairer society and a better world. It is this transformative function which is often lacking in today's educational systems. The students learn how to function within existing societies, but not how to transform and improve society in a sustainable way.

Learning may be seen at different levels. Goodman (2011) discusses first order learning, which implies transmission of knowledge where the students only learn to perform clinical skills, but not to link human health together with ecological health. In order to transform the student and his or her ability to affect society later on, it is necessary to have second or third order learning. These levels imply that the students learn to criticise and critically reflect upon basic values and assumptions

in the society in general, and in the nursing profession especially. They learn not to take the well-known for granted, but are able to judge the impact their actions have, not only on the healthcare system but on the planet and with a global perspective.

The Sustainable Development Education Panel (2003) identified seven key concepts for sustainable education: Citizenship and Stewardship, Sustainable Change, Needs and Rights of Future Generations, Interdependence, Diversity, Uncertainty and Precaution and Quality of Life, Equity and Justice. In nursing, Goodman (2011) suggests that Well-being is added to the list. Thompson and Aked (2011) challenges nurse educators and policymakers to apply the well-being concept, with some evidence-based elements which are defined as: Connecting, Giving, Activity, Taking Notice and Learning. In the report they discuss how well-being may be an important part of mental health, and how it may influence public health in a wider perspective.

Goodman (2011) has several recommendations for nursing curricula, in order to develop environmental sustainable nursing education. Among others he recommends that clarifying the role of both nursing education and educational ideology is mandatory to change the curriculum development. The nurse educators must identify the different levels of education: first order which is adaptive, second order which is critically reflective and third order which is transformative. Further one should agree upon whether implementation of sustainability issues should be within an infusion model where the issues are woven into all aspects of the curriculum, or a generic model where the issues are tailored into the disciplines. Students should be encouraged to visit green spaces, and be challenged to link these experiences to well-being and health promotion. In addition they should be encouraged to collaborate with multi-disciplinary groups, local authorities and third sector (voluntary workers) (Goodman 2011, p. 735).

The Curriculum should be designed to include artistic expression and experience. It should include different learning technologies, such as serious gaming, simulation training, as these may be models of sustainable practice. In order to develop critical reflection, the nursing students should be encouraged to discuss and develop a trans-disciplinary approach. Goodman (2011, p. 736) gives examples of relevant disciplines such as Economics, Politics, Design, Philosophy, Environmental Science literature and theory. Furthermore students may be encouraged to set their personal goals for a sustainable lifestyle, both as private persons and as professionals.

5.3.2 Recommendations for Environmental Sustainability

The American Association of Colleges of Nursing (AACN 2011) has developed recommendations for environmentally sustainable academic nursing education. They recommend that Schools of Nursing works to discover cost- effective solutions which reduce carbon that benefit consumers, and advance the health of the planet and its population. This includes addressing how to green nursing practice

laboratories by reducing, reusing and recycling. This may be done by using low-energy lighting, to unplug equipment not in use, and consider water conservation where possible. It may be by reusing by for example to reuse a catheter kit after use on a mannequin in the laboratory, and to recycle paper and bottles as well as other products eligible for recycling.

In addition AACN (2011) recommends that nurse students are taught to have a responsible and conscious use of health care resources as well as treat waste in a responsible manner. Their recommendations for educational competencies for undergraduate and graduate nursing students are that nursing students should:

> Use healthcare resources in a judicious and thoughtful way
> Dispose of health care associated waste, including pharmaceuticals and biomaterial, in a responsible manner
> Recognise the importance of minimising healthcare's biological, chemical, and physical waste stream
> Consider the adoption of policies aimed at promoting environmentally sustainable schools of nursing and/or clinical settings (AACN 2011, p. 18, Appendix F).

They especially recommend Deans for Nursing Education in the Universities to have a conscious focus on sustainability, and care about environmental issues in the educational system. Nursing students as well as nurses have also a right to work in an environment that is safe and healthy. So the focus on sustainable environment is thus both local and global at the same time. Nurses should have knowledge of environmental health concepts in their practice, and they should be guided by The Precautionary Principle in order not to harm human health or the environment.

In a recent article Butterfield et al. (2014) discuss how the principles of AACN's recommendations of Environmental Sustainability in Colleges of Nursing may be implemented. They report how one college in the United States of America (US) implemented the recommendations in their curriculum. In short they performed the following steps:

> (1) increasing student and faculty awareness; (2) greening business operations; (3) increased participation in media events; (4) leveraging the impact of national sustainability initiatives, and (5) enhancing curricula at the undergraduate and graduate levels (Butterfield et al. 2014)

Examples of how to enhance curricula were to include content of environmental issues at different levels to undergraduate and graduate students. The college worked through creating a culture for sustainability and contributions of health care to greenhouse gas production.

The college experienced some barriers, such as challenges with changing from giving lectures to performing more experiential and case-based learning activities. There was also discussion regarding content in nursing curricula. Focusing on environmental sustainability changed focus from former important individualised care to more global issues. Some experienced this as loosing focus on issues more central to the profession (Butterfield et al. 2014). The implementation of curricula focusing on environmental sustainability had an economic cost, and several existing committees had to take action within their respective areas of jurisdiction

instead of creating a new committee especially working on this topic. This was experienced as positive, because the change in curriculum towards environmental sustainability was integrated in the whole college (Butterfield et al. 2014).

5.3.3 *Competence for Acting Sustainably in Nursing Education*

One may say responsibility is linked to competence, and the possibility to understand and foresee consequences of ones actions. White (1994) discusses competence to consent, and says in her book that competence has to be judged for each particular situation and not generally. A student may have the competence to understand problems with waste of pharmaceuticals in an improper way because she/he is told how to handle such waste. But she/he may not be qualified to make regulations for the hospital on handling pharmaceutical waste on a large scale. She/he may be responsible for how she/he handle waste in his/her daily practice in home health care or in hospitals, and be competent to take responsibility for his/her own actions regarding responsible disposable of waste material.

Competence is also a matter of degree. The nurse student may have competence to understand his/her role in the educational system for responsible handling of waste, but not for the responsibility for sustainability the educational system have as system. Here the nurse educators or the dean have greater responsibilities and competence at a higher degree for organising sustainable systems. At the same time the nurse educators may not have the competence or responsibility to evaluate how the educational system ought to be organised in order to have a sustainable educational system in the country in order not to require import of nurses from developing countries, and as such imply brain drain of qualified nurses from such areas.

White (1994) claims that consequences are irrelevant in considerations to competence. This may be contested and debated, as consequences are important to assess when judging responsibility and competence to take the responsibility one has for actions. However, she argues that a person may choose negative consequences and still be competent. Unfortunately, one may argue that this happens all too often regarding sustainable health care and education.

The actors in the educational area may see that the consequences of their actions are not sustainable, and still continue to act in the same way as earlier. The nurse educators and nurse students may still be judged as competent to understand the consequences, but may not take care or consider their responsibilities for future generations or for reducing carbon to the atmosphere through their actions. This may be understood as the nurse students and the nurse educators being competent but not responsible. The question is, are they competent when they do not act on what they know about negative consequences of climate change, and the need for everyone to act responsibly? One may argue that nurse students and nurse educators

as well, ought to have an attitude of responsibility, and to be transformative to the situation and the challenges climate change have on the environment. To act blindly with a short term perspective, and not take into considerations responsibility for future generations and for the "whole" world, is not to take one's responsibility seriously.

However, to be competent to see and understand the consequences of one's actions implies having cognitive and affective abilities to handle the information (White 1994). This may be challenging when one has to foresee what consequences ones action today may have in the future, and for a long period of time ahead. It is difficult when experts do not agree on what consequences different kinds of actions may have on the environment (see introduction to this book). However, today most experts agree on climate changes leading to increased frequency of extreme weather events, lack of ground water, limited food availability, rising sea levels and melting of ice at the poles (Anåker and Elf 2014; Solomon et al. 2007). As nurses, we also know that the climate change has consequences for the public health such as increased air pollution, more vector-borne diseases, spread of harmful wastes, reduced biodiversity, more malnutrition due to decreased food supplies, and increased pesticide use (Anåker and Elf 2014; Costello et al. 2009).

To have the ability to foresee consequences of one's actions implies the ability to understand that what we do today affects the climate and environment, both today but also in the future. In order to change attitudes, the information should be understood not only intellectually but also emotionally. Our attitudes are affected both intellectually and emotionally and both aspects contribute to how we understand our surroundings and how we act upon different conditions. Indeed, Hans Herlof Grelland's presentation of Heidegger's *Dasein* seems highly pertinent in this context (see Chap. 2). If we do not understand that driving cars implies increased carbon into the air, and that this may have consequences for the climate on the long run, we do not change attitudes toward thinking alternative ways of transportation. The leaders of universities should encourage their students and employees to take climate changes into considerations when planning curricula. Moreover, the student experiment presented by Grelland in his chapter, concerning engineering students being exposed to the notion of breathing when studying air-quality, may serve as an inspiration for such efforts to renew curricula and teaching methods in nursing.

5.3.4 Responsibility for Sustainable Nursing Education

I now discuss Sustainable Nursing Education with an ethical angle regarding nurses' responsibilities to act sustainably. To be responsible has different meanings. It origin comes from Latin 'respons-' meaning 'answered, offered in return'. Responsibility has three different but associated meanings:

> (1) "the state or fact of having a duty to deal with something or of having control over someone"; (2) "the state or fact of being accountable or to blame for something" and (3) "the opportunity or ability to act independently and take decisions without

> authorisation". To be responsible has likewise three different but associated meanings: (1) "having an obligation to do something, or having control over or care for someone, as part of one's job or role"; (2) "being the primary cause of something and so able to be blamed or credited for it, for example to be morally accountable for one's behaviour;" and (3) "(of a job or position) involving important duties, independent decision-making, or control over others" (Soanes and Stevenson 2003, p. 1501)

In this context it means that to have responsibility for sustainable nursing care and nursing education is to have the power, obligation and willingness to react to a challenging situation. A central question regarding responsibility is who is responsible, and for what? One can argue that nursing students and nurse educators are responsible for sustainable education conditions. Likewise nursing students and nurse educators are as responsible as all citizens for climate change, and its consequences on society and environment. The responsibility for future generations is also part of nurse students' and nurse educators' responsibilities.

If nurse students and nurse educators are responsible for sustainable education meeting the climate change and future generations' needs, one main discussion is on what they are responsible for, and how this responsibility may be taken care for in a responsible way. It is hard to claim that they are not responsible for sustainable education and practice. All human beings may be held responsible for their actions, and the consequences of these actions in some ways.

To be concrete, it is a question if it is sustainable for a University in Norway to have a centre in Greece where the employees have to travel by airplane for several hours in order to use the centre for courses or meetings. It may be nice and it may foster collaboration between the two countries, as well as supporting business in Greece. Maybe it is not the best way to meet climate changes and responsibilities for the environment. Also, is it wise to encourage to participation in congresses far away, or international collaboration based on visits where the transportation possibilities are by airplane. One solution may be that nurse educators could think alternatively, and have meetings using technological solutions rather than personal visits in countries far away. These questions are easy to ask intellectually, but maybe challenging emotionally, because globalisation is part of our everyday life, and it is nice to see other parts of the world, and nice to meet new colleagues from other countries and collaborate with them personally. One implication of the globalisation policy is whether the employees and the students are responsible for participating in activities like this, when it is maybe not sustainable but expected from the leaders of universities all over the world.

Another question is whether the nursing curriculum is sustainably organised? It is important that nurse students are educated to think sustainability, and to recognise the responsibility each one has for actions that support sustainable professional conduct. The content of the curriculum should include information about sustainable health care services. The curriculum should also be organised in such a way that the students are taught to be transformative and be able to critically reflect upon their role as nurses and responsible citizens of a united world. Nurse educators should encourage students to critically reflect upon their possibilities to change attitudes in the population towards sustainable health care, and upon their own

attitudes towards sustainable health care work. It should be possible to a greater extent to reuse equipment, and not have all for one time use and throw away, but rather sterilise equipment in order to reuse, rather than throw away plastic equipment every time nurses have to do different procedures.

5.4 Conclusion

Nurses are responsible, together with all health care professions as well as the public itself, to maintain and provide a healthy population. Nurses are key professionals in the health care system, and should be aware of their responsibilities for the public to reduce effects of climate change. Nurse educators are as well responsible to equip nursing students with knowledge, values and attitudes toward securing a sustainable health care system. Nurse educators are also responsible for providing a sustainable curriculum encouraging students to understand climate changes consequences for public health. They should also be trained and equipped to develop attitudes toward critical reflection and taking responsibilities for the environment. Nurses and nurse students should be aware of their special responsibilities, as health care professionals, to inform the public of the consequences and effects climate change have on public health, and inform the public of methods and attitudes safeguarding a sustainable educational system and health care system. We are all responsible for a sound environment, respecting future generation needs and as such for a sustainable policy, whether it is for the educational or the health care systems. Future generations are our responsibility, as well as respecting responsibility for today's vulnerable groups who suffer most by environmental and health issues related to climate change and lack of today's sustainable systems.

Chapter 6
Sustainable Diets

Elling Bere

6.1 Introduction

6.1.1 Nutrition and Diets

Diet is what you eat; and what you eat influences how your body works, as well as your health status. Your body needs the matter that composes what we eat (i.e. food). Nutrition is how these matters work inside the body. While nutritionists have traditionally placed much emphasis on the health of individuals, they have been less interested in wider sustainability issues. However, there is a growing interest in sustainable diets, in particular how our food choices can contribute more positively to the environment, culture and economy, as well as to our health. A range of actors participates in this quest, including researchers, chefs and consumers. This chapter outlines some of these initiatives and highlights how research endeavours, government regulation and chefs can work in tandem to generate more insights, attention and product offerings within the field of sustainable diets. Moreover, in line with the main themes in this book, the chapter also hints at the contested nature of sustainability: how do we define what a sustainable diet is, and could the typical key features (locally grown and environmentally friendly) be too expensive and elitist to deserve the sustainable label?

At the outset of this chapter it might be useful to provide a short note on nutrition. The matters that the body needs can broadly be defined in three parts: macro nutrients, micro nutrients and other matters in food. Macro nutrients are those matters that give us energy to live. These are fats, carbohydrates and proteins. Alcohol also gives energy, but man can do well without alcohol. Most real foods contain amounts of all the three macro nutrients. In general, plant foods contain

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more carbohydrates than animal foods (i.e. meat, fish, eggs and milk), while animal foods contain more protein than plants. Man is omnivore, i.e. we eat both plant foods and animal foods, while other animals can be strictly herbivorous (e.g. sheep eat only plants) or strictly carnivorous (e.g. cats eat only animals). Man might survive on strict diets, and both a rather strict plant based (e.g. vegans) and animal based (i.e. traditional Inuit) diet is possible, however this comes with challenges. Therefore, a diet based on both plant and animal foods seems reasonable.

All macro nutrients are made up of smaller building blocks: carbohydrates of sugar molecules, fats of fatty acids and proteins of amino acids. Some of these building blocks are essential for us (i.e. they must be provided through diet). About half of the 21 amino acids are essential, as well as two fatty acids (one omega-3 and one omega-6 fatty acid). No sugar molecules are strictly essential. Matters that are needed by the human body, but are not essential, can be produced inside the body from essential matters which arrive through the diet.

Micro nutrients can be divided in two groups: vitamins and minerals. These are matters that we need in smaller amounts in order for the body to function properly. All vitamins are essential, except vitamin D. Vitamin D can be produced as long as the skin is exposed to sunlight, however, in northern latitudes with limited sunlight and today when much of the time is spent indoors, it is wise to get some vitamin D in the diet. All minerals are essential. Minerals are elements (e.g. iron and calcium) that the body needs in small amounts.

Food also contains several other compounds. Some of them are proposed as important for health, even if they are not (yet) found to be essential for the human body. Antioxidants are an example. The many different compounds found in foods, and possible interactions between them, are complex. There is much we do not know, and that we might never be able to understand. Unfortunately, foods also might contain substances that might harm our body if consumed in too large amounts. These can be natural toxins or unnatural matters due to human pollution (examples are heavy metals, PCB, dioxins). Food also contains matters that are added due to human preferences regarding longer shelf life (conservatives), appearance (colouring agents) or taste (sweeteners).

Eating too little macro nutrients (energy) or micro nutrients over time leads to under nutrition. Under nutrition is widespread, and now almost one billion of the human population suffer from some kind of under nutrition. In Norway, there is little under nutrition, but it is still apparent in certain groups, and today other diseases are the main reason for weight loss and under nutrition. However, despite little real under nutrition, national nutrition surveys do show that Norwegians on average consume less than recommended amounts of certain nutrients. On the other side, over nutrition is an increasing challenge. Today, many consume too much energy, and we see increasing rates in obesity and related diseases (e.g. diabetes type II). Today's diet is not optimal, not worldwide and not in Norway.

6.1.2 Development of Food

Initially humans only ate what grew and lived in nature, as this was all the food that was available. However, this changed with agriculture. About 10,000 years ago, man started to cultivate plants and keep livestock. This changed the human diet. Foods not eaten in significant amounts earlier entered the diets. Milk and grains are two examples. Potatoes are another example. Potatoes come from America, and no Europeans ate potatoes before Columbus visited America in 1492. In Norway, potatoes have been part of our diet only for the last 250 years.

With time, food has evolved enormously. Original foods have been refined, and human selection has created new varieties. As an example; all modern types of cabbage are developed from the same origin, but they have large differences in nutrient content (e.g. there is 0.3 mg of iron in 100 g of head cabbage while there is 1.7 mg in kale). Wild strawberries (6.9 mmol of antioxidants in 100 g of berries) are the ancestors of modern strawberries (2.2 mmol of antioxidant). Obvious changes can also be seen in animals used for food. The exact line of descent between domestic sheep and their wild ancestors is unclear, but google "mouflon" (an ancient breed) for a comparison with modern sheep. This human development of foods has been considered an improvement. Specific traits were selected upon (e.g. larger berries, longer shelf life, better taste, and that it is more practical that the wool is stuck on the animals rather than collecting wool that falls off). The content of essential nutrients, i.e. the quality of the foods for human health, probably did not count much, and this probably led to fewer nutrients as exemplified above.

Over time, food production has been heavily intensified. Artificial fertilisers and pesticides, together with increased irrigation, modern production techniques and a steady increase in high-yielding plants and animals has together given us a much larger food production worldwide, and more food produced in the same area of land. This has been called the green revolution. Important traits of the green revolution are monoculture, and the high demand of external resources such as energy, water, phosphorous and nitrogen. I.e. our diet has moved from a sustainable interaction with nature and the environment, to a situation where we are consuming nature's resources in order to produce our food. The food is no longer locally collected or produced, but is now transported around in a global food world. The enormous variety in food products we see in the supermarkets today is usually composed of a very few foods.

Human activities have reached a level that could damage the systems that keep Earth in a desirable state, and according to Rockström et al. (2009), the planetary boundaries have already been overstepped for three planetary systems: biodiversity loss, nitrogen cycle and climate change. All three are strongly linked to food production; the conversion of natural ecosystems into agriculture (biodiversity loss), production of artificial fertilisers (nitrogen cycle), and about one third of man-made climate gas emissions are related to food production.

Our diets are no longer sustainable. The usage of fossil energy in order to produce food is large; demands of energy to produce artificial fertilisers; transport

of foods, fuel to tractors and fishing boats. The soil erodes, air and water are polluted, ground water and natural deposits of e.g. phosphorous drains, and mono culture is the norm at the cost of biodiversity. Earlier species eaten as foods are now extinct (e.g. mammoths and the great auk), and today several of the oceans fish stocks are being heavily exploited.

A considerable challenge for the near future is how to feed the growing world population and still sustain the planet. The population is believed to stabilise at about nine billion people in 2050, and it is suggested that food production will have to be doubled by that time. Foley (2011) has suggested a five-step plan to double food production by 2050 while reducing environmental damage: (1) Stop expanding agriculture's footprint (less conversion of natural ecosystems to agriculture), (2) Close the world's yield gaps (i.e. improve yields of existing farmlands), (3) Use resources (e.g. energy, water, nitrogen, phosphorous) more efficiently, (4) Shift diets away from meat, and (5) Reduce food waste.

6.2 Description

6.2.1 Sustainability in Today's Dietary Guidelines

Dietary guidelines have traditionally only focused on health, i.e. what to eat for good health. Sustainability has not been an issue. However, in the last Norwegian food guidelines, sustainability has been discussed. A chapter on diet and environmental sustainability was included in the Norwegian food recommendations that were published in 2011 (Nasjonalt råd for ernæring 2011). This report was a review of the scientific evidence between diet and health, and the chapter on sustainability argued that a change in diet towards these guidelines (i.e. more fruits and vegetables, more whole grains, more fish, low fat diary, vegetable oils before butter, lean meat, little intake of red and processed meat, balance energy intake and energy expenditure) also would give a more sustainable diet. This is mainly due to more plant foods, a lower consumption of meat, and a shift from red to white meat. Similarly, also the recent update of the Nordic nutrition recommendations (Nordic Council of Ministers 2014) included a chapter on sustainable food consumption, and it was discussed that most environmental and public health scientists agree that a predominantly plant-based diet is preferable to one largely based on animal sources. In more details, it was discussed that a more sustainable diet requires more plant-based foods and less animal-based food; choosing primarily meat and fish with low environmental impact; eating more dried beans, peas, lentils, and cereals; choosing mainly field vegetables, root vegetables, potatoes, fruits, and berries that store well; choosing perishable products when they are in season; and minimising waste. So, it seems that a nutritional advisable diet corresponds well with a sustainable diet. This is also argued by others (Garnet 2011; Scarborough et al. 2012).

However, in both the Norwegian food guidelines and the Nordic nutrition recommendations, sustainability was not included as a prerequisite for making the recommendations; only health issues were included. Two examples might illustrate that the sustainability issue does not stick too deep. (1) In the Norwegian food guidelines, tomatoes are specifically recommended (as only one of two specific fruits and vegetables, the other being onions). Tomatoes are mostly imported or produced in energy intensive green houses in Norway. (2) The cover picture of the Nordic nutrition recommendations is a nice picture showing several different colourful fruits and vegetables in a rainbow fashion: most of them of exotic types that must have travelled far to reach the Nordic countries. Fortunately, dietary guidelines and sustainable diets correlate to a large degree.

6.2.2 Dietary Guidelines for Sustainability

Gussow and Clancy (1986), with their paper *Dietary Guidelines for Sustainability*, were among the first to argue that the relationship between human health and food choices is not a sufficient basis for giving advices about what to eat. They might also be the first ones to use the term "sustainable diets". Further they discussed that educated consumers need to make food choices that not only enhance their own health, but also contribute to the protection of our natural resources, and that the content of nutrition education needs to be broadened and enriched, not solely by medical knowledge, but also by information arising from disciplines such as economics, agriculture, and environmental science.

More specifically Gussow and Clancy were concerned with the loss of food variety. They noted that the world's population depends on a mere handful of species (among them wheat, rice, corn, and potatoes), and were concerned about the loss of variety within one food: e.g. the decline in variety of different apples. Further they argued for minimally processed and minimally packaged foods and, the importance of, when possible, buying locally produced foods to support regional agriculture that preserves farmland and that might be less energy intensive. Self-reliance was another issue, and the fact that rich countries were dependent on food produced in poorer countries (i.e. by people more in need of the food). They also noted the importance of maintaining an ideal body weight, because overconsumption of calories is wasted food. Producing animal foods is not energy efficient and it is responsible for much environmental stress; eating more plants is preferable. Also they argued against substituting sugar with artificial sweetener, as the energy used producing, packing and transport greatly outweigh the energy in the product (e.g. diet soft drinks).

Later, the focus has narrowed more to the climate change issues. Originally, in nature, food was embedded in the natural carbon cycle. Plants make sugars from CO_2, water and sunlight (i.e. draws CO_2 out of the atmosphere) during the photosynthesis. Sugar molecules are used as the basis for the production of fat, proteins and vitamins. Animals further eat plants, and emit CO_2 back to the atmosphere by

respiration. The problem first arises when humans uses external energy, such as fossil fuels, to make fertilisers, drive tractors, transport foods, etc. Earlier, the energy content in foods was made during photosynthesis from sunlight. Now, more energy is spent than made when producing food. It has been calculated that as much as 35 % of manmade climate gasses are related to food (Foley 2011), and worldwide production of livestock contributes with 18 % alone (a share that is greater than the transport sector) (Steinfeld et al. 2006). It is difficult to estimate the climate effect of specific foods in the supermarket as you go shopping, but a few more general rules can be applied:

Type of food: It is better to eat plants than to feed them first to animals, (1) because animals spend energy to live and survive (usually a ration of 1:10 is assumed: i.e. animals must be fed ten times the energy that they themselves will provide for human consumption), (2) some animals (ruminants) produce methane (a more potent climate gas than CO_2) in their gut. A diet with less meat and more plants is therefore preferable.

Type of production: As described above, wild foods do not have any negative climate impact (except the energy spent hunting and gathering, which can be large e.g. for long distance fishing), however there are probably too many people in the word today to rely on wild foods. Organic produce is assumed to have less impact than conventional produce, due to not using artificial fertilisers and conventional pesticides, however the total environmental impact is not clear as other indicators (e.g. land use, as organic production usually gives less produce per unit of land) are negative for organic produce. Consumption of external energy, e.g. for heating of greenhouses, might also have large impacts on the CO_2 emissions.

Transportation: Food is transported around the globe, and clearly for the least transport emission of climate gasses, food should be produced as close to where it is eaten as possible. This is an argument for eating local and seasonal foods. However, in some cases, the energy spent for storing might outweigh the energy spent for transportation.

The most important factor for climate change appears to be a reduction in meat consumption (Röös et al. 2014). This is a considerable challenge in a world with increasing population, with and increasing appetite for meat. As the economy rises, so does meat consumption. Further, the type of production appears to be more important regarding meat, while transportation appears to be more important regarding plant foods. This strongly contradicts what really is produced in Norway: most of our animal foods we eat are domestically produced, but more than half of our plant foods are imported.

Norway is a large exporter of fish, and eating more fish is recommended in the dietary guidelines. However, fish comes with some challenges regarding sustainability. Currently 80 % of the fish populations are fully exploited or overexploited; aquaculture is steadily compensating for wild fish, but to an increasing degree plant-based feed is added to the feed given to farmed fish, including predatory fish; eutrophication is also a significant environmental problem associated with

aquaculture; and in tropical waters coastal deforestation is a growing issue (Nordic Council of Ministers 2014). Since on a global scale there certainly is not enough wild seafood to be harvested to enable people to eat the often recommended two servings of seafood per week (Halweil 2006), present-day promotion of eating of more seafood may be ethically questionable. Guidelines for sustainable fish consumption have been published (e.g. by World Wildlife Foundation), and sustainable fish and seafood should be chosen.

Food waste is another important issue, as about 30 % of the food produced on the planet is discarded, lost, spoiled or consumed by pests (Foley 2011). Food waste should be reduced as much as possible. However, food waste is not only food that is wasted directly. Overconsumption of energy, and increasing weight, can also be regarded as wasting of foods, and as such keeping an ideal weight is more sustainable than gaining weight.

6.2.3 Definition of Sustainable Diets

Food is also more than health and environmental sustainability. Food production should, in addition to being environmentally sustainable, neither take advantage of human beings nor cross universal perceptions of acceptable animal welfare. The food we eat should also build on traditions, and food production has an important role for maintenance of populations in sparsely populated areas. FAO has recently defined sustainable diets in such a more holistic way:

> Sustainable Diets are those diets with low environmental impacts which contribute to food and nutrition security and to healthy life for present and future generations. Sustainable diets are protective and respectful of biodiversity and ecosystems, culturally acceptable, accessible, economically fair and affordable; nutritionally adequate, safe and healthy; while optimising natural and human resources. (FAO 2012)

That means that in order for diet to be sustainable, it must be sustainable regarding; health, environment and culture, while at the same time being accessible for all. There are great inequalities in the World, and also within an egalitarian country as Norway, and the diet is not sustainable before all can follow it. In addition, a diet should also taste good.

6.3 Discussion

In the following sections examples of sustainable diets are discussed.

6.3.1 The Mediterranean Diet

The traditional Mediterranean diet is often presented as an example of a sustainable diet (Burlingham and Dernini 2011). The origin of the Mediterranean diet, as we perceive it today, was what was eaten on Crete just after the Second World War. The American physician Ancel Keys (1980) studied the relationship between diet and coronary heart disease in seven European countries and USA. The results showed great differences in prevalence of coronary heart disease and in diet between the countries. The lowest prevalence of coronary heart disease was observed in Crete; ten times lower than in Finland. Keys explanation for this was a much lower intake of saturated fats in Crete than in Finland, despite a similar total intake of fat, and that different fatty acids affect the blood cholesterol differently, and blood cholesterol is a risk factor for coronary heart disease. Keys is seen as the father of the Mediterranean diet, and of the recommendations about reducing the amount of saturated fats in the diet.

Reviewing the scientific literature, two slightly different Mediterranean diets appear. One is based on nutrition epidemiology studies that relate diet to disease, usually in very large cohort studies. Several such studies have been conducted, and the results show that those adhering to the Mediterranean diet have lower odds for developing a number of modern lifestyle diseases such as cardiovascular diseases and cancer (Sofi et al. 2008). Adherence to the Mediterranean diet in such studies is based on questionnaire data assessing in what degree the study participants eat foods that characterise the Mediterranean Diet, that is a high intake of fruits and vegetables, nuts, legumes, grains, a low intake of meat and milk and products thereof, a moderate intake of alcohol, and a high intake of monounsaturated fatty acids compared to saturated fatty acids (olive oil). Originally, fish was not part of this scale, but has been added later. It is not clear how much fish the traditional Mediterranean diet included. Eating in adherence to the Mediterranean diet is more sustainable than e.g. today's Norwegian diet, simply because it is more plant based.

The other Mediterranean diet is more a description of what traditionally was eaten in the Mediterranean area, and especially in Crete, after World War II, and the nutrient content of specific local foods. E.g. that purslane and snails contain much omega-3 fatty acid. The diet in Crete just after World War II has been described as if it had not changed much in 4,000 years. An interesting description of what was eaten in Crete during the 1950s is included in Allbauch's study *Crete*: *a case study of an underdeveloped area* (1953). They used nature, and gathered wild greens and herbs. Snails and octopus was eaten in greater amounts than local fish. Potatoes were eaten in great amounts, and bread was included at every meal. They ate several meals, but usually only one hot meal a day. Sunday appeared to be the day for eating meat. The one hot meal was usually braised and boiled in a form of one-pot-cooking, and a habit of dipping bread into the sauce that saved nutrients was described. Olive oil was used frequently, while the consumption of butter and margarine was limited. Desserts was fresh fruit in season, but not served every day. Most of the food was locally produced. There were no fridge at that time, and the

usual way of conserving foods was sun drying. In sum, the traditional Mediterranean diet contained much plant foods and less meat, nature was harvested, the foods were natural and the diet contained few highly processed foods.

There is little doubt that a Mediterranean diet is both healthier and more sustainable than today's Norwegian diet. However, it is not for sure that the health effect is due to the type of fat, as originally hypothesised by Keys. An alternative hypothesis is that the Cretans had to eat like this because they were poor, and that this diet is closer to what humans are supposed to eat (Bere and Brug 2010). Allbaugh (1953) writes that if they had the opportunity to eat more meat, they would have done so. Michael Pollan (2008) argues somewhat similarly; that there is no magic bullet in the Mediterranean diet, it is healthy just because of the absence of highly processed foods.

Unfortunately, the traditional Mediterranean diet is not eaten widely anymore, and Crete has been included in the global food world. Cretan farmers were in 2000 in average 20 kg heavier than farmers in the 1960s when Keys did his studies (Vardavas et al. 2009), and now more than 40 % of Greek school children are overweight (compared to 15 % of Norwegian children) (Brug et al. 2012).

6.3.2 The New Nordic Diet

Traditionally, the Nordic diet has been seen as rather boring and not too healthy. In the Nordic countries we have had some of the highest prevalence of death due to coronary heart diseases, with a great increase until about 1980, then a great decrease has been seen (Bønaa 2011). This reduction has been linked to a reduction in intake of saturated fat and *trans* fatty acids in the diet. The Nordic diet has long been high in saturated fat, but at the same time also low in fruits and vegetables, and with a lower intake of fish than recommended. The Nordic diet has been more associated with un-health than health, and the focus has been on the negative sides of what we eat.

This appears to be changing. In recent years there has been a steady increase in interest in Nordic foods, and now the focus is on healthy foods. Recent studies show a relationship between Nordic foods and disease (Riserus 2013): Danish studies show protective associations between those with high adherence to a healthy Nordic Diet, and both mortality and colorectal cancer. Other studies show reductions in risk factors for heart disease. Foods included in a healthy Nordic Diet are often whole grains (whole grain bread and oat meal), local berries, fruits and vegetables, fish and rape seed oil.

There is also now a focus on Nordic foods and sustainability. Do we really have to transport healthy foods from exotic places far away, and do we have the possibilities to grow more of the healthy food ourselves? To import food is usage of other people's soils, and as almost one billion people in the world starve, it should be sustainable to produce more food ourselves. In Norway, we imported about 60 % of the food we eat. Most of the agricultural land in Norway is used in

production of animal food; pasture and production of grass and production of grain (most of it for animal consumption). Eating the grain ourselves would give more food for human consumption using the same area of agricultural land. We might also utilise nature better. Probably there are enough berries in Norwegian nature to alone give all Norwegian their daily recommended amounts of fruit (Bere and Brug 2009), still we import about 95 % of the fruit we eat.

The New Nordic Diet (NND) is an initiative on how we in the Nordic countries can eat both healthy and sustainable with local foods. It is a vision for the future, and in general it is an importation of the traditional Mediterranean diet, not the specific food, but the principles behind the Mediterranean diet. That is more plant food, less meat, harvesting of nature, local natural foods and fewer highly processed foods.

In 2009 we published an article where we argued that within all food groups we have local foods that can be produced in a sustainable manner, foods that are just as healthy as other foods within the same food categories (Bere and Brug 2009); berries, cabbage, local fish, game (and free range livestock), rape seed oil and oat/barley/rye. These foods were just examples, and do not constitute a full diet. This is neither an argument that Nordic foods are better than foods from other places. Other regions can do just the same with local foods. Our main point was that, even in the Nordic countries, we can create a diet of local produce that is just as healthy as any other diet, and that this diet also might be more sustainable.

A large research project, "Optimal well-being, development and health for Danish children through a healthy New Nordic Diet" (OPUS) was launched in 2010 with the main aim objective to establish a multi-disciplinary research centre to develop a healthy and palatable new food and eating concept *The New Nordic Diet*, and to examine how such a diet can affect mental and physical health. Within this project the concept of New Nordic Diet has been developed (Mithril et al. 2012), and the following ten basic easy to interpret principles for consumers were formulated:

Eat more fruit and vegetables (especially more berries, cabbage, root vegetables, legumes, potatoes and fresh herbs)
Eat more wholegrain (especially oat, rye and barley)
Eat more food from the sea and lakes
Eat less meat but of a higher quality (e.g. free-ranges/organic)
Eat more foods from the wild countryside
Choose organic whenever possible
Avoid additives
Eat according to the seasons
Make more homemade meals
Waste less food Source: Mithril (2013)

Following the project, leading chefs have composed new dishes based on the defined concept, and the diets with newly composed dishes have been tried out in scientific trials. In one study overweight adults lost weight, even if they could eat as much as they wanted (Poulsen et al. 2014). The theory behind this is that the New Nordic Diet contains foods that are naturally satiating, and the intake of food

naturally will be regulated by hormones, hunger- and satiety. Also school food for children has been developed and tried out in a study, showing improved overall dietary intake at the food and nutrient levels when habitual packed school lunches was replaced by school meals, following the principles of the New Nordic Diet (Andersen et al. 2014). Within the OPUS project also the sustainability effect of the New Nordic diet has been calculated, and reducing meat and excluding most long-distance imports were of substantial environmental and socioeconomic advantage to the New Nordic Diet when compared to the average Danish diet (Saxe 2014).

At the University of Agder we have created a scale, for use in nutrition epidemiology studies, assessing the adherence to the New Nordic Diet, using the Norwegian mother and child cohort. Higher NND adherence implied higher nutrient intakes, higher nutrient density and a healthier macronutrient distribution and adherence to a such a regionally based diet may facilitate optimal gestational weight gain in normal-weight women and improve foetal growth in general (Hillesund et al. 2014a). In a second chapter we showed that NND adherence was associated with lower overall risk of preeclampsia in pregnant women (Hillesund et al. 2014a, b).

The New Nordic Diet is consistent with the Manifesto for the New Nordic Kitchen. This manifesto was formulated and signed by several of the greatest chefs from the different Nordic countries, and it has probably cleared the road for the great increase in restaurants focusing on local foods in the Nordic countries. The restaurant NOMA, now in 2014, ranked best restaurant in the world for the fourth time, is leading this development.

The aims of New Nordic Kitchen are:

To express the purity, freshness, simplicity and ethics we wish to associate with our region.
To reflect the changing of the seasons in the meals we make.
To base our cooking on ingredients and produce whose characteristics are particularly excellent in our climates, landscapes and waters.
To combine the demand for good taste with modern knowledge of health and well-being.
To promote Nordic products and the variety of Nordic producers—and to spread the word about their underlying cultures.
To promote animal welfare and a sound production process in our seas, on our farmland and in the wild.
To develop potentially new applications of traditional Nordic food products.
To combine the best in Nordic cookery and culinary traditions with impulses from abroad.
To combine local self-sufficiency with regional sharing of high-quality products.
To join forces with consumer representatives, other cooking craftsmen, agriculture, the fishing, food, retail and wholesale industries, researchers, teachers, politicians and authorities on this project for the benefit and advantage of everyone in the Nordic countries.

NND has been criticised in Denmark for being elitist. It has also been discussed that it will be a great challenge to get people to eat this way (Micheelsen 2013). Changing eating habits is not easy, and it is also challenging to get people to eat according to national guidelines. Often is it those that have a decent diet that catches new advices and grabs new information. There are great social inequalities in health, as well as in health related behaviours, such as diet, and this must be taken seriously. A change in diet according to the New Nordic Diet will most probably be more expensive than today's average diet (Jensen and Poulsen 2013), as healthy diet in general costs more than less healthy diets. At the same time, the New Nordic Diet is based on rather simple ingredients and foods. What grows in nature can be harvested without cost, and potatoes, grains, root vegetables, onions, cabbage and legumes are among the cheaper foods there is. However, if not in money, such a diet will demand more time for cooking, shopping and procurement such as gathering, harvesting, and own food production. People might not be interested in this, or be willing to allocate the time or resources needed.

On the other side, it is important that food is produced in a sustainable manner, and that the farmers and other food producers are paid for healthier and more sustainable foods. The global food world, together with our drive for cheapest possible food, has given us foods today that are cheaper than ever. Since 2000 we have only spent about 10 % of our salary on food, never before have we spent less.

6.3.3 Other Sustainable Diets

Sustainable diets is currently a hot topic, and also other regions are now focusing on local sustainable and healthy foods. A Peruvian example has been explained (Jacoby 2012), and the draft for the new Brazilian food guide is very much in line with the essence of the New Nordic Diet described above (Ministry of Health 2014).

6.4 Conclusion

Sustainable diets have not had any prominent role among nutritionists, nor in nutrition education in Norway. However, there is an increasing interest in this topic. As mentioned, both the national dietary guidelines in Norway and the Nordic nutrition recommendations now include chapters regarding food and sustainability. In 2012 the topic for the yearly seminar within the Norwegian nutrition associations was Sustainable diets. In some Universities and colleges there are now elements of sustainable diets included in courses. At the University of Agder we now have also established a research group focusing on a sustainable lifestyle, including sustainable diets.

However, sustainability is an important issue regarding food, and it definitively deserves a more prominent role among nutritionists and in the nutrition studies. The focus on diet and nutrition today is enormous, maybe too large, and the focus is mainly how diet can improve individual health. Food is more than the sum of its nutrients, and it is not possible to eat for guaranteed health. It might be smart to assess food in a more holistic manner. FAO's definition on sustainable diets is exactly this. They lift the issue about what to eat to a higher level. Our diet should be sustainable, both in relation to health, the environment, the culture and the economy. People should be aware how they play a role in a value chain, and that the whole chain needs to be sustainable. This is important to learn for the coming generations.

Part III
Sustainability in Technology and Planning Studies

In this part of the book we present perspectives on how technological education and planning studies can approach sustainability. Technology has traditionally involved very instrumental studies, aiming at finding good, technical solutions to concrete tasks like building bridges or houses, of machines. By addressing sustainability, we argue that not only the efficiency of technology, but also reflections on the social and human environment that the technology become part of, are relevant issues. In this part we have three chapters.

In Chap. 7, *Sustainability and Teaching in Higher Technological Education*, Tom V. Nilsen argues for technological education that sees technology in a holistic perspective. The chapter starts with World Commission on Environment and Development (1987) and moves on to engineering education. It is recognised that the implications for universities are radical. The idea of the *Honest Broker* is presented. Via Giddens and Habermas, and systems thinking, there are links to other disciplines which are discussed in other chapters.

In Chap. 8, *Sustainable Manufacturing as MCB*, Halvor Holtskog, Richard Ennals, and Hans Chr Garmann Johnsen argue how sustainable manufacturing can be seen as combining the traditional manufacturing management perspective with organisational development and participatory perspectives. The definition of Sustainable Business Systems is different from other uses of sustainability. The chapter tries to link arguments for business and for education. Arguably Working Life Research has an integrative role. One might ask: how can universities be seen as sustainable work systems, and how can they develop an account of empowerment?

In Chap. 9, *Planning for Sustainability*: *Between Risks and Lifeworlds*, Mikaela Vasstrøm and Hans Kjetil Lysgård present ideas of a planning study that takes a critical perspective on planning. What are the alternative planning ideas? Planning is a field where different paradigms meet. How can one approach that? Their suggestion is a combination of participatory and critical planning. There is a strong account of planning and sustainability with better links between planning and Higher Education. Empowerment may provide a connection. For both planning

and education, we need an understanding of context. The discussion of universities is thought-provoking.

Mutual competence building is, with reference to these three chapters, a matter of developing a balance between different concerns. However, balance does not necessary mean compromise between interests. It might as well mean that new insight is taken into account. Balancing means both having a larger or systemic understanding of what one's actions play into, but also a critical attitude to the alternative one is offered.

Chapter 7
Sustainability and Teaching in Higher Technological Education

Tom V. Nilsen

7.1 Introduction

The concept of sustainability was first of all linked to, and first appeared in, as we know it today, the UN report *World Commission on Environment and Development* from 1987, also named *Our Common Future*. The thought of sustainable development probably appeared first in the work within the UN Environmental Programme and in the report *World Conservation Strategy* from 1980. The idea of sustainable development, however, gradually evolved within the ecological movement from the 1960s, as an answer to a destructive development in industrial countries, both ecological and social. The report *Our Common Future* (World Commission on Environment and Development 1987) had a depressing background, but already in its first pages it underlined that this is a positive and optimistic report, which should be the point of departure for new developments and possibilities for a better future, if we do the right things. It is ambitious, as the report was intended to support a philosophy of growth, and at the same time to have an aim of sustainable growth in the future.

The report defines sustainability as: "A sustainable development is a development that meets the needs of today without doing compromises with the possibilities for the coming generations to satisfy their needs." There are two basic concepts or ideas:

The concept of needs. The most essential need is the need of the poor people in the world, and this have to the dominating priority.

The idea of restrictions because of technology and social organisation, that restricts the environment to give possibilities for present and future fulfillments of needs.

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This chapter deals mainly with education within technical issues, with how technologies should be developed and shaped in a sustainable world, and with the impact of technology on the environment. Therefore the idea of restrictions is one of the two basic ideas that this chapter is based on. Some essential points in a new environmental policy are renewable growth, changing the quality of growth, to meet essential needs for work, food, energy, water and health, securing a sustainable level of population, protecting and extending the resource basis, a new orientation of technology and risk and to involve environmental views in decisions. When it comes to the economy, this new development has to reduce vulnerability for crises. According to the report this demands:

A real democratic system that will secure the people influence in decision processes.
An economic system that generates profit and technical knowledge that is sustainable.
A social system that claims solutions of problems that occur because of a disharmonic development.
A production system that respects the request of protecting the ecological basis for development.
A technological system that continually seeks for new solutions.
An international system for sustainable frames for finance and trade.
A system for administration that is flexible and has a capacity for self-adjustment.

These, and in particular points 3–5, are the most important background for the discussion of sustainability in the education of engineers. In addition the authorities (in Norway) give some national guidelines for this kind of education. They do not mention the words sustainable development or sustainable education, but it is obvious that they have this in their minds when they say that the candidate shall have knowledge about the history of technology, the role of the engineer in the society, the development of technology and social, environmental, ethical and economic consequences of technology. The candidate shall also have knowledge that gives an overall system view at the engineering profession and be aware of environmental, ethic and economic consequences of technological products and solutions, locally and globally in a lifecycle perspective. A third moment for this claim for sustainability thinking within education is what the report from Earth Summit in Rio de Janeiro in 1992 (Agenda 21) says:

> Education is critical for promoting sustainable development and improving the capacity of the people to address sustainable issues. (UNCED 1992)

As pointed out by Hans H. Grelland in chapter two in this book, there is a need for a change, a change in attitude, knowledge and practical methods. This article is mainly about the necessity of a change in knowledge and practical methods within education of engineers, but doing so it will surely lead to a change in an engineer's attitude to sustainability and care for the environment.

7.2 Description

So what is this about? Taken seriously, this implementation of sustainable thinking in education of engineers will or should totally reform education. We have to answer some critical questions like: why we should do this, how to do it, and what the consequences will be for teaching.

The modern project, with its division of the whole into parts, when it comes to science and technology is dominated by humanist perspectives, of anthropocentrism in relation to external nature and western cultural domination and an imperialistic attitude to other cultures. Education within sustainability must problematise, and have a sceptical and critical attitude to, the modern project with regard to anthropocentrism, because of environmental issues, and to capitalism, liberalism, socialism and science with regard to the needs of all people. Stables and Scott (1999) argue that the studies within sustainability must include critical environmental literacy that permits the students to understand environmental issues and empowers them to take action, a functional environmental literacy that enables the students to decode the environment and the cause of damage (the pollution and the pollutants), and a cultural literacy that makes it possible for the students to see cultural differences and the impact of science and technology on all cultures (Stables and Scott 1999; Scott 2000, p. 153).

The mutual influence between technology and society has always been there. This process cannot be stopped; it can only be understood, and hopefully we will be able to point at aims that are positive for humans and the environment. This has to be a process of adaption and innovation. Sustainability is a framework for change, but not a concept referring to some static paradise, but rather a capacity of human beings to continuously adapt to their non-human environments by means of social organisation. (Scott 2000).

According to Scott, sustainability is about building capacity. It is not essentially about the environment, but the capacity of our culture to reach permanent reforms to secure the balance between humans and their natural basis of existence, or as mentioned earlier, a capacity for change. It is about our ability to build capacity for living and learning. Sustainability is a framework for change, and not a list of activities to reach a specific goal. It is a process that contains an understanding of challenges and a willingness to work interdisciplinary. Or as Bruno Latour puts it: the modern project has never managed to combine the knowledge of science, the discussions within politics and the cultural arena. The borders between science, the humanities and social studies have to be opened. In Latour's words (1996) we have to be un-modern. Teaching at all levels is important in this relations, and studies within engineering in particular, because of the tight relationship between technology and society. Figure 7.1: Relationship between technology and society, tries to illustrate to the left that science, politics and society as separate fields of knowledge, and to the right that science, politics and society as integrated and overlapping fields of knowledge. The figure shows how these fields traditionally are (left), and how they ought to be (right).

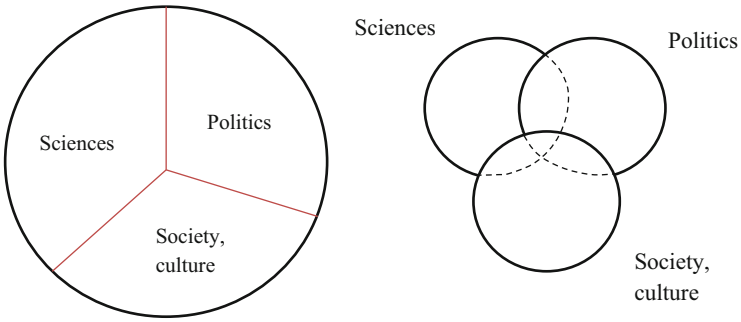

Fig. 7.1 Relationship between technology and society

As mentioned, the origin of the concept of sustainability has a depressing background. So teaching as a whole, and studies in engineering in particular, have to deal with climate change as a result of much use of fossil energy and irrigation projects, pollution of air and soil, decrease of unrenewable resources, overpopulation and poverty and decrease of biodiversity. This is, or can be, overwhelming, and leads to a defensive attitude, an attitude that accepts a non-sustainable culture, that this society is here to stay, and that we are bound to live in non-sustainable cultures. This is dangerous. We have to accept the situation, of course, we are tied up with to the problem, and we have to accept it and try to do something with it. We have no choice.

Sustainable development is about limits, limits of use of non-renewable resources, limits of destruction and degradation, and also how we affect living organisms and whole ecosystems. The most unlimited and organised factor in history has been our material development. Knowledge about limits and connections has to be known, as well as the relations between human activity and the environment.

7.2.1 Why Should Sustainability Be a Part of the Education of Engineers?

If we look at how the education of engineers traditionally is today, and if we are a little bit critical, the education is like this: we have a technological problem, we will analyse it in a technological way, and we will find an appropriate theory and some data that can help us with the solution. We have blinkers for the purpose of seeing nothing else than the road straight ahead and a solution. The students do not see the emission of climate gases, the overuse of non-renewable resources, which poor people do not have sufficient possibilities to develop; they shut their eyes to the use of children in work, and so on. Students know about this, and maybe they are concerned about this in their spare time, but not in their professional practice as an engineer. It is true that the impact of human activity upon the environment is a part

of all education. But why has this not led to a more fundamental change in our relationship with nature? The answer to this is that our attitude and our understanding of this has been essentially cosmetic. I think Michael Bonnett is right when he says that:

> It rests on a comfortable veneer of concern which veils a set of more fundamental issues whose far-reaching political and practical ramifications would be severely discomforting too many. (Bonnett 1997)

There are two main reasons why the combination of education of engineers and sustainability is important: the impact of technology on society and nature, and thinking in terms of sustainability as a tool for building capacity for living and learning. We can like it or not, but technology has totally invaded our lives, and so it is with nature. Several intellectuals have over the course of history warned or protested against this development, such as Jacques Ellul who was concerned about human freedom with his background in religion, or Lewis Mumford with his arguments against mega machines, or Martin Heidegger's technophobia.

Technology and society are fundamentally interdependent, and this creates the necessity of developing an education with sustainability in focus. Undoubtedly modern technology has had an enormous positive effect on people's lives, but to look at the negative effects, it is only necessary to mention a few alarming trends:

About 2,000 million ha of soil is now classed as degraded as a result of human activities.
Around half of the world's rivers are serious depleted and polluted.
About 24 % (1,130) of mammals and 12 % (1,183) of bird species are currently regarded as globally threatened. (Perdan 2004)

The list could be extended for pages. It seems as if our societies have permitted technology, industry and capital to do just as they have wanted, without looking for negative impacts. There is another aspect that underlines the need of taking sustainability seriously in education, and this is the accelerating growth of technology in key areas as nanotechnology, biotechnology, robotics and information and communications technology. This is at the same time frightening, and it gives an opportunity to solve serious problems within a modern society, as well as in countries that desperate needs to develop. Sustainability can offer a framework for change. The planet really needs a change, because it is far from a steady state. Three ways towards a sustainable state have been suggested:

> (1) Managed growth until a long-term sustainable population/technology/cultural dynamic state (which we will call "carrying capacity" is achieved, (2) a managed reduction of population to a lower level sustainable with less technological activity, or (3) an unmanaged crash of one or more of the parameters (population, culture, technology) until stability at some undesirable low level is approached. (Graedel and Allenby 2010, p. 27)

These are theoretical possibilities, but can be used as headlines. The relationship between the mentioned parameters is not static, but dynamic, and the engineer, among others, plays an important role in the development of these dynamic relations. That is why sustainability in education is important. The universities

have to contribute to a common debate about a future that is sustainable, and develop subjects to ensure that the students from universities are beware of the content and the meaning of ecological, economic and social sustainability. Activities in education and research must have the highest quality when it comes to definition and identification and a sustainable future.

Mitchell, Carew and Clift have introduced a paradigm of the "Honest Broker" as a concept of the professional engineer and scientist, when it comes to sustainability and technology. They use the concept of the Honest Broker as the term of the new expert within the teaching of sustainability in technical education.

> . . ., the Honest Broker is an expert who investigates and describes a range of technical options for the realisation of a desired service within the broad contextual constraints of the problem-setting. (Mitchell et al. 2004, p. 40)

According to Mitchell, Carew and Clift the new expert, the Honest Broker, is different from most of the experts of today in four ways. Firstly the new expert has a long term and broader approach to the field of knowledge, and a systematic view on the environment. This is about skills, knowledge and attitude to a new practice. It is about a self-critical and reflective practice. Secondly, the Honest Broker moves away from giving "the right answer". The new expert will instead concentrate on several possible solutions; about information, negotiations, participation and consensus. Thirdly, the Honest Broker will move behind problem solving and against problem formulation. The decision-making process is dependent on a thorough definition of the problems, and being a part of the problem solving process, the Honest Broker will have better possibilities to make good solutions. This differs from the traditional expert who solves a problem with his knowledge, a problem defined by some others. Fourthly, the new expert focuses on setting the problem formulation in a broader context of environment, culture and economy. The critical practice of the new expert will appear at several levels. It is self-critical, and it questions the fundamental assumptions and values of current practice.

The concept of the Honest Broker is to some degree wider than the concept of care presented by Hans H. Grelland in his chapter *Sustainability and Care*: *On a Philosophical Contribution to the Project of Sustainability* (Chap. 2 in this book). As he mentions, the attitude, the knowledge and practical methods are needed if we wish to obtain a change. The concept of care is mainly about attitude. The Honest Broker is a concept that covers all three needs for change, but, as I see it, the Honest Broker is mainly about knowledge and practical methods. So the two concepts are in a way complementary. It is my opinion that when working with sustainability in order to obtain a change, the concept of the Honest Broker will lead to changes in attitudes when it comes to technology and environment, and technology and society.

This is not the place to go into details of ways of describing or calculate sustainability, but three methods have to be mentioned; Life Cycle Analysis (LCA), ecological footprint, and the precautionary principle. Life Cycle Analysis is a formal method described in international standards (ISO 14040 and ISO 14044). A LCA gives the opportunity to identify the possibilities to improve the

environmental aspects of products at different places during their lifetime; it informs the decision makers in industry and elsewhere; it helps to identify relevant indicators for environmental presentation; and is useful in marketing. Normally LCA does not include economic and cultural aspects, but the reflections and the methods mentioned in the standard can be used within economy and culture as well.

Ecological footprints show how much productive land and water is necessary in an economy or in a population with a specific standard of living. It is a simple indicator, and not a suitable indicator for the control of production processes. There is 1.9 ha of land per capita in the world, and the average footprint is 2.3 ha. The US and some Arab countries have a footprint of ten.

The precautionary principle has been an important part of the development within sustainability, but also the least specific of the three mentioned here. The principle received a lot of support in Rio de Janeiro (1972), but has led to endless discussions. In the strongest interpretation, it demands absolute proofs for security before new products can be approved. This demand for proofs has been lightened in the "Third Ministerial Declaration on the North Sea" (1990) and in other fora.

7.2.2 What Will This Imply?

The tension that occurs between the social and technical imperatives on one side, and the encouragement to autonomy and critical thought on the other side, has maybe always been there, but introducing sustainability in engineering teaching will certainly strengthen this tension. The tension will occur because of social development and economic possibilities on one side, and ecological claims on the other. Taking sustainability in account in education of engineers will change this fundamentally. The problems will be more complex, the clients affected by technology will be more differentiated, and the effect of technology will be more scattered throughout the immediate user of technology. There will be a rising demand for technological solutions as an answer to social and political problems, and these demands require that an engineer understands and effectively answers these questions, with a fundamental knowledge of the principles of sustainability.

According to Fiona S. Crofton, the competence of an engineer within sustainability must consist of an understanding of the meaning and the objective of a development that is sustainable, and skills to develop a competence to reflect on the future so as to identify social, economic and environmental implications of decisions and processes, based on the understanding of the contact between the systems of humans and the nature itself. To achieve this understanding, it is necessary to be able to assess alternative concepts, designs and methods that reflect an overall way of thinking, and this will require a capacity for solidarity, empathy and an understanding of other cultures. Further on this will require competence in interdisciplinarity, both within technology itself, and between technology and culture and nature.

Surely we will need interdisciplinary and system thinking. It is a historical fact and it is obvious that it there has always been a mutual influence between technology and society. This process of mutual influence cannot be stopped and this relationship can only be, and has to be, understood by people engaged in this process. Hopefully this process will be aimed at solutions that are positive for humans and nature.

The childhood of social thought was dominated by and influenced heavily by positivistic thought, and the ideas were formulated by the philosopher August Comte. The bases of these ideas were science and technology, and especially classical physics. The social sciences were to search for general laws of human behaviour. This is not the place for the history of social sciences, but to come to the core of the relationship between technology and society, we have to mention two integrative theories, the theories of Anthony Giddens and Jürgen Habermas. Giddens emphasised that people's conduct is mainly based on how they interpret their environment, and that subjective phenomenological insight must be taken seriously if we are to understand human conduct. Habermas formulated the theory of communicative action, and emphasises that social system and social structures constrain people's actions. It is a critical theory of society. The theories of Giddens and Habermas need a systematic understanding of social connections, including science and technology.

This is the core of the understanding of the relation between technology, science and society: the necessity to think in systems. Most of the technological development is an evolution, and system thinking or system theory evolves in interplay between adaption and innovation. This is exactly what the education of engineers with a dominant sustainable view is about. The students have to know how to use system theories in practice.

7.2.3 So What Is System Thinking in This Connection?

It is not systems engineering, or how to produce a car. It is a method to identify technological and social systems that are related to each other, to describe the connection between them, and to discuss the influence of decisions taken in one system on another system, good or bad. We need system thinking to make a survey of effects of actions. System thinking is not a new discipline. The system thinking of Aristotle, Copernicus, Galileo, Bacon, Newton, Linnaeus and others was extremely important for the development of modern science and technology, but this system expressed a static view, and gave no good understanding of the dynamic correlation between society and technology of today. Dynamic system theory generates late in the twentieth century and rests on the new insights in quantum physics, biology, cybernetics, complexity and the theory of chaos. Figure 7.2 shows to the left the outcome, Y, of the system is a result of looking at one variable at a time, each independent of the others, to the right the variables in a system are interdependent, and the outcome, Y, is a result of how the variables relate to each other. Figure 7.2 thus can illustrate that we leave a system thinking based on

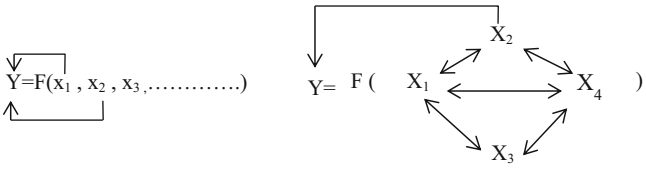

Fig. 7.2 System thinking

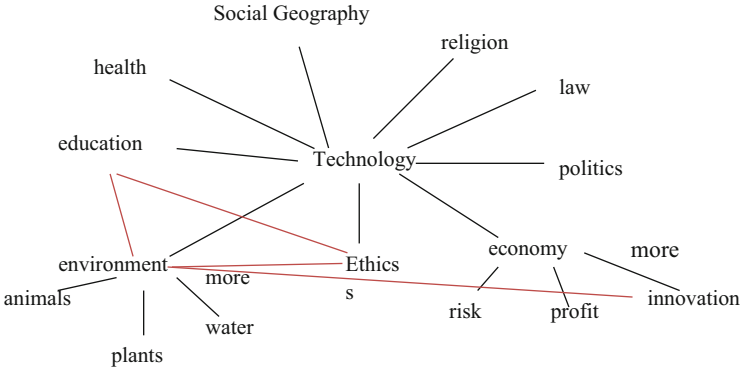

Fig. 7.3 The sub-system of technology correlated with other sub-systems

independent variables and linearity (left in the figure), and end with a system of dependent variables (right in the figure).

According to Ervin Lazlo, one of the main contributors to modern system thinking, this is going back to synthesis, and the reason for this is the fragmentation of knowledge. We need to have a philosophy of society, including technology, which sees the connections. The method has some principles. We can try to see the big picture (the principle of a forest), on a short or long term, the principle of soft indicators (moral, loyalty, capacity of learning, and exhaustion), the system as a cause, cause contra symptom or or/nor thinking. Independent of which principles we use, we have to identify a main system with its sub-systems. Figure 7.3 shows how the sub-system of technology can be correlated with other sub-systems. The figure tries to illustrate how technology has an influence on other social systems, and how other social systems influence technology. Further it gives some examples of how subsystems (education, environment, ethics and innovation) are dependent on each other without involving technology.

For both of these kinds of systems (the whole and the sub-systems) we need to establish system borders. Our point of departure should be an open system, but it is impossible in practice, and especially within education. We have to establish some kind of borders. System thinking will also try to deal with the uncertainty regarding the cause and the impact in the highly complicated relations described in the figure above. We will return to the system thinking in the discussion later in this chapter.

Thinking in systems will include the concepts of complexity and holism. The students have to know that the concept of sustainability in education is a complex matter. It is not necessarily complicated, but it surely is complex. Complexity has a close relationship to systems, but also to the theories of chaos. The University of Bristol homepage (2014) defines complexity like this:

> The understanding of complex systems refutes the approach of traditional science according to which a system's behaviour can be understood by studying the systems parts independently at each level. The difficulty of a complex system is that often its parts are interacting on many time- and length scales.

Basically seen, complexity means to be complex, compound or multi-purpose, and in its origin it is an ecological concept. Complexity is an old concept, but the first time we managed to calculate a complex natural phenomenon was probably in 1955, when the meteorologist Jules Charney and the mathematician Jon von Neuman developed a computer for weather forecasting. Already in 1904 the Norwegian Vilhelm Bjerknes had introduced the use of seven simple physical laws to calculate the condition of the atmosphere. This was a complex combination of simple physical laws. Science is also familiar with another concept which affects the same topic, the concept of chaos. A third, and maybe a fourth, concept can be mentioned; the concept of uncertainty from physics and the concept of complementarity, also from physics. The point is that there are concepts and tools within science that could be helpful in the education of engineers when it comes to looking at sustainability.

Big complex systems are often characterised by self-organisation, and they are adaptable to new conditions, but they can also be spontaneous and lead to a kind of disorder. Sometime this can lead to chaos. At the same time complex systems have the ability to obtain order and chaos to a kind of balance, a point often called "the edge of chaos".

> The edge of chaos is where life has enough stability to sustain itself and enough creativity to deserve the name of life (Mitchell 1994, p. 12)

This is the point of new ideas and innovation. This is a point where complex systems are spontaneous, adaptable and active. This is the point where change can start to develop. If we maintain that sustainability is about renewable growth, a change in the quality of growth or a new orientation of technology, this is the place to be, and where the students more often should be if it is about taking sustainability seriously in education.

The ideal of integrating all parts of nature is called holism. This is also a concept taken from ecology, and frequently used in connection with sustainability in education. Holism and complexity are closely connected, and were for several decades synonymous. The thoughts and ideas of holism had their days of glory in the German Romanticism, but it was Jan Smuts that gave the concept its name in his book *Holism and Evolution* in 1924. In its origin, within ecology, holism is about seeing the whole. In education it is more like having a broad view, as broad as possible. It is an important concept when discussing sustainability in education, because sustainability is about having a broad view or handling a complex reality,

and because the concept of holism makes it difficult to grasp the content and methods when it comes to didactics.

Engineers are used to handling complex systems within production. There is a lot of logistics and systems engineering as a part of the job of many engineers. So why do we not use what we know about complex systems when it comes to sustainability, and all the good reasons for implement this in the education of engineers? I think that much of the answer lies in the quotation from M. Bonnett above. When implementing sustainability in the education of engineers, we have to discuss the relationship between subjectivity and objectivity. Science and practical problem-solving within the field of engineering has always been seen as an objective task, both in education and research. But if technology is to be judged in connection to sustainability, and if technology is a part of systems including culture and economy, then it is obvious that objectivity is not the whole story.

Already in early 1971 T. Blackburn (Mitchell et al. 2004) described how the claim of objectiveness and value-neutrality in research made the research incompetent. Blackburn meant that we needed something else if we wanted to see the whole, and he turned to Niels Bohr and his idea of complementarity. Blackburn meant that complementarity was necessary if we wanted to understand complex and natural systems, and he used the two concepts intellectual and perceptible to describe the two halves of reality; the objective and the subjective part. The only true picture of reality is composed of facts and our impressions. Scott (2000) means that the responsibility of universities, in the field of sustainability, lies in developing studies and subjects that stimulate the students without having an opinion in advance. In according to him, the education must have content of objectivity and of subjectivity, it has to differentiate between simple problems where one answer is sufficient, and complex problems where formulations consist of relations, and where it is important to see that more than one solution can be the answer.

As mentioned earlier in this chapter, the concept of needs is a vital part of sustainable development. The need of the poor people in the world, and the need of the environment must have the dominant priority. This is a discussion that includes ethics. It is necessarily to understand and to develop ethics if we want to understand the crises of today. Ethical standards are part of traditions and maintained through time. It is two underlying relations with ethics that are problematic in according to sustainability. Firstly the ethics in this connection is almost static; it has to be dynamic, to absorb the necessity of sustainability to include poor people and non-humans. This is more about the practice of ethics (moral) than of ethical axioms. The moral has to adapt to new situations. Secondly this is about ethical conduct. We need actions in the field of ethics from conscious agents:

> Active agents, morally-active individuals, are needed to create paradigms with witch to confront the cultural and political establishment (Paula et al. 2000).

If we talk about ethics with an ecologist in connection with sustainability, the concept of anthropocentrism and humanism, understood as humans in the centre of reality, will emerge. Modernity as a whole is more or less anthropocentric, but taking sustainability into account, and specifically sustainability versus the

environment, it is obvious that the future development has to give up this anthropocentrism. This is a philosophical problem, and we leave it here.

7.2.4 So What Shall We Include in the Curriculum and How Shall We Teach?

The contributors to the debate on how to teach sustainability seem to agree on that it has to be a kind of active learning. The students need to learn the art of investigating, and active learning will in addition support a personal development by supporting reflection and critical thought. Passive learning supports analytic thinking and "professional objectivity", and not the need to think synthetically.

The teaching environment has to be responsible in helping the students to understand why reflections on sustainability are in their own interest. The teachers have to use pedagogic methods for active learning, and these methods must help the students to see or include several perspectives. A main aim for this is that the students continually think that sustainability is an important matter after their formal studies are completed. The students have both to learn how to learn, and how to think critically. There is a tension here between cultural development, economic possibilities and environmental claims that can be felt as a straitjacket, but that also contains numerous possibilities that have to be seen.

There are probably many ways of teaching sustainability, but it seems that one method that is to be preferred, and that is problem based learning (PBL). This is not the place to discuss PBL in detail, but we have to mention some main content or stages in problem based learning. PBL has some characteristic stages:

The students meet the problem or the situation. The problem can be presented by students, the teachers or others. The students have to evaluate their own knowledge and the understanding of the problem.

The group has to identify and formulate the problem(*s*). Normally the teacher leads the discussion. This is the place of reflection over team values, individual skills, how to organise the work, hypothesis of causes and the connections between problems and causes.

Required new knowledge. What shall the students learn for themselves, and what can be, or must be, obtained from external sources.

Solutions of the problems. Potential solutions will be identified, investigated and communicated. The teacher provides critique and takes part in the discussion. This step will be repeated until an acceptable solution is at the table.

This way of learning may be uncommon for an engineering student, because in science attached to technology we usual are searching for one right answer, and that is not the point here. When teaching about sustainability, one right answer is not the point:

Table 7.1 Transformation

⇓	Ultimate means nature capital	Science, technology	The biosphere, raw materials, solar energy
	Intermediate means	Politics, economy	Built, human capital, machines, etc.
	Intermediate ends	Ethics, theology	Human/social capital; health, communications
	Ultimate ends		Society, well-being, self realisation

> but rather to find the "right" questions and to develop the capacity and inclination to answer those questions in an insightful, critical and consultative way (Mitchell et al. 2004, p. 48).

Changing the way of teaching from "knowledge delivery" to PBL is difficult and challenging for both students and teachers, but it has to be done if sustainability should be taken seriously. When we teach sustainability we usually take the situation in the Fig. 7.1 as the starting point. We put together, or let the students take the role of sociologists, economists, environmentalists and technicians. This can be a useful way of handling a complex system, but in a world where sustainability is important, the categories are not as discrete as the figure shows. The lines between the areas in the figure are an illusion. William Scott offers another view "which nests human activity and what is meaningful to us within a hierarchy resting on natural capital" (Scott 2000). It presents a system view that distinguishes clearly between means and ends, and between the ultimate goal and the intermediate, as shown in Table 7.1. Table 7.1 shows, in the vertical direction, the steps in the transformation of our natural capital and basic means to our defined and ultimate goals. The second column shows the area of knowledge used to obtain the steps and the ultimate goal. The column to the right shows the starting point and then the results of each step in the social development.

This table tries to illustrate that we are totally dependent on the environment, science and technology, culture and ethics.

> It also reminds us that there are ultimate human ends beyond the products of industry and our institutions. This is something we are all apt to forget: whichever end of the ideological spectrum we view such issues from (Scott 2000).

As mentioned above, we are as engineers used to seeking the right answer, and hopefully find a number that can tell us if the solution is acceptable or not, but that in the case of sustainability this is different and difficult. But often in teaching technological subjects we try to avoid the problem of no right answer, and sometimes this can be a fruitful approach to the discussion of sustainability. I am

thinking of methods of doing life cycle analysis (LCA). Mainly LCA is used for two purposes:

Declaration of products. This can be used to tell buyers the content of a product or something about the production process (CO_2-emission)

Comparison. Two products that do the same job can be compared to each other looking at specified parameters over the life cycle, or two different versions of a product can be compared to each other.

Using programs for a LCA can be useful, and maybe necessary, as a tool in the teaching of sustainability.

7.3 Discussion

There are three main discussions when it comes to sustainability and teaching technical topics. The first one is about sustainability as a part of the modern project; the second is about sustainability as a concept; and the third is about the content in the teaching of sustainability and how. Sustainability as a part of the modern project is a part of a larger philosophical discussion, and will not be discussed here in detail, but we have to mention it. The starting point for this discussion is the claim of seeing the whole, seeing the totality. Several thinkers, and Jürgen Habermas as the highest profile one, think that modernity has failed because it has allowed the totality to be divided into independent specialities and handled by experts in each field. In their mind this division is not in the interest of us as individuals, because we seek broader relations and the great narratives. Or as Jean-Francois Lyotard says:

> What Habermas requires from the arts and the experiences they provide is, in short, to bridge the gap between the cognitive, ethical, and political discourses, thus opening the way to a unity of experience (Lyotard 1984, p. 72)

The question is what kind of unity Habermas and others have in mind. Is the aim of their modernity the constitution of sociocultural unity where science, technology and the great narratives constitute an organic whole? This is a broad philosophical discussion. If we leave the philosophical question of sustainability in higher education, and focus on what the government tells us to do, it is easier to get a clear answer. As mentioned earlier in this chapter, the politicians do not mention the word sustainability in their learning outcomes for engineering studies, but it is not possible to misunderstand that they have sustainability in mind, when they write and talk about technology and society in their basic learning outcomes.

The second discussion to be mentioned here is about sustainability as a concept. First of all sustainability says nothing about what shall be sustainable: an ecosystem in balance, our culture, human needs or economic growth. All these different aspects of sustainability will give different meaning and understanding, and different solutions. Difficult sides of sustainability are that it is too theoretical and too broad, and therefore almost impossible to handle. The potential meaning is so wide and all-embracing that the question "sustainability for who or what" is complete open. There is no prioritisation. Additionally, in all these definitions, the term "sustainable development" carries implications of a prior commitment to economic growth which raises doubts about the meaning of accompanying phrases such as: "living within the carrying capacity of supporting ecosystems", "in harmony with nature", "protecting and enhancing the environment now and for the future". (Stables and Scott 1999, p. 146)

In the ongoing discussion, sustainability is used as self-evident and neutral, as it refers to an obvious wish to live in a condition of equilibrium when it comes to environmental sustainability. At this point in the discussion the claim for inherent values in nature enters the arena. On the other side sustainability can be an adjusting ideal as long as it does not demand absolute legitimation. The reason that sustainability can play an important role, and why it appeals to so many, is that sustainability has the potential to harmonise two politically attractive, but conflicting terms: firstly we want to take care of what is valued, but that has the risk of being destroyed by depletion and pollution, and secondly the idea of human development for the best of all humans.

We have seen that doing a Life Cycle Analysis (LCA) is one way to measure sustainability. But there are two main problems with a LCA. The analyses are about the technical processes at one side and the environment on the other. The points of contact between this two and the effects of the contact are so many when we are talking about a whole life cycle that the analysis will be extremely complex. Secondly there will be a huge challenge in making a definition of the systems that are to be analysed. We talk about several systems that interlock and the quality of the analyses depend heavily on the system definition. Ecological footprint gives us a number that mainly is about consumption, and cannot be used to point out where in a process we should improve. It is an objective number, but gives no overview of a production process, or where all the connection points between technology and society are. When introducing sustainability in technical studies, it is important to hold on to objectivity at the same time as subjectivity is introduced. It is possible that the claim of objectivity should be weakened in some extend, but if objectivity should be less important, it has to be so by letting subjectivity challenge it in a fruitful discussion.

The third discussion here is about sustainability and education, and it can be summed up as: this is too much and can be too narcissistic. Engineering studies have traditionally taken care of needs in a society. This education has some professional technical requirements, and requirements regarding productivity and

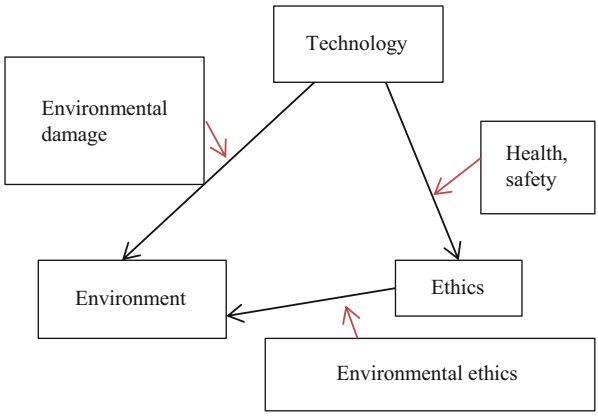

Fig. 7.4 Technology as part of a huge system

for further studies. Now, when sustainability is a part of the education, we have to come up with a supplement, and give the students skills within ethics, environment, social systems and problem-solving. What is problematic and why it can be too much, is the claim for seeing the whole, holism, and interdisciplinary.

We have already seen that technology is a part of a huge system, and it is impossible to cover it as a whole. Even when we consider a small part of this system, it will be big enough. In Fig. 7.4 technology is shown as part of a huge system or part of the huge technology/society system shown in Fig. 7.4. This is an example of a part of the huge system of technology and society, and an example of some dependencies between technology and other subsystems. We will only consider the small part of the system consisting technology, ethics, and environment.

Technology is linked to ethics in many ways. Here we are only talking about health and safety. Taking this connection seriously will imply a lot of rules and laws, maybe unknown for an engineer, and he/she has to work together with other groups of skilled people who do not have their competence within technology. Through the link between technology and environment, the engineer meets botanists, biologists and other professions. So it is with the link called environmental ethics too. There is a big discussion on what role technology plays, within the discussion of environmental ethics. Another example is what role technology has, through innovation, on settlement, democracy, economy. Figure 7.5 shows a simple picture of how technology has influence on social arenas.

Sustainability within the studies of technology can be divided into two parts, two parts that are not independent. One is the technology or the product itself. Here doing a LCA can be fruitful to obtain improvements in products and production processes. The other part is about the process of working, that surely can improve the quality of technologies, but more important: it is a part of living in a sustainable society; it is about care and changing attitudes.

Sustainability is not a subject in the same way as traditional technical subjects within studies. It should be incorporated in many subjects if not all, and thus there is a risk for that it will be seen as an abstract concept. For engineers this will mean

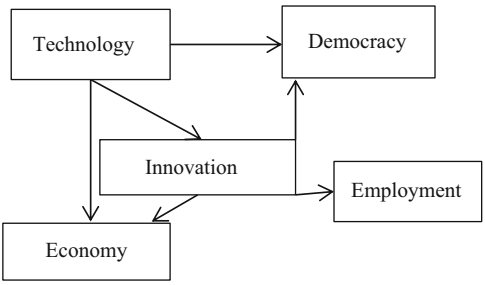

Fig. 7.5 The role of technology

looking at systems that consists of more than technology. The only way of dealing with this is shifting to other forms of didactics, such as PBL or similar methods. If the aim is to incorporate sustainability in higher education in general, and in technological studies in special, the universities need determined leadership and dedicated teachers. This is important and not easy, not easy because the leaders of faculties and institutes are educated and trained in the "old" school, and have to break out of the normal way of thinking.

There is no tradition in engineering education for things other than looking for technical solutions that are economically profitable, and some, like Fiona S. Crofton, argue that giving priority to sustainability can come in conflict with new developments within technology and science, shifting social needs, other priorities from industry and colleagues, and it will certainly come in conflict with time given for the studies.

7.4 Conclusion

It is necessary to introduce sustainability in higher education, and in technical studies in special, because of the possible impact technology has on society and the environment. There is no way of getting around the problem of letting sustainability be a part of engineering education. We have to move ahead, but in doing so, we have to give some subjects a priority because of the waste content of sustainability. What is said about systems and system thinking reflects this. The big question is how to change the attitudes of the students and the members of the staff. To do so the universities got to have determined leaders. The students have to learn other skills than today, as thinking in systems, ethics, sustainability, co-operation with other professions and working with other methods of didactics, such as problem based learning (PBL). This is a great challenge because of the limited time the students have for their education.

Chapter 8
Sustainable Manufacturing as Mutual Competence Building

Halvor Holtskog, Richard Ennals, and Hans Christian Garmann Johnsen

8.1 Introduction

Companies are facing an increased need to address innovation, as well as environmental and corporate responsibility issues. In the context of globalisation, and increased competition on the basis of cost and scarce energy resources, it is vital to empower both management and workforce to seek and maintain processes of continuous improvement, energy and resource efficiency, and to develop internal cultures for addressing environmental and responsibility issues. Companies will not be able to do that unless they are able to develop an inclusive and collaborative culture inside the organisation, as well as across organisations (Ennals and Gustavsen 1999; Johnsen and Ennals 2012a, b). What can organisational theory and management theory offer in order to guide these challenges, and which organisational design principles should be recommended? In this chapter we argue that no single theory provides answers to these questions. Rather we argue that universities can learn from enlightened companies as they address the challenges of sustainability. Companies can also learn from universities, in a process of *mutual competence building*.

The chapter refers to joint reflections by the authors, related to understanding trends in industrial organisation in Norway. Through analysing cases, both studies made together and case studies made by each of the authors, we have observed on the one hand that concepts like "Lean" and similar organisation design principles are commonly referred to in manufacturing industry. On the other hand, there is no

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one single interpretation or application of these design principles. Rather we observe that sustainable manufacturing companies today are *balancing different organisational design principles*.

When we link this observation to the concept of sustainable manufacturing, we argue that special skills are required in order to make sense of the complex and partly conflicting challenges for manufacturing industry. This chapter tries to put this into a theoretical and historical perspective, in order to focus on the skills required. The chapter starts with a broad picture of the development of industrial organisation, and of sustainability trends and thinkers behind them. This locates sustainability thinking in companies within the overall picture. Deepening and expanding this picture will refer to socio-technical systems, as well as human-centred dialogical approaches to manufacturing. We will examine processes of continuous improvement implemented through quality circles as a way to integral to corporate strategy: how does this promote and deepen our understanding of sustainability both in higher education and companies? We argue that *mutual competence building* concerns the ability to balance different organisational design principles with innovation and sustainability, and dialogue with the environment including higher education.

8.2 Description

8.2.1 The Historical Backdrop

In order to address these questions, one can visit the historical debates within the field. A normal reference to start such a review is Frederick Winslow Taylor *The Principles of Scientific Management*, published in America 1911 (Taylor 1914). Taylor's principles became academically famous, not least because they formed the background for the large organisational experiments at the Western Electric factory outside Chicago from 1924 to 1932, the Hawthorne Works. Taylor, an engineer, argued that one could, through scientific methods, identify the optimal and most resource-efficient work routines. His argument resembles that of Auguste Comte (1798–1857), two generations earlier, who had made similar arguments in favour of the philosophy of positivism [Comte (1830)]. Henri Fayol also developed a similar conception of management in the early 1900s. His major work, *Administration industrielle et générale*; *prévoyance*, *organisation*, *commandement*, *coordination*, *controle*, was published in 1916. One of the methods that Taylor proposed was to identify best practices, and make them into standards and routines.

Starting out as a scientific management project, the Hawthorne experiments soon became an ideological battleground. Gillespie's (1993) analysis of the Hawthorne experiments shows how the scientists manufactured knowledge in the sense that (a) the theoretical perspectives of the researchers influenced what they emphasised, and (b) the same experiments were interpreted in very different directions, not least

as a result of Elton Mayo taking over the project in 1931. Mayo's influence led to the development of an alternative theory that was named the Human Relations position. The ideological shift, from scientific management to human relations, was not so much an outcome of the experiments, as a shift among those who managed the experiments. However, the project established the reference point for the divide between scientific management and human resources that has existed ever since.

The difference between the two positions; scientific management and Human Relations, was summarised in Douglas Murray McGregor's influential book from 1960, *The Human Side of Enterprise*. Here McGregor identified the two positions in the debate as theory X and theory Y. This debate exemplifies two main principles of organisation design; on the one hand structure, system, extrinsic motivation and control, on the other hand self-realisation, intrinsic motivation and self-control.

It is an interesting historical coincidence that Joseph Schumpeter in 1911, the same year as Taylor published his book, published in Vienna the book *Theorie der wirtschaftlichen Entwicklung*, which in 1934 was translated into English as *The Theory of Economic Development*: *An inquiry into profits*, *capital*, *credit*, *interest and the business cycle*. It was in this book that the logic of the entrepreneur was outlined. He developed two categories of economic actors: on the one hand the capitalist or industrialist, who utilises economies of scale, on the other the entrepreneur, who is an inventor, somebody who sees new, innovative ways to use resources and explores market opportunities.

The dualism between exploitation and exploration, production and innovation, bureaucratisation and formalisation versus learning, development and creativity was thereby established. We can talk about two ideal types. Max Weber had developed the ideal type of bureaucracy in a discussion of modernisation and differentiation in society. He saw the development of bureaucracy as a natural response to the emergence of modern society. At the same time, there developed, both academically and in society, hostility to some of the features of modern society. The dualism therefore also became political and ideological. Another reference to the dualism between the formalised, structured and routinised organisation and the more dynamic, innovative and creative one is found in Philip Selznick's 1957 book, *Leadership in Administration*: *A Sociological Interpretation*. In it, Selznick argues that there is a distinction between being an administrator and being a leader. Leadership goes beyond supervising procedures and rule-following. Leadership implies looking forward, motivating new possibilities and making adjustments in the organisation. Administration is authoritarian, top–down, and hierarchical; leadership is communicative, bottom–up and vertical.

Burns and Stalker, who worked at The Tavistock Institute of Human Relations in London, summarised this discussion in their 1961 book *The Management of Innovation*. They formulated it as a distinction between mechanistic management and organic management. With *mechanistic management*, they implied that there are differentiations of functions according to tasks, defined as abstract categories, differentiations between hierarchies in the organisation, a precise definition of rights and obligations, and rights and obligations translated into methods and responsibilities in functional positions. They argued that this implies a hierarchical

structure of control, and the localisation of specific knowledge in the hierarchy, with interaction being mainly vertical. Accordingly, work behaviours are governed by instructions, and there is a strong insistence on loyalty. This management and organisational form implies that greater importance and prestige are accorded to specific and local knowledge, as compared with general knowledge. This resembles many aspects of Max Weber's ideal type of bureaucracy (Weber 1978).

With *organic management*, Burns and Stalker (1961) implied, special knowledge relates to the common task of concern, the overall situation defines the individual task, and individuals are task-adjusted and redefined in their interactions with others. This implies limited definition of rights, obligations and methods. Reasonability is expected of everyone, and commitment stretches beyond one's individual task. The system of control, authority and communication is seen as a network. This organisation is omnipotent in the distribution of tasks. Tasks are located where they are most relevant. Communication is lateral (both horizontal and vertical) and tends to take the form of consulting more than commanding. There is a strong commitment to progress and values, and to prestige related to the whole organisational milieu.

Other examples could be presented, but the point is that the dualism that distinguishes between a static, hierarchical and bureaucratic vision of the organisation on the one hand, and a more flexible, dialogical, open and innovative organisational vision on the other, is a well-established dualism in organisational and management theory. We can see them as ideal types; we have at one extreme the analytical tools related to model I learning, implemented through the use of authority, and at the other, intuitive tasks, related to creative learning and theory-building in practice by means of dialogue. These extremes presuppose very different kinds of personal qualities in other respects as well: analytical problems presuppose loyalty, predictability, the obeying of, and non-individuality, while intuitive tasks presuppose creativity, individuality, vision, commitment and other qualities such as variety of experience, intimacy of communication and responsiveness. Thus we can say that by 1960 the main dimensions in the theoretical field of industrial management and organisation were established.

8.2.2 The Norwegian Tradition

The Norwegian Working Life Research tradition fits into this international theoretical development. The tradition has been analysed in numerous works (Gustavsen 1992; Ennals and Gustavsen 1999; Levin 2001; Fricke and Totterdill 2004; Gustavsen et al. 2007; Ekman et al. 2010; Johnsen and Ennals 2012a, b). In fact, it was the Tavistock Institute that provided the theoretical support for the initiative that led to the collaborative studies (Samarbeidsforsøkene) led by Einar Thorsrud and Fred Emery in the early 1960s (Emery and Thorsrud 1976). Their work was cross-disciplinary and close to practice. Interactive research approaches integrated human and productivity aspects in enterprise development. The work has

continued in different forms, combining insights from social science, economics and technology, with experience from many processes of development and innovation in working life. It has its roots in the Human Relations tradition, but moved beyond that in terms of democratic and broad direct participation at all levels in the organisation (Gustavsen et al. 2001; Johnsen 2001; Klev and Levin 2009; Røvik 1998).

The democracy project in Norway came as a result of a co-operation that started in the 1950s, between the social partners and the government, to establish a research milieu for workplace development in Norway. To help developing such a milieu, co-operation with the Tavistock Institute in London was initiated. Both Fred Emery and Eric Trist, who came from Tavistock, had a particular perspective on workplace development, known as the socio-technical approach (Emery and Trist 1965). This approach implied among others, that the organisation was seen as a system consisting of two main sub systems; the technical sub-system and the human-sub system. It was an approach that had positioned itself against other dominant discourses at the time. They wanted to include technological change in their theory, but avoid technological determinism (Trist 1981). They also wanted to have a participatory perspective, but wanted to avoid the type of social psychology that they found in the Human relations movement (Trist 1981). Less articulated, but also important, is that they wanted to avoid making their approach into a managerial theory.

Their systems approach implied that one could discuss organisational development, without addressing leadership directly. Thereby, one avoided a confrontational debate on how their approach positioned itself in the ideological battle over democracy and capitalist interests in Norway. Other factors contributed in the same direction, and there were political discussions and disputes. The fact is that one was able in the 1970s to develop workplace legislation that opened up participatory arrangements in companies, without there being a deep and dividing conflict of the sort that we saw in other countries, in example Sweden, but more severely in France. Participatory work systems, self-steering groups and the like, were simply seen as smart ways of organising businesses. The model was seen as the Norwegian or Nordic approach to democratic capitalism (Byrkjeflot 2001).

8.2.3 The Communicative Turn

If we move to the situation in Norwegian Work Life in the beginning of the 1990s, most of the ideas of the democracy movement in the 1960s had been integrated into modern managerial practice. Decentralised solutions and participatory processes had been absorbed into organisational design principles like Total Quality Management (TQM), management by objectives (Drucker 1954) or Quality Circles (Ishikawa 1980; Deming 1982). Work Life Research includes not only organisational, managerial and sociological perspectives and, but lately also geographical perspectives. The last related to how businesses are integrated in networks and

regional innovation systems (Ekman et al. 2010). One could say that all four paradigmatic positions identified by Burrell and Morgan (1979) were represented in the Norwegian discourse. We find radical humanist arguments (Eikeland 2008), structuralist arguments (Emery and Trist 1965), interpretive sociology (Johnsen 2001) and functionalist sociology (Clausen 2011) arguments. A main divide existed between *structural and functional* arguments on the one hand, and *humanist and interpretive* arguments on the other. This difference is more than words, it is about how you practice participation, and not least how you interpret and relate to it as researchers.

Bjørn Gustavsen introduced the communicative perspective on workplace development in the 1990s in Norway (Gustavsen 1992; Toulmin and Gustavsen 1996), building on his work in Sweden in the 1980s in the LOM programme.

> The programme "Leadership, Organisation and Communication" (LOM) was a research and development programme from 1985 to 1990, with the intention of supporting local processes of change in the private and the public sector (Drejhammar 1998)

The philosophical and paradigmatic foundation of this initiative came from the communicative theory of Habermas (1981, 1984), but integrated into a humanist/interpretive understanding of the participatory workplace tradition in Norway.

A core of this perspective or position was development through dialogue. It argued that the dialogical approach represented two main deviations from a more functional/structural understanding of workplace development: on the one hand, that reality is created through dialogue, and on the other hand, that in addition our knowledge about this reality is developed through our dialogue. Dialogical development is therefore a key both to development and to our understanding and interpretation of development. One can argue that both represent an *epistemological* critique of an excessive *rationalism* represented by structural and functional perspectives on organisations. Gustavsen aimed his critique against the socio-technical approach, as is indicated by Table 8.1.

Table 8.1 Gustavsen on dialogue

Characteristics	Experimental oriented	Dialogue oriented
The logic of the project	Linear	Interactive
Chief theoretical source	Socio-technical and socio-psychological/theory of organisation	Theory of participative democracy
Legitimacy	The content of the solution	Participation in the process which creates solutions
Leading actors	Few	Many
Definition of initial conditions	Zero-point	On-going process
Situational map	Highly structured	Minimally structured
Procedure	"Big jump"	Stepwise

Source Gustavsen (1992, p. 7)

8.2.4 Recent Discussions of Workplace Innovation

Recently, there has been increased focus on workplace innovation as being important for economic development (Black and Lynch 2004; Pot 2011). However, there are many different discussions and concepts that address this issue. Organisational design principles are often discussed as management fads, or as introducing foreign management practices in companies (Huczynskia 1993). Some of these are in conflict, whereas the Nordic countries often have emphasised participatory concepts in contrast with more management driven concepts (Ekman et al. 2010). Some argue that organisational design principles are contrary to more contextually based processes, or an obstacle for real engagement in work processes.

This last argument has, not least, been used related to the introduction of Lean concepts in Norwegian enterprises (i.e. Gustavsen et al. 2001). There has been a Norwegian discussion about Lean and learning. Often, organisational concepts are seen as management driven, top-down approaches in conflict with participatory organisational approaches. However, an organisational concept like Lean might contribute to a more rational, internal communication in the company, and thereby to incremental innovation. This argument is in line with David Hutchins' account of Hoshin Kanri in Japan (Hutchins 2008).

Following values and thoughts from the collaborative studies, Employee-Driven Innovation (EDI) has come into focus, extending effective engagement. "Employees typically acquire exclusive and in-depth and highly context-dependent knowledge that managers often do not possess", Kesting and Ulhøi (2010) argue. Employee-driven innovation (EDI) argues that autonomy in teams will bring innovative ideas from the employees in a bottom-up manner (Pedersen 2012). Central to EDI is that

> "learning can produce innovation" and there is "complex interplay of processes that include factors at the individual level as well as organisational culture" (Pedersen 2012, p. 4). EDI: ". . . refers to the generation and implementation of new ideas, products, and processes, including everyday remaking of jobs and organisational practices, originated from interaction of employees, who are not assigned to this task" (Høyrup 2012; Kesting and Ulhøi 2010). In addition, "the processes are unfolded in an organisation and may be integrated in co-operative and managerial efforts of the organisation. Employees are active and may initiate, support or even drive/lead the process" (Ibid, p. 8)

High technology creates exclusive and in-depth context-dependent knowledge. Only employees can hold this kind of knowledge embedded in the context of the work.

Learning or organisational learning forms an important part of this. By learning we mean "a social process involving social relations (shaped by social institutions) and learning itself (a 'cultural object' created by artful practices of cultural work)" (Gherardi and Nicolini 2001, p. 53). A similar approach is set out in the tradition of Quality as Empowerment, and the Japanese *Hoshin Kanri* (Hutchins 2008), where bottom up processes of continuous improvement, often implemented through Quality Circles, are integral to corporate strategy. Thus there are many and

competing organisational design principles. Pålshaugen has lately argued for a pluralistic approach (Pålshaugen 2013), as a way to avoid fragmentation and theoretical locking in. At the same time Pålshaugen argues that this opens up meta-discussions; what are the overriding perspectives guiding Work Life Research in general and industrial management and organisation in particular?

8.2.5 Thinkers That Formed Sustainability

So, we see that, from a theoretical point of view, there are many different approaches to industrial management and organisation. How can this be combined with a focus on sustainability? In order to discuss that, we need to look at what we mean by sustainability.

Sustainability has been at the centre of attention for decades, especially for activists. From the early warning cries, like the campaign against DDT and chemical industry, and the resource depletion suggesting a biophysical growth limit of our society (Carson 1962; Meadows et al. 1972). They build on conservation ethics promoted by Leopold, regarded as the father of wildlife management (Leopold 1966). The argument is that humanity is part of the land, and the land must be regarded as a community of different species, not as a commodity. This follows the main argument of preservation.

The World Commission on Environment and Development (1987), chaired by Brundtland, believed that a reversal of human made damage to the environment, and making a better world, was possible. However, they pointed to the need for strong political will and international commitment to change. The report had three main points: environmental conservation, social equity, and economic growth. In the sense of environmental conservation, the argumentation was in line with Leopold and the early warning cries, and it pointed out that the world must sustain human progress all over the world, not in just a few places. Economic growth was seen as a tool for developing countries to have equal quality with developed countries. The two latter points stand in somewhat contrast to the resource depletion movement. These three main points became known as the triple bottom line. Elkington (1997) asked the rhetorical question "is it progress if the cannibal uses a fork?" as a critique and answer to the positive World Commission on Environment and Development (1987) report. He meant that the companies must change their fundamental thinking in order to make a difference. Sustainability as a corporate agenda must be about economic prosperity, environmental quality and social justice, and only through a balanced approach of these three can sustainability be achieved. Stakeholders must be engaged by motivating the companies to detect social, economic and environmental risks and opportunities. He suggested the 7D analysis in order to battle companies against entering the "CNN-world" of pressured thinking and short-term commitments.

After the World Commission on Environment and Development (1987) report and the triple bottom line discussion there has been technological optimism, related

to the expectation that efficiency through technological advancement will minimise the overuse of natural environment, decreasing the availability of non-renewable resources and minimised waste (von Weizsäcker et al. 1997). The technological optimists argue that moving towards efficiency thinking will use resources better and create better life. Other benefits, claimed by the technology fix movement, are: the results of focusing on efficiency are less pollution and depletions, more profit, harnessing markets and enlisting business, multiplying the use of scarce capital, increasing security and employment. Building on the eco-effectiveness argument is "Cradle to Cradle" (McDonough and Braungart 2002). The main arguments are that redesign of products for manufacturing helps to get free of known culprits, follow informed personal preferences, create and activate a passive positive list, and reinvent.

Against this technology optimism the social activist movement represented by "Unsafe at any speed" (Nader 1965) argues that governments do not always act in the public interest, business often lags on social responsibility when action implies short-term costs, and in the absence of governments policy and business responsibility, consumer activism is critical. Naomi Klein argued in "No Logo" (2000) that since multinational companies are not responsible to others than their shareholders, they will not act responsibly. Korten (2001) argues that we need an ecological revolution, where people are put first and ahead of corporations, local communities ahead of global trade, and nature before money. Finally, the Wall Street movement got support of their claim for reducing corporate power and influence by Bakan (2004). Both Bakan and Korten meant that the Corporate Social Responsibility paradigm is a sidetrack.

In contradiction to the social activist movement is the belief in business as a powerful force in sustainability. Lots of books tell how business can play a force in reshaping our society. One of the most famous is "Business as unusual" (Roddick 2000), which tells the story about Body Shop and the fight against experiments on animals. Other examples are "The Ecology of Commerce" (Hawken 1993) and "Maverick" (Semler 1993). The latter tells the story about changes made in the Brazilian shipbuilding supplies manufacturer Semco. Looking at social responsibility in the poor countries, and how to overcome many of the problems of poverty in a capitalist way. A more direct support of CSR can be found in "The Civil Corporation" (Zadek 2001), which argues for three stages in CSR: fixing problems, evolving strategies and reshaping markets.

Finally, Lomborg's "The sceptical environmentalist" (2003) fired up a heated debate about global warming and environmental concern, as he claimed that things have been getting better, not worse, over the last 50–100 years. On a number of parameters he showed that things have become better, like higher life expectancy and more people getting education, etc. On a company level, his argument is that one cannot expect business to do more than CSR. Poverty, pollution, etc. are policy and political problems and must be addressed by the government. In this respect, his argument is similar, and points back to the World Commission on Environment and Development (1987) report.

These different perspectives on sustainability illustrate that the word sustainability is used and understood in many different ways. They also paint the broad and overall picture of the sustainability debate with a special focus on corporations. Beneath this overall, broad debate, other more pointed debates also addresses sustainability in ways that are more indirect. The British research community of Artificial Intelligence had some critical voices towards the rationalistic approach of thinking AI as a form of formalising tacit knowledge into implicit knowledge (Cooley 1987; Gill 1988). These voices turned the attention to the Scandinavian tradition of more human centred systems and the workers wellbeing focus. Here the tacit dimension of knowledge is valued, and said to be the crux of the debate when it comes to acquisition and transfer of knowledge and skills. In many ways, the Scandinavian tradition builds on an idea that there is a deep "interrelationship between tacit and propositional knowledge" (Gill 1988, p. 338). Machines have a supportive role for humans, and knowledge is not a commodity, but corporation's profit spins out of cultivating human knowledge.

The question we try to address is how to develop sustainable manufacturing, which among others implies *sustainable work systems* (Docherty et al. 2008). The concept of sustainable work systems was developed in the 1990s, based on work on organisational development in the Scandinavian tradition. It was argued that a work system had to comply with meaningful work and create engagement and use knowledge in the organisation. The effort is both a top down and a bottom up approach, where every voice in the organisation should be heard. In this way, a hearing and discussion process gains a common understanding of the goals throughout the organisation. In the Scandinavian tradition, we find the same thoughts of sharing common goals and humanising the organisation.

8.3 Discussion

8.3.1 The Challenge to Industrial Organisation

Scandinavian and Norwegian companies (like companies worldwide) increasingly face global competition. They often have foreign owners, and are in a constant battle for working smarter through automation, effectiveness and efficiency. Modern manufacturing industry is often organised as matrix organisations with ambiguous work roles. They apply a combination of expert knowledge and knowledge derived from praxis. Awareness of responsibility and sustainability issues has to be comprehensive. The increased degree of automation, and knowledge intensive processes and systems, require the role of the expert and the 'blue-collar worker' to merge. The learning perspective, with knowledge transferred from the expert to the others, becomes increasingly important.

One can argue that the reindustrialisation of Europe is due to companies integrating in value chains, and helping develop value throughout the chain. This

requires competences of communication, dialogue and innovation. Thus companies in high cost countries, in order to meet global competition, combine management concepts and methods with specific contextual, historical and cultural patterns. In the Norwegian case, this means combining insights from both dialogical and structuring organisational processes. The main issue is how the tension between different concepts and traditions are mediated in a concrete work situation at the workplace, and thereby create a new practice.

In Norway we find characteristics of this type of organisation in the sectors of maritime and oil and gas, where engineering is a crucial part of delivering the right product, at the right quality, and on time. Projects are organised as autonomous work groups, given a mandate, time horizon, and a brief specification of the expected output. Therefore, project groups can be extremely autonomous, creating a multitude of sub-cultures in an organisation: in turn constructing demands for new ways of managing and developing organisations. Managers need to utilise this capacity: both between project teams, and to enhance new and competitive services and products. A person can be both a leader and an employee in the same company, or one can have many leaders related to the same task. The dichotomy of management versus employees now makes little sense. Rather than retaining the dual roles of employee and management, flat and informal organisations, implies that employees significantly contribute to everyday and strategy decisions. One illustration of this can be the research done by Ringen (2010), where he showed that these autonomous teams start out in one direction, but the ideas and inspirations that become the actual fulfilment of the innovation could come from many sources. A coupling-producing firm took one idea from the Lean tradition, one-piece flow, and made use of this to accelerate the production illustrated this creative process. Instead of producing each product in batches and the setting up the production line for another product, they managed to design the production lines in such a way that the changes took just one tact time. The result was production that is more flexible, and just the right amount of each product was produced.

Another side of the autonomous team is the co-ordination cost and the desire to make system-wide effects across teams. Ingvaldsen and Rolfsen (2012) showed that this was a challenge in the Norwegian Model of industrial democratisation. Management was eager to implement what one autonomous team found out to the other teams in such a way that work speed increases and the quality of the work became greater. However, making autonomous teams learn from each other was a difficult task that required huge coordination efforts and cost. It seemed that people wanted to learn for themselves not so much from each other. Fujimoto (1999) called this "fat design" when he discovered that product development teams at Toyota wanted to relearn things that other teams have discovered. Running the same tests again was really "reinventing the wheel".

Dialogue can play an important role in linking bottom-up improvement processes and more top-down strategy. Management and organisational structures support and facilitate learning and knowledge creation at all levels of the organisation. Technological advances in production and automated processes have led to more educated and specialised operators or experts, who are vital to successful

production (Holtskog 2013; Holtskog and Ringen 2013). Keeping the description of operations and routines up to date with insights learned by experts is a challenge (Ringen 2010); likewise, seeing the value of their suggestions and ideas (Ringen et al. 2012). Securing high quality cannot simply be taken care of in a system. It starts with every process in the internal value chain (Ringen and Holtskog 2011). It is important to develop understanding of Quality systems in autonomous work groups (Fricke and Totterdill 2004), and Quality Circles (Ennals and Hutchins 2012).

Applying Learning Circles related to Quality systems takes into consideration the systems perspective, where organisations can learn within the framework of 'popular' manufacturing systems such as Lean, TQM, Quality, and Six Sigma. These systems are becoming more widespread in Norwegian companies, especially in companies in a global context. The latter is related to which actors trigger the implementation of such a system. It can be global customers, foreign owners or regulations at industry or country level. For instance: Lean is now a familiar term in most companies, even in the service sector, often manifested as a comprehensive manufacturing system including everything from procedures at operational level, quality, HES (Health, environment and safety), customer orientation, business development and management practices. In terms of sustainability, these systems should encourage environmental and corporate responsibility issues in the organisation. Comprising all these aspects of an organisation it will certainly affect teams' degree of autonomy, co-operation, performance, understanding, and learning capability. Thus the capacity thorough the organisation to balance different organisational design principles is essential to companies' competitiveness.

8.3.2 Combining Innovation and Sustainability

What is it that builds this reflective competence? Beliefs and values are formed and held by different members of the organisation. Argyris and Schön argue that systems of beliefs underlie action, and are derived from various actions, or procedural descriptions on how to do things. They call this theory of action (Argyris and Schön 1996). Theory of action is for them divided into two forms; espoused theory, which explains or justifies a given pattern of activity, and theory-in-use, which is implicit in the performance of that pattern of activity. Theory-in-use can further be divided into model I, focused on unilateral control and often resulting in defensive actions, and model II, emphasising productive reasoning and robust testing of claims. In model II the reasoning and testing prevent mechanisms like self-fulfilling, self-sealing and error-escalating processes that are common in model I. They also make a distinction between the individual and the organisation, hence model O-I and O-II stand for organisational learning model I and model II. Ideally, these two theories should be the same; most often, they are not. Each member of an organisation has their own theory-in-use, and does not have the whole picture of the organisation.

In practical terms, and in the context of structural changes in Higher Education, we could imagine new ways of working in Higher Education, such as Students' Quality Circles (see Chap. 11). Student empowerment should mean that students can take the lead in managing their own work. This changes relationships with academics, who become partners. We might explore the scope for expanding work-based learning. Work in the Knowledge Society may have a different relationship with education. This may involve work placements and consultancy projects. Thus, a key to combining efficiency, democracy and sustainability in manufacturing relates to processes of dialogue and learning. *Mutual competence building* is about developing capacity in the organisation for that.

According to the timeline set up by Shah and Ward (Shah and Ward 2007) of critical phases in the lean production evolution, academic progress was mostly between 1988 and 2000. After this period the ratio of academic conceptualisation to lean and empirical articles has dropped. The field is now dominated by books and articles written by practitioners and consultants. The famous book, "One best way" (Freyssenet et al. 1998), describes clearly that companies adapt and use only what they find can support their operations, therefore there is diversity in how companies do their operations even in the automobile industry and even inside Toyota itself. However, there are some common principles as Netland (2012) points out, or as he put it "XPS (that is company-specific production system) represents an own-best-way approach to the one-best-way paradigm". What this also means is that lean is more of a technique than an integrated approach. Or said differently, we have to split Lean Production as an icon or as a practice. Here there are room for much more empirical work.

Lean as a practice is not a coherent grab bag of techniques. Important issues are made by the management rather than in a collaborative environment, and yet they get great result initially. But after a while it slows down, and the management talk about having "picked the lower hanging fruit". So why does not Lean sustain itself and keep moving itself incrementally in a successful way? One example is a metal producing company with many factories that had a structured and formalised production system, where every critical operational procedures were described in detail. Teams for revision of these operational procedures met regularly. Talking to people at all the different factories they in unison told that in the beginning lots of improvement were made, and they really felt part of the improvement process when it was introduced by the management. Now the improvement process had slowed down and sometimes lack momentum. Leaders talked about "the fruit", and now after picking them more fundamental and difficult changes needed to be done.

Going back to the beginning there was a collaborative effort in the factories to describe all procedures and making them better. One good example of model O-II or double loop learning by Argyris and Schön (Argyris and Schön 1996). When the systems and descriptions were finished and the production system established, groups for revising operation procedures were established. The reason for having standardised operational procedures was that much of the work at the shop floor was potential dangerous and therefore experimenting could not be allowed. Therefore workers should make suggestions to the group and the group should consider the

suggestions and perhaps make changes. Reasonably from a safety perspective, however, the members in the groups were seldom changed: some had been members for years. This formalisation of changes in the procedures meant that the continuous improvement effort slowed down, and the enthusiasm for suggesting changes also cooled. Along the way the model O-II had evolved into model O-I where one part of the company, after a process of learning and reflection, teaches the rest of the organisation. The workers indicated that they felt more distant from the improvement process, or they were tired of innovation and change. Many workers said that it was all right to work in a more stable setting for a while, some even wanted to go back to "the good old days" when they just got told what to do by the foremen.

Lean as an icon, is arguing for continuous improvement with a strong focus on effectiveness and efficiency. The story above can illustrate that people need some times of non-innovation in order to make sense of the new working environment. Stability provides such space. But at the same time as making the stable environment, the danger is that the organisation loses track of the next critical problems that come along. Or as a manager in one large insurance company said: "I think continuous improvement is demanding for both workers and managers. One needs time to mature and other times to improve". This is a management, workplace, collaboration, and learning issue, or can be thought of as a very difficult balancing act. In order to perform the balancing act important issues are made by the management rather than in a collaborative environment. Perhaps the quest for effectiveness and efficiency leaves little room for discussions and reflections. If that is true, then it is this quest that is incompatible to the social partner model that had worked well in the Scandinavian countries. If the quest cuts the trial and error effort at the shop floor out, then you limit the capabilities of the organisation to innovate.

8.4 Conclusion

In this chapter we have argued that sustainable manufacturing draws on many different insights from theory, which can be made available via universities. It has to balance more structural approaches with more human-centred approaches. It has to balance rule following and learning. It has to balance the internal call for efficiency with dialogue with the environment, and sensibility to stakeholders and actors in the value chain. Given this insight, what sort of education should one give students to prepare them for this? This is a complex question. The argument here is that just learning theories of certain kinds, for example principle/agent theory, which we find in economic organisational theory, will not provide the competence needed. Students need to be exposed to the complex issues involved in finding a good balance between different theoretical concepts, and knowledge about how to apply them in practice. This is at the heart of *mutual competence building*.

Chapter 9
Planning for Sustainability: Between Risks and Lifeworlds

Mikaela Vasstrøm and Hans Kjetil Lysgård

9.1 Introduction

There are distinct paradigmatic understandings of sustainability in planning. The ethos of sustainability has, over the last 50 years, risen to become omnipresent on national and international agendas. The question is, however, if it has also lost some of its edge, meaning and purpose on this journey. Sustainability in planning is often focused on risk assessment and boundary setting of economic development, based on expert knowledge and professional assessments by planning institutions. This chapter seeks to explore if citizens' participation in planning can contribute with a lifeworld oriented perspective that can unfold an understanding of a sustainable planning horizon with a broader scope of "development". Lastly, this discussion is reflected in the role of the university as provider of education to professional planners and societal developers.

Sustainability is one of the most pressing concerns in our modern society. All types of societal policy, planning and development are in different ways influenced by the sustainability agenda (Wallimann 2013). The universities as institutions and educators are no exception to this global discourse (Carroll and Janke 2013). Given that the primary role of the university is to educate academics and professionals, it makes sense that the sustainability agenda also influences the content and perspective of the disciplines taught. This is perhaps especially important in the discipline of planning. Planning is directed at balancing different human interests and values, to assemble and generate knowledge, facilitate processes of collaboration and development: and therefore inherently deals with sustainability (Cowell and

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Owens 2011). The question is though how universities can enable future policy makers, planners or developers to work with the ambiguous and tensional field of sustainability.

The ethos of sustainability has grown along with the recognition that the exploitation of nature (as a resource) for societal development has limitations, and irreversible environmental consequences for the existence and formation of future societies (Elling 2008; Nielsen et al. 2010; Woodhill and Röling 1998). The understanding of sustainability, in this sense, reflects the inherent relationship between nature and society, and links perspectives of human development to understandings of the boundaries of the planet and ecosystem (Nielsen et al. 2010; Rockström et al. 2009). Further, sustainability is also a concept that emphasises the necessity of change in our societal developments trajectories, and thus contains a future orientation (Sachs 2010). However, as discussed in the introduction of this book, the very concept of sustainability embodies a range of different paradigmatic understandings of nature and society and their interrelation. This diverse, and sometimes contradictory, conceptualisation of sustainability becomes especially perceptible when broad policy viewpoints are translated into particular planning processes that relate distinct interests, values and knowledge claims in a specific materiality. Sustainability may provide a common ground of understanding as an abstract concept, but represent a variety of distinct interpretations (and thus potential conflicts) when translated into definite terms and concrete actions (Cowell and Owens 2011).

This chapter problematises how the concept of sustainability, together with other established "truths", has the potential of being exploited as or by an authoritarian structure where certain institutions and actors dominate the discourse of sustainability without a broader democratic debate (Elling 2008). Such authoritarian structures can qualify some types of knowledge that we can call *knowledge regimes*, actors, and perspectives over others, and neutralise the potential deliberation of the subject matter (Deetz 1992). These concerns are relevant in the discipline of planning (Meadowcroft 1999). Due to the pressing concern of issues related to pollution, climate change, and biodiversity loss, the concept of sustainability has become a powerful idiom in societal policy and planning processes (Cowell and Owens 2011; Meadowcroft 2007). This generates situations where the planning trajectory, in the name of sustainability, is reduced to calculating risks or determining boundaries to societal development, instead of unfolding and discussing alternative perspectives for societal change.

This next section unfolds and discusses different understandings of sustainability in relation to aspects of participation and knowledge in planning. Hereafter we present a short case of environmental planning in Norway, to illustrate some tensions and contradictions of sustainability as protection and boundary setting in relation to local citizens' everyday life perspectives. Then we discuss the discipline of planning, and the sustainability tensions between calculating risk and opening critical utopian planning horizons, arguing that planning as a mean to reach increased societal sustainability is a constructive process of reorienting development paths, through deliberation of different and often diverging perspectives and

understandings of a variety of actors. Lastly we discuss how universities as educators of planning professionals and societal developers can deal with this inherent political tension in societal development. Our main argument in this relation is that the education of planning professionals ought to explore different social and environmental (ontological) perspectives of sustainability, and develop broad epistemological (and methodological) understandings of participation and the use and production of different types of knowledge in planning. Thus, in our perspective, mutual competence building implies in practice overcoming an unproductive conflict between different knowledge regimes.

9.2 Description

9.2.1 Sustainability Between Risk and Lifeworld

The report *Our Common Future* (World Commission on Environment and Development 1987) was the first international policy document that lifted the sustainability challenge out of the realm of activist niche policies and onto the international agenda (see also the introduction of this book). The concepts of sustainability in the report are broad and inclusive, but have also been criticised for not being more critical of the existing growth paradigm of economic development, and its influence on natural resource exploitation (Nielsen and Nielsen 2006a; Nielsen et al. 2010; Sachs 2010). This critique further argues that sustainability has developed into a discourse of concern for the environment, but without a critical edge of challenging the existing societal system, market rationality, or "western" lifestyle (Sachs 1999; Shiva 2006). The interpretation of sustainability can, as discussed in the introduction to this book, be divided into a pragmatic perspective of reforming existing society, and a more radical perspective of creating fundamental economic and social changes. This critique of the pragmatic reformist sustainability discourse can, in a planning perspective, be related to the division of sustainability into an economic and ecological interest-logic and the belief in objective regulatory sustainability measures. In this discourse, sustainability becomes "reduced", from the broad ethical and normative questions of freedom, equality, and justice of societal development, to concern measurable ecological aspects of nature i.e. ecosystem services, biodiversity, carbon emissions, etc. (Clausen et al. 2010; Harste 2000). It thus changes the essence of sustainability, to become a question of socio-ecological resilience (Berkes and Folke 1998; Folke 2006a) based on certain nature values. In addition it nourishes a policy and planning perspective concerned with balancing measured ecological indicators and societal development trajectories within the (human defined) planetary boundaries (Rockström et al. 2009). In practice sustainability planning becomes about regulatory means in relation to measurable objective indicators. Social values, cultural traditions, and even economic aspects that relate everyday life with a physical place

can, within this sustainability framework, become disqualified and illegitimate claims when set against ecologically measured sustainability, and the global risk of tampering with planetary boundaries (see also the discussion in Chap. 2 about human care as an essential element for understanding sustainability from a non-scientific perspective).

The division of nature and society also influences what type of knowledge is considered relevant in environmental decision making and planning (Brunner and Steelman 2005). The current development of environmental discourses is fundamentally influenced by the ontology of natural sciences, and contributes to the globalisation and consolidation of certain nature perspectives (Hironaka 2003). Natural sciences and the technical measurement of the physical-ecological dimension become providers of "objective" knowledge for rational planning and decision making (Brunner and Steelman 2005; Cowell and Owens 2011). Other types of knowledge concerned with socio-cultural or economic aspects, or even aesthetic and moral dimensions of a lifeworld-based knowledge, are considered less relevant within this logic (Elling 2008).

The domination of ecological measures and natural (positivistic) science transforms the agenda of sustainable development into a matter of planning societal development in relation to ecological risk (Harste 2000; Sachs 1999; Clausen et al. 2010). The challenge of sustainability in such an understanding becomes more concerned with how to protect nature from the current societal development trajectory based on ecological expert knowledge, and less concerned with a democratic sustainable societal development (including deliberations of how we want a future society: and what quality of life is). On a policy level, this has nudged development from the broad environmental concern for sustainable development towards a more instrumental policy perspective of securing certain "measurable" nature qualities like biodiversity and ecosystem services (Cowell and Owens 2011) or guide societal development according to indicators of planetary boundaries (Rockström et al. 2009). This logic generates a situation where scientific knowledge dominates, while the democratic values and lifeworld perspectives are unaccounted for in the decision making and planning arena.

Trust in science and scientific knowledge is a basic paradox in modern society, where the science that is thought to solve our problems is also an inherent part of defining and creating the problems (Elling 2008; Szerszynski et al. 1996; Woodhill and Röling 1998). This is especially relevant within the sustainability agenda that literally requires new ways of thinking to cultivate future oriented societal trajectories. The definition of sustainable trajectories cannot be exclusively based on scientific exploration, instrumental policy measures, and expert knowledge-based management. Sustainability is a question of iterative reflections and deliberations about our societal ethics, morals, and values, and about how our societal actions (broadly speaking) have impact on our environment (Cowell and Owens 2011). The core concern is how societal development perspectives can be balanced with environmental concerns (Cowell and Owens 2011; Innes and Booher 2010; Meadowcroft 1999), without being reduced to a process of mere risk assessment.

9.2.2 Planning Sustainability: Theoretical Considerations

Planning is in practice the intermediate state between policy making and governance, and the management of existing relations and institutions. Planning processes relate and discuss ecological, social, cultural and economic values and interests with different claims of knowledge and formal institutional power (Cowell and Owens 2011). A planning process is the operationalisation of certain policy goals that leads to some sort of outcome like a management document, regional plan guidelines, or institutionalisation of an agency (Innes and Booher 2010). A planning process is also influenced by the actors who participate; actors who are capable of generating new knowledge about the situation and new meaning horizons through reflection. Planning is thus ideally a (democratic) process that continuously generates trajectories or horizons for societal development. The planning process should in this sense be understood as "unfinished" or continuously moulded between different developing knowledge claims and meaning horizons (Nielsen and Nielsen 2007).

The sustainability agenda in planning can be interpreted as an institutional answer to cope with the societal sustainability challenges (Elling 2008; Meadowcroft 1999; Nielsen et al. 2010). Environmental planning is thus the operationalisation of sustainability policies that aims at protecting certain nature values that can deliver ecological benefits and thereby balancing some of the unsustainable traits of modern society (Cowell and Owens 2011). Such regulation also influences socio-economic and cultural aspects, and creates contested claims between different nature-society values and interests. One of the main challenges in planning is to balance societal development perspectives with ecological concerns (Cowell and Owens 2011; Innes and Booher 2010; Meadowcroft 1999) in a process that *also* opens future potentialities for societal and everyday life improvements (Healey 2006, 2009). This challenge has, as we explore in the following section, been met by broadening two fundamental aspects in planning: public participation and diverse knowledge generation.

Environmental planning has traditionally been orchestrated by state agencies through implementing national policies in particular areas (Carlsson 2008; Sandström et al. 2008). Such processes can be understood as top-down steering approaches, where environmental authorities define the purpose or the outcome of a plan in relation to stated national policies and based on the prevailing natural scientific knowledge (Björkell 2008; Brunner and Steelman 2005; Innes and Booher 2010). During the 1980s and 1990s the legitimacy, efficiency, and outcome of the expert-oriented, top-down nature protection policies and government have been increasingly challenged (Dietz et al. 2003; Hajer 2003) and criticised for ignoring the relationship between the socio-cultural and ecological dimensions of nature and landscapes (Berkes and Folke 1998; Folke 2006b). Public participation has during the last 30 years become a common ingredient in environmental planning processes as a way to increase legitimacy, reduce conflict, and thereby increase the effectiveness of policy implementation. Further, public participation

has been considered a mean to improve and widen the knowledge base for decision making (Innes and Booher 2010). But, despite the presence of a local participation ethos in environmental planning, participation in local communities is not very well developed in practical terms and is still contested and conflictual (Björkell 2008; Daugstad 2011; Grönholm 2009). The question is what local participation approaches with the intention of increasing legitimacy and reducing conflict are *not* able to answer when it comes to issues about sustainability.

One common problem could be the underlying institutional presumption that participation is merely a tool to fulfil the planning system purpose rationality (Elling 2008). Participation based on an instrumental-legitimising rationality creates an ethical democratic deficit and participation fatigue, i.e. people become uninterested in participating in pre-ordained planning processes, and this further erodes the democratic essence of planning (Cooke and Kothari 2001; Elling 2008; Nielsen and Nielsen 2007). Rational instrumental participation arguments thus limit the planning arena to a concern by the actors (experts or stakeholders) that are considered relevant from the planning system perspective, i.e. those that have the right knowledge and can serve to fulfil the purpose of the plan. The very deliberation of values and knowledge about the subject matter (i.e. sustainability or how to develop more sustainable societies) is reduced to negotiations about setting boundaries to the societal use of nature.

Local citizens are connected to the nature and landscape through numerous relations of economic, social, cultural character, and of aesthetic, "embodied", and practical dimensions (Clausen 2011; Daugstad et al. 2006; Nielsen and Nielsen 2006a). Participation of citizens in planning is, from a *democratic* perspective, not just a measure to increase policy legitimacy or to increase effectiveness of policy implementation. The perspectives of local communities are important, because they constitute the practical material relation to nature and society, and their perspectives can contribute with a substantial *different* perspective in planning (Elling 2008; Nielsen and Nielsen 2007; Vasstrøm 2014). The argument is not that local citizens have a "better" perspective of sustainability, but that they can contribute with different perspectives related to everyday life than a pure institutional perspective. A search for sustainability must therefore also be a question of how the diversity, ambiguity and normative dimensions of the everyday life can contribute with a different understanding of nature relations and in that sense (co)generate distinct knowledge during the planning process (Elling 2008; Healey 2006; Nielsen and Nielsen 2006a).

The theoretical point argued is not that either planning professional or local everyday life-oriented perspectives have the "solution" to nature protection or sustainability. Rather, the point is to illustrate that, quoting Elinor Ostrom (2008), "there is no panacea" to these complex challenges of nature society relations, neither scientific, technocratic, nor local. The argument is that if the goal is to improve sustainability in the long run, it is necessary to generate a more democratic platform for environmental planning that can open local and scientific perspectives towards new understandings and co-production of new knowledge. Participation is, in this sense, also a matter of developing substantial knowledge about the particular

situation that can improve the sustainability of the planning outcome (Healey 2009). Such collaboration requires that local perspectives are involved in a more nuanced manner than through the mere premises of technical planning categories or premises of expert agendas.

An important issue to have in mind when promoting the participative approach to planning, is the critique of collaborative planning as consensus building. Two approaches to planning and democracy have dominated the theoretical evolution of the planning field since the late 1980s and early 1990s. One approach is the model of deliberative planning and democracy, in which the search for consensus has been at the forefront (Healey 2006; Innes and Booher 2010). The other approach has evolved as a critique of the obsession with consensus in the planning regime within deliberative democracy, with ontological and epistemological reasoning about the need to expand the field of politics (Flyvbjerg 1998; Mouffe 2005). This approach politicises planning issues, and thereby facilitates an ongoing debate in which we accept that the social is structured by elusive and ephemeral discourses, i.e. an agonistic model of planning and (radical) democracy (Bond 2011; Hillier 2003; Mouffe 1999; Pløger 2013).

The theory of communicative rationality (Habermas 1984) and the subsequent theories of collaborative, communicative, and deliberative planning have been criticised for several reasons (Lysgård and Cruickshank 2013). First, they have been criticised for their insufficient perspective on power. It fails to conceptualise politics as a struggle between collective identities or systems of meaning and denies the inherent power of individuals. Second, it is criticised for its rationalistic premises, and especially for assuming neutral or rational dialogue. Politics is better characterised as decision-making in an 'undecidable terrain' than as a fully rational procedure. Third, the theory of communicative rationality has been criticised for its universalistic aspirations. When consensus is the main objective, the theory becomes a moral theory in which the goal, as a principle of social change, is an ideal commonly shared understanding of what values are most desirable. This is problematic because it presupposes a worldview in which a final consensus or answer is possible, whereas planning in practice demonstrates that consensus in fact always is incomplete, contested, and exclusionary. As an alternative to communicative rationality, the model of agonistic planning based on the view that consensus is always incomplete, and all pretence to consensus can and will be contested. Antagonism is therefore an inherent part of the social and should also therefore be inherent to planning: '*Moreover*, *antagonism under this formulation is inherent in the social and possible in every social relation*: *it is the essence of politics*' (Bond 2011, p. 168).

Agonisms, and planning beyond the purpose orientated consensus, might be especially relevant within a sustainability discourse where there is no objective answer and where interests, values and knowledge claims will generate opposing and conflictual trajectories. A planning arena can within this understanding form different legitimate, although contradictory, knowledge and value claims as part of the democratic debate.

In the following section we will illustrate the conceptualisations about planning, participation and knowledge in a case about nature protection in Southern Norway, and analyse how the planning arena opened and closed for scientific and local everyday life oriented perspectives of nature protection and use.

9.2.3 Environmental Planning and Nature Protection: The Case of Heiplanen

The nature protection rationality has during the last 100 years changed from a romantic aesthetic perspective of "being in nature", to a scientifically founded argument of protecting biodiversity for the resilience of the ecological system on earth (Vasstrøm 2013; Cowell and Owens 2011). The question is however, if nature protection as "risk-based-boundary-setting" will facilitate a sustainable societal development trajectory, or simply create protected "islands" of nature to compensate for the general unsustainability of society at large. Conversely, it is meaningful to question if approaching the caretaking of nature as part of everyday life and societal development could bring forth other understandings of sustainability in environmental planning.

The aim of the research on Heiplanen was to understand the tensions between different conceptualisations of sustainability, different knowledge paradigms, and different nature relations. The research approach sought to understand the situation through observations, interviews and engagement with both local communities (citizens and municipalities) and planning institutions (county government and County Governor). In that way the research analysis explored the dissonances between different perspectives during the planning process. The research objective was on the one hand to develop knowledge about a planning process from different perspectives. On the other hand it was a way of "disturbing" the institutional planning logic of Heiplanen through participatory reflections between different actors to explore the possible openings and closures for new orientations in the planning horizon. The research approach was in this sense a critical utopian action research that combined the ontological perspectives of action research (Greenwood and Levin 1998; Reason and Bradbury 2001; Svensson and Nielsen 2006) with the critical and dialectic epistemology of critical theory (Nielsen and Nielsen 2006b). The methodology interactively creates knowledge with the actors involved in the case through collective exploration and reflection.

Heiplanen was a regional environmental planning process in the years 2009–2011 in southern Norway commissioned by the Norwegian Ministry of Environment in 2007. The plan had two objectives, first to secure the habitat of the wild reindeer; and second to explore rural development possibilities. The planning authority was delegated to a municipal and regional political steering board, responsible for a joint regional plan across 18 municipalities and five counties (12,000 km^2). However, the commissioning letter emphasised that all decisions

should be taken on an "(. . .) updated natural scientific knowledge ground". And that the main objective was to determine boundaries for human activities in relation to the biological habitats of the wild reindeer (Ministry of Environment 2007).

The formal planning process was started with an introduction of a map of the potential wild reindeer habitat in the region based on biological, ecological and historic knowledge (Mossing and Heggenes 2010). The formal planning process was hereafter directed at summoning the municipalities to negotiate the categorisation and boundaries of the map between rural development zones and the wild reindeer habitats. The planning process instantly generated severe conflict in several municipalities that had literally 99 % of their area affected by the plan. The majority of the municipalities argued that the introduction of the wild reindeer map in connotation with the knowledge premise had already defined the planning outcome before the process had even begun. They argued that it became impossible to even open a discussion when the natural scientific based boundaries were already drawn on a map. The initial part of the planning process was influenced by frustration and conflict between the municipal authorities and communities on one side, and the county planners and county governors on the other.

The researcher entered the formal planning process during this initial phase in 2009. After a few meetings with county and municipal planners and politicians the researcher suggested the facilitation of three future creating workshops for citizens (Nielsen and Nielsen 2006b) in the municipalities that were most affected. The workshops were arranged in the three Setesdal municipalities in May and June 2010. The intention with the future creating workshops was to create a space for critical utopian deliberations about the nature-society subject matter for citizens unrestricted by the pre-defined planning purpose and categories. 60–80 people attended the three workshops in the three municipalities. The workshops opened for a generation of perspectives (or knowledge, values, relations) about nature protection and wild reindeer management in relation to "the good life in Setesdal: now and in the future" (Vasstrøm 2013). The themes developed in the workshops treated different aspects of nature and community, but together revealed how interconnected "nature" or the area was in their thinking of "community" (Vasstrøm 2014). First of all, the use of nature was seen as a cultural practice and a key value of living in the area. A concrete example was the concern for education and formation of the local youth in relation to nature understanding and use, as a potential to strengthen local nature identity. Such local identity was again related to more responsible nature use, and place identity and thus the potential to re-attract the youth after their tertiary education in larger cities. Another, but related, theme was concerned with the strengthening of the local capability and competence of nature management through the establishment of local knowledge parks. Such strengthening was not only considered a remedy to improve nature management, but also a way to develop workplaces and forming better nature practices in the local community. These perspectives included the local experimentation and monitoring of for instance the revival of traditional Seter agriculture as a remedy, to explore if such practice created ecological niches for the wild reindeer feeding potential. The workshops thus presented different perspectives of nature protection

planning and management that were connected with a community vision of re-vitalising the nature responsibility in the communities, and thereby ensure a more long-term commitment to sustainable nature management in the communities (Vasstrøm 2013).

The results from the workshops were presented on the formal Heiplanen planning arena during two regional planning sessions with municipal and county planners and politicians, and the environmental managers of the county governors. These presentations and following table discussions between municipal authorities and county planners and managers opened a new space for discussing nature protection as something different than setting boundaries on a map. The discussions did not create consensus about the planning purpose or outcome, but it created increased acceptance for other legitimate perspectives on nature. In this sense the perspectives developed during the workshops and the presentation and discussion at the regional plan arena facilitated a communicative bridge between the everyday life understanding of living in an area, with the professional and natural scientific categorisations of the area (Vasstrøm 2014). In the following months the researcher and the county planner encouraged the municipalities and county governor to discuss the planning outcome through dialogue meetings. Though reluctantly at first, the municipalities and county governor met five times during 2 months to discuss and draft the final planning outcome: the planning document and area boundaries. During 2011 these were politically approved in the five counties.

9.3 Discussion

The story of Heiplanen is in many ways a story about how a nationally commissioned regulation plan creates conflicts and disputes between different meaning systems and interests. Further, from a collaborative planning perspective, Heiplanen can tell a story about how dialogue can generate improved mutual understanding, and reduce conflict and reach some sort of consensual planning proposal. However, as discussed in the theoretical part of this chapter, it can be questioned if such area regulations improve the sustainability of the nature society relations in the particular area. Heiplanen is in this sense also a story about how a purpose of setting regulatory boundaries between society and nature can shadow the potential of deliberating other perspectives of what nature protection (or sustainable development) can be from an everyday life oriented perspective.

The formal planning purpose of Heiplanen was to create a plan document that could be accepted by national authorities within a given time frame. The national policy discourse of nature protection was in this sense "reproduced" and naturalised as an issue of setting boundaries to human activity and wild reindeer habitats. The formal planning arena was not able to open and be challenged by "other" perspectives of nature protection. The participatory processes in Heiplanen were an attempt to bring different rationalities into play on the planning arena. The process revealed that there were willingness and potential to unfold such diversified nature

protection perspectives. However, deliberations about local engagement and responsibility as a form of nature protection, was not considered plannable within the pre-defined planning purpose rationality. The planning arena closed for the generation and enactment of other values and understandings of nature protection, related to the (future oriented) everyday life perspectives such as youth education, strengthening of local identity, creation of local knowledge centres, etc. The dialogue development (or collaboration) between municipalities and county planners and governors was able to create some degree of consensus and craft a more legitimate planning outcome (the document and area boundaries), but it was not able to include and develop community perspectives that transcended the initial planning purpose of boundary setting.

If the planning arena is reduced to negotiate categorisations defined by the planning system, or interests defined by stakeholders, and only aimed at communicating *within* the planning institutional logic, it can seem meaningless (and impossible) for the public, as citizens, to contribute with their everyday life perspectives of the subject matter (Nielsen and Nielsen 2006a; Clausen 2011). The question is then whether to discuss democratic participation and sustainability within or transcending the existing nature protection planning rationality (Elling 2010). As the introduction of this book unfolds, this is related to a pragmatic or radical understanding of sustainability. Within environmental planning it is relevant to question if a plan document or the establishment of boundaries are proper means to nature protection or sustainability, or if such boundaries only serve to protect islands of nature against the general unsustainability of the society (Cowell and Owens 2011). Planning could also be a potential of deliberating contrasting (or agonistic) nature-society perspectives that might generate new orientations in societal development. This challenges the planning process to foster openings *between* system and everyday life perspectives, experts' and citizens' understandings.

The argument is therefore that the planning system must be able to open up reversed participation where citizens and communities are considered legitimate contributors of different perspectives and agendas to the subject matter than what is (pre)defined by the planning system or expert definitions (Nielsen and Nielsen 2007). The argumentation for citizens' participation is not just a matter of procedural legitimacy in planning, but a matter of encouraging citizens' emancipation and social responsibility for society (Nielsen and Nielsen 2006a). Such can only be developed when citizens are genuinely recognized and involved in what they consider a meaningful deliberation about the subject matter (Nielsen and Nielsen 2007).

These perspectives elucidate the tension between the collaborative and deliberative understanding of public participation in planning, and the potential for allowing agonistic perspectives in the process. The collaborative perspective is concerned with a "relevant" public or stakeholders that can contribute to understanding the complexity of the situation. Such participation is concerned with balancing and negotiating established interests or perspectives towards an agreed planning outcome. The deliberative perspective, on the contrary, is concerned with

bringing the public into play as something different than interest holders. It is an attempt to enrich the democratic planning arena, and the substantial outcome with different rationalities from the institutional or interest based rationalities (Hansen 2007).

This discussion of the public in planning is perhaps especially relevant in the search for sustainable societal development trajectories. Planning has to acknowledge and encourage the participation of the broader public, exactly because they can contribute with perspectives that are not "visible" within established scientific, bureaucratic, or interest based discourses (see also Chap. 2 on understanding reality through human care). The opening of broader public participation in planning is, in a processual sense, a matter of developing citizens' emancipation and responsibility for the common matter of concern, and in a substantial sense a matter of generating different development perspectives to the societal trajectory (Vasstrøm 2014).

The example of Heiplanen demonstrates how a planning process commissioned by the national authorities became focused on answering a natural scientific knowledge premise. The planning process was directed at crafting a planning proposal that could be accepted by the national authorities. The proposal was thus focused on boundaries to secure the wild reindeer habitats according to the natural scientific knowledge perspective. The planning process was thus framed by those knowledge claims that had been delegated the power to define the right outcome. The encounters between local and regional planning actors in Heiplanen revealed significant discrepancies between their understandings of protection and use, and the type and role of knowledge used to define these concepts. The dialogical knowledge development between municipalities and county governor generated improved understandings between the actors involved, which led to a gradual acceptance and recognition of *different* legitimate perspectives to the area. The understanding of the area was thus moulded between ecological perspectives of the area as a wild reindeer habitat, and the local perspective of the area as part of a broader life matter. Although this process of knowledge co-production improved the understanding of the area, and influenced the setting of the boundaries, it could not change the fact that natural scientific knowledge was still the main premise for defining protection and use.

The challenge of natural scientific claims in planning is not related to the quality of knowledge as such. It is its relation to the institutions of power and its utilisation as a mean to reach a certain purpose that is the challenge (Elling 2008; Pløger 2013). This is especially relevant in environmental planning where natural scientific knowledge has the status of a superior truth that can provide answers to complex challenges (Brunner and Steelman 2005; Pellizzoni 2010). However, the dialogical development in Heiplanen illustrates the importance of recognising the dynamic potential of knowledge in planning. Knowledge should in this sense not only be considered a means of power, but also a democratic potential for learning across different "knowledges" (In't Veld 2009). Such potential presupposes the ability of the planning arena to involve and legitimise different knowledge perspectives, different knowledge production methods and even regard the participative process as an arena of co-production of knowledge.

The argument of this analysis is thus that if environmental planning is a search to reach more sustainable trajectories, then the planning arena should be able to address nature as something more than ecological or economic interests or categorisations of protection and use. It requires a planning arena that can address nature as a common matter of concern between bureaucrats, scientists, politicians and citizens. This implicates the ability to address nature and society relations through a variety of knowledge and value perspectives, as well as an acceptance of their equally legitimate orientation. In this sense it requires that the public in planning are allowed to challenge and broaden the initially set purposes of the planning institutions and the expert perspectives on the subject matter, even though these might be radically different. This argument is not only furthered because such deliberations constitute a prerequisite for a democratic planning arena, but also because they generate the potential for developing new and different approaches to nature-society relations that may be more sustainable than what currently exists.

9.4 Conclusion

9.4.1 Sustainable Development as an Open Political Field

The sustainability endeavour cannot be reduced to a question of estimating risk of the current trajectory, and defining the "right" direction based on expert perspectives and knowledge. Sustainability can similarly not be reduced to a matter of balancing existing perspectives, knowledge or interests through collaborative efforts between "relevant" stakeholders. Sustainability requires a future orientation of the societal trajectory and is therefore in essence a democratic challenge (Elling 2010; Clausen et al. 2010) that needs to be engaged in an open political discussion. Sustainability cannot only be pursued by risk assessments, scientific modelling or technical means to avoid an inevitable dystopia (Harste 2000; Sachs 1999). Sustainability also requires hope, reorientation and creation of new perspectives, and therefore the necessity of bringing different rationalities into play (Nielsen and Nielsen 2006a).

This is one of the main aspects of the modernity paradox that is discussed by a broad range of reflexive thinkers; we cannot face the sustainability challenges by dominating the social trajectory with the same kind of knowledge totalitarianism that has contributed to their formation (Elling 2008, 2010; Nielsen and Nielsen 2006a; Szerszynski et al. 1996; Wynne 1996). Sustainability endeavours must be a question about generating different and alternative perspectives of existing rationalities (knowledge, interests, values, norms). It is, in other words, difficult either to instrumentally or collaboratively meet the sustainability challenges with the same logic that, in many ways, has paved the way for the present situation. The existing expert and institutional rationalities must therefore be challenged through other ways of thinking in order to open other horizons.

This argument of dialectics in planning raises the potential of the utopian horizon in planning. Instrumental and collaborative planning approaches often become reduced to answering to the initially set purposes of a plan. The objective of fulfilling the purposes of a plan thereby becomes a matter of either producing rational-instrumental and authoritative decisions and implementations, or a question of (collaboratively) negotiating and balancing existing interests and values towards a mutually agreed compromise. However, if nature protection is an answer to the ethos of sustainability, then it should also embrace and encourage the generation of development trajectories or planning horizons other than the purpose of planning institutional objectives. Such different rationalities of nature and society, or sustainability, can be introduced through a lifeworld or everyday life perspective of the subject matter (Elling 2010). The knowledge developed from the everyday relation between nature and society can contribute with aspects of nature protection that a pre-defined planning purpose might not be able to "see". Further it can develop human commitment and responsibility to nature beyond the lines on a map (Vasstrøm 2013).

The challenge in planning is to use these antagonisms as productive forces, rather than excluding them via a consensus-seeking process. It is necessary to see differences and conflicts as productive and to respect different views and values not as generating friendship or animosity, but rather as a valid component of the planning process (Flyvbjerg 1998). Planning becomes '*a place for strife about legitimate options and meanings on the road to reasonable and commonly agreed solutions or consensus-building among mutual adversaries*' (Pløger 2013, p. 72); decisions based on consensus are still possible, but the agreements reached will be temporary compromises in an ongoing process that continues based on debates about differences.

The legitimacy of diverging views and different political positions becomes very important in the discussion of sustainable development, since the hegemonic environmental discourses are fundamentally influenced by the ontology of natural sciences as the "proof" and "fact" that becomes the "objective truth" and measurement for rational planning and decision making. The challenge in sustainable development is actually to keep the political field open for deliberate processes and political debate. The ability to withhold intensity and passion in a participatory democracy depends on the space generated for agonisms as a legitimate part of the democratic debate (Mouffe 1999). To create a truly deliberative democracy, we should consider that the right to engage in conflict is a crucial freedom (Lysgård and Cruickshank 2013).

9.4.2 The Educational Role of the University for Sustainable Planning

As discussed in the introduction of this book, there are many examples of how universities, scholars and students have initiated and influenced large scale societal changes. However, the role of the university is not a uniformly defined concept, but an evolving debate with many different aspects of how higher education institutions can contribute to societal discourses and development. In this sense, as with other big conceptualisations: sustainability and the role of the university contain many different and contrasting (and even conflicting) ideas. In this section we will mainly address how the university as educators of planning professionals and societal developers can address sustainability. We therefore ask what kind of knowledge should be taught and how.

The overall argument in this chapter demonstrates that the concept of sustainability in planning cannot be taught as an isolated subject. Rather, the understanding of sustainability must be taught in relation to the broader ontological, epistemological, methodological and theoretical conceptualisations in the planning discipline that encourages reflections about sustainability as a cross disciplinary concept. In the following we list six main aspects that we consider fundamental for building a critical reflexive understanding of sustainability in planning:

Philosophy and methodology of social and natural sciences: To understand the complexity of the sustainability challenges in both a substantial and processual sense, it is essential that planning professionals and societal developers acquire scholarship about the paradigmatic understandings and methods for the production of knowledge. Perception and reflexivity about epistemological and methodological aspects of knowledge is necessary to create awareness of how different types of knowledge can elucidate a problem, be able to analyse different knowledge perspectives and claims during a planning process, and to facilitate production of situational knowledge during a planning process. This point of learning is principally a reflexive foundation for understanding the essence of planning and sustainability, and for questioning their own role as planners in a particular situation.

Paradigmatic understandings and discourses about nature society relations: Students must become familiar with basic antagonisms and conflicts within the nature—society relationship. This involves learning about how nature and society discourses have developed during modernity, and how these are influenced by different aspects of historical developments, economic interests, cultural values, technological innovations, and knowledge claims. Such basic understanding gives a foundation for understanding and analysing different aspects of a particular situation before directing the planning purpose toward a specific goal.

Sustainability as a field of policy: In relation to the latter topic, it is important to acquire ability to link nature society discourses with ideological struggles of

power and how nature should be managed. This involves learning about how different perspectives in a political field relate to and discuss matters of nature-society segregation or integration, management as a collective societal task or interest based negotiation, etc. In other words it is raising awareness of what ideologies that influence the dominating discourses in the sustainability field.

Planning theory: Purpose, participation and knowledge creation: In addition to the more abstract and theoretically distanced concepts of nature, society, knowledge and power, planning professionals also need to learn about the processual aspects of planning. Planning is in this sense understood as a reciprocal process between policy making and knowledge creation that is directed at developing new societal trajectories (and thus open yet unforeseen horizons). This involves learning about how different planning processes are structured in relation to formal authorities and legal frameworks and different conceptualisations about how a planning arena can be formed. Further, it requires deep understanding about different theoretical perspectives on participation and participants, and methods for creating mobilisation and participation between different (agonistic) perspectives in particular situations. It is thus not only a matter of learning how to plan from A to B, but how that planning process can open for the production of new knowledge and improved (and in that sense sustainable) trajectories for societal development.

Governance and management of nature society relations: In any given society, nature society relations are embedded in a range of different vertical and horizontal formal and informal governance systems. Sustainability in planning is not only related to the substantial aspects of environmental, economic or socio-cultural concerns, but also to how these are managed and governed in a democratic and legitimate way in a long term perspective. Professional planners and societal developers should therefore acquire knowledge about how governance and management models can be crafted in a particular system: that generates long term commitment and democratic legitimacy.

Experiential learning, *problem based cases and participatory fieldwork*: to create understanding of the complexity and "wickedness" of sustainability in real situations. Students should experience how problems related to different aspects of sustainability (social, economic and environmental) are played out among different types of stakeholders (planning system, politicians, interests, citizens, etc.) during a planning process. Such experiences generate foundation for reflections between abstract conceptualisations and theoretical knowledge, and the complex reality of societal planning and change processes. An important way of teaching students about sustainability should therefore be based on direct experience through field studies and field courses, and problem-based individual or group-based work with case-studies that reflect 'real' planning issues about contested sustainability.

What we have learned from the case-study of Heiplanen and the following discussion about challenges of planning sustainability is that (future) planners

should be able to recognise the specificity, multiplicity, difference, and power-relations of the sustainability planning field in at least three dimensions. First, it should acknowledge the *complexity* of sustainability. It is important to look for differences in discursive positions as a strategy for producing knowledge in planning. To regard knowledge as constructed is a basic premise for planning also in the field of environment and nature. Second, we need to recognise that knowledge is *contested*. By defining the main contested issues of sustainability, the agonisms, the knowledge will initiate political debate that is and should be at the heart of planning for sustainable development. Third, in order to *represent all people*, and not least ordinary people's opinions about what is sustainable, it is necessary to co-produce the knowledge in collaboration with a broad segment of the population, representing a wide variety of interests in question.

Part IV
Sustainability and the Teaching of Management and Business Development

In this part we present perspectives on business education in light of sustainability. The arguments that are presented are both descriptive and normative. It is obvious that there are many cases where business misuse power and behaves in non-sustainable ways. How can business education help avoid such misuse? In normative sense, one can discuss what sustainability is, and what behaviour is acceptable in perspective of sustainability. In a descriptive sense one can expose misbehaviour. However, it seems that a core responsibility relates to business itself. The case of the Eyde-network at Agder offers some promising hope. Here it is industry itself, at high executive levels, that has taken initiatives to address sustainability, and has initiated vocational training to increase that level of awareness about this issue in the whole organisation.

In Chap. 10, *Teaching the Sensitive Stuff*: *Does Industry Matter*? *Issues in Corporate Social Responsibility and Sustainability*, Harald Knudsen and Alessandro Frigerio discuss the relation between business behaviour and morality. It is a provocative chapter that makes important links with CSR debates. The message on the core themes of Higher Education and Sustainability lies in making students aware of how misuse of power and influence can develop within businesses. The chapter argues against a theoretical approach that assumes that the market functions equally well in all situations. Rather, experience shows that industry matters.

In Chap. 11, *Management as Intervention*, Richard Ennals presents ideas on an alternative perspective on management. The chapter seeks to apply ideas of sustainability, which is seen as mutual competence building development, to business management and business education. Management is presented in the context of the project "Higher Education in a Sustainable Society". It takes the opportunity to offer a distinctive Norwegian perspective, going beyond conventional capitalist accounts of business and business education. It offers alternative links to the university curriculum, and recognises that universities are themselves businesses. Management as Intervention may help unify the discourse.

In Chap. 12, *Agder as Mutual Competence Builders*: *Developing Sustainability as a Competitive Advantage*, Karen Landmark, Marianne Rodvelt and Stina Torjesen provide a discussion of companies in the Agder region which are organised in the Eyde-network, and how they have developed a common sustainability agenda in co-operation with the university. The chapter shows how this is followed up by organising an Eyde-school, as vocational training in co-operation with the university.

Mutual competence building means here to develop reason, responsibility, justice and ethics. It means seeing businesses in a larger perspective and seeing sustainability as an integrated part of management.

Chapter 10
Teaching the Sensitive Stuff: Does Industry Matter? Issues in Corporate Social Responsibility and Sustainability

Harald Knudsen and Alessandro Frigerio

10.1 Introduction

Our intention in this chapter is to bring up some challenges that face professors when dealing with ethics and critical thinking, related to social, environmental and sustainability issues that are relevant to management courses in higher education. In particular, we want to examine the role of a few selected branches of industry, and of a predominant business model. A basic assumption is that when it comes to the economic guidance provided by the "invisible hand" of the market, the ethical guidance provided by the business culture, and the guidelines and regulations provided by regulatory agencies, not all industries are created equal.

While management practices based on stakeholder theory and Corporate Social Responsibility (CSR) may be present in all industries, the practices and results seem to differ considerably, both between companies and industries. Thus, we are challenged both to discover the somewhat hidden reasons for the differences, and also to examine the obstacles to teaching about them.

Most CSR initiatives can be classified as answers to social and environmental issues, and most empirical research in CSR seems to be focused on company reporting and company practices related to social and environmental categories. Among these two, the environmental issues seem to be more directly linked to the concept of sustainability, and to the main topics of this book. We do not take this to mean, however, that social issues should be kept separate from the sustainability issue. We shall therefore include in this chapter both environmental and social

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categories in our concept of sustainability and in what we consider significant CSR issues. Also, while climate issues certainly are worthy of focus in a book on sustainability, we do not see them as the only area of concern. "The Limits to Growth" (Meadows et al. 1972) was written well before there was any talk about man-made climate changes.

While social and environmental practices have been the main topics both of legislation and of CSR programmes and CSR studies, we shall also consider the sustainability of the business model itself. Thus, we make a distinction between on the one hand a great number of critical issues and practices, and on the other hand, the very logic of predominant business models in a given industry.

In what follows, we first give a (historical) review of the somewhat uneasy relationship between environmental initiatives and business management education. We identify several stages in this development: from early neglect of environmental initiatives, to the present day confusion over climate issues, and the adoption of "sustainability strategies" and "eco-business" by large scale manufacturers and retail chains. We also examine the concept of a "common good", and discuss how to measure the contribution of a branch of industry and of individual enterprises to the common good. In the second part of the chapter we discuss the characteristics of five, selected branches of industry in terms of sustainability and corporate social responsibility, and also consider the role of predominant business models.

10.2 Description

10.2.1 The Environment Versus Business Tension

While individual capitalists in many cases certainly contributed significantly to social and environmental improvements in the late nineteenth and early twentieth centuries, even in the 1960s, environmental protection was mainly a proto-environmentalists concern, often seen as anti-business and a threat to material well-being. On the academic side, teaching business management was in many ways a reflection of the ideas and attitudes typically found in the business communities. Comments and answers to student questions were often of an apologetic nature: implying that important environmental issues were already well taken care of by the market mechanism, and by the regulatory structures already in place.

10.2.2 Environmental Roots

An early champion of nature was Jean-Jacques Rousseau, who in *Émile* (Rousseau (1762) 1979) argued that everything natural was in perfect order. Contrary to Thomas Hobbes, who in Leviathan, from 1651 characterised the "state of nature" as a place devoid of any possibility for justice, and where the prudential morality of the laws of nature is not compelling other than in *foro interno* (Hobbes (1651)

2010), Rousseau argued that in the state of nature some sort of "uncorrupted morals": a certain natural goodness, would prevail. Therefore "savages" would be better off, and more capable of peaceful living, than people subjected to the decadence of civilisation, as Rousseau argued in *Discourse on Inequality* in 1754:

> The first man who, having fenced in a piece of land, said "This is mine," and found people naïve enough to believe him, that man was the true founder of civil society. From how many crimes, wars, and murders, from how many horrors and misfortunes might not any one have saved mankind, by pulling up the stakes, or filling up the ditch, and crying to his fellows: Beware of listening to this impostor; you are undone if you once forget that the fruits of the earth belong to us all, and the earth itself to nobody (Rousseau 2009, p. 63)

An early American call for a return to nature was from Henry David Thoreau, who in "Walden; or, Life in the Woods", published in 1854 (Thoreau (1854) 2008) wrote about living in harmony with nature. Thoreau was to remind a century of urbanised Americans about the true value of simple and clean living. An early political voice in defence of nature was President Theodore Roosevelt, who in 1907 stated that "The conservation of natural resources is the fundamental problem (Quoted from Theodore Roosevelt's Seventh Annual Message to Congress, December 3, 1907: "The Conservation of Natural Resources").

This passage has the value of contextualising the issue: the world that we inhabit is an artificial composition that we human beings are shaping. The point is not so much to go back to a romantic Rousseauian state of nature, provided it ever existed, but to recognise the political responsibility, and to employ the knowledge and technologies that have been developed for the only apparent paradox of preserving the natural environment as a human creation.

A more direct forerunner of the environmental movement was the famous book by Rachel Carson, *Silent Spring* (1962), documenting the detrimental effects of pesticides on bird life and on the environment, accusing the chemical industry of spreading disinformation, and public officials of uncritically accepting industry claims. The Rachel Carson case also served to demonstrate how far such companies as Monsanto, Velsicol, American Cyanamid and large parts of the American chemical industry, even with the support of the Agriculture Department, would go in order to stop publication of the book, by personal harassment of Rachel Carson and threats of lawsuits.

The early contributions paved the way for broad international environmentalist and conservationist, grassroots movement. The environmental movement focused on a broad spectrum of issues, mainly wilderness protection, pollution control, agricultural sustainability and human health. While the Sierra Club was founded in 1892, mainly as a wilderness conservation movement, a number of environmental disasters in the post-World War II years, opened up ordinary peoples' eyes to environmental negligence, widespread pollution and pollution-caused disease: ranging from radioactive fallout from hydrogen bomb testing (Japanese fishermen near the Bikini Atoll), to oil spills (Cornwall, England and Santa Barbara, California), to mercury poisoning (Minamata population in Japan). The first Earth Day was celebrated in 1970. Greenpeace was established in 1971. Paul R. Ehrlich wrote "The Population Bomb" in 1968. "The Limits to Growth" was published in 1972.

The 1960s was not only a period of growing environmental concern, but more like a period of revivals, with individual engagement, a spread of collectives (including hippie communities in the US and 68th generation movements in Europe), and a mix of concerns: including civil rights, the rights of (former) colonies and issues of foreign aid, and the right to clean air and a clean environment.

10.2.3 Business, Government and Management-Educator Responses

Business on both sides of the Atlantic responded to the new movements by more or less rejecting the legitimacy of the cause, seeing most kinds of environmental and social critique as a threat to business freedom and a cause for increased costs. Environmentalists were not seen as credible informants. Business managers claimed to know best what was needed, and self-regulation (meaning non-regulation) was seen as the best strategy for dealing with the environment and social concerns.

Academic responses in the business schools to some extent mirrored the business responses. There was a huge gap between the responses of political scientists and sociologist, who often joined the environmental movement, on the one hand and business and management educators, on the other hand, who generally took a market-conservative, pro-business stand. To the extent that environmental issues were dealt with in the classroom, the problem issues were often more the question of how to deal with movements, activists and regulators, than how to clean up the environment.

Starting in the 1970s most industrialised societies set up Ministries of Environment and similar governmental structures. The Royal Norwegian Ministry of the Environment was set up in 1972, as the first in the world (in January 2014 the name was changed to The Ministry of Climate and Environment). Other nations soon followed, and public agencies often became mediators between radical environmental groups and businesses. While the companies, especially the big polluters, still looked upon environmental movements mainly as a threat to freedom and profits, the fact that environmental protection now more and more was based on scientific investigations and enacted into law, caused managers to gradually shift from a focus upon fighting against idealists and environmentalists towards lobbying against law making and law enforcement. In mainstream business policy, environmental protection was still seen by many managers as a necessary evil, and measures to decrease pollution were frequently seen as non-recoverable and un-necessary investments.

10.2.4 Stakeholders, NGOs and CSR

If the 1970s was marked by the initiation of public regulations, with the power to impose limitations on pollution and enforce fines for non-abiding parties, the 1980s was in many ways a period of NGOs and stakeholder action. The story of environmental movements and later legislation shows that the market does not exist in a socio-political vacuum, and that profits and salaries are not the only interests at stake.

Individual environmentalist, idealists and philanthropists, as well as NGOs, consumer and environmentalist movements, are part of a wider system of influences, influencing what is being produced and consumed as well as the processes of production and distribution. Government agencies are important regulators of business, and sometimes even more important, and more negatively important, when they fail to do a proper job of regulating.

The first to write about stakeholder theory in management was R. Edward Freeman (1984), who in "Strategic Management: A stakeholder Approach" identified various interests who all had a stake in the outcome of business decisions. While Freeman's approach was a general one, including all kinds of stakeholders: financial, local, consumer, suppliers, owners and employees, the stakeholder approach to business management added legitimacy to environmental and social concerns in business management. Business managers gradually came to realise that they would do better working with the tides of the time than against them. They would do a better job by listening to, and reporting back to, a wide selection of stakeholders than only to the shareholders.

CSR-initiatives, dating back to the 1960s, in a sense presuppose a stakeholder theory. CSR is mainly about corporate responses to stakeholder concerns. At an early stage the main idea was to pre-empt criticism, often through philanthropic donations, and still many look upon CSR as mainly an instrument for philanthropy and as a way to escape criticism, whether it is called "corporate conscience", "corporate citizenship" or "sustainable responsible business". Gradually, however, CSR is seen more as a principle of self-regulation, with less attention to gift-giving, and more focus on sustainable business management, and sustainable business models, looking at internal value chains and external value systems. A main goal is to avoid illegal and unethical business policies, and to operate according to (international) norms of good business practice. Today CSR is about systematic approaches: there is even an ISO-standard for CSR—the ISO 26000 (The ISO-standard does not serve as an "ethical certification" but as a system of feedback and advice about ethical business practice in such areas as local community development, human rights, labour relations, consumer relations, fair business practice and environmental impact). In Norway, CSR reporting is now mandated by law (see also Chap. 12 for a further discussion of different approaches to CSR).

10.2.5 Environmental and Social Challenges to Business Strategy

Our experience from many years of teaching in business schools, and from participation in international, academic management arenas tells us that even now, not much attention is normally given to CSR and sustainability issues in business research and teaching. While most business schools offer coursework in business ethics or CSR, the area has never been promoted to a high status or a predominant position in degree programmes (at the same level as finance, accounting or business strategy), and the number of staff hired to teach such disciplines is usually small. Teaching obligations in the area are often seen as a side obligation, or a voluntary input, as part of a more conventional academic position. Much of what is accomplished is due to the efforts of idealists. And where such individuals are missing, deans and administrators sometimes have a hard time finding people to teach CSR and sustainability issues.

Going with the flow, however, also means that there is now an increased space for proactive and strategic thinking in the area of environmental and social sustainability. For a long time, the environmental issue never became a top priority in most firms, but it has increasingly been seen as a legitimate concern along with a great number of other issues. A proactive, strategic attitude to environmental issues was encouraged by Michael Porter and Class van der Linde in their 1995 Harvard Business Review article ("Green and Competitive: Ending the Stalemate"), where they argued that environmental protection should not be seen mainly as a threat and a cost, but as an opportunity (Porter and van der Linde 1995). For a number of industries, including pulp and paper, paint and coatings, electronics, refrigerators, dry cell batteries and printing, they demonstrated how clean technologies not only would eliminate pollution but also improve the bottom-line. They also gave advice in favour of "innovation-friendly regulation", and they indicated how German and Japanese car manufacturers had captured early-mover advantages, by proactively coming up with environment-friendly innovations, while the American producers had wasted money trying to fight regulations. In a later publication, Porter and Kramer (2011a, b) introduced the concept of shared value, concretising the idea of proactive, strategic action for community development and social and environmental contributions, at the same time promoting your own business goals for profit and growth.

In their excellent book on *Eco-Business—A Big-Brand Takeover of Sustainability* (2013), authors Dauvergne and Lister demonstrate how big-brand firms like Walmart, Coca-Cola, Nestlé, McDonald's and Nike, now actively promote themselves as prominent actors for sustainability, and use the sustainability concept in their drive for leaner production and distribution, and for tougher administration of value chains and international supply chains. While sustainability policies may help clean up industrial and logistical processes, the overall impact, according to these authors, is to speed up overall consumption, waste and resource depletion, often incurring sizeable human and social costs along the way. Therefore, while certainly

a great number of strategy and management professors have advocated that sustainability be added to the strategy tool box, and Michael Porter's support of "shared value" is an eco-friendly initiative, the overall impact of "eco-business" may be more business and more profit, more sustainability marketing and image management resulting, however, in less real sustainability!

This is a serious issue, hinged on the gap between eco-friendly CSR proclamations on the one hand and the real "footprint" on the other. The tobacco industry for a long time used CSR as a "shield" in order to protect harmful business practices (Hirschhorn 2004). The new trends, with mega-corporations in retailing taking over more and more of international business (Walmart now employing more than two million people worldwide), using "eco-friendliness" and "eco-business" as marketing devices brings the issue to a new level: The use of "sustainability strategies" that may promote sales without being good for true sustainability and for the social good, should definitely be dealt with critically in business schools. In the present chapter we shall focus more on some other targeted industries, however.

10.2.6 From Pure Profit to Common Good to Concrete Negatives

A starting point in the examination of industry-level problems with sustainability, may be Milton Friedman's famous claim that "the business of business is to make profit" (Friedman 1962, 1970). Specifically, he warned:

> Few trends could so thoroughly undermine the very foundations of our free society as the acceptance by corporate officials of a social responsibility other than to make as much money for their stockholders as possible (Friedman 1962, p. 133).

Friedman's argument presupposes that perfectly functioning regulatory agencies are in place, and that all aspects of pollution, negative side effects of production and consumption, and issues of sustainability are taken care of through legislation. It also follows that the best indicator for comparisons of "goodness" between industries and companies is the rate of profit, or return on owners' equity: ROE: The more profitable a business firm, or the higher the average ROE in a branch of industry, the greater its contribution to the common good of a society! High profits imply that entrepreneurs and business firms are able to better meet important (unsatisfied) customer needs than their competitors, or that they are able to satisfy such needs in a more efficient way.

While often strongly criticised in public debate, most business schools and business professors seem to take Friedman's reasoning, and the full back-up of neo-classical micro-economics, and libertarian ideology, more or less for granted, even when they add some qualification (that markets are not perfect, customers are not fully informed, regulations do not always work as needed). What is new is that sustainability is now used by prominent actors as an effective strategy for increased profit (Dauvergne and Lister 2013).

10.2.7 The Invisible Hand

Since Adam Smith we have had a reasonably clear conceptualisation of the capitalist market economy. The market is to serve as a co-ordinating mechanism (or "invisible hand") matching production capabilities to human needs, in ways that best exploit the comparative advantages of producers, and that also best satisfy the needs of people. At the level of individuals and families, and perhaps also of regions or ethnic groups, talent, effort and luck will influence to what extent they are able to retain a higher or lower share of the values being created. The share allotted to an individual, family or social group also determines their opportunities for consumption and capital accumulation. The role of the government and public agencies is seen mainly as one of regulating private business (limiting negative side effects), procurement of public goods, and sometimes provide for a minimal "surplus goal" of redistributing income and wealth.

The real secret of the invisible hand lies in the conversion of individual subjective interest into a collective interest: the satisfaction of individual and group needs by people in pursuit of their own interests. The drive for profit by individual capitalists, even with a total ignorance and disregard of the common good, will lead to increased wealth in society. Thus, a "conversion mechanism" in the shape of an "the invisible hand", seems to be in place, converting individual interests into collective interest, individual good into collective or common good.

The precondition for this to take place is that what we may call "the pure economic interest" of an economic actor, does not stop the "conversion mechanism" from doing its job, in which case we might talk about a "negative conversion mechanism". Sometimes the invisible hand does not seem to measure up: it does not seem capable of turning out the common good it was supposed to do.

We can think of "non-conversion" or "negative conversion" as being either circumstantial or categorical. A "circumstantial negative conversion", as in a downward spiral of wages, might take place in a company town, where a mining company would pay workers as little as possible. Since workers often seem to be "stuck" in such places, indebted or otherwise incapable of leaving, and since no competing capitalists are moving in to bid up prices of labour, a downward spiral of decreasing wages and increasing labour misery is possible, perhaps even likely. Clearly, the invisible hand is here corrupted, and the conversion mechanism works in the wrong direction.

When we move from "circumstantial negative conversion" to "categorical negative conversion", we have to look for industries where the economic interest, as expressed in underlying logic and dynamics of predominant business models in the industry, itself drives a negative spiral, or a negative conversion process, and where, in the process, it also tends to undermine or corrupt governmental agencies that were meant to arrests the negative conversion processes. To uncover such mechanisms, one may ask what tendencies would prevail if such corporations were driven purely by a profit motivation, without proper regulation and without any

consideration of ethics beyond that which is mandated by law, as suggested by Friedman.

10.2.8 Common Good: The Great Divide

The common good is not a very precise term because it tends to vary between cultures and it changes over time. Further difficulties are generated by debates that consider whether the public good consists of the simple sum of individuals' good or something more and on how to strike the proper balance between the good of the current generation against the good of future generations.

While we cannot account for every single variation of the idea of common good, for the scope of this chapter we can try to systematise the concept by looking at a set of two dichotomies and use them for sketching four ideal-types. The first dichotomy considers whether it is simply desirable to set a proper process and the common good will be the unpredicted and changing outcome whatever it may be (process-based) or whether the common good is pre-defined and it is necessary to look at the possible final outcome for creating the best process that will generate exactly that specific idea of common good (end state). The second dichotomy focuses on the political priorities for generating the common good: whether the private interests should determine the boundaries of the public action or the public interest should set the boundaries of private actions. Table 10.1 tries to illustrate this.

First: private over public priority and process-based not predetermined idea of common good. Robert Nozick's idea of libertarianism expresses this ideal-type. In Anarchy, State, and Utopia (1974), the satisfaction of individuals' preferences can come only from the total respect for individual rights (toward liberty, security and property, derived from Locke's concept of the state of nature). According to this view, the state should be minimal and work only for guaranteeing individual and corporate (as free associations of individuals) rights. If the state decides to have "surplus goals", or goals beyond protecting individual rights (which under libertarianism is not recommended, but not strictly excluded), it can pursue such goals only if they do not interfere with individual rights which are defined as side-constraints. A minimal, night-watchman, state would be limited to the protection against violence and use of force, theft and fraud, and the enforcement of contracts. The essential mechanism for the creation and distribution of goods and benefits in society is based on the concept of entitlement: the institution of free exchange among consenting adults, based on a just and fair starting position, even if the exchanges lead to large inequalities at later stages.

The main problems of this ideal-type in terms of common good are twofold: first, as Nozick recognises, it is unable to redress past injustices both deriving from the initial appropriation of limited natural resources and from the effects of following passages of wealth that started with an unjust procedure; second, the creation of negative externalities or side effects, including "the tragedy of the commons",

Table 10.1 The common good

	Process-based not pre-determined	End-state pre-determined
Private priority over public	Nozick's libertarianism	Mill's liberalism
Public priority over private	Rousseau's republicanism	Bentham's utilitarianism

serious deprivation of the poor, linked to huge discrepancies in income and wealth, and serious lack of public services.

Second: public over private priority and process-based not predetermined idea of common good. This ideal-type may be represented by the works of Rousseau, particularly The Social Contract (1762). The common good in Rousseau is linked with the idea of the general will: as much as the general will is not the sum of the private wills of different individuals, but something more that bypasses their personal interests, so the common good is not simply the total sum of each individual's private wealth, but adds a further substance to the final result. The process outlined here does not specify the kind of common good that will result, but only the fact that it can only be derived from the individuals' willingness to look for it rather than for their private interests when deliberating.

The main risk in terms of common good associated with the general will assumptions is, at the extreme, the danger of tyranny. It may be the tyranny of a democratic majority, over-ambitious about surplus goals or a tyranny in the shape of a dictatorship of the proletariat, as seen in communist societies. But we may also associate such tyranny with political oligarchies and monopolistic business-government relationships, such as the "military-industrial complex": coined by President Eisenhower at his departure address (As we shall see, there seem to be many such "complexes" in modern economies).

Third: public over private priority and end-state predetermined idea of common good. This ideal-type can be represented by Bentham's classical formulation of utilitarianism (Introduction to the Principles of Morals and Legislation, 1789). Bentham started from the consideration that pain and pleasure are the "two sovereign masters" under which human kind was put. The common good derives from the hedonistic assumption that every sentient being, so including also animals as moral patients, wants to avoid pain and get pleasure. The passage from the individual to the collective keeps the same pre-determined common good's substance as the greatest possible good for the greatest possible number of individuals. Having defined the goal, as a teleological and consequentialist theory, the process is determined by its ability to reach that goal and Bentham provides a series of technical formulas for succeeding.

While, as a social doctrine, utilitarianism seems to satisfy the idea democratic idea of giving equal weight to everyone and to promote social welfare, its main risk in terms of common good is associated with its potential inability to respect individuals in the name of the maximisation of utility of the group, for example when the pain of one brings about the pleasure of all the others. This problem has constrained the application of utilitarianism to politics, but it has not prevented it to spill over on smaller groupings such as large corporations as a justification for

practices that penalise internal and external stakeholders in the name of the highest good of the company (and its shareholders).

Fourth: private over public priority and end-state predetermined idea of common good. John Stuart Mill's idea of liberalism can be used for characterising this ideal-type. In On Liberty from 1859 (Mill (1859) 1869) there is a clear defence of individual rights against external interferences on the basis of at least two principles. First, anti-paternalism, as for example expressed by his criticism of the presumption of infallibility: Mill describes this problem in terms of freedom of expression, highlighting how censorship of dissenting ideas may risk preventing the full development of individuals and therefore societies, and he uses the example of Marcus Aurelius as a respected philosopher who, as an emperor, persecuted Christians. Second, the harm principle stating that one's actions can be limited only when they harm someone else. These procedural principles derive from the predetermined and perfectionist idea of common good that Mill indicates in Utilitarianism (1863) as the only form of real freedom: autonomy or the possibility for each individual to flourish according to his/her own ways. Interestingly Mill was also supporting a qualitative form of utilitarianism as a progressive system designed for creating those political and social preconditions that are necessary for extending the opportunity for individual flourishing to everyone (Mill (1863) 1998).

The main problem of this ideal-type in terms of common good rests with its perfectionist view that risks not only and not so much to clash with the harm principle, but also and most importantly imposes a goal to be promoted on individuals and governments in such a way that it may generate a sacrifice of autonomy itself. In Mill this problem is exacerbated by his version of utilitarianism which focuses not only on the quantity of pleasure, but also on its quality ("better to be Socrates dissatisfied than a pig satisfied") with a preference for those intellectual activities that according to him provide a higher level of satisfaction.

While arguments among political philosopher are not settled, as a matter of practice, the diversity of the idea of common good is also reflected in the most comprehensive list of rights that has been historically agreed upon, though not very much respected, by the largest number of international actors: the Universal Declaration of Human Rights (1948). Here while the libertarian interest for individual rights is represented, it is not based on the strict format of side-constraints and both the rights of individuals and the duties of the public extend well beyond the idea of side constraints (including, for example, the right to education in article 26); and while republican calls for political participation are endorsed, there are no references to any general will and most importantly there are specific limits not only for preventing abuses of individual rights, but even to co-optation (including, for example, a specific prohibition against compulsory association in article 20.2). The tone of the Declaration is set up in such a way that, if we want to interpret it in the light of our ideal-types of common good, it recalls Mill's interest towards human flourishing and the provision of those instruments that enable individuals to endeavour for it (that later were further developed in the International Covenant on Economic, Social and Cultural Rights in 1966, although not all countries who signed later ratified it, with the USA being the most prominent case). Finally,

recognising the extended importance and power of private corporations, the United Nations Human Rights Council endorsed the Guiding Principles on Business and Human Rights (2011): a first, non-legally binding, step for addressing and possibly "protect, respect and remedy" illicit practices by the private sector. While the document is a very positive step, possibly covering a wide array of issues like pollution, the eviction of people and systematic abuses of workers, it is limited in its scope. Here we consider not only cases that violate existing legislation and international agreements, but also intended practices and effects of practices: lack of responsibility and accountability, for example that endangers or even prevents the possibility of human flourishing. When referring to the common good in the present text, we shall refer to these as "concrete negatives": aspects of business and society that go against the human flourishing vision.

10.3 Discussion

10.3.1 Reasons for Concern

While most advanced economies today have social and environmental legislation in place, and while most legal business operations today take these regulations for granted, and many firms have proactive CSR-type policies in place, we should not assume that social and environmental concerns are therefore taken care of.

From CSR-research we may observe a number of sobering observations. In an article, covering 400 interviews and 1,100 questionnaires to managers, including sustainability experts, and external stakeholders, Steger et al. (2007), all from IMD, ask whether the "triple bottom line" (of economic, social and ecological reporting) is just an illusion, a "fashionable" rhetoric without substance: "Reality appears to be that the economic bottom line still dominates corporate decision making" (2007, p. 162). Most companies seek to comply with laws and regulations, but CSR was meant to take companies beyond simple compliance with laws. Laws are seen by these authors as the "required precondition for companies' license to operate" (p. 162) while CSR should be mainly about corporate responses to stakeholder issues and internalisation issues ("polluter pays" principles) beyond legislation.

In their study of ten important industries (including: Electric utilities; oil and gas; automotive; aviation; technology; chemical; food and beverage; pharmaceutical; financial; and other), most social and environmental issues were considered to be of secondary importance. On a 5-point scale (where 5 means highly important, and 1 means not at all important) social and environmental issues were rated around 3, even in highly exposed industries, meaning "fairly important". In the financial sector, social concerns were rated at 2.75 and environmental concerns at 2.17: which translated into ordinary language, would mean "nothing to care about". And, in agreement with the authors, we should also remind ourselves that these results are likely to be too optimistic: companies tend to present themselves as being more

concerned than they really are about such issues, as part of their "impression management". However, some issues, such as climate change in the energy industries, or obesity in the food and beverages industries, were seen as important enough to receive "professional attention".

We may ask why the interviewed managers did not see such issues as more important: not "make or break" issues. The reasons may be many: critical economic issues take precedence; managers believe they have successfully managed such issues before; uncertainty about regulations and diffuse market reactions may cause them to be reluctant; highly fragmented issues makes it difficult to face up to problems: 225 different issues were brought up in a former study (Steger 2004); the spread of issues over the entire value chain leads to fragmentation of responsibility.

While the responses seemed to gravitate towards the mean on the 5-point scale, there was still a statistically significant difference between industries, indicating that both the nature of the business and differences in management attitudes and management practice might play a role, with oil and gas and the chemical industry being more than average concerned with environmental impact, and with oil and gas (in less developed countries) together with the food and beverages industries being more than average concerned with social issues. Overall, environmental issues were seen as more important than the social ones.

10.3.2 Concrete Negatives by Industry

We have so far rejected the argument that profitability can serve as a "supreme and only" indicator of contribution to the common good. We have also uncovered that while common good arguments may remind us that human wellbeing should be sought in the good of the whole society, and not only at the level of individual or private interests, the concept of a common good may be too broad for the purposes of the present chapter. Instead we shall return to what we referred to "concrete negatives" for our comparisons of environmental and social sustainability at the industry level.

From the history of business and economics, there are many cases, and in some industries a systematic pattern, of unfair practices, waste, social misery, and environmental degradation in the footprints of capitalism. Many firms also seem willing to spend unlimited amounts of money for bribery, corruption of regulatory agencies, lobbying among politicians, and whatever undercover influence they might find economically beneficial. Instead of going for an indicator of goodness, we may start in the other end, looking for indicators of badness and criminal behaviour. Of course, a company may engage in unlawful behaviour and at the same time be active in sustainability policies, shared value policies or charity. It may also at the same time offer employee's generous salaries and benefits. Furthermore, national legislation does not always correspond to ethical ideals. In some countries, it may (according to one's own standard) be unethical to not follow the

law (as in the case of taxation or bidding practices); in other societies it may be unethical to follow the law (as in the case of treatment of homosexuals or child labour).

But if we accept that it is hard to find one indicator of overall goodness or badness, at least we can use trespasses of the law as a starting point. All proponents of the market economy, would agree that business firms normally need to operate inside of the law (although some might argue that the most important is not to get caught. . ..), and while there are a number of ethical concerns that may not be illegal, but nevertheless ethically unsustainable, we shall take criminal behaviour and the size of fines paid for transgressions as a first indicator of "concrete negatives". We shall later discuss other indicators.

10.3.3 Starting with Crime

One indicator of levels of illegal business practices is the size of fines and court settlements in the history of a given industry. In connection with the recent settlement between the US Department of Justice and J. P. Morgan, the Wall Street Journal ("Where J. P. Morgan's Settlement Sits in History of Corporate Fines". October 19, 2013) published a list of the biggest historical settlements: all in the US. While not giving an indication of general unethical behaviour and unsustainability, and saying very little about unethical or illegal behaviour outside the US, the list is quite revealing. The biggest settlement ever reached was between the five largest tobacco makers in the US (Philip Morris, R. J. Reynolds, Brown & Williamson, Lorillard, and Liggett & Meyers) and most of the American states, totalling $246 billion, in 1998, to be paid over 25 years. The biggest non-tobacco settlement is a fine of $25 billion in 2012, shared by financial giants Wells Fargo & Co, J. P. Morgan Chase Co, Citigroup Inc., Bank of America Corp. and Ally Financial Inc, paid in penalties and borrower relief over foreclosure processing abuse.

If we look at the remaining cases, several of the biggest fines have been levied on banks and financial services: The biggest individual settlement is the one between J. P. Morgan and the US Department of Justice, totalling $13 billion in 2013 (with Morgan still showing strong annual profits, even after paying the fine). A group of banks including Bank of America, Wells Fargo, J. P. Morgan and ten others in 2013 paid $9.3 billion to homeowners over alleged foreclosure abuses, after a settlement with the Office of the Comptroller of the Currency and Federal Reserve. Bank of America in 2011 paid $8.5 billion in a settlement with a group of mortgage bond holders, after also paying billions to various customer groups. In 2003 HSBC Holdings agreed to pay $1.9 billion to the U.S. over deficiencies in its antimony-laundering controls. It was then the largest penalty under the U.S. Bank Secrecy Act. In 2012 the UBS AG agreed to pay $1.5 billion for manipulating interbank lending rates. In 2003 a group of ten Wall Street firms including Goldman Sachs,

Morgan Stanley and J. P. Morgan had to pay penalties of $1.4 billion for conflicts of interest between their research and investment banking sectors.

While we can see that many of these claims have come in the aftermath of the 2008 financial crisis, the level of penalties and fines is quite astounding. At much the same level, but much less frequent, are some of the penalties in the oil sector. The $4.5 billion fine levied on BP in November 2012, for the Gulf of Mexico blow-out, was the biggest fine ever levied by the US Department of Justice, and it came in addition to paying victims $7.8 billion in damages and $42 billion for clean-up and settlement payments (In certain other countries oil spills and damages, even of a similar magnitude, might have been settled by bribery). In 1991 Exxon agreed to settle all public (federal and state) claims after the Exxon Valdez oil spill in March 1989, totalling $900 million.

Apart from the post 2008 penalties in financial services and banking, the most persistent contributions to the "worst-case-list" come, quite remarkably, from one targeted industry, pharmaceuticals: At the top of the list is the July 2012 settlement between GlaxoSmithKline and the US Department of Justice, amounting to $3 billion for illegal marketing of drugs and the withholding of safety data from U.S. regulators. In 2009 Pfizer Inc. pleaded guilty to criminal charges and had to pay $2.3 billion for illegal marketing of Bextra and other medicines for unapproved uses. In 2012 Abbott Laboratories pleaded guilty of criminal misdemeanour and paid $1.6 billion for illegal promotion of the anti-seizure drug Depakote. In 2009 Eli Lilly & Co paid $1.42 billion for improper marketing of the antipsychotic drug Zyprexa. In 2011 Merck & Co agreed to pay $950 million for illegal promotion of the painkiller Vioxx and for incorrect reporting of safety issues. In addition to these (having come up in April 2014, after the Wall Street Journal list was made), is the record-braking fine of $9 billion in damages, to be paid by Takeda of Japan and Eli Lilly of the US for hiding evidence of a link between their Actos diabetes drug and bladder cancer.

Outside pharmaceuticals, the Journal actually only lists two cases involving manufacturing firms: In 2008 Siemens agreed to pay $1.6 billion in fines and penalties to U.S. and German authorities for bribery in several countries. In 2009 Intel was charged with a penalty of $1.5 billion to the European Union for price fixing, in what was then the biggest antitrust case to date in the world. Intel controls 80 % of the international computer chips market.

What we see from these examples is that not all industries are created equal! The list is decidedly skewed. As mentioned, we cannot take the "worst-case-list" of penalties as a proxy for the general level of unethical behaviour, and we need to fill in with additional information. However, we can at least summarise that the biggest penalty has been levied on the tobacco industry, that the oil industry has had to pay for neglect and accidents, that the financial sector has been made to pay for criminal behaviour leading up to the 2008 crisis, and that the most persistent violator over many years is, by far, the pharmaceutical industry. But we also notice that no record fines have been levied on the oil industry for corruption abroad. Similarly, military armaments are not on the list, in spite of numerous cases of corruption.

While fraudulent behaviour in the tobacco industry had been going on for a long time, and while, interestingly, CSR seem to have been used as an instrument for defending and expanding criminal behaviour (rather than for improving the behaviour), we may assume that by now most people, at least in medium and high income countries, are informed about the dangers of tobacco smoking. We may note that the major issue in this industry was policies of cheating the public and the regulatory agencies on harmful side-effects, and also the deliberate policies of cultivating tobacco that would lead to increased dependency/addictivity.

The big fines in banking and finance are mainly in the aftermath of 2008, and while the court cases may have helped clean up the industry, we are not yet fully convinced. Much of what went on before 2008, seems to continue, sometimes in new forms. The rates of profits and bonuses are still extremely high. The main issue in this industry has been the overselling of risky investment and financial schemes. The troubled relationship between investment banking and government, what we might call (following Eisenhower) "the financial-regulatory complex" would never appear on this kind of a list.

Military supplies and the weapons industry are conspicuously absent from the list. That does not mean there is no trouble, as indicated for instance by the recent corruption scandal in Greece, where former defence minister (and a founding member of the Socialist Party), Akis Tsochatzopoulos in 2012 became the highest-ranking Greek official ever to be detained on corruption charges, accused of pocketing at least $26 million for Greece's purchase of submarines and missile systems.

Also absent is the food and beverage industrial chain. This does not mean that environmentally concerned people around the world are not concerned with the practices of a company like Monsanto. Where the underlying business interest is to sell chemicals as pesticides, there is reason to believe that engagement in gene modification, seed and pesticide patenting, and seed production and distribution will contradict the ecological interest in avoiding toxicity and also contradict a democratic interest in having farmers freely choosing how to make a living. Thus critical issues in the food and beverage industry overlap with similar issues in the pharmaceutical industry (where an underlying interest in parts of the industry is to sell chemicals as drugs).

We may also note that while oil firms are on the list, they are there mainly because of accidents, not because of corruption, "resource curse" and support of "cleptocratic" governments. The major issues have been accidents linked to production and transportation, and only when such accidents occur in the rich part of the world. Regular pollution in poor countries is not accounted for, neither are regular pollution problems and issues related to fighting against climate control.

Finally, "big pharma" seem to play a role in criminal business conduct way out of proportion to the size of the industry. Like the tobacco industry, the major issues are about cheating the public and the medical profession through overselling drugs, and also for using scientific methods and testing procedures for deceptive purposes and for coming around regulatory arrangements. Again, we may look to President Eisenhower and suggest the existence of a "pharmaceutical-regulatory complex".

We shall return to this particular "complex" below. We should, of course, also note that while other business segments barely make the list, it is easy to find everyday examples of misconduct and unsustainability (including construction).

10.3.4 Additional Issues in Five Branches

From the list of offenders, and from our comments about "concrete negatives", it appears that five industries in particular seem to deserve a close examination (weapons, oil, finance, food and pharmaceuticals). Among these, it seems that pharmaceuticals deserve an even closer examination.

What seems clear from the list of offenders, however, is that different industries get on the list for quite different reasons, and that some firms are off the list, even if we have tons of reports showing that they would score low on various measures of ethics and common good. This suggest that teaching about environmental and social sustainability, as something more and different from image management, needs to get behind the particular logical mechanisms and dynamics that drive their business models and that contradict the general workings of the "invisible hand": something categorical that undermines the conversion of private gain into common good.

Historically there are many indicators of gaps between common good ideals and the realities of the invisible hand. Starting with weapons and armaments, President Dwight D. Eisenhower spoke out about the "military-industrial complex" after having himself been trapped into a full confrontation (U 2 affair) with the Soviet Union, at a time when he wanted to depart as president with a peace treaty in his hand: evidently trapped by forces within the complex. We also note that international weapon sales have been a constant source of corruption, conflicts and dictatorship around the world. Where is the logical breakdown?

The invisible hand assumption is that weapons are needed for defence: weapons producers serve a national, common good interest in peace. The practical/political issue is, however, that if the basic drives for profit and growth in the industry are based on ever increasing production and sales of weaponry, to what extent does such an industry generally serve the interest of peace, and how can we assure that, given the enormous sums of the contracts involved, there is no collusion of interest between seller and buyer, and no economic benefits from corruption?

The Oil & Gas industry has for decades been notorious for pollution, corruption, "resource curse" and "cleptocracies" practices, and is increasingly at the forefront of climate/CO_2 issues. While the petrol station side of the business is assumed to be generally clean, the extraction side has been scarred by some quite extreme lawsuits. The invisible hand assumption is that oil and gas is essential to efficiency in nearly all industries and to the functioning of societies and individuals. The practical/political issue is that if the basic drives for profit and growth is based on ever increasing access to scarce resources, often located in non-democratic societies, to what extent can we expect high ethical standards in the dealings between the

industry and national institutions, and to what extent can we expect this industry to comply with a common good interest in reduced CO_2 emissions?

The food and beverages industry has for ages been infiltrated with small scale cheating and malpractice. In earlier times the mixing in of bad flour and bad fish or meat were the main problems. Recently, the list of problems has grown increasingly longer, hitting every stage of production, refinery, industrial production and distribution, with ever increasing lists of illnesses and obesity seen as end consequences of ever increasing lists of additives and pesticides.

The invisible hand assumption is that the provision of food is basic to human health and well-being, while the practical/political issue to be raised is that if the basic drives for profit and growth is based on ever increasing production and sales of food, at the lowest possible resource input prices and a maximal value added in processing and distribution, can we then expect farming methods and food processing to be environmentally friendly and the end output to be the healthiest food possible?

The financial services industry has for long periods of time been seen as a needed, harmless service. The "financial crisis" of 2008 opened the eyes of many people to both criminal and misplaced practices, with the biggest fines in history imposed upon companies involved. The invisible hand assumption is that financial institutions and banks are needed to create a balance between people's need for saving, spending and investment and to facilitate payment in all forms of trade. The practical/political issue is, however, to what extent will competition serve to drive down the mark-up (interest rates for deposits versus loans) in money markets and create a safest possible financing of housing and business?

The pharmaceutical industry has traditionally been seen as a "do good" industry, a classic case of the invisible hand providing for the good of society and the good of individuals. Even in this industry, there has in recent years been increasing attention to fraudulent business practices, scientific cheating and corruption. The invisible hand assumption is that medicines are needed to promote individual and public health (contrasting an old Chinese argument is that doctors should be paid according to the health status of the patient: The healthier the patient, the greater the payment to the doctor should be). The practical/political issue is that if the basic drives for profit and growth is positively related to the intake of medicine in a population (i.e. keeping as many people as possible on so many medicines as possible for as long as possible), such that more money is made the more medicine that is consumed, to what extent does such an industry serve the interest of health?

What we notice in all these cases is, first of all, the crucial role of public regulators and governmental purchasers (military): both in host countries (oil, food) and countries of origin and consumption (pharmaceuticals, finance). We also note that the problem issues mentioned go beyond particular incidents and accidents: the basic logic of prevailing business models seem to drive these industries towards conflict with the common good, unless being strongly regulated by independent and powerful regulatory agencies. We also notice that regulations in some of them (food, pharmaceuticals) is strongly dependent on advanced and costly independent research in order to do a proper job, or on strong, independent

judgment by expert counsel (military purchases, finance), and generally incorrupt government (oil).

Our next step is to examine one industry in some more detail, also considering more directly the business model issue, picking "big pharma" as an industry case. First we shall define what we mean by the term "business model" and what we see as essential elements of a business model.

10.3.5 A Business Model Defined

In "The Practice of Management" Peter Drucker (1954) claimed that a sound business model should answer the question of who the customer is and how value is created for the customer. A more recent source states that business models consist of "stories" that explain how the business enterprise works (Magretta 2002). Still other sources say that the heart of a business model is the "inner logic" of the enterprise, the way it operates, and the way it creates value for stakeholders (Casadesus-Masanell and Ricart 2010, p. 196–197), or it describes "the logic" of the enterprise in creating, delivering and capturing value (Osterwalder and Pigneur 2010).

We shall here use the following definition: "A business model is a verbal or visual representation of the inner logic and dynamic that allow an enterprise to create value for its stakeholders" (Knudsen and Flåten 2015). We may also consider some more general requirements such as a "customer value proposition" (defining how to satisfy customer needs), a "profit formula" (defining how to satisfy profit requirements), and also identifying resource needs and essential processes (Johnson et al. 2008). However, the essential requirement in our view is the existence of an inner logic and, where applicable, an inner dynamic between elements. As an example we may consider some of the elements of the Ryanair business model (Kay 2004, s. 198; Casadesus-Masanell and Ricart 2011):

The use of regional or "number 2" airports lead to lower airport costs
Low travel agency commissions rates reduces costs
The standardisation of the fleet adds negotiating strength versus aircraft producers and lead to lower procurement costs and lower maintenance and service-costs
Only one passenger class allows for economies of scale
Personal incentives and options to employees attract talent
Nothing for free on board provides for «ancillary revenue»
A modest headquarters saves cost and reduces risk
A non-union human resource policy allow for flexible use of employees
Low cost allows for lowest prices in the market

Dynamic elements are also added:

Low prices lead to greater volume and economies of scale

Greater volume allows for added ancillary revenue, improved bargaining power, reduced investment costs and maintenance costs, which in turn lead to lower prices, which again drives a new cycle of growth

There are elements of this model (such as non-unionisation) that may seem repulsive to some readers. Our point is not to sympathise with any given policy, only to demonstrate that the model is one of the most logical consistent in the market and it fits perfectly with the requirements of the invisible hand assumption. Ryanair has become the largest and most lucrative airline in Europe, serving more passengers than any other airline.

10.3.6 The Hidden Business Model

A recent collaborative research project between scholars from Kazakhstan and Norway, focusing upon transparency and corruption issues in the oil industry, brought up a surprising interview response from a prominent Kazakh investor: Don't look at the (resource based) wealth generators: look at the (public) spenders; don't look at the oil sector: look at why our hospitals pay quintuple prices for medicine! We have decided, in this chapter to follow his advice by focusing on predominant business models in the pharmaceutical industry.

There is a long list of indicators that the prevailing business models in the industry are unsustainable and in need of an overhaul, but we have not seen convincing arguments that it really will happen. A strong indicator that change is called for is the fact that major consulting firms for a long time have lined up to state the need for å new business model in the pharmaceutical industry: business model development might be very lucrative if change indeed were to happen.

An early call for a change of business model touched upon a basic ingredient in the prevailing models: the "blockbuster mentality" (aiming to sweep multi-billion dollar markets for standardised solutions to widespread illnesses, such as cardio-vascular and cholesterol, diabetes II, depression, and anxiety) coupled with "me too" strategies (near-copying existing medicines with a small, patent-able and brand-able variation) (Gilbert et al. 2003). Much of the literature on the troubled future of the "big pharma" business model, takes a pro-business stand, expressing concern over (potentially) falling returns on investments. Given that this industry for decades has outperformed just about any other industry in terms of profits, wages and bonuses, falling profits should be seen as normal and as a sound market reaction.

Our concern is more with the social impact of present practices and with the gap between "the apparent business model" and the "nominal" commitments to improving health and relieving suffering on the one hand, and "the hidden business model" and the real commitment to profit and lavishness at the expense of the public and patients on the other. The term "hidden business model" was coined by Donald W. Light in a warning to Harvard Business Review subscribers that they are

wasting billions of dollars on "ineffective, even harmful drugs in their health plans": both because the drugs are ineffective, overpriced, and creating harmful side-effects that in turn create a need for even more overpriced and ineffective drugs (Light 2012; Light and Lexchin 2012).

While there have been innumerable claims that the blockbuster strategy would fail in the long run, as patents ran out and innovation became more and more expensive and less and less effective, even in 2014 the lists of bestselling drugs look pretty much as before, and for those who are critical of the present business model, that is not good news.

So what are the internal logics and dynamics of this "hidden business model"? Not all the elements of the model are created by the industry, although they are all influenced by it. An important role in the model is played by regulators, notably the Federal Drug Administration (FDA) in the US: but also by similar institutions in other countries, often more or less automatically accepting the results of American testing and approval. The main elements and strategies of the model are, however, fully in the hands of the companies.

The following are what we see as some important historical premises. The take-off of the industry, in terms of growth and profit, came as a result of the identification of huge areas of real and potential sickness (reflecting increasing claims of "over-diagnosis" of patients) that came to be seen as treatable, starting in the 1950s and 1960s (following among others the discovery of penicillin and the first generation of what has been termed the psychopharmacological revolution). While penicillin definitely represented a step forward, the talk of a revolution in the treatment of mental illness seem to have been premature. Yes, mental patients became quiet and were released from hospitals, but the "revolving door" effect soon brought them back. Actually, compared to "before revolution" results, fewer people suffering from illnesses such as depression and anxiety, and treated with the most popular modern medicines, return to a normal family and work life, than before the so-called revolution (Whitaker 2010). Perhaps psychiatry, and depression in particular, has been the target of the worst "attacks" by the pharmaceutical industry (Greenberg 2010; Moncrieff 2009; Whitaker 2002). However, in many other areas, such as diabetes II, cancer and cardiovascular diseases, the benefits of the drugs seem to have been grossly exaggerated, negative side effects under-reported, and the real causes of the illnesses often badly identified, underrepresenting the need for lifestyle and food-choice changes (except, of course, for stopping smoking) (Angell 2005; Peterson 2008; Moynihan and Cassels 2005; Abramson 2004; Virapen 2008).

The heart of a blockbuster strategy is to get regulator approval for a patented and brand-able "new" medicine, and to put the main effort into developing such medicines, either as a "first out with a new generation" strategy (such as the SSRI-generation of psychopharma) or as a "me too" strategy (such as coming up with a statin number x).

Getting FDA/equivalent acceptance has become very expensive (Under pressure from Aids lobbyists, pressuring for increased speed in the examination of new Aids medicines, the Reagan administration—instead of increasing FDA budgets to expand capacity, made the applicants pay a high fee, thereby being able to add

more staff. The cost of running a full evaluation process is normally in the $100–200 million range). High costs of product evaluation tend to keep out small competitors and stimulate acquisitions, thus driving monopolisation. It also makes it uneconomic to seek approval for cheap remedies and for infrequent illnesses—further driving monopolisation and blockbuster strategies. In order to have a new medicine accepted, applicants do not need to show that it is better than existing medicines, only that it is better than a placebo. A great effort therefore goes into convincing the regulators that the new medicine is in fact better than placebo.

The preferred scientific method for proving the effect is the so-called "double blind test", where neither the patient nor the doctor/researcher administering the process are supposed to know whether or not the patient receives the real medicine or a placebo. Double-blind research designs have become a mantra in the industry, and for a majority of doctors a kind of final scientific proof. There are many ways to lie about statistics, however, and they all seem to be in the toolbox of the predominant business model.

The doctor/researcher is required by law to inform the patients about likely negative side effects (such as dryness in the mouth, feeling of nausea, upset stomach, or bad sleep). Therefore, patients who experience such side-effects will "know" that they are receiving "the real thing" and step right into the placebo trap. According to world-leading expert on placebo-effects, Irving Kirsch, meta-research on placebo effects of anti-depressives, show that, controlling for such "active placebo" (sometimes called nocebo effect, meaning that patients respond positively to otherwise harmful effects of the drug), such drugs have no net benefit (some patients report they feel better, others that they feel terrible), and that psychological treatment, such as cognitive therapy, outperform all drugs (Kirsch 2010).

Double-blind research designs normally include the testing of a new medicine on large, and scattered populations, which in itself is positive. The negative side is that the companies do not have to report all results, they are allowed (unless requested to submit all results) to only submit some of the test scores, and these are not required to be chosen randomly. In other words, a medicine may be approved even if testing in other locations show negative results. The companies are responsible for testing their own products, which result in a conflict of interest. In order to increase the likelihood of positive test results they may choose to exclude from the testing patients with expected adverse reactions, such as people with more than one health problem, and sometimes women, children and minorities.

Many studies run only for a few weeks, enough to show the benefits, if any, but not enough time for negative side-effects to show up. In the treatment of cancer, a standard measure of result is survival after 5 years. However, with improved early cancer diagnostics, a person may not live longer than before: still the statistical survival rate will have gone up. Regulators often fail to distinguish between statistical results and clinical results. If patients are tested on a 40-point depression indicator, there will be a significant statistical result if sufficiently many patients have an average score of (say) 32 when using the drug as opposed to 30 without using the drug. However, no doctor would be able to see the clinical difference in

the patient. Beyond the research methodology itself, pharmaceutical companies use a wide array of marketing and promotion to influence the regulators directly.

The probability of having a new drug accepted by regulatory agencies is influenced by reference to scientific publishing, journal articles presenting findings that the drug is effective and harmless, in particular articles in the most prestigious scientific journals. The probability that such articles will influence the regulators is higher when the authors hold prominent academic positions or prominent positions in prestigious hospitals: more so than if the authors were sales people hired by the applicants.

In order to get around this, the pharmaceutical industry is notoriously using professional "ghost writers" to write up research results in very positive terms, and having doctors or administrators sign in as "authors". These "authors" are then paid a certain amount, and having your name on a sufficient number of "scientific" articles also helps your career promotion. The practice of "ghost writing" is unheard of in other scientific disciplines, and in some cases a majority of the supporting articles in pharmaceutical research is a result of the practice. Reviews show persistently that research done by the companies and research articles written by "ghost-writers", are significantly more positive in their evaluation of new drugs than reports written by independent, academic researchers.

Given that the FDA is insufficiently funded and is relying on applicant payments, and that many FDA employees are recruited from the pharmaceutical industry, have side payments from the industry, or eager to seek a job in the industry, they are often less critical of received information than they ought to be. The pharmaceutical industry, in spite of litigations and sometimes negative publicity, still enjoys considerable status as a research intensive, innovative and science-based industry. This is very important for its "hold" on regulatory agencies and even on doctors. This "hold" is largely based on a myth, however. High innovation costs are said to be the main reason for high prices: thus legitimising high prices. Innovation strength is also claimed to be the main reason for high profits: legitimising a generally high level of profits, affluence and inefficiency in the industry.

According to the independent French bulletin, La Revue Prescrire, only 12 % of new drugs brought to the market in France in the 1981–2001 period represented therapeutic advantages. In the 2002–2011 period, out of a total of 946 new drugs, only 2 (0.2 %) represented some kind of a breakthrough. About 8 % represented some degree of real therapeutic advantage, while 54.7 % added no medical value, and 15.6 % represented more risk of harm than benefit (Editors 2012). The industry claims that innovation costs have become unsustainable. However, investment in true, patient-friendly innovation has been going down, while the costs of marketing and advertising, often camouflaged as some kind of development costs, have been going up. Revenues have increased six times as much as the cost of the research (Light 2012).

Enormous efforts have gone into influencing medical schools, professional conferences and seminars, doctors' further educational programmes, visit to doctors' offices, academic research institutes, etc: in the end influencing what

medicines doctors prescribe. A trend towards ever new diagnoses (such as in psychiatry) means that ever new "targeted" medicines have to be developed all the time: way beyond the capacity of the firms to do real "targeting". A trend toward over-diagnosis in traditional areas of illness, such as hypertension, where the industry constantly pressure for lower safety limits and earlier medication, means that more medicines will be sold to people previously seen as healthy. In the distribution of all medicines, the potential gains in health should be balanced against the potential negative side effects. Over-diagnosis means that medicine will be sold to patients who do not need them, and that the negative side-effects will tip the balance in the direction of a net negative effect, making us all sicker (Welch et al. 2011). Over-diagnosis also initiates processes of "cascading", where the use of one drug produces side-effects which again create a need for one or more additional drugs to deal with the side effects, which again cascade into a need for still more drugs (Welch et al. 2011).

The end result is that the pharmaceutical industry is still exceedingly profitable, while it is now estimated that prescription drugs in the US have become the 4th leading cause of death and a leading cause of hospitalisation, accidents and falls. Even so, former FDA commissioner David Kessler has estimated that only one percent of serious cases of side-effects are reported to the FDA (Light 2010). In addition, more "innocent" side-effects every year cause considerable patient suffering and enormous losses of time and money.

10.3.7 To Summarise

We have been challenged to discuss issues of sustainability and non-sustainability relevant to business schools and the teaching of management. While sustainability is often seen as mainly an environmental issue, and lately more narrowly as a climate issue, we have argued that the environmental concern includes more than climate effects, and that sustainability generally should include both environmental and social concerns. The review of the concept of common good was instrumental to show two main features. First, while there are many and different interpretations of the idea of common good, it seems that human flourishing has the characteristics to represent the current shared understanding across borders of the concept. Second, since human flourishing is an open concept, it needs be carefully employed in order to avoid despotic turns. Therefore, rather than imposing it as a moral absolute, we avoided any specific positive definition and we rather focused on concrete negatives as guidelines for an analysis based on defective practices.

Our general concern is with the gap between nominal values (including CSR statements, value statements, mission statements and generally all kinds of tools and instruments for impression management) on the one hand, and the reality of practice and true impact on the other: between theory and practice, story and embodiment. We have done so by highlighting issues of concern in five industries, with a particular emphasis on the pharmaceutical industry and predominant

business models in that particular industry. Big pharma on the one hand has enjoyed recognition as a life-saving, "do-good" type of industry. On the other hand, no other industry has been so chronically involved in criminal action, corrupting regulatory agencies and educational institutions, and lying about scientific results.

We have linked the sustainability issue to the teaching of business ethics, and to notions of a common good, of corporate social responsibility and stakeholder theory, and we have pointed out the need to bring social and environmental sustainability into mainstream course-work in the business schools. At the same time, we have also expressed awareness that mainstream coursework normally does not go very far in the direction of critical thinking about sustainability, unless it is related to some conventional, analytical management issue. Typically, there are a great number of business cases in use, including a large number from the pharmaceutical industry, which never touch upon the critical issues raised by our presentation of the "hidden business model". Mostly, the issue is defined as a "how to": how to market a certain product, how to manage a certain innovation process, how to define a new human resource policy.

Our experience is also that, when bringing in the larger, critical issues, students tend to be a bit shocked ("does he really mean it", "is it really that bad"?). This tells us, first, that for the teacher there is a great deal of pressure to conform: to teach textbook presentations in a conventional manner, and also that it takes a great deal of pedagogic inventiveness to present critical material in such a way that students will engage in reflective thinking. Secondly, in order for ethics and sustainability concerns to have an impact on later practice, the choice of pedagogical solutions is important ones. Mostly, ethical comments and sustainability examples will be perceived as no more than "spices" in an otherwise mainstream diet.

10.3.8 Three Levels of Engagement

At one level, both ethical issues in general and sustainability issues in particular are largely overlooked. We believe that this is not normally the case, and we shall assume that a first level of engagement includes individual professors bringing up relevant ethical and sustainability concerns in their ordinary teaching. We also believe that this sometimes can be extremely effective in terms of student engagement and learning. The pedagogical impact can be reinforced by having students write term papers and reports, where ethical thinking is required. The impact may also be increased by adding a substantial interdisciplinary component from the humanities and social sciences to business curricula, including not only dedicated ethics courses and sustainability or CSR courses, but also general philosophy and ethics as well as political theory and different international relations classes. This passage will not water-down the skills based component of a business degree; it would rather open it up to critical thinking and reflective knowledge.

The downside of this is that such inputs may be perceived more as "spices" than as main content. The students end up as "business graduates" and they enter work

life with an anticipation of normal careers and money-making as superior goals. At a higher level of engagement, there are universities and schools that offer specialised programmes, dedicated to business ethics and sustainability issues, or similar. At the University of Agder we have experience with a "Development Study" as a parallel to the business study. It all started with the offering of "development seminars" taught by an English geography professor, in the late 1970s. In 1985, with external financial support from the Norwegian Agency for Development Cooperation (NORAD), a 1-year "Development Study" was started. The new programme attracted excellent students, highly motivated and talented. Gradually the programme was expanded to offer both a bachelor degree and a master degree, and the curriculum has been expanded from focusing mainly on development issues, to also include sustainability and climate issues.

While this solution, and similar solutions at other universities, definitely are of high value, the learning impact on regular business students may be modest. By most business students, the "Development Study" is seen as just another offering, on par with engineering or humanities. Efforts to motivate business students to take development courses as electives have had very little impact on student choices. Development studies are not what they are here for.

At a still higher level of engagement we find business schools that choose sustainability as a brand marker. Several different rankings have appeared over the last few years. One such ranking, by *Bloomberg Businessweek*, asked 2012 graduating MBAs, in an on-line survey, to rank their institution on several specific aspects of the business programme, one of which was performance in the area of "green business and sustainability offerings". It turned out that the "green" indicator provided the most variance among the schools, with some schools offering very little while others offering excellent programmes. At the top of the list was University of Michigan's Ross School of Business, host to the Erb Institute for Global Sustainable Enterprise. In the second place was Cornell's Johnson School of Business. Other top performers were University of California Haas School, Yale Business School, the Erasmus School of Rotterdam, and at MIT the Sloan School. Of course, such a ranking depends on which institutions are included in the survey.

A broader, international survey was done by the Corporate Knights Magazine, ranking the 30 top business schools in a "Global Green MBA" survey. They found that four of the top ten schools were Canadian. Two American, two British, one Danish and one South Korean school made up the remaining top 10, and 11 countries were represented on the list of the top 30.

Clearly, the determination to build a green and social sustainability profile of a business school, so that sustainability becomes what the school will be known for, requires both a very strong leadership engagement, but also the support of staff and students. On the other hand, in order to have an impact on students and society, it would seem that such level of commitment is needed. If the impact is to be anything more than a "spice effect", a new culture has to be built. In the same way as some business schools shine as finance oriented, there are schools that excel by specialising in creativity and innovation, human resource management, or some special industry like oil or forestry. Building a reputation and a brand name around

sustainability is equally relevant. Both professors to be hired and entering students will know what the school stands for, which will make the teaching of critical topics, and spending time doing research in these areas much more plausible.

On the other hand, even teaching at this high level of commitment provides no assurance that the troubled aspects of making eco-business popular and profitable, as pointed out by Dauvergne and Lister (2013), are properly dealt with. Business schools are expected by broad stakeholder interests to provide an education that is relevant to the business community, and they will always be under some pressure to be apologetic in the choice of topics and teaching and research approaches.

10.4 Conclusion

It should be noted that social and environmental sustainability is not just about stopping bad practices, but also about being creative and innovative in coming up with solutions that will have a positive impact on both the social and the natural environment. The two sides to sustainability have often led to breakdowns in communications, where hardliners on the one side only see "limits to growth" whereas hardliners at the other extreme see no problems ahead: all problems will be solved in due time through technological innovation. Even for those who seek a more balanced view, it may be hard to see just how critical the situation is, and just how important it is to speak out and enact radical changes in production and consumption. It is also hard so say just how much sacrifice should be accepted today in order to bring about a better future for our grand-children and for the grand-children of people in poor countries. Table 10.2 brings together two dimensions, the distinction between stopping bad practice and supporting good (innovative) practice, and the distinction between improving the present situation and improving a future situation.

Since our thesis in the present chapter has focused mainly on the first (present x stop bad practice) quadrant, and most sustainability concerns tend to be located in the second (future x stop bad practice), we see a need to highlight the last two quadrants. Only repeating what is bad will appeal to some students some of the time. In order to count in all students, we believe all quadrants should be covered. Former Vice President Al Gore recently claimed that we are winning the struggle for sustainability (Gore 2014), pointing in particular to the growth of alternative energy provision. Large technology areas that have been a long time in the making, such as new materials built on nano-technology, and entirely new methods of construction and production have been developed, built on such robotic technologies as 3D printing or additive manufacturing (AM). While "The Limits to Growth" focused on exponential growth and exponential exploitation and pollution, we should be aware, and communicate to students, how exponential growth in knowledge, particularly over the last few decades, is now presenting us with unprecedented intellectual resources, with unprecedented opportunity for both social and profitable entrepreneurship (Diamandis and Kotler 2012). This prospect did not

Table 10.2 Where is the problem?

	Present challenges	Future challenges
Stopping bad practice	Setting limits and establishing regulations, mobilising consumer and citizen protest Example: issues in the pharmaceutical industry as exemplified in the present chapter Auditorium challenge: highlighting issues, building awareness and competence	Setting limits and establishing regulations, mobilising consumer and citizen protest Example: how to reduce CO_2 emissions from fossil fuels and how to prevent a methane and clathrate "blow-outs" as a result of gradual heating of oceans and permafrost areas Auditorium challenge: building awareness, balancing optimism and pessimism
Reinforcing good practice	Exploiting present knowledge and present technologies through innovation and entrepreneurship Examples: newly available energy forms, such as solar, wind, and wave energy, exploiting nano-technology for filtering and de-salinisation Auditorium challenge: bringing students up-to-date on new, available technologies and entrepreneurial efforts to exploit them	Stimulating basic research and reinforcing exponential growth in knowledge Example: relevant in all areas of basic research (farming, medicine, nano-science, and informatics) Auditorium challenge: adding information and stimulating up-front innovative thinking

emerge by chance, but through investments driven by a combination of profit opportunities and social concerns channelled through the political system. Notwithstanding the uses of CSR as an image-cleaning marketing strategy, the concept of common good, when translated into practical arguments and issues like sustainability, has shaped business markets and directions (more than business practices) more than is recognised.

However, as shown in the present chapter, we are still not finished, and most likely we will never be, with the first quadrant. Whether the issues is corruption in the sales of weapons, criminal and unethical practices in the financial sector, corruption in the battle for oil exploitation concessions, hazardous practices in farming and food processing, or criminal and unethical policies and business models in pharmaceuticals, we need to create business school environments that encourage critical and reflective thinking.

Generally, we have the impression that students are interested in and capable of ethical reflection. Without necessarily defining news issues and political debates in ethical terms they bring "life-world" experience (Habermas 1981) of ethical standards and "right and wrong thinking" into the classroom. What they have very little experience with, is to use their capacity for critical examination of relevant business practices.

In order to bring about a major change in the student-life experience, we believe we have to move beyond the first levels of engagement, as exemplified in the

discussion section above. We are impressed with the mission statements and actual profiles of business schools that have chosen to build their brand names around sustainability and ethics. In a better world, such branding would be standard in our educational communities.

Anyway, we think that this is the first step. In order to have a proper curriculum that covers all four quadrants, one specialised ethics course and a few courses on new technologies and sustainable development may not be enough. A global business programme needs to recognise, reflect and (maybe) shape the environment into which it operates: in order to be able to do that, other than adding a scientific-technological component, it needs to broaden itself to cover, at least to the level of creating the possibility of a dialogue with other disciplines, some of the aspects that are usually proper of a social sciences programme: social and political theories and international affairs. In a system of global sustainability challenges and technological opportunities, markets may end up being directed by theories that are able to capture and propose interpretations of the common good. The language of business schools may be changing soon.

Chapter 11
Management as Intervention

Richard Ennals

11.1 Introduction

The chapter offers an alternative account of management, and seeks to apply it to the emerging debate on sustainability. If successful, the outcome can be seen as a reorientation of Business Education. Norwegian research and practice is located in an international context. Within Business Education, we should focus on introducing "Responsible Management" (Ennals 2014), with a focus on empowerment. This will involve both theory and practice, as our students expect us to "walk the talk". Talk of "Corporate Social Responsibility" is cheap: active implementation often requires organisational change. As with motherhood and apple pie, it is very hard to oppose Corporate Social Responsibility, within a community of well-meaning people, and a growing literature (Idowu et al. 2009a,b, 2011, 2013, 2014; Louche et al. 2010). It is however necessary to challenge the foundations on which CSR is based.

Many accounts of CSR assume a consistent model of capitalism around the world. It is suggested that capitalism can be given a human face, as companies adopt programmes which go beyond the minimum legal requirements. This builds on traditions of optional corporate philanthropy. Without changing the underlying working of the company, cosmetic changes are made: lipstick is applied to the capitalist pig. However, it is still a pig. Adding a new veneer of public relations covering to the "organisational levée" is futile if the underlying structure is already fatally weakened, and in danger of breaking when a hurricane strikes. Such businesses are not sustainable without radical redesign and reconstruction.

With our chosen focus on Mutual Competence Building, we need to broaden our perspective on Business and Business Education. Competitive Advantage needs to be complemented by Collaborative Advantage (Johnsen and Ennals 2012a, b). We bring an external approach to discussions of Higher Education. The UK case

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provides an interesting alternative example: much is similar, but much is different. Recently the Governor of the Bank of England warned of the dangers of unsustainable inequality and an ethics-free banking sector. The option of continuing business as usual is not available. Piketty (2014) would suggest that Harvard and Oxford, with their vast capital reserves, are certainly part of the problem, and possibly part of the solution. Other universities need to consider their positions.

Harvard Business Review (April 2014) is now highlighting the importance of "Sustainability". This means developing and presenting arguments which challenge what has been the basis of the US economy and society. The US is still in Denial, struggling to cope with the realities of Climate Change, and is in no position to preach to the rest of the world. As with "Shared Value" in HBR in 2011, the strategy is to give US branding to ideas which have been developed elsewhere, facilitating their local adoption, and evading the "Not Invented Here" label.

Perhaps in Norway we could find an equivalent "Look Back in Agder", a theatrical presentation which captures a distinctive innovative spirit. Ibsen lived in Grimstad, one of the home towns for the University of Agder. We might derive inspiration from Ibsden's "Enemy of the People" and "Pillars of Society". George Bernard Shaw regarded Ibsen as more than just Norwegian: he captured the essence of European middle class morality.

There is an emerging Agder definition of what is to be meant by "Sustainability". This has a backdrop of an account of environmental concerns, and the threats posed by recent decades of industrial capitalism. The creative approach at Agder is to regard the contributors, and their contributions, as constituting a collective exemplification of a "Sustainable Perspective". Perhaps this underpins how the group came together. Perhaps they have been exchanging ideas and examples for some time. This may have resulted in a shared vocabulary (even in English translation), and a consistent set of arguments. On this optimistic assumption, we have the possibility of producing a book which goes far beyond the HBR discovery of new buzz-words for management. Through an intriguing set of chapters with examples in many disciplines, we may be able to reveal "Sustainability" as an integral and integrating theme.

Having done this, we may also be able to show a working example of a university which embodies these shared principles. We should recall that Wittgenstein was a great admirer of Ibsen, and in particular of "Brand". He greatly valued his Norwegian cottage near Bergen (now the site of a Wittgenstein archive). We might want to present the University of Agder, in Wittgenstein's terms, as an important "form of life", with distinctive "language games" concerning "Sustainability".

In this chapter we argue for a radical change in the relationship between Higher Education and Business Management. The conventional links are not intellectually and practically sustainable, in particular following the international financial crash of 2008, which had not been predicted, and which led to global recession. The relationship is based on adherence to untenable myths, denial of inconvenient truths, and the exclusion of insights from many disciplines. As a result, particularly within Liberal Capitalism, Business and Management Education have been

preparing a new generation of managers based on a narrow and profoundly flawed prospectus, poorly prepared for the challenges of the real business world.

Business and Management have been classified as falling within the Social Sciences. In increasingly competitive environments for research funding, university researchers have been required to demonstrate "scientific" approaches. They have been expected to maintain detachment, and to focus on quantitative approaches, publishing in prescribed journals. This has meant downgrading alternative approaches. The implicit assumption has been that managers are detached observers, making objective decisions based on the exhaustive consideration of all relevant evidence. Given the emphasis on bottom line financial performance in business, Higher Education has been expected to equip new managers with the necessary analytical tools and techniques. Managers have been encouraged to see themselves as generalists, emphasising strategic rather than operational considerations. Increasingly operations, and associated responsibilities, have been outsourced to others.

In preparing new participants in the market economy, it has been assumed that markets had underpinning rationality, and that automatic corrections could take place when markets appeared to fail. The financial crash of 2008 exposed the falsity of this view. The preparation of managers has been irresponsible and unsustainable. By maintaining the illusion of distance and detachment, individuals have assumed and encouraged a lack of personal responsibility. They have sought employment in companies protected by limited liability. Skilled and experienced managers are expected to know how to externalise risk, outsourcing many functions to others who would bear responsibility. As we reconceptualise the nature of management, we can identify new challenges for Higher Education, drawing on broader intellectual foundations. Each Higher Education institution faces the challenge of reconfiguring work and work organisation, to meet new demands.

11.2 Description

11.2.1 Varieties of Capitalism

This unitary approach to capitalism, based on Liberal Capitalism in the USA and UK, is now multiply flawed, and should not be perpetuated in Business Education. We can now identify several varieties of capitalism, such as in the European Union or in Scandinavia, where the working of market forces is also underpinned and constrained by distinctive cultural and legislative features. This results in departures from the liberal free market capitalism of the USA and the UK. In emerging markets, such as India, China and Africa, we must expect to encounter further differences.

The European Social Model and the Scandinavian Model exemplify alternative models for economic and social arrangements. When they refer to "Social

Responsibility" they give central consideration to employment relationships. Rather than giving full autonomy to managers, they specify partnership relations in the workplace. Such discussions are alien to CSR in the USA, and often in the UK. In consequence, we find discussion of "Corporate Responsibility". CSR is redefined to omit employees, and to avoid discussing recognition of trade unions. Attractive projects with community partners (such as computers or footballs for schools), or eye-catching environmental initiatives, are seen as safer. They can also usefully distract attention from problematic aspects of the mainstream business.

In European Employment and Social Policy (Bruun and Bercusson 2001), employers have been assigned defined responsibilities to the workforce, and an obligation to work with the Social Partners (trade unions and employers' organisations). It is through engagement in the process of Social Dialogue, at all levels, that working conditions are improved. There can be a role for legislation and regulation if negotiations do not achieve consensus. Reliance is not placed on voluntarism alone.

The Scandinavian Model goes further, with a tradition in each country of seeking consensus and conducting tripartite discussions. There is respect for work and skill, and a commitment to social equity (Ekman et al. 2010), meaning that the differences in incomes between rich and poor are less pronounced than in liberal capitalist countries. More equal economic relationships tend to produce benefits in terms of public health, education and community relations (Wilkinson and Pickett 2010). It is recognised that the key to productivity and innovation can be seen in approaches to work organisation, and the ways in which people work together (Ennals and Gustavsen 1999). In other words, many features of what might normally be termed CSR are embedded in legislation and custom. We can talk of "socially responsible innovation" (Ekman et al. 2010). Norway is a further distinctive case within Scandinavia: the Norwegian Model has a strong tradition, and underpins mutual competence building development, which provides the basis for sustainability.

Despite increasing globalisation, we should not overlook the varieties of capitalism (Johnsen and Ennals 2012a, b). Companies need to take account of attitudes and legal requirements in each country where they operate. This impacts on "Responsible Management".

11.2.2 Responsible Management

Increasingly we see "Responsible Management" being introduced as a required element in all business courses at undergraduate and postgraduate levels. However, it can be a mistake to read too much into "Responsible Management", when the culture of management is arguably designed around irresponsibility (Ennals 2014). Companies have developed elaborate schemes of outsourcing, in a legal environment of limited liability. This cannot easily be overcome through gestures. Rather than simply criticising misleading facades, where responsibility is at best skin deep,

we need to highlight practical initiatives based on empowerment, not as an optional extra, but as integral to corporate strategy.

These initiatives may involve government as well as companies: both public and private sectors, in mixed economies. In the UK, this can be contrasted with the tendency to privatise many of what have previously been government functions, so that they are now conducted in the private sector, often by contractors who derive economies and profit from reducing pay and pensions for employees. This includes many welfare functions, hidden behind a shield of commercial confidentiality.

Such transitions are often facilitated by arrangements such as the UK Private Finance Initiative, which enables private sector finances to be used for new projects, underpinned behind the scenes by public funds. This enables publicly stated limits on public spending to be circumvented, while greatly increased costs have to be met by ordinary citizens. It would be easy to conclude that governments seek to evade responsibility and accountability, when invoking commercial confidentiality for corporate partners. Government is not necessarily socially responsible.

A further long term consequence is a feeling of impotence by government civil servants, who have come to regard policy as driven by market forces, which they cannot hope to influence (Ennals 1986, 2014). They have often lost sight of the fact that the markets were themselves created by government policy decisions, and could be open to further change.

Recently Business School students have protested against the continuation of courses based on a model of business and economics which was in 2008 shown to be broken, as the financial crisis and depression demonstrated that international financial markets are not self-correcting. They have argued the case for new courses which take account of the realities of the knowledge economy and knowledge society. Academics have continued to resist such pressures. They may find that students vote with their feet, or choose to study through Massively Open Online Courses (MOOCs). This may further individualise the process of study, in contrast with mutual competence building development.

11.2.3 Convergence of Traditions

A new synthesis is required. The old models of business and business education are broken. The Workplace Innovation movement, active in 30 European countries and supported by the European Commission, derives energy and value from the active engagement of the workforce, who are empowered to use their creativity. New patterns of dialogue and collaborative working are deriving benefits from diversity, and drawing on the experience and tacit knowledge of workers. We can see strong Norwegian values at the core of the movement, which crosses borders.

The branch of the international Quality movement which is concerned with Empowerment has similar foundations of worker knowledge and experience, including in Norway. At its best in Hoshin Kanri (Hutchins 2008), members of the workforce and management share common objectives, which are developed

both in bottom up processes of continuous improvement and top down implementation of strategy, mediated by well-developed dialogue. Again, Norwegian Working Life Research has emphasised dialogue (Gustavsen 1992).

We are obliged to question prevailing models of management, as encouraged in Business Schools, where business is reduced to dispassionate quantitative analysis, and little emphasis is given to expert domain knowledge. It is common for managers to operate in areas where they lack experience and expertise, yet they are regarded as "responsible". In both Workplace Innovation and Quality as Empowerment we recognise the vital importance of Skill and Tacit Knowledge (Göranzon et al. 2006), and we note the apparent obsolescence of management practices. Denial is all too common: it is more comfortable to assume that all will be well, and to avoid asking difficult questions, which are likely to lead to major financial costs. However, business decision making is weakened and distorted if there are topics which cannot be discussed.

If managers are to be truly responsible, they will need to learn from the tradition of Action Research (Karlsen and Larrea 2014). Action Researchers recognise that they are engaged: they cannot claim detachment. Once engaged in action, they can make sense of research and briefings, and learn from differences in previous cases. They need to move beyond merely analytical thinking, and deploy analogical thinking, if they are to find their way in unfamiliar territory. Management and Action Research have much in common, with a central role for interventions.

11.2.4 Quality as Empowerment

There has been surprisingly limited understanding of several traditions in the international Quality movement. The American accounts of the Japanese Quality movement (Deming 1982) tend to emphasise Compliance, and the importance of quantitative measurement. This serves to strengthen the hand of management, and builds on Taylorist scientific management. Little was said about the workforce as partners, and less about trade unions.

By contrast, the Japanese account from Ishikawa (1980), who was concerned with Empowerment, was based on foundations of worker knowledge and experience. At its best in Hoshin Kanri (Hutchins 2008), members of the workforce and management share common objectives, which are developed both in bottom up processes of continuous improvement, and top down implementation of strategy, mediated by well-developed dialogue. The Japanese model of Quality Circles was extraordinarily influential in Japanese industry, but enjoyed less success under different brands of capitalism.

Since 1994 Quality Circles approaches have been applied in Education around the world, starting in India, with the foundation of Students' Quality Circles. Circles of students are empowered to work together to solve practical problems related to their work and learning (Chapagain 2013). The Circles are voluntary and self-managing, and create a flow of bottom up improvements (Ennals and Hutchins

2012). Students empowered by such experience are well prepared for work in small businesses, and for teamwork in larger organisations. Their learning involves new relationships with teachers and other students.

11.2.5 Workplace Innovation

It has often been assumed that "innovation" is largely a matter of effective development and deployment of new technology. Broader discussions have concerned product innovation and process innovation. Increasingly attention is being given to workplace innovation, where the workforce is regarded as the key resource. Can the foundations be laid for effective innovation systems, by developing new ways of working and learning? What are the implications for Business Education?

The Workplace Innovation movement (Fricke and Totterdill 2004; Dhondt and Totterdill 2013), active in 30 European countries and supported by the European Commission, derives energy and value from the active engagement of the workforce, who are empowered to use their creativity. New patterns of dialogue and collaborative working are deriving benefits from diversity, and drawing on the experience and tacit knowledge of workers. There have been preparatory projects for over 20 years, resulting in well-established international networks, involving trade unions and employers as well as academic researchers. There is no "one best way", but there is a growing network of successful cases, from which much can be learned. Learning does not come from detached observation, but from active engagement in interventions, drawing on previous research and contributing to future policy discussions.

11.2.6 Skill and Tacit Knowledge

We are obliged to question prevailing models of management, as encouraged in Business Schools, where business is reduced to dispassionate quantitative analysis, and no emphasis is given to domain knowledge. Expert knowledge is typically held by workers with the relevant experience. However, only a proportion of that knowledge can be made explicit, and manipulated with computers. Much more remains tacit. We ignore it at our peril. This realisation has grown in the Swedish nuclear power industry (Berglund 2011, 2014). It is vital for workers to be able to communicate and share knowledge at times of crisis, which means that such arrangements need to be in place in advance. Older workers have accumulated expert knowledge which can be cast aside when they retire.

It is common for managers to be required to operate in areas where they lack experience and expertise, yet they are regarded as "responsible". In both Workplace Innovation and Quality as Empowerment we recognise the vital importance of skill and tacit knowledge (Göranzon et al. 2006). We have explored approaches to

accessing tacit knowledge through dialogue. We note the apparent obsolescence of many current management practices. We recognise the importance of analogical thinking to complement analytical thinking. It is incoherent to talk of business decisions being made on the basis of considering "all of the evidence". In practice, decisions are made based on partial information. Access to that information is uneven.

11.2.7 Action and Inaction

If managers are to be truly responsible, they will need to learn from the tradition of Action Research. Action Researchers recognise that they are engaged: they cannot claim detachment (Giddens 1984). Managers are part of the problems which they seek to solve. Like medical surgeons, they intervene, take action, and their actions have consequences (Toulmin 2001).

Once engaged in action, managers and researchers can make sense of research and briefings, and learn from differences in previous cases. They need to move beyond merely analytical thinking, and deploy analogical thinking (Göranzon et al. 2006), if they are to find their way in unfamiliar territory. This requires a very different approach to social science research, and to business and management education. Management and Action Research must now be considered together, with management redefined in terms of intervention, and the orchestration of reflection. This will have implications for universities, and for career paths.

The Norwegian Enterprise Development and Working Life (EDWOR) PhD programme brought these previously separate traditions together. Researchers from enterprise development projects across the country, and from overseas (e.g. Turkey and USA) came together quarterly for intensive teaching weeks with international academics, operating as a "flying circus", located in different bases. This was advanced higher education without institutional walls, in which students learned from engagement in individual and group interventions. Seven years after the first PhD completions, the collaborative culture continues, spanning rival research groups.

11.2.8 The Knowledge Business

These discussions come together when we consider practical cases in which we are directly involved. Many active researchers in CSR are based in universities. They are part of the "knowledge business". In universities, and in particular in Business Schools, we may have lost sight of the radically changed business context in which we operate. There are real challenges for Responsible Management. In the UK, my former university, Kingston, is legally designated a Higher Education Corporation. In 1992 the government undertook a form of privatisation in which government

regarded themselves as no longer responsible for maintaining the financial viability of universities. Universities became subject to market forces, complicated by changing regulations and targets set by government, and competing for scarce government research funding. There was a time lag before the implications of this regime change became evident. Government withdrew funding for most university teaching, and replaced the shortfall by requiring new much higher tuition fees to be paid by students.

For the most prestigious universities, this has been an opportunity to seek to charge still higher fees, and to assert traditional academic excellence. For the weakest universities and colleges, there has been the option of competing on price, under-cutting higher profile rivals. For those squeezed in the middle, there has been the temptation to engage in cosmetic changes, asserting "Quality" while offering "Mediocrity". Standing back, we see a more complex picture. UK universities now depend on an influx of overseas students, who can choose where they study. National borders are less important. There are almost as many Chinese as UK postgraduate students. Parents and students are asking whether, with the new tuition fees, the courses are good value. Would it be better to seek employment, and find ways of learning in the workplace? Previous rhetorical concern for widening participation has quietened.

A further complication is the growth of a new pattern of course delivery, the Massively Open Online Course (MOOC), first pioneered in the USA. In principle MOOCs offer low cost or no-cost assess to leading edge courses taught by outstanding international academics. How can lower prestige universities and colleges hope to compete? Should they simply offer tutorial support? What are the wider implications? How can this situation be managed responsibly? Universities and colleges must be prepared to re-invent themselves and their courses, to take account of new realities. This presents challenges in terms of CSR, on a number of grounds. The offer to prospective students needs to be honest, and good value for money. The university needs to address the needs of employers as well as students, when offering work-based and work-related courses. Course content and pedagogical methods need to be sustainable.

If we revisit the arguments outlined earlier in this chapter, we may find the basis for new, responsible, approaches to higher education in the current competitive context. In the past, students went to university to gain access to information and knowledge. Now we could argue that there is a danger of being overwhelmed by information, including many contradictions. The same problem faces managers. Students need to learn how to filter and select. It is also apparent that professionals require more than explicit knowledge. If possible, universities should provide the opportunity to learn from experience, and to draw on the tacit knowledge of others.

To be one of a large audience for a MOOC may be less satisfactory than being part of a group who can learn and discuss together, taking personal ownership of a mass broadcast set of material. New pedagogical approaches may become popular. We could imagine an important role being played by Students' Quality Circles (Ennals and Hutchins 2012; Chapagain 2013), within and across conventional institutions. As they develop confidence in sharing ideas, and developing proposals

for improvements, and make competent use of electronic resources, they may become a driving force in higher education, setting the agenda for academics to follow. Such Circles and Networks may drive educational change, Innovation in the Knowledge Workplace.

This scenario of change poses challenges to traditional hierarchies and institutional structures. Some universities and colleges may become financially non-viable. They may have to form new relationships with students and alliances with other institutions. Little of this is evident in marketing communications between universities and prospective students. We see more focus on cosmetic adjustments, with appeals to aspiration to academic status. University senior managers are saying little about empowering knowledge workers, whether academics or students. Such talk would take them into a new and unknown world, with unfamiliar power relationships.

As with the Titanic, we may expect little change of course before the encounter with the iceberg. When the ship goes down, it will be a rapid process. It will become apparent that we were not "all in it together". In the meantime, we are encouraged to enjoy the illusion of stability and comfort. To complement those who are privileged to be in the knowledge business, we can find millions who are in need of basic empowerment, if they are to engage in the global economy and knowledge society.

In an unequal world, large parts of developing countries lack access to a reliable fixed infrastructure of power supplies. This denies them the benefits of several generations of technology, and serves to perpetuate the gap between rich and poor. On the other hand, it may offer an opportunity to follow a different technology trajectory, leapfrogging intermediate stages. Such a development can be revolutionary. A recent example of leapfrogging has been the jump from no telephony to mobile telephony, without transiting through copper cables everywhere. It has been revolutionary in the sense that it has brought a great deal of change to people's lives in a short time.

The case with solar technology is different. It does not at present represent an alternative to centralised power generation and electricity transmission lines. Low cost technology is now available to use solar energy to power many electrical devices, and to enable other devices to be powered or recharged (Cameron 2014). A new community-based infrastructure can be developed on a local basis, bottom-up, and sustainably. This requires painstaking experimental interventions, followed by sustainable infrastructure operations. Similar arguments apply to water management technologies, agricultural infrastructure etc. This is the practical side of the United Nations Millennium Development Goals, and successor initiatives.

Successful implementation can depend on changing management decision-making processes, which tend to have emphasised capital investment in technology, rather than ongoing issues of maintenance and support. It is much easier to stage a media event, with photographs typically full of posed smiles, than to enable an ongoing process. Numerous overseas development projects, for example introducing water pumps, have come to a halt because of a minor fault, an absence of local technical knowledge, and a lack of funding for maintenance. Often there has been a

lack of local ownership of the change processes, and limited communication between donor and recipient groups.

If the result of an initiative is to be genuine empowerment, rather a cosmetic application of lipstick, then we need to recall the history of socio-technical systems thinking, and the focus on participation. We need to recognise that apparently the same processes can be conducted in very different ways according to cultural context. Research on applying mobile health information systems (Li 2011) showed that in the USA state of the art technology would be used, and reliance on human workers would be limited, while in China it was decided to secure active participation from the local community. They make use of text messaging facilities on early mobile phones, which are widely available. It was also recognised in China that participation in design and decision making are important, together with accommodating to the views of leaders. China is now active in developing infrastructure in East Africa. New networks and partnerships are forming, with increasing local participation.

11.2.9 Reason and Sustainability

Stephen Toulmin argued (Toulmin 2001) that the roots of this problem date back many centuries. As a historian of ideas, with a background in Physics and the Philosophy of Science, he identified prevailing myths and illusions, explaining the views of key thinkers in terms of their own circumstances and pressures.

In the seventeenth century, after 30 years of war in Europe, the idea of peace and predictability was extremely attractive. Astronomy and physics offered the security of stable systems, and a new perception of stability in the heavens provided a model for potential stability between and within nation states. Academic disciplines developed, matured, and built institutional structures, mirroring political systems. Unfortunately for those wanting a peaceful academic life, this view was based on the myth of stability. Science could offer partial models, but not complete security and predictability. There had long been research on chaos, and this could not safely be neglected.

Toulmin pointed to a second phase of myths in the twentieth century, introduced by economists. Economists aspired to the status of astronomy and physics, with sound underpinning from mathematics. Concepts such as equilibrium were developed to accompany complex market models. Despite the continued relevance of concerns for chaos, it was politically and professionally preferable to act as if economics presented a truthful and accurate picture of the world. Whereas economists assumed that business deals were made on a basis of full information, to which all participants had equal access, this was clearly false. Toulmin died before the financial crash of 2008, but it would have come as no surprise to him at all. The whole global economic house of cards was based on illusions: it could not be sustained. It was simply a matter of when the collapse would take place. Building an alternative would take time, and would involve new building materials. Toulmin

had pointed out, with gentle elegance, that the emperor had no clothes. A new tailor would be required.

Managers and other professionals had protected their personal positions by claiming protection from science, as if science was a body of incontrovertible fact, which could be evaluated in objective terms. However, as Tony Giddens argued (Giddens 1984), this protection was an illusion. By virtue of their working roles, managers are engaged in organisations. They are part of the structures which at the same time they seek to analyse from a safe distance. They are part of the problem, and may not be part of the solution. Toulmin drew on experience working with Action Research in Sweden and Norway (Göranzon 1995; Toulmin and Gustavsen 1996). In a number of Scandinavian traditions we find a focus on intervention and reflection. Often this has seemed like a rearguard resistance movement, while positivist social science research and management continues to prevail. Toulmin's work provides the basis for an alternative.

After over 50 years of publishing influential books on the philosophy of science and the history of ideas, Toulmin was laying the foundations for a fresh approach to management. He had the reputation and prestige which enabled him to roam across the disciplines and around the world, and the compendious knowledge of the literature which enabled him to write about thinkers as if he had known each of them personally. This is best seen in his "Imaginary Confessions" (in Göranzon 1995). Intervention was at the centre of Toulmin's attention. It was not something for which one should apologise. Quite the reverse. To manage, or to conduct research in social science, is to intervene. Our actions, words and writings bring about change. He recommended the clinical model of intervention, as seen in the practice of surgeons. There are cycles of Plan, Do, Check, and Act. The actions of the surgeon cause change, for good or ill. The same applies to managers.

If this view is accepted, there needs to be a profound reconfiguration of academic activity in Higher Education. A sustainable view of business and organisations makes use of insights from many different disciplines, which may not be accommodated within current Business Schools. This suggests a requirement for new relationships within Higher Education, and between Higher Education and Business. Learning in Higher Education should not just be a matter of books and lectures constrained by traditional disciplines. "Learning from Encounters" and "Learning from Differences" require engagement in action, rather than detachment.

11.3 Discussion

In this chapter we refer to example cases in UK, Spain and Sweden, which are presented with the intention of complementing Norwegian cases which are developed in other chapters. In each case, we consider the central role of interventions, which cut across conventional functional and discipline-based approaches.

11.3.1 UK: Work and Health

The first case is from the UK. The WORKAGE project, led from Nottingham Trent University and Workplace Innovation Ltd, is funded by the European Commission, and draws on experience from other countries, including Norway. As issues associated with the health of older workers are under consideration around the world (Ennals and Salomon 2011), this project tests a radical alternative hypothesis. A concerted intervention in two pilot organisations, with a focus on workplace innovation, is intended to be generally beneficial, with detailed analysis of the outcomes for older workers. The field has long been confused and difficult, with rival perspectives relying on different collections of evidence, to be analysed according to separate criteria. If all the detached analyses are laid end to end, they will never reach a conclusion. However, an appropriate intervention may provoke productive responses.

It is not credible to present a model of management as the detached analysis of all available information, given that in practice decisions are made with only partial information. It makes more sense to start with Management as Action Research, involving interventions and reflection. This approach is in line with Toulmin's "Return to Reason" (2001). His approach was then to illustrate his argument using vignettes, offering culturally situated insights.

In the UK, the established orthodoxy, which underpins the "Research Excellence Framework", is to regard Business and Management as falling within the Social Sciences, where scientific detachment is required, with largely positivist research methods. The consequence is that business does not take academic research seriously, preferring to rely on consultants. One defensive rationale for this approach has been to argue that Action Research is confused and incoherent. Somehow it has been assumed that conventional approaches to management are responsible, sustainable and acceptable. Such assumptions are no longer tenable.

In Norway, Action Research has a higher profile, and greater acceptability. Research organisations such as AFI, IRIS and SINTEF deliver contracts based on Action Research methodologies, and national enterprise development programmes such as Enterprise Development 2000 and Value Creation 2010 have emphasised Action Research. Implicitly this has involved a redefinition of management in the context of innovation.

The WORKAGE project casts light on a fresh approach to Management, "Management as Intervention". Rather than working from a positivist paradigm of detached social science, here the key is engagement in action. There are interventions in two pilot organisations: Stoke City Council and Southern Healthcare Trust, in Northern Ireland.

The WORKAGE project is organised in three stages, which would ideally form part of an ongoing Plan—Do—Check—Act (PDCA) cycle:

collection of scientific data and literature on work and age
intervention (which could be seen as Action Research working with Management)
policies, conclusions or organisational changes, consolidating learning

Intervention is the critical distinctive stage. It needs to pick up key words and concepts from science, so that traces of influence and continuity can be identified. It needs to engage participants in collaborative collective action, so that they go beyond their previous individual concerns. Responsible Management is intended to catalyse this fusion, embodying a shared agenda. For the third stage to be effective, we need to go beyond the single firm, which is to be located in a form of "development coalition" (Ennals and Gustavsen 1999; Gustavsen et al. 2001; Levin 2001; Ennals 2014). This involves relations with other companies and organisations in a wider dialogue, so that experiences can be shared and lessons learned.

From the context of action, we can in turn make practical sense of the background of scientific research. Words and theories are given meaning from experience. This can link work from several scientific traditions, where communication has often been obstructed by conflicting assumptions and vocabulary. In the context of the WORKAGE project, there need to be identifiable strands on work, health and learning running through all three stages, so that links can be recognised and followed. We must expect the sets of scientific findings to be varied, disparate and incomplete. They are like ingredients for a cake recipe. They are not effective by themselves, but depend on interactions with other materials, and changes due to external pressures. Typically science has been based on observation, rather than experience. Scientists can be "shaken", but they are rarely "stirred". By contrast, innovation involves stirring.

Work is about change, taking ingredients, forming a new mixture, and enabling a transformation to a new product. Work is thus important in itself. One problem has been that, in conventional social science, "scientific detachment" has often been valued over "active engagement" in work. A change of outcome for work and health in older workers involves responsible managers recognising their own need to intervene. On this basis, to manage is to intervene. Scientists have been producing the raw material to inform decisions and interventions. It is bizarre that managers are often not given the confidence to support their interventions. Perhaps most radically, we need to articulate a fresh approach to learning which takes account of this model. Learning does not derive from following a single linear path, but from encounters with differences, and the need to make sense of these encounters. We can imagine a clean and consistent line of development, but the real world of action and management is messy.

Learning involves the capacity to reflect on experience, both from inside and, to some extent, as it may appear to others. It needs to include the capacity to reflect on apparent failure. We can also take a fresh look at defining health, both in medical and social terms. Our medical accounts depend on scientific observations, which may be quantified. As we act in contexts of work and society, our separate individual medical conditions can sometimes drop out of consideration. It may be more effective to work at an organisational level. It is thus unhelpful that, for example in the UK, Medical General Practitioners tend to have little knowledge of occupational health, and very limited contact with workplaces. They focus on diagnoses regarding their individual patients, and may have no dialogue with

management about the workforce. UK government departments and European Commission Directorate-General tend to prefer to remain within their comfort zones. Cross-disciplinary discussion is limited.

It has been difficult to establish and maintain dialogue between strategic management and the various specialists concerned with workplace health. They start with different models of evidence and explanation, and with little common vocabulary. Rival detached experts fail to engage. The way forward seems to involve interventions to which each must respond in their own way, as they encounter discontinuities. It is easy to identify gaps and discontinuities between stages and traditions, so that important issues are not addressed. More importantly, we can often suggest a way through, with the integrative role of action and intervention, and a central role for learning from differences.

On this basis, WORKAGE has much to offer both Responsible Management and the Philosophy of Knowledge. Planned interventions in two or three organisations can have wider impacts. Over a 3-year project, there will be links to several disciplines, and to political events at national and EU levels. Effective management involves making people an offer they cannot refuse, in a language they can understand. Those who make the offers, as part of interventions, need to speak the languages of those they are seeking to engage. This means participating in the relevant "forms of life", and playing their "language games". Several normally separate disciplines are brought together in the WORKAGE project. Communication within the project will be vital. The link is through action, not simply written words. Utterances are to be seen as actions (speech acts). We need to monitor the requirements of interlocutors. Reports are targeted communications. Interventions have a vital language component. Issues of knowledge arise at each stage. Language and knowledge are used differently in science, interventions and organisational policy development. When we consider health, our understanding of individual health provides the analogy which we use when discussing organisational health. We can envisage consultants and "spin doctors" intervening in organisations. The surgeon provides a model for interventionist social science.

WORKAGE offers a chance to escape the tyrannies of scientific positivism and academic scientific management, which have created the current silos, and failed to address human dimensions. Language defences need to be constructed, so that research communities can see evidence that their particular contributions have been recognised, without necessarily achieving dominance. Where the literature has become narrow and specialist, additional language hooks need to be found. There needs to be an actionable dimension, possibly via intermediary discourse. If the output is to be a model or toolkit, it needs to be applied in practice. The project proposal included references on age and health, which will be amplified in the Literature Review and summary. The Survey will then focus on the workplace context. The Intervention has been outlined in very general terms: so far it has been more "buzz" than specifically addressing age or health. That may be fine, but it is then hard to envisage toolkits, promised as project outputs, other than "beehives" and specialist protective clothing. It also poses challenges to those trying to quantify resulting changes, seen as due to the Intervention.

Much will depend on the leadership in the pilot organisations, who will respond to the "buzz" in practical ways. They will doubtless talk about age and health as they see them in practical terms. In their efforts to bring about change, facilitated by the intervention team, they will need to learn from the different experiences of other interventions. It may be that the European Workplace Innovation Network approach based on the "Fifth Element" emerges as part of the draft tool kit. However, it assumes the other four elements, details of which will need to be described for each case. If it is the work of the partner employers that is central, rather than rolling out a pre-existing cartoon based presentation, then we need detailed analyses of the organisations in terms of age and health, interpreted by managers. We need to understand the ways in which these issues are tackled in each organisation, enabling the organisations to take ownership.

If the interventions are to be largely Workplace Innovation Ltd shows with local on-site hosts, then, however impressive the team may be, nothing substantive and sustainable may take place as a result. It would be what Gustavsen (1996) has described as "expert-led consultancy", rather than "concept-driven development". It may be rash to assume that age and health do not require specific mention in the intervention, yet to assert that measurable benefits in terms of age and health will result, and will be recognised by workplace actors and European Commission project officers. We need some indicative examples. The survey seems to have planned appropriate questions, linking to research by Ilmarinen and Cooper. However, it is not clear how the resulting data will be used, in the intervention and policy work. Ideally the project will be integrated, rather than just a set of separate work packages. This will be necessary if real workplace change is to result. To date the project seems to take no account of particular age distributions or health profiles. It may be that the patterns in the pilot organisations are very different.

There is passing mention of the 'medical model' of age, but little is made of the 'resource model', with a focus on the experience, skill and tacit knowledge of the older worker, which need to be handled appropriately in the innovative workplace. Instead, the approach seems to be simply to disregard age. That may have been the intention of the proposer, but it is possible that the European Commission have different expectations. This is a practical personal example of learning from differences, starting from the experience of seeking to bring about change.

11.3.2 Spain: Working with Policy Makers

Working with policy makers is the focus of research at Orkestra, Deusto University, involving Miren Larrea and James Karlsen. Using an Action Research Methodology, they are working with local policy makers in the Basque Country, including many who are new to mainstream politics. Experience from WORKAGE is potentially relevant to recent discussions on Policy Making, because of fresh insights which it provides on 'learning from differences'. At the core of the 3-year WORKAGE project is a set of interventions in pilot organisations. Active

engagement in those interventions provides a context in which to make sense of the rich literatures which have been reviewed, in this case around the health of older workers. It then provides the starting point for policy developments building on experience of the interventions.

As with our partners in local government in the Basque Country, many of the UK colleagues in the WORKAGE pilot organisations lack familiarity with the scientific literature, and are new to the business of policy development and implementations. In each case, the starting point for those engaged in change processes in their own organisations is to describe one's own case against the background of other cases. This may also include encounters with relevant literatures, through the light they can cast on cases. This is an iterative process. Typically there have been limited connections between different strands of literature, which can be hard to link to actionable knowledge. We are accustomed to gaps between theory, practice, and policy implementation. Here the link is made by active interventions, which become the focus of attention.

We should see managers as making interventions, making sense of complexity by reference to the literatures, and comparing their experience with that of others. We can regard management as a form of Action Research and we can see one of the tasks of the manager as being the orchestration of reflection. Apart from the implications for the health of older workers (in which I declare a personal interest!), we are offering an important new model for applied research, using learning from differences and actionable knowledge. This is now defined as knowledge which takes shape in the context of action. This can also be a way of mainstreaming issues of Responsible Management which are typically regarded as an optional extra. This is an especially attractive approach in the EU, where Social Partnership, Social Dialogue, Social Benchmarking and Social Capital are well understood, at least formally.

11.3.3 Sweden: Power Generation

At Vattenfall in Sweden, there is a long history of research on dialogue in the workplace, resulting in several PhDs. For the power generation company Vattenfall, owned by the Swedish government, Responsible Management is central to strategy. Responsibility has more practical significance than in other industry sectors. Nuclear technologies can pose risks to health and life. Management tends to be conservative, while keeping abreast of the state of the art. There are new challenges for training.

In the nuclear power generation division, activities have safety as a central concern, and the company has had to deal with the consequences of disasters elsewhere, in terms of attitudes to nuclear power. Germany and Switzerland decided to close all nuclear power plants following the Fukushima disaster. Other countries have delayed their decisions regarding the appropriate mix of power

sources. There have been long delays in the UK. There have been major job losses at Vattenfall, and important changes in company culture.

The company has been concerned with older workers. The present generation of power stations is old, with their original workforce reaching retiring age as the plants reach the end of their planned operational period. These older workers embody knowledge and understanding which have been accumulated through long experience. The transition between generations, both of technology and workers, are difficult. Although technological advances have increased the extent of automation, there is still a foundation of reliance on the judgement and skill of the experienced workforce. There is a plan to introduce Students' Quality Circles into safety education and training for control centre and maintenance staff. Habits of dialogue and collaboration need to precede emergency situations.

11.4 Conclusion

11.4.1 Sustainability as Mutual Competence Building

Sustainability is not an optional extra, but is integral to management. Envisaging management in terms of mutual competence building development involves new patterns of decision making, new approaches to the working of the organisation. Rather than management being detached and quantitatively driven, it is hands-on, and inevitably brings about change. Our international cases focus around the health of older workers in public and private sector organisations, processes of policy making in local government, and complex challenges in an international power generation company. It becomes apparent that people, their knowledge, and their capacity to innovate, are central in each case. Their creativity needs to be engaged, and they need to be able to respond to management interventions, with subsequent dialogue.

This research experience suggests that empowerment is not a simple and instant process. Empowerment of individuals is with respect to a given system, which needs to be understood through engagement, and cannot simply be determined from a distance. Responsible management involves creating an environment where others can be empowered, and the organisation can be sustained. This presents challenges to the current generation of managers.

The borders of our world are shifting. As we explore developments in a solar energy company in Kenya, we can envisage implications for partners in Tanzania and Mozambique, as well as in Asia. Freed from reliance on fixed infrastructure at every stage, we can consider hybrid approaches, crossing borders of countries and technologies. Within current organisations and countries, we may need to seek cultural change, so that we can align objectives, benefit from improvements designed at local community level, develop co-ordination strategies, and engage in constructive dialogue. These are the principles of Hoshin Kanri (Hutchins 2008).

Corporate Social Responsibility should not be seen as an optional extra set of activities, designed to attract favourable public attention. Like lipstick, it can be quickly applied, and later removed, as if it had never been there. It is instead a matter of Responsible Management being a reflexive characteristic of an approach to management which is always seeking to improve, and with a perspective which goes beyond managers themselves. Responsible Management requires engagement in action, which offers the opportunity for learning from differences. Impressions from past research and experience are given fresh meaning in action, which in turn provokes responses from others, through a process of Mutual Competence Building.

Chapter 12
Agder as Mutual Competence Builders: Developing Sustainability as a Competitive Advantage

Karen Landmark, Marianne Rodvelt, and Stina Torjesen

12.1 Introduction

The introduction to this book noted that universities are well positioned to enter into, and open up, debate about what efforts should be taken to create a sustainable society. This may include initiatives where the universities build their own and others' competence on sustainability in a collaborative manner with external work life organisations. In this chapter we explore in detail the sustainability commitment by a large industry cluster in the Agder region (the Eyde cluster) and we assess the co-operation on sustainability that it has entered into with the University of Agder. We also ask what approach the Eyde cluster takes to sustainability, and whether it foresees the likely change associated with sustainability as gradual or radical.

We find that a collaborative and open partnership between the university and the industry allows both parties to gradually build their capacity on sustainability in a way that is, indeed, mutually beneficial. Moreover, by partnering with the industry sector, the university staff is brought up to speed on contemporary concerns and initiatives in the business sector. The collaboration also bestows the university the privileged opportunity to moderately influence how the regional process industry addresses sustainability. However, the collaborative partnership on sustainability is not entirely without potential pitfalls, and we attempt to identify some of the key challenges.

We start the chapter by a short discussion of relevant theories of sustainability in the business sector and then present an outline of the Eyde cluster's work on sustainability and its cooperation with the University of Agder. We end the chapter

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by discussing what light the Eyde case sheds on the theory and on the overall theme of the book: mutual competence building on sustainability.

The chapter draws on material generated for a prior study of sustainability practices among businesses based in the Agder region, including two interviews with company representatives from the Eyde cluster. However, we also draw on insights generated through our own involvement in the cluster's activities. Karen Landmark and Marianne Rodveldt have worked extensively with the Eyde network since its inception in 2008, including on the initial CEO exploration of the Vision 2050 framework and its potential relevance for the Eyde cluster (see below). Stina Torjesen is involved as an organiser, lecturer and term paper supervisor in the leadership development programme which the university offers the Eyde cluster (see below). Needless to say our deep involvement with the case creates substantial biases in our description and analysis. At the same time we believe the insights we have gained hold a high degree of relevance to the present book. We therefore choose to present our material, but with the caveat that we are very much part of the activities we seek to reflect on.

12.2 Description

Two themes from the literature hold particular relevance for our case: the reasoning behind corporate social responsibility initiatives and debates about the likely scale and pace of change as society and business attempt to transition towards sustainability. The literature on Corporate Social Responsibility (CSR) looks at the role of business in society from the firm level perspective. At its core lies the question of what impacts companies may have on society, either positive or negative, and the extent to which, and how, companies need to address, or even utilise further, these impacts. There are at least three ways to think about the role of companies in relation to society.

The first perspective holds that companies should constrain or adjust their behaviour so that this conforms to prevailing social norms or distinct ethical frameworks. In this perspective companies are seen as facing a set of ethical expectations that go beyond pure legal requirements. These ethical requirements can be formulated differently depending of which type of ethical reasoning one may want to adopt (i.e. utilitarian, Kantian or other) or depending on what type of social norms would prevail in a given context. Seen from an Integrative Social Contract Theory perspective, for example, the moral consensus in many societies have shifted, so that companies are not only expected to focus on producing goods and services at reasonable prices, but also address other issues, including environmental footprint, provision of decent work throughout a company's supply chain or the consequences of work and management patterns in a company on racial or gender inequality (Donaldson and Dunfee 2002).

Carroll (1999), in a similar manner, holds that companies need to adhere to what is expected by society (ethical responsibilities) and also, ideally, contribute to

society through additional charitable acts (philanthropic acts). In an overview on 'Ethical CSR' Bryan–Kjær (2012) also finds that a key subset within the CSR body of literature, stakeholder theory (Freeman 1984) can been seen as ethical CSR. Importantly, this strand in the literature acknowledges that the ethically imposed restrictions or additional contributions that companies allow for may very well, in some cases, result in additional costs or missed business opportunities.

The second perspective argues that companies will improve their risk management if they engage with social actors to 'do good'. This perspective finds that 'doing good' will be costly, but that such activities are nevertheless justified because they can 'integrate companies into the social fabric of local communities' in a way that 'strengthen social bonds' (Fombrun et al. 2000). Moreover, and crucially, engaging with non-profit actors and communities will build 'reputational capital', which in turn may strengthen a company's ability to 'negotiate more attractive contracts with suppliers and governments, to charge premium prices for its products, and to reduce its cost of capital'(Ibid, p. 1). Here, even if there are tangible and immediate costs associated with CSR, these are likely to pay off in the long run: even if these benefits will be hard to measure in quantitative terms.

The third perspective stresses that companies can transform social problems into business opportunities. This implies attempting to solve critical social challenges while simultaneously seeking to increase the profitability of the firm. A number of writers have contributed to this strand in the literature. Harvard professor Porter and Kramer (2011a, b) hold a particularly prominent position due to their widely referred concept of Creating Shared Value (CSV). Porter and Kramer. Here, all social and environmental challenges facing local or global communities constitute potential business opportunities that should be addressed at the strategic management level and as part of forging competitive business strategies. Given the profound social and environmental challenges facing communities across the globe, Porter and Kramer predict that CSV will 'drive the next wave of innovation and productivity growth in the global economy'. In more detailed terms CSV may entail strategies to re-conceive products and markets so that these can solve social or environmental problems; redefining productivity in the value chain by increasing the social, environmental and economic performance of supply chain members; and foster local cluster development in areas where key suppliers are located.

The above three themes outline different perspectives on why the corporate sector might want to address sustainability issues. The three perspectives save for the third one, say little about the scale of the sustainability challenge. In the first and second perspective in particular we are left with an impression that sustainability matters pose relatively minor challenges to businesses. Other authors writing on business and sustainability take a very different perspective. The starting point for the recent World Watch Institute report on sustainability was the question 'is sustainability still possible?' (World Watch Institute 2013). The contributors highlight the scale of human impact on the environment at present and note that business, government and other actors need to undertake 'vastly larger changes than we have seen so far' in order to avert ecological crisis. Andrew Winston, in a recent Harvard Business Review special issue on sustainability, spells out the

business implications of environmental changes. He uses the increased frequencies of extreme weather incidents and rising volatility of commodity prices as starting points for an exploration of how 'climate change and increasing limits on resources are both having an unprecedented impact, threatening corporate profits and global prosperity' (Winston 2014). Winston stresses that such 'mega challenges' will require companies to fundamentally rethink their strategies: 'an extreme world calls for extreme change' (Ibid.)

Finally, in addition to the above perspectives from the literature, we note the introduction's discussion of the role of universities in general, and as participant in efforts to discuss and bring about a more sustainable society. A particularly useful approach is one where clusters of expertise within the university enter into collaborative relations with industry or other work life institutions. Moreover, universities endow students with professional and life skills that can help them enact or cope with change. Executive education, as noted in the introduction, may be particularly important, as former graduates and workers seek to upgrade and reframe their skillsets in a period of rapid change.

12.2.1 The Eyde Cluster

The Eyde cluster comprise of nine processing industries, which have total turnover of around ten billion NOK. The Eyde cluster was established in 2007 by CEOs in the process industry in the Agder Region to increase the member companies' competitiveness through internal and external collaboration. The companies belong to different global value chains within the metallurgical sector, but share a number of similar constraints and opportunities.

The cluster has evolved incrementally over several years, as illustrated in Fig. 12.1. While the initial period built trust and dialogue among the companies, the current phase is one where the companies work jointly to enhance their capacity for innovation, reduce environmental footprint and develop their business models. The co-operating partners have arrived at a shared understanding that global threats and opportunities linked to resource scarcity and climate change will profoundly affect the business conditions of the cluster members in the period ahead. Maintaining global competitiveness under these conditions will require the ability to organise production in the most resource and energy efficient way. Using this shared understanding as their starting point, the CEOs of the member companies has identified a vision for the cluster: to become the world leading knowledge hub for the sustainable process industry by 2020.

The World Business Council for Sustainable Development's *Vision 2050* has provided the framework for the companies' common dialogue on sustainability. The *Vision 2050* report lays out a pathway leading to a global population of some nine billion people living well within the resource limits of the planet by 2050. The scenarios in *Vision 2050* matched the Eyde-cluster thinking on sustainability: it acknowledges that the future will need their products and that these products can

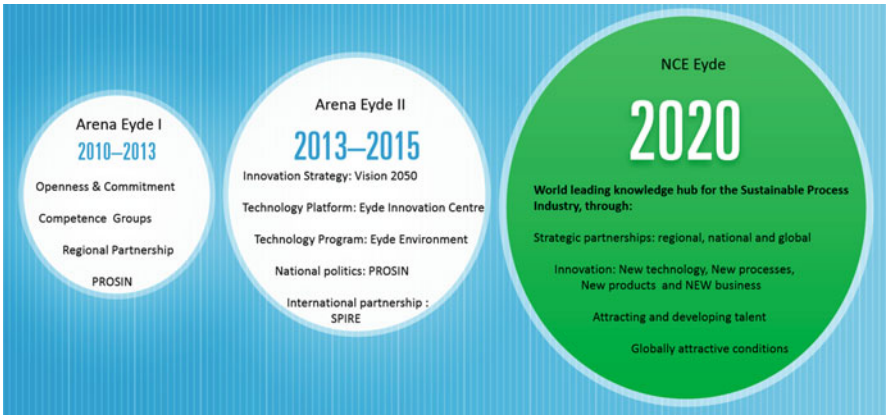

Fig. 12.1 Arena Eyde development process

and must fit a low-emission world. A key feature of *Vision 2050* is an identification of relevant business opportunities as societies move towards a sustainable future.

Two underlying drivers have helped shaped the companies' interest in the sustainability agenda. First, Norway has a surplus of hydropower, and all the companies in the cluster all have access to clean and renewable energy. This makes it easier to develop credible positions as sustainability champions within their industries. Second, the companies in the cluster are mostly foreign owned (owners include Alcoa, GE, Saint Gobain and Glencore) and many of these large multinationals have adopted ambitious positions on sustainability. The Agder based subsidiaries therefore have an interest in answering their headquarters call for sustainable production. Indeed, the Eyde companies' strong sustainability performance may help to secure continued head quarter commitment to maintain operations in Norway, where high operation costs are a serious concern.

The cluster has taken a number of practical measures in order to build a strong sustainability position. In 2012 a designated Eyde Environmental Programme was set in operation. The programme was established to house the different ongoing projects that the cluster has linked to sustainability, innovation and change. The programme houses initiatives include Eyde 0 Waste (cost efficient treatments of bi-products), Eyde bicarbon (replace fossil carbon with bicarbon) and Eyde Waste Heat (minimise and utilise waste heat so as to lower total energy consumption). In addition the project 'the Eyde Model' aims to create a common culture among management and workers of the need for change and the key demands associated with an ambitious sustainability strategy. More recently the Eyde Innovation Centre has been launched, which aims to scale up the activities within the Eyde Environmental programmes through joint R&D activities. In addition, the cluster has worked to enhance government support for a sustainable process industry by suggesting a national strategy exercise (*Process 21*) for the sector. The federation of Norwegian Industries (Norsk Industri) is an important partner in these efforts.

The Eyde cluster has had considerable co-operation with the University of Agder and also two independent and applied research institutes in the region: Teknova (natural sciences) and the university-owned Agder Research (applied social sciences). This co-operation has evolved alongside the changes in the cluster's focus areas and general development and maturing. Representatives from the research institutes and the university have, from the very start, been part of the clusters' extended board and participated in relevant forums, workshops and strategy processes. When the cluster started it had its base at Agder Research and the project manager was employed by the research institute. The cluster then became a legal entity, but the co-operation continued.

Researchers from Agder Research contributed to a mapping of the cluster companies' Corporate Social Responsibility tools and routines, and also with the promotion of the Vision 2050 framework. The cooperation with the university has also evolved along with the cluster's general development. In the early years co-operation centred on specific research initiatives within areas such as lean management and Human Resource related issues, where the company and university staff pooled their insights to suggest new production and management techniques. The university also conducted a mapping of work presence and absence in all Eyde companies. This report was an important input to the cluster: it elevated the interest in human resource related questions and was used as input to the sustainability and innovation strategies. The manager of the cluster's secretariat also serves as a government appointed external board member at the University of Agder. The board member has argued for further emphasis on sustainability related issues in the university's research and course offerings.

In 2014 the Eyde cluster signed a contract with the University of Agder that envisages more substantial co-operation within a number of fields, in particular the development of study programmes and joint research. Sustainability related themes are prominent in both areas. Moreover, and importantly, a bespoke executive education programme at the University of Agder was initiated in autumn 2014. Mid-level managers and team leaders from the cluster are exposed to key ideas related to sustainability, organisational development and lean management in the programme. It draws on the network's own experiences with improving their environmental footprint, and seeks to inspire further change and bottom up initiatives on sustainable innovation.

The bespoke leadership programme stems from an acknowledgement by the CEOs in the cluster that without a common ground, a common understanding of the challenges the companies are facing today, including in relation to sustainability, they will not succeed in reaching their goals. A need for change in the whole company organisations was identified. The leadership development programme was developed jointly by cluster representatives and university staff. The cluster brought their challenges and needs to the table and the university tried to match this with relevant recourses. The University has mobilised scholars specialising in various sub-disciplines such as change management, lean and sustainability and these are serving as lecturers and term chapter supervisors on the programme. While the scholars hold considerable general knowledge on sustainability and

other themes, a key task for the scholars have been to understand how the sustainability challenge appears in the cluster companies, and then tailor their input in teaching and supervisions accordingly. Group work, presentations and a term chapter form central parts of the course. This mobilises the participants to share their knowledge on the state of existing efforts in areas such as energy efficiency, waste management and lean production to other colleagues in the network and the university scholars. The knowledge that is generated and shared provides the university scholars with unique insights into a 'live' case. This increases their understanding of the sustainability field and allow for an updating of existing knowledge.

12.3 Discussion

At the outset of this chapter we highlighted key insights from the sustainability literature, and flagged three themes that hold relevance for this book: why companies might want to address sustainability issues, what kind of change might be associated with the sustainability agenda, and how universities can address sustainability through mutual competence building. How do these three themes play out in the case material on the Eyde cluster?

In the initial short literature review at the outset of this chapter, we noted that companies engage with sustainability related themes for different reasons: ethical reasons, risk mitigation/relations building and strategic positioning. The Eyde cluster is firmly situated within the third category: strategic positioning. The Eyde cluster identifies likely future changes in regulation, resources access and customer demand and responds to these presumed future changes by attempting to develop a strong position on sustainable production. Indeed, the explicit aim of the Eyde cluster is to become the world leading knowledge hub on sustainable process industry. Attention to company survival is a central underlying driver of this response. The companies face considerable competition and pressure within the larger multinational corporations they form part of, other business units might outcompete the Norwegian units due to superior performance on cost. The ability to answer to the headquarters' aims to increase the overall sustainability performance, and provide tangible sustainable innovation that enacts these, help ensure continuity of the Norwegian business units. Survival also comes into play in a more basic sense: the cluster anticipates that goods produced in an unsustainable manner will generate reduced demand. With long investments horizons for technology and production upgrades the companies need to make adjustments now for likely changes that may come in the market place a decade or more from now. In this way the perspectives put forward by Porter and Kramer resonates strongly with the approach taken by the Eyde cluster. Environmental pressures are framed as potential business challenges that are addressed at the strategic management level, with the responses attempted integrated into core company competencies and company cultures.

The second major theme we identified is that of the likely gradual or disruptive change that a move towards sustainability might bring about. The Eyde cluster's anticipation of, and preparation for change is split. One the one hand the adoption of the Vision 2050 framework ensures that the cluster has familiarised itself with the predictions for potentially sweeping change that industries might face in the medium term to long term. However, the sustainability innovations and co-operation initiatives undertaken so far are typically characterised by step-by-step approaches. Few resources set aside to explore more radical and game changing technologies and approaches.

The third theme we highlighted was that of the potential for mutual competence building on sustainability. The case material above provides a rich illustration of how such mutual competence building might play out. Cluster company staff and university researchers have engaged in specific research projects; the Agder Research and the university have helped formulate the ambitious sustainability strategies for the cluster, and the university have developed an executive education programme where sustainability is placed at the core. This programme is to a large extent co-created by the Eyde cluster representatives, university staff and the course participants.

These activities are all strongly collaborative in nature, and they allow, to some degree, for debate and discussion of what sustainability might entail. In this way the case manifests a pattern where the university is able to address sustainability through mutual competence building with work life institutions. Moreover, the scholars are able to shape, to some degree, how the industry cluster relates to sustainability. Agder Research, has, for example, been a key promoter and supporter of the Vision 2050 framework, which in turn has been a major influence on the cluster's thinking on sustainability.

It bears stressing however, that collaboration, trust and knowledge sharing are central to the way the cluster operates, not only in its relation with the university but also between companies and as it relates to the government. This is a key asset associated with the cluster, which also serves as an important pre-condition for the mutual competence building with the university which is currently unfolding. The cluster, rather than the university, should take credit for establishing this culture of trust, sharing and collaboration.

Moreover, the initiatives and the university's role in these are not without problems or concerns. One is the extent to which the university groups of expertise are indeed holders of relevant and sufficiently in-depth and up to date knowledge for it to be of use to the Eyde network. A notable feature of the collaboration has been the Eyde cluster's pro-activeness, while the university has largely been responding to the needs and request of the industry. This weakness the credibility of the university and makes it less able to promote critical and open debates about sustainability in industrial activity in the region. With so many parameters and sophisticated thinking undertaken by Eyde ahead of the large co-operation initiatives, the university is less able to set the parameters for debate, inquiry and teaching, or alternatively ensure that these parameters are up for debate.

Finally, there is a risk that the shared commitment and enthusiasm that is generated in the collaborative activities between university staff and cluster company representatives may prevent the participating scholars from thinking critically about the cluster companies overall performance. Much of the joint work on sustainability pertains to ambitions, strategies and quests for change that lie in the future but as yet unrealised. The companies' current sustainability performance, and potential weakness, is addressed in less detail.

12.4 Conclusion

The Eyde cluster and University of Agder case is useful, in that it illustrates how mutual competence building on sustainability might play out. It also adds insights on how companies come to engage with sustainability on the strategic management level.

Some broader points might also be distilled from the chapter. The split approach by the Eyde network to the possible change, associated with the move towards sustainability that was identified above, brings attention to one of the opening theme of this book, namely that sustainability is tightly liked to large scale societal change. The Eyde cluster's response has been one where it on the one hand anticipates and prepares strategically for large-scale change within their industries. At the same time many of their key initiatives are primarily incremental in nature. How would the university perform if we assessed the university in a similar manner? The university is less restrained by financial and market limitations than the business in the Eyde network and more able to engage with long term and utopian ideas. However, the University of Agder seems to be to a much lesser degree interested in exploring future scenarios and potential societal transformations.

Finally, the case pertains to the university's collaboration with the Eyde cluster. Would the university have been able to enter into credible co-operation on sustainability with the regional oil and gas network (NODE)? And is the current collaboration with NODE in other fields in accordance with the University's approach to sustainability? At the very least the university might initiate a debate on this, but also in this respect the institution remains largely passive and disinterested. This does little to build a credible position on the part of the university on sustainability.

Part V
The Sustainable University

In this part we address the issue of Sustainability in Higher Education at a structural and strategic level of the university. The issue is what does the university do in terms of strategies that address sustainability, and to what extent are these significant for society.

In Chap. 13, *Translating the Global Script of the Sustainable University: The Case of the University of Oslo,* Rómulo Pinheiro, Maryam Faghihimani and Jarle Trondal discuss the green strategy of University of Oslo in a neo-institutional perspective. This chapter, which is conceptually based on neo-institutional theory, approaches the notion of the 'sustainable organisation' as a global, legitimate script, i.e. a dominant hegemonic idea which, once adopted and consequently adapted locally, is likely to enhance both internal and external legitimacy. This analysis is built on the empirical case of the University of Oslo (UiO), that sheds light on the ways in which the notion of a 'sustainable university' has been locally 'translated' in order to fit (be aligned with) contextual circumstances, including path- and resource-dependencies, strategic intentions and aspirations, and internal values and norms. More specifically, the chapter investigates the rationale for, and the key actors behind, the design and subsequent implementation of a 'sustainable strategic platform' at UiO, and casts light on the degree of institutionalisation: rules, standard operating procedures and resource allocations across the board.

In Chap. 14, *Rhetoric About Sustainability in Education The Presence of the Words Not Spoken*, Astrid Stifoss-Hanssen addresses the rhetorical situation that one runs into when addressing concepts of sustainability. The theme here is how rhetoric and reality can be reconciled. A key concept is *ethos*. Ethos implies that you really mean what you say and live by it.

In Chap. 15, *Higher Education in a Knowledge Society: how to close the knowledge divide*, Richard Ennals and Hans Christian Garmann Johnsen discuss education policy in UK and Norway, and how national conditions might influence the role that universities take in social development. The new communicative reality: mobilisation and education breaking the institutional barriers. They can be met by initiatives like Quality Circles, or a P*enny University*. The underlying big

problem is to what extent universities are really taking a role in reducing the serious knowledge and education level divide we see in western societies.

Mutual competence building is in relation to these chapters to go beyond rhetoric. It is not the words alone, but the sincerity and commitment behind these words that count. This implies taking the strategic issues seriously. Addressing sustainability will have strategic consequences.

Chapter 13
Translating the Global Script of the Sustainable University: The Case of the University of Oslo

Rómulo Pinheiro, Maryam Faghihimani, and Jarle Trondal

13.1 Introduction

Institutional scholars have, for some time, paid attention to the impact of environmental imperatives in the formal and informal structures of organisations (DiMaggio and Powell 1983; Scott and Christensen 1995; Selznick 1949). This is particularly the case when it comes to the public sector (Christensen et al. 2007) where organisational actors inhabit a highly institutionalised environment, i.e. a social context characterised by the prevalence of a wide range of formal and informal rules, emanating from a variety of sources (Powell and DiMaggio 1991), on how individual and collective actors alike are to behave if they are to secure external validation (Deephouse and Suchman 2008; March and Olsen 2006b).

Earlier studies have shown that organisations, particularly public ones, go to great lengths in order to accommodate, in either real or symbolic terms, key environmental features in their internal structures and activities (Greenwood et al. 2008; Meyer and Rowan 1977; Powell and DiMaggio 1991). They do so for a variety of reasons, ranging from resource dependencies (Pfeffer and Salancik 2003) to the need to secure internal and external support or 'legitimacy' towards organisational goals (Drori and Honig 2013) to imitative (isomorphic) behaviour due to environmental complexity and high levels of ambiguity (DiMaggio and Powell 1983) to fiercer competitive pressures (Ramirez 2010).

Scott and Christensen (1995: 56) define an organisational field as "a community of organisations that partakes of a common meaning system and whose participants

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interact more frequently and fatefully with one another than with actors outside the field". Studies across the *organisational field of higher education* (cf. Kyvik 2009) have shown that, as public sector organisations, universities are faced with increasing pressures to accommodate, i.e. more effectively respond, to a rapidly changing environment (Pinheiro and Stensaker 2013; Rip 2004; Zechlin 2010). The latter is characterised by *financial stringency* (Frølich et al. 2010), increasing national and global *competition* for talented staff and students as well as funds and prestige (Kehm and Stensaker 2009; Marginson 2006), and a changing *regulative environment,* which is, largely, a result of: (a) the rise of external stakeholders (Benneworth and Jongbloed 2010; Jongbloed et al. 2008); (b) the interplay between national, cross-national and supranational governance structures and initiatives (Maassen and Olsen 2007; Maassen and Stensaker 2011); (c) and the search for a new foundational or 'social pact', brokered via the state, between higher education (HE) and society (Gornitzka et al. 2007; see also Pinheiro et al. 2014 and Schwartzman et al. 2015).

As a means of strategically responding to an increasingly complex *institutional* (rules and regulations) and *technical* (competition) environment (cf. Scott 2013), universities the world over have been modifying their internal structures, systems and core activities. One of the ways in which they have done so is through the *adoption* (diffusion) and consequent *adaptation* (contextualisation) of prevalent global models, abstract ideas, scripts and/or archetypes emanating from the organisational field of higher education (Beerkens 2009, 2010; Mohrman 2008; Morphew and Huisman 2002; Pinheiro 2013; Pinheiro and Stensaker 2013).

That said, this chapter sheds light on the internal adoption, adaptation and consequent diffusion (institutionalisation) of one such global, legitimating idea: that of the *ecologically sustainable organisation* (Jennings and Zandbergen 1995), within the organisational field of HE materialised in the form of the 'sustainable university'. We draw upon empirical data emanating from the University of Oslo, Norway's oldest and most prestigious higher education institution, which, amongst other things, acts as the system's flag-ship and hence plays a prominent role in the diffusion of new practices and procedures within the domestic field of higher education.

The chapter is organised as follows. In Sect. 13.2, we explore the notion of the sustainable organisation as a blueprint or organisational archetype for organising activities in the twenty-first century. We then move on to present the conceptual framework adopted in the chapter, based on the notion of the contextualisation or 'localisation' of global, hegemonic scripts. Section 13.4 presents *how*, *why*, and via *whom* the notion of sustainability entered the organisational field of HE globally, and what its (generic) effects have been so far. On the basis of desk-top analysis and interview data, conducted between January 2010 and June 2012, and as part of a master degree thesis at the University of Oslo (Faghihimani 2012), Sect. 13.2.5 illustrates the key empirical findings. The argument for mutual competence building that can be learned from our discussion, is the importance of founding development processes in the organisation and build it on the interpretation and implementation that makes sense in different disciplines.

13.2 Description

13.2.1 Global Scripts and Local Translations

The institutional environments in which individual actors and organisations operate have a profound effect in the ways in which their structures, rules, identities and traditions develop over periods of time (Meyer and Rowan 1977). This basically means that many of the existing rules within organisations are part of a wider rule-system in society (Brunson and Olsen 1997; Drori et al. 2006), and that, once legitimated by dominant actors within a given organisational field (see Brint and Karabel 1991; Sahlin-Andersson and Engwall 2002) they have a tendency of acting as rationalised *myths*. As they flow from the 'global' sphere to a particular 'local' context, such myths or ideas are subjected to translation (*editing*) by local actors (Czarniawska-Joerges and Sevón 2005; Sahlin and Wedlin 2008; for a recent study from Northern Europe consult Pinheiro and Hauge 2014).

Three processes are thought to play a key role in the diffusion of global ideas. The first pertains to the need to secure *legitimacy,* internally and externally (Drori and Honig 2013), as well as the importance attributed to timing or *fashion*. Neo-institutional scholars have convincingly shown that 'fashion-following' encompasses a simultaneous act of conformism (inertia) as well as creativity (change) (Sahlin and Wedlin 2008, p. 223). The second process is that of *imitation* and *identification*. Organisations have a tendency for copying features associated with prestigious models or organisational forms seen as successful (like Oxford and Harvard), a process known in the literature as 'mimetic isomorphism' (Meyer and Rowan 1977, 1991). Yet, at the same time, organisations are also driven by the impetus to develop a distinct local culture and identity (cf. Pinheiro 2013), what some have termed 'polymorphism' (Fleming and Lee 2009). The third process pertains to *translation* and *editing* (Sahlin-Andersson 1996). Studies have shown that while undergoing translation by local actors, new meanings are ascribed in the light of abstract ideas (e.g. 'world class university'), concrete activities (e.g. societal engagement) and actors' ("editors") past and current experiences (Sahlin and Wedlin 2008; Pinheiro and Hauge 2014).

13.2.2 The Sustainable Organization

Debates on sustainability are not necessarily new (World Commission on Environment and Development 1987), but they have become more prevalent in recent years given the sets of challenges facing humankind in years to come (see Johnsen et al.'s chapter 1 in this book). Ecological sustainability is a key emerging management concept (Starik and Rands 1995). A number of so-called "green organisational theorists" have, for some time, attempted to infuse ecological principles, like 'sustainability', into specific theoretical domains from leadership to organisational

learning and design (Jennings and Zandbergen 1995, p. 1016; Pfeffer 2010) to (sustainable) competitive advantages (Rodriguez et al. 2002). Particular attention has been paid to the development of multi-level and multi-systems perspectives (of ecologically sustainable organisations). Starik and Rands contend that:

> The test of an organisation's ecological sustainability is the degree to which its activities can be continued indefinitely without negatively altering the *limiting* factors (food, water, shelter, etc.) that permit the existence and flourishing of other groups of entities, including other organisations (Starik and Rands 1995, p. 909)

Scholars adopting an *institutionalism perspective* (Greenwood et al. 2008) for investigating organisational sustainability argue that the key is to:

> understand how definitions of sustainability are constructed and accepted and then how practices encouraging sustainability are created and adopted over time by organisations, that is, how they come to have a 'rule-like, social fact quality' and how they become 'embedded' in institutions and organisational fields (Jennings and Zandbergen 1995, p. 1016)

13.2.3 Sustainability Enters the Organisational Field of Higher Education

In 1972, the *Stockholm Conference on the Human Environment* drew attention to sustainable development (SD) and its relevance to HE, by stressing the interdependency between humans and the environment and the role of educational institutions in providing environmental education across all age groups. The declaration called on all educational institutions to "broaden the basis for enlightened opinions and responsible conduct by individuals, enterprises and communities in protecting and improving the environment in its full human dimensions" (UNESCO 1972, Principle 19). Later, in 1977, the UNESCO-UNEP's *Intergovernmental Conference on Environmental Education* stated:

> Universities as centres for research teaching and training of qualified personnel for the nation, must be increasingly available to undertake research concerning environmental education and train experts in formal and non-formal education (. . .) It is necessary for students in all fields, not only natural and technical sciences but also social sciences and arts, because the relationship between nature, technology and society mark and determine the development of a society (UNESCO/UNEP 1977, p. 33)

Wright (2004) refers to the Belgrade Charter (1975) and the Tbilisi Declaration (1977) as key milestones in the development of international environmental education and sustainability initiatives, alerting universities to consider environmental education as part of curricula and actively engage faculty and staff. In addition, it was argued, universities play a critical role in promoting SD by providing specialist training, participating in regional and international projects, and educating community and the wider public about environmental challenges. The notion of sustainability in HE was first addressed globally in 1978, by the UNESCO-UNEP's

Table 13.1 Sustainability declarations for higher education

Year	Declaration	Level
1990	Tallooires declaration	International
1991	Halifax declaration	Canada
1993	Kyoto declaration	International
1993	Swansea declaration	International
1994	CRE Copernicus charter	Europe
1997	Declaration of Thessaloniki	International
2000	Luneburg declaration	International

Source Wright (2004, in Faghihimani 2012, p. 15)

International Environmental Higher Education Programme. Following this, a number of international, national and regional declarations relating to HE and environmental sustainability were issued and signed by numerous higher education institutions (HEIs), as illustrated in Table 13.1.

All of these declarations laid the foundation for defining what a sustainable university is, according to certain principles, and provided a great resource for creating and developing managerial tools to both implement and evaluate environmental sustainability as a component of HEIs' internal processes and primary activities. An analysis of the most common principles coming out of the declarations explicitly referring to HE highlight, amongst other things, the notion of sustainability as a 'moral obligation' for universities, the criticality of third mission or 'public outreach', 'environmental literacy', and 'partnerships' both within and beyond the HE sector, as shown in Table 13.2.

More recently, in 2012, leaders (Chancellors and Deans) of the global academic community were called upon to commit to the development of sustainable practices for HEIs, and were invited to sign the declaration *Higher Education Sustainability Initiative for Rio + 20* (*Consult* https://sustainabledevelopment.un.org/index.php?menu=1073). Through this declaration, leaders of HEIs across the world have declared their moral and formal support for the following strategic actions:

Teach sustainable development concepts;
Encourage research on sustainable development issues;
Green the campuses;
Support sustainability efforts;
Engage with and share results through international frameworks.

Signatories (272 organisations as of time of writing) emanate from about 47 countries, from Argentina to Norway to Ethiopia to Kazakhstan. For a full, updated list see: http://rio20.euromed-management.com/roll-of-commitments-2/.

Table 13.2 Sustainability principles in higher education declarations

Declaration	Moral obligation	Public outreach	Physical operation	Environmental literacy	Interdisciplinary curriculum	Research	Partnership and collaboration with other sectors	Interuniversity cooperation
Talloires	X	X	X	X	X	X	X	X
Halifax	X	X		X			X	X
Kyoto	X	X	X	X		X	X	X
Swansea	X	X	X	X		X		X
Cre-Copernicus	X	X		X		X	X	
Thessaloniki	X	X		X	X		X	
Luneburg	X	X			X	X	X	X

Source Wright (2004, in Faghihimani 2012, p. 17)

13.2.4 University of Oslo: The "Green University"

In the spring of 2012, UiO's rector signed the Rio + 20 declaration, making the university the first, and so far only, Norwegian HE signatory. This, in turn, became the foundation for UiO's sustainability strategic platform (2012–2015) which is based on the following *five* goals:

1. Establish UiO as a 'green university';
2. Promote the symmetry between research activities, curriculum and educational approach and daily operations with regards to environmental sustainability;
3. Raise awareness on environmental sustainability and make results visible;
4. Increase energy efficiency (buildings);
5. Integrate Green House Gas reporting in UiO's overall reporting system (UiO).

13.2.5 Problem Assessment and Benchmarking

In 2010, UiO's central leadership decided to improve its sustainability efforts through the establishment of a dedicated project team, *Green UiO* (GU) tasked with developing a suitable strategy for the entire university. GU was placed at the level of UiO's central administration. It was part of the *Personal and Organisational Support Department* (OPA) and later on moved to the *Estate Department* (ED). GU's mandate was to implement and promote sustainability across the board: in education, research and operations. The operation fold was closely linked to the technical activities at the ED, including aspects related to energy efficiency, waste management, transportations and so on. The education and research component was to be undertaken in direct collaboration with the academic units, such as faculties and research centres.

The first step: *diagnosis phase*, was to undertake a benchmarking study on how HEIs the world over are adapting to the challenges posed by global sustainability. *Benchmarking,* which is a popular method and management tool across the private sector (Camp 1989), is based on the search for 'best practices' leading to superior performance (see Beringer 2007 and Charles and Wilson 2012 for the implementation of benchmarking in HE including an assessment of environmental sustainability). The main question driving GU was as follows: *How can the implementation of environmental sustainability at the various operational dimensions of higher education institutions be measured?*

Following Sterling (2004), the project adopted a systematic approach towards environmental sustainability (ES), addressing the need for a shift from a 'classic' perspective towards a 'systemic' approach for sustainability within HE, as shown in Table 13.3. In this study, terms such as 'sustainable', 'environmentally sustainable' and 'green' are used interchangeably.

According to Sterling (2004), applying a *cybernetic systems* model for sustainability at the institutional level requires a realisation of systemic coherence and

Table 13.3 The general shift towards sustainable institutions

From (classic perspective)	To (systemic approach)
Incoherence and fragmentation	Systemic coherence and positive synergy
Large scale, loss of connectivity	Human scale, high connectivity
Closed community	Open 'permeable' community
Teaching organisation	Learning organisation
Microcosm of unsustainable society	Microcosm of sustainable society

Source Sterling (2004)

Fig. 13.1 Operational dimensions of higher education institutions [*Source* Sterling (2004)]

healthy emergence within and between the various dimensions of an organisation's operations, as shown in Fig. 13.1. Cybernetics is a trans-disciplinary approach for exploring regulatory systems; their structures, constraints, and possibilities. The basic idea is that the management of the system is intrinsically dependent on feedback regarding its internal functioning, including links with the external environment. For an analysis of cybernetics theory applied to HEIs, consult Birnbaum (1988) and Hölttä and Karjalainen (1997).

As regards the *sample,* a strategic decision was made to include ten top universities from Asia, Europe and North America as per the 2009 Times Higher Education ranking (THE), online at: http://www.timeshighereducation.co.uk/world-university-rankings/. The rationale for this selection lies on UiO's strategic ambition to become one of the top research universities as measured in the international rankings (The latest figures 2013/2014, show UiO ranking 185th, way below some of its Nordic counterparts like Helsinki (100th) Stockholm (103rd) and/or Aarhus (138th). http://www.timeshighereducation.co.uk/world-university-rankings/2013-14/world-ranking/region/europe, see also Hazelkorn 2009). In addition, the sample

(N = 21) included: a set of universities (chosen randomly) in the same bibliometric category as UiO; other Norwegian universities; and universities known for their environmental sustainability (ES) efforts. Based on Sterling model's (2004), the content analysis of the sustainability declarations for HEIs (Table 13.2) and Beringer's (2007) assessment tool, a total of 50 indicators were developed as to measure ES at the sample universities.

After developing the indicators, data related to the environmental sustainability efforts of each university were collected from their (English) websites. In those circumstances where it was not possible to find related pages to the sustainability office, groups or documents on the web (public domain), the universities were then contacted and a request for information was sent directly to them. This was particularly the case in regards to those universities where English was not the first language. When the necessary data was gathered, the overall performance or grade of each university, including UiO, was shown in a comparison scale in Fig. 13.2. The highest grade that a single university could obtain within the frame of the tool was 50 (score of 1 for each existing dimension), which meant that a given institution had implemented environmental sustainability in various dimensions and in a systemic (and systematic) manner. The data show that half of the sample scored 45 points or more (75 % sample above 40 points), with three institutions: MIT (Massachusetts Institute of Technology, USA), Gothenburg (Sweden) and UBC (University of British Columbia, Canada), occupying the top spot. Four of the five lowest scoring universities were based in Norway, with only one university, Bergen, scoring lower than UiO, which scored only 20 out of 50 possible indicators.

Looking more closely to the top-three universities, as a benchmark of achievements, these are important for UiO in different ways. In addition to being excellent in research and education, MIT is also among the leading universities in the implementation of ES. This suggests that the internal, strategic objectives and academic interests of the institution did not seem to have interfered with the

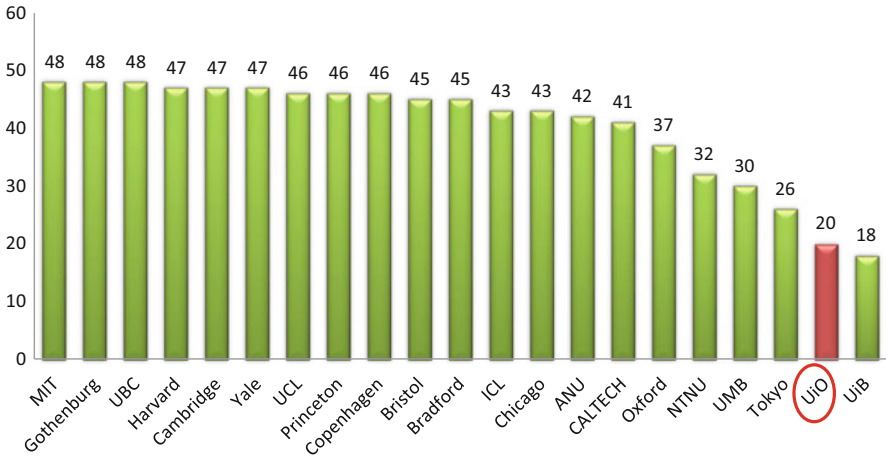


Fig. 13.2 Overall environmental sustainability score (2010) (*Source* UiO)

university's ability to cope with environmental related challenges. In the case of UBC, the remarkable point is that, despite the short ES history at the university, it shows great achievements in the selected indicators. Its first strategic action was initiated in 2007 around two cross-cutting themes: the campus as a living laboratory; and the university as an agent of change. UBC's strategic plan (2007–2011) refers to the cornerstones of UBC's 'living laboratory initiative' as based on *four* basic principles:

1. The integration of research and teaching with the university's operations;
2. Partnerships—between UBC and the private and public sectors and/or NGOs;
3. Sound financial use of UBC's resources and infrastructure;
4. The potential to transfer the knowledge gained into practical, positive action applicable to the greater community'

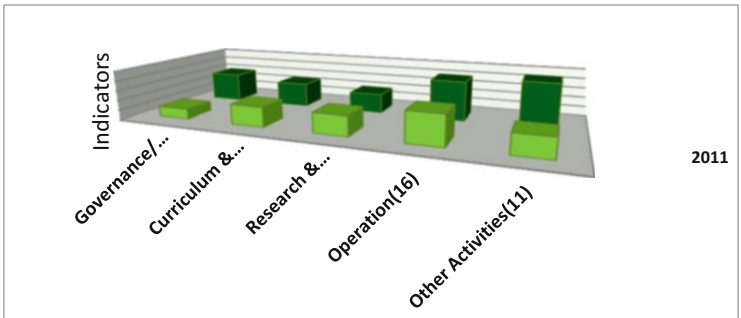
(For an overview of UBC's sustainability policy, strategic plan and initiatives see: http://www.sustain.ubc.ca)

Finally, Gothenburg University is a successful example as regards ES efforts within the Nordic region, despite the clear differences in terms of the way in which the HE system is steered in Sweden, where universities have traditionally followed a more corporative, market-oriented model (cf. Benner and Sörlin 2007) than is the case in Norway (see Pinheiro et al. 2014). Furthermore, governmental directives have, since the late 1990s, made the implementation of environmental management systems compulsory for all Swedish public HEIs (Sammalisto and Arvidsson 2005).

13.2.6 The Rise and Fall of "Green UiO"

This section zooms in at UiO's ES performance (2010) in all five indicators' categories, and sheds light on the expected (predicted) performance for 2011 according to the recommendation list ('best practices') advanced by GU's team to the university's central leadership. Performance scores for 2012 (June), following the implementation of guidelines, are also shown.

Figure 13.3 shows UiO's ES performance in 2009 and its potential (predicted) score in 2011, upon the successful implementation of the recommended best green practices emerging from the results of the diagnosis phase (benchmarking). It is worth mentioning that the recommended practices [online at: http://www.uio.no/english/about/strategy/environment/green-uio/reports/Report-best-green-university-practice-nov2010.pdf (pgs. 24–5)] were tailor-made for UiO, based on the available resources and as a short term plan (yearly basis). No specific recommendations in the research and innovation components were advanced, since any adjustments within this frame would require more time than what was proposed in the suggested yearly plan. UiO's 2010 results show that the university scored 20 out of 50 possible categories. The most positive areas included 'curriculum and study opportunities' (4 out of 8 points) as well as 'research and innovation' (4 out of 7 points). The lowest score (2 out of 8 points) was in the realm of institutional



	Governance/ Administration(8)	Curriculum & Study Opportunity(8)	Research & Innovation(7)	Operation(16)	Other Activities(11)
2010	2	4	4	6	4
2011	6	5	4	8	9

Fig. 13.3 UiO's ES implementation in 2010, compared to practiced score for 2011 (*Source* UiO)

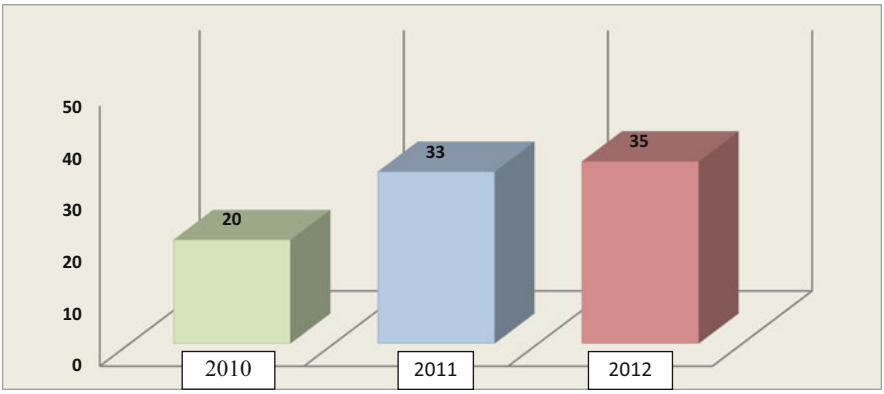


Fig. 13.4 UiO's ES performance: 2010–2012 (predicted) (*Source* UiO)

governance and administrative related dimensions, thus suggesting low levels of institutionalisation (of rules, procedures, incentives and practices) at the central level.

Following this, a list of activities related to the four main categories (excluding research component) was put into the sustainability plan, and work progress during 2011 was closely observed. By mid-2012, UiO's ES performance was re-evaluated and compared with the status in 2010 and the predicted ES performance for 2011. UiO's predicted aggregated score for 2011 was 33, which could be obtained by implementing the recommended best green practices. By 2012, UiO's ES performance showed progress with a total of 35 out of 50 possible points, as shown in Fig. 13.4. This suggests an increase in the level of ES implementation from 20 in

2010 to 35 in the middle of 2012. Yet, it should be indicated that what was assessed by the first half of 2012 is mostly what UiO had achieved in the previous year. This is due to the fact that some of the activities in year 2012 have been on-going processes, and had not come to a measurable result by the time the 2012 assessment was undertaken. That said, the score in 2012 (first half) was 2 points higher than what was predicted to be achieved by the end of 2011, thus suggesting that the 2011 target had somehow been successfully met.

13.2.7 Institutionalisation, Editing, Translation

Due to the lack of a systematic approach for implementing sustainability at UiO and the importance attributed to 'academic freedom', a formal bridge (tight-coupling) between GU and the various academic units was never created. In retrospect, placing GU outside of the academic sphere or core and putting it in the heart of UiO's central administration, has caused an unintended conflict. In spite of the fact that GU's mandate pertained to the promotion of the 'Sustainability Agenda' across teaching, research and operations, no one from academia became an integral part of the project. This, in turn, created the perception amongst academics that UiO's central administration might interfere with educational and research activities through its sustainability office, thus seen as a threat to (violation of) the cherished academic freedom. This led GU to change its initial ('top-down') strategy, by approaching a selected number of researchers and teachers interested in sustainability as an interdisciplinary theme. This resulted into a more fruitful collaboration within the context of a non-formal framework for education. For example, GU supported and co-hosted a series of lectures, public talks and high level events to discuss sustainability in general and its importance for HEIs in particular. Another approach used to avoid conflict and foster trust internally, was to host a 'Green School' as an integral part of the lifelong learning programme targeting UiO's staff. In addition, GU directly collaborated with students' groups in a number of projects, for example, co-hosting an event together with the editorial board of an academic journal dedicated to sustainability (and run by young researchers based at UiO and UMB Norwegian University of Life Sciences). This proved to be a rather valuable approach, not only when it comes to infusing the logic of ES amongst student audiences but also as regards collaboration with core academic groups via the direct involvement of students in specific project activities.

Regarding infusing ES-related dimensions in UiO's *research activities*, the available data suggest considerable improvements since 2010, despite the absence of concrete policies ('best practices') in targeting this specific domain (above). There are a number of possible explanations here: the positive effects accrued to external funding for sustainability obtained by researchers and research centres at UiO; existing structures (centres of excellence) focusing on sustainability research

(e.g. Centre for Development and the Environment. Online at: http://www.sum.uio.no/english/); initiatives of specific researchers addressing the global environmental challenge, such as the 'Sustainable Companies' project (2010–2013) hosted at the Faculty of Law· (Online at: http://www.jus.uio.no/ifp/english/research/projects/sustainable-companies/). In addition, a series of student grants linked to sustainable topics (master thesis) were also made available.

In 2013, UiO set up the 'Energy Initiative' (EI), a research group focusing on energy efficiency. The initial plan was that GU and EI would merge and work together on larger issues pertaining to sustainability, yet this plan was abandoned (this was due to the fact that leadership structures within EI rejected this arrangement) and thus EI continued as an independent unit. According to *Viable System Model* (Espejo 2003; Flood and Carson 1993) such types of research activities have the potential for providing critical inputs for the implementation of sustainability at the level of curriculum structures as well as study opportunities if/when strong co-ordination mechanisms are in place. Consequently, this system is likely to facilitate the initiation of interdisciplinary ES courses for all students, hence providing a platform where researchers from various departments or research centres can share their resources as a joint force for enhancing sustainability across the curriculum, in either a formal or informal format.

The same goes for links with external parties. One of UiO's challenges was that it lacked a strategic plan (cf. Fumasoli, Pinheiro, and Stensaker 2014) delineating the scope of its outreach and community-based services for sustainability literacy, and for raising awareness towards ES in society at large. As of today (summer 2014), UiO does *not* have an extensive sustainability-oriented profile targeting community partnerships, industry collaborations and/or sustainability networks. Examples include, ISCN (International Sustainable Campus Network) and AASHE (Association for Advancement of Sustainability in Higher Education). These are strong networks with a concrete reporting system providing external auditing for HE. Most top research universities are part of these networks.

Despite some positive developments, a closer investigation of UiO's approach towards ES raises some critical reflections. This is primarily due to the absence of a systemic approach in the university's sustainability-related efforts. The low scores around 'Governance and Administration' (2 out of 8) are indicative of this problem. The available data show that, despite endorsing a sustainability agenda for the entire university UiO still lacks any kind of strategic plan (with concrete objectives, goals and milestones) at the institution level for implementing ES across the board. The lack of strategic hindsight is also reflected on the fact that, as a unit within UiO, GU also lacked its own strategic plan. This basically meant that the scope of its activities was based on short term projects on a yearly basis rather than calculated steps towards the successful realisation of a broader strategic (long-term) vision. The result is that, today, sustainability-related activities across UiO are rather fragmented and do not follow any systemic approach as suggested in the literature (Beringer 2007; Faghihimani 2012; Flood and Carson 1993). What is more, this lack of systemic thinking is (also) reflected on UiO's approach towards ES going

forward (future). UiO's central administration has decided to spread ES-related activities across the different academic departments without the presence of an overall coordinating sub-unit (GU is to be closed down) responsible for keeping local activities in line with UiO's policy, signed treaties and the existing ES framework developed by GU's team. Since the spring of 2014, UiO has started to scale down its sustainability activities to the level that the current capacity of its various departments can deliver. In the new approach, there will not be any sustainability expert to plan, monitor and measure the implementation and work progress, as was the case until now.

As regards *accountability*, since UiO does not currently have sustainability audit on its institutional profile (the university is not a member of any sustainability networks requiring annual reporting), it is therefore not obliged to provide any public reports, comply with sustainability indicators and/or be accountable for fulfilling specific laws or regulations for assuring a certain level of sustainability over time. Further, UiO does not have in place an 'Environmental or Sustainability Management System' which is a basic element for co-ordinating and monitoring activities within the Viable System Model alluded to above. The best practices identified earlier are of relevance here. At the University of Gothenburg, a group of employees is responsible for co-ordinating or orchestrating the sustainability agenda across the entire university. These are either placed at the (central) level of the sustainability unit which can closely monitor and facilitate the process of ES implementation, or instead are based at academic sub-units of the university whilst allocating a percentage of their working time to co-ordinate ES implementation.

Turning back to co-ordinating ES efforts at UiO, only one permanent full time position for the entire sustainability office was created. Although GU resorted to project assistance on a temporary basis, and part time contracts mostly targeting students, and that this, on the whole, has had a positive effect in raising ES awareness amongst student audiences, the successful (and systemic) implementation of ES across the entire university requires a larger team of professionals aware of and working closely with environmental-related issues, in addition to help supervise students' projects as well. Starting in the second half of 2014, all the sustainability work at UiO will be translated to efforts only at the technical and operational levels within the realm of the Estate Department. Since GU has partnered in several education and research projects funded externally, UiO will appoint different staff from other departments in order to fulfil these obligations. However, the university (still) lacks a framework which describes how all these activities will take place on the one hand, and how they will serve the larger strategic purpose of infusing (institutionalisation) ES structures: both formal (rules, procedures, incentives, etc.) and informal (values, behaviours and identities), across the entire university.

13.3 Discussion

As a 'global script' or hegemonic idea, sustainability gradually but steadily entered the organisational field of HE since the early 1990s, as shown in table A. As is often the case with the adoption of global ideas, like management fads (Birnbaum 2000), early adopters become seen by many within the field as 'leaders', thus creating isomorphic pressures for compliance by so-called 'laggards' (DiMaggio and Powell 1983). From an instrumentalist perspective, what some have called the 'logic of outcomes' or means ends rationality (March and Olsen 2006a, b), the adoption of hegemonic ideas provide actors and the organisations they inhabit with both enhanced *legitimacy* (Deephouse and Suchman 2008) and privileged access to scarce *resources* (Pfeffer and Salancik 2003), aspects of considerable importance under conditions of environmental uncertainty and fiercer competitive (market) pressures (Greenwood et al. 2008, 2011). What is more, global ideas are always 'translated and edited' (Sahlin and Wedlin 2008) in order to fit specific local circumstances, including the historical trajectories of institutions (Krücken 2003), deeply rooted local norms, values and identities (Clark 1972), as well as the strategic agendas of certain constituencies, either internal or external to the organisation (Jongbloed et al. 2008). That said, institutional scholars have also shed light on the resilience of organisations, universities included (Karksen and Pritchard 2013), particularly those that can be considered *institutions* (Scott 2013), i.e. when norms, values and structures are deeply institutionalised and are therefore 'taken for granted' (Selznick 1996); by, *inter alia*, showing evidence of their ability to protect their core technologies/activities (e.g. through *decoupling* their structures, see Orton and Weick 1990) from being *co-opted* by external and internal agendas and interests thought to be a threat to institutional integrity, including cherished values (e.g. academic freedom), traditions (e.g. decentralised decision making) and identities (Kehm and Teichler 2013; Selznick 1949).

UiO's case of the adoption, and consequently *adaptation* (Beerkens 2010), of 'sustainability' as a global idea provides some fascinating insights on the challenges facing leadership structures within HEIs in their attempts to transform them into more "complete organisations", through rationalisation processes (Brunsson and Sahlin-Andersson 2000; Ramirez 2010). The lack of (tight) coupling between ES activities and the so-called *academic core* (Clark 1998), i.e. teaching and research, suggests that: (a) either sustainability was taken on board in a rather symbolic, ceremonial fashion (Meyer and Rowan 1977), as claimed by proponents of neo-institutionalism; or (b) UiO's central *steering core* (Clark 1998) or central administration overestimated its abilities to forge change and adaptability at the level of the academic core or *heartland*, without involving key members of the academic community. In so doing, the latter also engaged in processes of their own 'translation', approaching ES from a rather sceptical perspective, namely, that of a central steering core that is attempting to purse internal change without the necessary 'buy-in' or direct involvement by key internal actors such as academics. Earlier studies have suggested that active support by the academic communities or *academic*

heartland is a critical factor whilst pursuing (and successfully achieving) change agendas (e.g. adaptation to environmental imperatives) within contemporary HEIs (Clark 1998, 2004; Pinheiro 2012b).

Having established GU as a 'project' located in the *extended periphery* (Clark 1998) of core academic structures and activities considerably limited the scope of strategic action (Pinheiro and Stensaker 2013) by those actors involving with promoting ES across the board. This is aligned with earlier empirical findings suggesting that successful institutionalisation within HEIs is, in part, related to the degree of coupling with core tasks and activities (Pinheiro 2012a, b), i.e. the extent through which aspects related to ES are a part of teaching and research endeavours. For example, recent comparative studies have shown that within HEIs *loose-coupling* (Orton and Weick 1990; see also Pinheiro and Trondal 2014) or *decoupling* often leads to what is known as 'projectisation' (Cloete et al. 2011; Wangenge-Ouma and Fongwa 2012), with little positive spillovers at the level of core activities, thus resulting into weak or partial institutionalisation (see Gornitzka 2007; Olsen 2007). Moreover, this case demonstrates that students (see Klemenčič et al. 2015) play an important role in aiding institutionalisation processes by acting as intermediaries or *brokers* (Fisher and Atkinson-Grosjean 2002) between the strategic agendas (like ES) being promoted from the top-down by the central steering core and dynamics, activities and values at the level of the academic heartland.

Coming back to the notion of a 'sustainable university', UiO's case reveals that the low levels of institutionalisation of ES-related issues across the academic heartland and core university structures have, for the most part, failed to infuse local values, norms, practices and identities with the 'logic of appropriateness' (March and Olsen 2006b) associated with a sustainable organisation. This, in turn, also casts critical light on the shortcomings linked to certain managerial practices such as *benchmarking* as applied to HEIs (cf. Charles and Wilson 2012). Having successfully adopted certain 'labels' that are associated with best practices when it comes to what is considered to be a 'sustainable university', e.g. like having a sustainable strategic platform or co-ordinating-unit like GU, UiO has nonetheless neglected the importance associated with the internal meanings associated with those labels. In other words, as also found elsewhere (Huisman et al. 2002), the labels were, to an extent, institutionalised yet the meanings linked to those labels were never internalised by the core social actors, i.e. academics. This, we argue, is due to the fact that UiO's academic heartland was never given the chance to neither 'translate' (*adoption*) those meanings in the light of specific circumstances (e.g. knowledge-related dimensions or strategic ambitions at the sub-unit level) nor were they able to 'edit' (*adaptation*) them according to their own (sub-disciplinary) interpretations and local settings.

13.4 Conclusion

The organisational field of HE is not immune to the spread of global ideas or hegemonic scripts emanating from the environment in which contemporary HEIs operate. 'Sustainability' is one such dominant idea, with significant effects in the ways in which (some) HEIs are going about their daily activities. By investigating the case of a major, Nordic research-intensive university, we have revealed major tensions and dilemmas permeating attempts at institutionalising ES-aspects across the board, as well as the short-comings associated with 'top-down' managerial approaches aimed at transforming academic structures, norms, values, identities and behavioural postures. It was found that *loose-coupling*, a distinctive feature of HEIs, can become a major hurdle in this respect.

The present study is based on data from one Norwegian university. We have argued that these data are of significant interest in studies of the sustainability of public sector organisations since the impact of environmental imperatives is expected to be extensive in small countries. The systematic approach described by Sterling and others is considered to be one of the most efficient methodologies for measuring and implementing ES in HEIs. Regardless of size and age of HEIs, they have certain features in common which have been illustrated in the model of a sustainable university. So the benchmarking based on the same indicators and implementing ES in light of the systemic approach (Sterling Model) is feasible and recommended for other HEIs as well, also since the indicators used are based on numerous declarations (for ES in HE) that many different HEIs have signed and tried to implement. That said, our conclusions are necessarily preliminary in their findings. The tendencies demonstrated in the Norwegian case may, for example, be different in larger countries. Furthermore, there are significant differences in the level of international adaptation in industrialised countries, which may not reflect country size. Also factors like research culture and research facilities are likely to influence faculty members' adaptation towards environmental scripts (El-Khawas 2002).

Additionally, variation in environmental adaptation may be systematically associated with organisational and institutional traits of universities (cf. Pinheiro 2012; Trondal 2015). Such traits might include the size of universities, their age and institutionalisation, and the (perceived) scientific excellence of faculty members. Of particular relevance in an analysis of sustainability is university age and degrees of institutionalisation. Universities that are old and strongly institutionalised might have weaker potential than young and less institutionalised universities to adapt flexibly to new opportunities and challenges presented by environments. The organisation literature assumes a positive correlation between the age of organisations, their degrees of institutionalisation, and their flexibility to adapt to exogenous and endogenous possibilities and constraints (March et al. 2000, p. 78). Universities that are strongly institutionalised may have well established procedures and logics of how things should be done. By contrast, young and less institutionalised universities might have more leeway for adapting to exogenous possibilities offered by

environments (c.f. Pinheiro 2013). Thus, the potential for adaptation towards global scripts of the 'sustainable university' might be greater among young universities.

Further unpacking university organisations, future qualitative inquiries should also shed light on the ways in which 'sustainability', as a global script, is affecting structures, activities and behavioural logics at the sub-unit level or the *academic heartland*. Furthermore, studies from and beyond the European Continent could possibly identify the mechanisms associated with the ways in which global ideas are 'locally translated' and further edited across the board, as well as providing some empirical account on the effects accrued to such processes at the level of core, teaching and research activities on the one hand, and professional/academic identities on the other.

Mutual competence building in/around sustainability between internal academic communities (teaching) on the one hand, and external partners such as industry on the other (research and technology transfers realms), implies the need for: (a) a clear identification of internal competencies and external partnerships within and beyond the immediate vicinity of the university campus; (b) mobilisation and broad involvement at the level of the academic heartland; (c) proper incentive structures, including clarity on IP rights and knowledge commodification; and (d) active and engaged leaders, at all levels, that are capable of bridging various communities, both internal and external to the university, as well as of communicating a clear, and concise vision and strategy (with a clear definition of roles and responsibilities) across the board; and, (e) the gradual yet steady nurturing of a vibrant internal culture (norms, values, identities) towards dynamic partnerships for addressing sustainability goals (internal and external). More importantly, local actors within the university should be given the adequate freedom to 'translate' and localise their approach towards sustainability in the light of their sub-disciplinary traditions, professional identities, strategic goals and scientific aspirations. Lastly, sustainable efforts towards sustainability require both broad articulation or co-ordination as well as some degree of *coupling* between university policies, strategies and goals, as well as teaching, research and outreach (third mission) activities.

Does UiO have the potential to act as an engine for ES in Norway and the Nordic region and thereby contribute to mutual competence building in a broader sense? Based on its current operations and leadership ethos, we would not necessarily present UiO as a 'role model' for other Norwegian/Nordic universities to follow as such. That said, future developments will dependent on the strategic directions taken by key actors within the university. Undoubtedly, UiO has well established connections (trusty networks) with the local municipality, which has the ambition of making Oslo the 'Green Capital of Europe'. In addition, UiO already has a number of research centres and high level projects working on/around ES-related issues. However, if UiO is to take full advantage of these emerging opportunities, it is imperative that the ES policy currently in place is put into action. That, in turn, will require the aforementioned centres and internal units to play a critical role in the process, by, for example: provide direct ES inputs into the curriculum; build a stronger network with various internal academic communities with an interest in, and expertise of, ES-issues; and, increase strategic collaborations with surrounding

industries as well as key arms of the public sector. Furthermore, in our view, UiO has also a chance to become more (pro-) actively engaged on ES-related forums such as NUAS, UNICA, RCE, etc., which have the potential for enhancing the visibility of its ES efforts both internally (within UiO) and externally (region/country/Nordics/global). Hence, UiO's future, and ES profile, will depend on the leadership decisions going forward, and the ability to develop an integrated ecosystem encompassing a wide variety of actors at various levels of the organisation, based on clear and measurable policies and goals, and supportive procedures, incentives and norms, in addition to the institutionalisation of a shared (sustainability) identity/culture substantiated around a joint ('win-win') strategic agenda.

Chapter 14
Rhetoric About Sustainability in Education: The Presence of the Words Not Spoken

Astrid Stifoss-Hanssen

14.1 Introduction

Sometimes words can change the world. Universities have a social and statutory responsibility to provide higher education and conduct research at a high international level, and to disseminate and promote scientific knowledge in the public sphere (Norwegian "Act relating to universities and university colleges" 2005). When problems arise that will affect mankind in a fundamental way, like that of sustainability, universities are expected to be engaged in both research, teaching and public debate. In engineering, lectures and research on sustainability is particularly important, because today's engineering students will create tomorrow's technology, and technological development has a great impact on the environment as well as on our social and economic development. If work of rhetoric on sustainability is successfully performed with engineering students as audience, they can make changes in the world. In this chapter I will use rhetorical theory, and especially theory about "the rhetorical situation", to analyse the position of sustainability issues in education, exemplified by communication about sustainability in engineering education on bachelor level. The chapter aims to investigate challenges in introducing sustainability in teaching, and to argue that focus on sustainability in teaching is part of the construction of a university's ethos.

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14.2 Description

14.2.1 The Rhetorical Situation

According to the American rhetorician, Lloyd F. Bitzer, rhetorical discourse "comes into existence as a response to a situation, in the same sense that an answer comes into existence in response to a question." (Bitzer 1968, s. 5) The speech is seen as a communicative act performed by words in a situation. In more recent theories of rhetoric, for instance Jens Kjeldsen (2009), other sign systems, like pictures and sound, are also considered to be "text" or "rhetoric". "The act of rhetoric is pragmatic, it comes into existence for the sake of something beyond itself." (Bitzer 1968) The success of the speech is not within the speech itself; the situation demands speech as a reply to a situation. When Barack Obama said "Yes, we can", or John F Kennedy said "Ich bin ein Berliner", the words were not brilliant in themselves. The situation and the rhetorical moment made them brilliant.

At the UN climate summit in Warsaw 13th November 2013, there was a rhetorical moment as Philippines lead negotiator Yeb Sano was to address the opening session. A few days earlier, on the 8th of November, the Philippines had been struck by the largest typhoon yet to be registered. In Warsaw there were clear expectations on the speech to be held. While struggling to hold back his tears, and with a voice that was firm, but at the same time on the edge to break, Sano said

> . . . I speak for my delegation. But more than that, I speak for the countless people who will no longer be able to speak for themselves after perishing from the storm. I also speak for those who have been orphaned by this tragedy. I also speak for the people now racing against time to save survivors and alleviate the suffering of the people affected by the disaster. We can take drastic action now to ensure that we prevent a future where super typhoons are a way of life. . .(..). . . We can fix this. We can stop this madness. Right now. (Sano, cited at http://www.rtcc.org)

Sano also said that he would "refrain from eating food during this COP until a meaningful outcome is in sight." Because of the previous disaster, the expectations to his speech had changed. Everyone expected the typhoon to be the center of the speech. He was personally and emotionally engaged. Due to the circumstances, this engagement was expected, and his speech moved an international audience.

Some rhetorical moments, like the one described above, are grand, and at the focus of everyone's attention. Other moments are trivial, and concern just you and me. Most people "know" that if it is someone's birthday, we must congratulate them, and if we are given a present, one should say "thank you". In any circumstances, grand or trivial, the speaker can choose to fulfill the expectations, or to let the opportunity pass her by, but if the norms are not respected, people will notice that something is missing. For this we could use the Greek term "Kairos", which means to "seize the moment" (Kjeldsen 2009).

Where do the expectations come from? In a dialogue comprehension of language and communication, all utterings are created as a reply to former utterings (Bakhtin 1998). In communicating with others, norms of acceptable communication are

created. A political speech, for instance, demands a different style than a conversation between friends, when we communicate, the norms of speech are confirmed and challenged at the same time. Similar situations demand similar kinds of reply.

> From day to day, year to year, comparable situations occur, prompting comparable responses; hence rhetorical forms are born and a special vocabulary, grammar, and style are established (Bitzer 1968, p. 13).

This is how genres are created. Genres are "categories of utterances" which have resemblances in central characteristics.

Socrates, cited by Kjeldsen (2009, p. 70), considers the sense for the moment to be central for good rhetoric. However, there can be many different reasons why people do not speak whey they are expected to do so, or why their words "miss the target". Planning speech may demand too much time and effort; the speaker may be shy or inexperienced. She could be worried that her words would not come out well even if she made an effort, and she could be right. In engineering education at the University of Agder in Southern Norway, comments are often made by teachers that they are too busy with other tasks, and that they do not have time to learn and teach about sustainability.

Rhetorical moments can be more or less clear. Some situations are so clear that one can "predict with almost certainty" what will be said. Bitzer uses the situation generated by the assassination of President Kennedy as an example where a certain content and performance of speech is almost "required". Likewise, when the principal of our university gives a speech to the new students at the beginning of a new study year, we expect the speech to include visions and goals on Sustainability. These expectations are so clear that the speaker finds herself obliged to respond appropriately. Similar expectations arise when the sitting Norwegian Prime Minister, along with the tradition, delivers her "New Year's speech". On the 31st of December 2013 critics praised her speech, but at the same time it was noticed for how she avoided treating challenges on climate and environment. With quotes like ". . .miss more focus on climate and environment" (Senel 2014), "A hole in the New Year's speech" (Båtstrand 2014), the speech was noticed for what was not being said.

14.2.2 Exigence, Audience, Constraints

Sometimes words can be perfectly well spoken, yet nobody seems to listen. The 5th assessment report of the Intergovernmental Panel on Climate Change (IPCC), which provides an "up to date view of the current state of scientific knowledge relevant to climate change" (ipcc.ch), concludes with 95 % certainty that global warming is human-caused. There is nothing unclear about the words spoken.

> An exigence is rhetorical when it is capable of positive modification and when positive modification requires discourse or can be assisted by discourse. . .(..). . .The pollution of our air is also a rhetorical exigence because its positive modification: reduction of pollution,

> strongly invites the assistance of discourse producing public awareness, indignation, and action of the right kind (Bitzer 1968, p. 7)

Bitzer uses the term exigence, not exigency. A work of rhetoric is pragmatic, and functions to produce action or change in the world. Since it is goal oriented, it always addresses an audience. "...a rhetorical audience consists only of those persons who are capable of being influenced by discourse and of being mediators for change." (ibid.).

Finally, in a rhetorical situation there are constraints, and when warnings and information about climate changes do not work, we must investigate the constraints. What could be possible constraints for engineering students at bachelor level to gain good knowledge and engagement on sustainable development through their studies? The constraints can be within the message itself, the way the message is presented, the speakers ability to convince the audience, the audience's attitude and interest or the circumstances in which the words are spoken. The message, the style, the speaker, the receiver or the concrete circumstances; these are the five "constants" of the rhetorical pentagram that Cicero mentions in what is considered to be the first known model of communication (Kjeldsen 2009, p. 73). The model is illustrated in Fig. 14.1. Since rhetorical speech is seen as a communicative act performed in a situation, they must all be suitable for the message to work. For this he uses the term "aptum"; which means "proper" or "suitable".

Some speeches are so good that they are noticed for their brilliance. But quite often it is enough to fulfill the audience' expectations. As described in the example above with the Prime Minister's New Year's speech, aptum is most easily noticed when we experience a lack or an absence of suitable speech. Further I will use the rhetorical pentagram to analyse the challenges of introducing teaching on

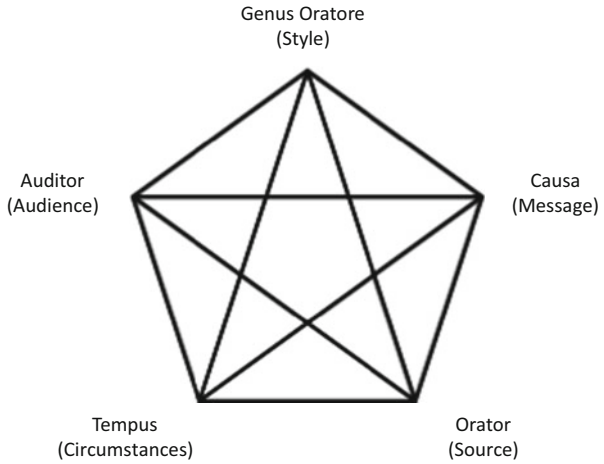

Fig. 14.1 The rhetorical pentagram [*Source* Rhetorical pentagram (Kjeldsen 2009)]

sustainability in lower grade engineering studies, focusing on what could be possible constraints for successful rhetorical communication.

The English translations are mine, adapted from different sources: I use Bitzer's terms "audience" and "circumstances". The terms "style", "message" and "source" are taken from James C. McCroskey (2006). For "source" Kjeldsen uses a term (avsender) that could be translated as "sender", and appears to be more active than source. The reason that the word source is used here, is because it seems to be a more common English translation. It also covers the idea that a source does not have to be a person. When the source is a person, however, in this text I have also used Bitzer's term "speaker" because it is more intuitive to readers than the term "source".

14.3 Description and Discussion

Sustainable development is defined as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (World Commission on Environment and Development 1987). The concept incorporates economic, social and ecological dimensions. However, technical solutions which can create social and economic growth often have negative consequences on the environment. Therefor the aspect of sustainability in engineering is complex, and the discourse addressed to the students could face ethical and rhetorical dilemmas.

14.3.1 The Message

Rhetorical communication, as opposed to accidental or expressive communication, is goal directed. (McMcroskey 2006). It is a basic idea in communication that in order to achieve one's communicative goals, one must know what the goal is. Goals on sustainability are commonly stated in universities' strategy plans. However, if the strategy is not implemented in all levels of an organization, the message becomes unclear.

The "Norwegian National Committee for Research Ethics in Science and Technology" (NENT) has stressed the complexity of assessing "the extent to which a given research and technology investment is sustainable…" (…) "…since a thorough assessment must incorporate a diversity of economic, social and environmental aspects which can point in contradictory directions" (NENT 2014, p. 6). Even though the word in itself is comprehensible, it could be difficult to judge whether a technology contributes to a sustainable development. Øyvind Ihlen, who has done rhetorical analysis of oil companies communication about sustainability, claims that the vagueness of the term has been used strategically by the oil industry. (Ihlen 2007) Ihlen claims that the oil companies face a rhetorical dilemma since they must defend large CO_2 emissions, and at the same time present environmental engagement.

14.3.2 The Circumstances

In order to create rhetorical messages on sustainability in engineering education, the students must see the urgent need created by the circumstances. In Norway many engineering students prepare for jobs in the petroleum industry, and oil and gas are some of the world's largest sources of CO_2-emissions. Most Norwegian universities, and engineering departments in particular, are engaged in the petroleum industry for cooperation and funding of education and research. In June 2014 the NENT presented a report which concluded that *"it is indefensible from a research ethics perspective if the framework conditions for petroleum research and research activities hinder transition processes and thus prevent the achievement of UN climate goals which Norway has pledged to uphold* (NENT 2014).

Southern Norway has a globally leading position in certain fields of the gas and oil industry, and many engineering students are motivated by well-paid, interesting jobs in a high competence technological environment. At the University of Agder we are proud of our recent achievements in natural science. The institution received its university status only recently, in 2007. Since then the engineering studies and research have expanded greatly. Our studies in mechatronics have been developed to answer the needs of the local industry, is to a large extent financed by the oil industry, and is experiencing great growth in students and research on all levels.

This may seem like a privileged position, and in many ways it is, but the circumstances do not bring out the urgency of the situation.

14.3.3 The Style

After the last revision of the curriculum in 2009, all engineering studies in Norway must have a certain number of study points on sustainability. So far the way sustainability is taught on lower grade engineering studies seems to depend on individual initiative, and differs from one university to another (ref. to Chap. 7 by Nilsen). Many teachers probably have a focus on sustainability, but rather than being explicitly integrated in the engineering subjects, at most Norwegian universities it has appeared on the side. A common reaction from those who teach engineering is "we do not have time for this".

In order to be persuaded to make changes in the world, the engineering students must have the needed knowledge. Speaking with Aristotle's concepts "modes or persuasion" (around 330 BC), the students must be exposed to logos-oriented speech. But they also need to be convinced that it is important, and to feel an urge to act. The audience's feelings must be touched (pathos), and the speaker must gain the audience' trust (ethos). All speech has an aspect of ethos, logos and pathos, but one mode of persuasion can be dominant. Teaching, for instance, is mainly logos oriented. When the principal welcomes the new students, and tells them about the visions of the university, the speech has an aspect of information, but the main

intention is probably to create some kind of goodwill by the students, and to communicate an identity of the university that the students can relate to. Although the speech may appear to be logos-oriented, it is mainly ethos- and pathos oriented.

According to Per Espen Stoknes (2014), psychologist and associate professor at the "Norwegian Business School" (BI), one problem with the conventional rational climate information approaches is that they have mostly targeted the cognitive component of attitude." With notions of rhetoric, we would say that the information has been too logos oriented. Stoknes points to the view in social psychology that "attitudes consist of three components: affect, behaviour and cognition." If there is a conflict between the three, it is difficult to maintain a positive engagement. In order to change attitude, an understanding of the problem is not enough. One also needs to feel an urge to change, and to have the opportunity to make good choices.

To engage in the world around them, the students need to learn about sustainability on problems that may seem distant and abstract, but if Stoknes is right, they also need to learn how they can make a difference. When sustainability is taught on a general level, it may easily become distant, abstract and logos oriented. Teachers in technical classes can show the students how to use their professional knowledge to create sustainable solutions. If giving solutions for possible action is necessary to create a change of attitude, it would be advantageous to include sustainability aspects in all subjects. It would not make teaching less logos-oriented, but lessons could be less abstract and more closely tied to the students' concrete experiences. Teachers in technical classes also represent a professional identity that the students can relate to. They have a possibility to use their ethos to teach the students about sustainability.

"The majority has the power—unfortunately—but not the right. The right belongs to me and the other few, the individuals. The minority is always right" (Ibsen 2004). These are the words from Dr Stockman in the play "An Enemy of the People". "It must be right because most people think it is right" has since Aristotle been described as an argumentation fallacy. Yet it is a powerful tool for convincing the audience by appealing to their feelings. People tend to believe what other people believe, and do what other people do. According to Stoknes, we tend to be influenced by the attitudes of "significant others". "if there is social dissonance between significant other's attitudes and mine, then the other's attitude impacts mine!" (Stoknes 2014) The teachers in technical subjects are probably in most cases "significant others" to the students because they are experts on the field in which the students prepare to work. If they do not communicate the importance of environmental engagement, it could be interpreted by the students as being not very central in their education. Likewise, the subject could be interpreted by the employees as marginal for the university as an institution if it is absent in the communication between different levels of the organisation.

14.3.4 The Audience

The universities are institutions communicating on several levels and with different intentions and target groups. The academic staff is alternately speaker and audience for messages about sustainability. When they give lectures they have an institutional role as representatives of the university, and take the role of the speaker. In other situations they act as receivers of information, national and local guide lines and instructions from the management.

When I have discussed the need for sustainability issues to be given more attention within the engineering education, I have been met by the argument "The students are not interested. They come to our university because they are interested in technology, and if we give them lectures about sustainability, they do not get what they came here for."

According to Bitzer, the awareness of the exigency within the audience as well as the speaker depends on the level of interest in solving the problem. George Campbell (1988; cited in Kjeldsen 2009) says that the degree of interest is influenced by the likelihood of the problem existing or coming into existence, and of how directly and sensibly it can be perceived. Of the possibility to confront and change the problem, of the risk we take in confronting the problem, of duties and expectations, of knowledge and familiarity with the problem, of the situation's demand of immediate action. Occasionally I meet students who say they want to become engineers out of social engagement. Some of the most socially engaged engineering students I have met are immigrants from third world countries, or students who have experiences from travelling or living abroad. However, some engineering students may not consider themselves to be the audience of rhetoric about sustainability because it appears to be too far away in space and time, and it may seem to be out of their reach to do something about it.

At the same time student organisations in Oslo and Bergen have initiated critical debate on environmental issues. In Bergen the student newspaper has written critical articles on oil funded research on several occasions, and in Oslo the student parliament has passed an agreement stating that it would work to prevent the university from "performing research which increases or prologues the petroleum recovery" (Gjengedal 2013). This could be an indication that the students may be more interested than we presume. Since the problem is growing, so is probably the interest.

14.3.5 The Source

Universities are institutions of knowledge, and of open and independent discussions. Just as the audience differs from one situation to another, so does the speaker. Yet the university as an institution has ethos. James C. McMcroskey defines ethos as the "attitude toward a source of communication held at a given time by a

receiver" (McMcroskey 2006, p. 82). According to McMcroskey, the source does not have to be a person, it may well be "a group, an organisation, a government agency, or even a country" (ibid, p. 83). McCorskey even thinks that when a person represents an organisation, the person's individual ethos is "pretty much irrelevant", what matters is the ethos of the organisation represented. Many university employees would probably oppose being part of a common, institutional ethos. However, even if we have individual ethos, all communication exercised by university employees on all levels, in teaching, research, public debate, information to students and potential students on our web sites, media contact etc, participate in building the institution's ethos.

According to McMcroskey, ethos is currently considered to be the total image of the source, but traditionally ethos has been focused on source credibility. To gain trust one must be intelligent, have character and good will for the people to be addressed (ibid). Critics of rhetorical practice since Plato have claimed that rhetoric is sometimes being used to win discussions without considering the moral aspect of a case, but in Quintilian's view, speech cannot be suitable without being morally good (Kjeldsen 2009, p. 78). Usually there is a match between the advantageous and the morally appropriate. If a person is known to be good and competent, people are more likely to be convinced. But in situations where the morally appropriate does not seem to be advantageous on the short run, it must still be preferred to the advantageous.

From whom the words come is not without importance. What would happen if Barack Obama, for his inauguration speech, said "I am so tired now, I need to rest, so someone else needs to make the speech in my place". In the former article (Pinheiro, Faghihimani, Trondal) we saw that integration of the "Green University of Oslo" was put in the heart of the central administration, and that no one from academia became an integral part of the project. If speech about sustainability is absent in areas where one would expect it to be present, the audience could get the impression that the source does not consider it to be important.

Rhetorical speech can be concept-centred or ethos-centred. One can use her ethos to convince someone on a subject, or use cases to build ethos. For instance, when someone is running an election campaign, the rhetoric will be mainly ethos-centred (McMcroskey 2006).

Most companies profile themselves with visions and standards when it comes to environmental engagement, and so do most universities. When speaking of their moral standards concerning environment, they make promises and commit themselves to contribute to the good of our common resources. Therefore they build ethos by speaking about the environment. For politicians it is more complicated. Working politically with environmental issues means prioritising time, money and brains to save the planet. In these speeches we are all asked to participate; give up our private cars for public transport, recycle, turn down the heat in our living rooms, or pay taxes to finance railroad and better buildings. The speech will be more appealing, less committing. Therefor it can be difficult for people with power and influence to build ethos in environmental issues. In addressing the students, encouraging engagement in sustainable development could mean asking the students to

give focus to the concern of their co-citizens and future generations rather than to satisfy their own short-term needs. Therefore teaching sustainability is mostly case-centred.

Sometimes one may get the impression that ethos-centred speech about sustainability is something going on between the university management and the outside world. At the University of Agder, renewable energy was the first research priority area. According to the UiA web site, "The Agder region has a major focus on renewable energy and the University of Agder co-operates closely with regional industry and other research institutes in this field. This has made the region an important renewable energy actor, both nationally and internationally." This information could contribute to building the university's ethos as an institution that prioritises sustainability. If a subject is being taught by someone who has ethos on a subject, the audience will learn more because they give more attention and interest to the speaker (McMcroskey 2006) However, when implementing sustainability issues in engineering education, the ethos effect of communicating the efforts that the university is making is generally not an issue.

The universities can build ethos as socially responsible institutions by letting their voices be heard in the public sphere. However, the words need to be followed by action. The universities could also use their ethos to perform case-oriented speech outside the universities, and when members of the management or the academic staff talks about sustainability outside the university, the speech can be ethos-oriented. However, if the discourse of sustainability in teaching is not present, there would be a mismatch between what the university as an institution expresses, and an important part of the practice, and in the long run this could harm their ethos.

14.4 Conclusion

Universities worldwide work on implementing sustainability in teaching. However, if the universities do not see lower grade engineering students as a significant audience of rhetoric on sustainability, we do not manage to create rhetorical speech and to move the audience.

Bitzer's view could be criticised for being too goal oriented, influenced by a kind of strategic marked thinking. One could argue that the model would conflict with basic ideas of what a university should be. The universities have a role in society as open, independent institutions. They should be arenas for informed, open, critical debates, characterised by diversity in voices and opinions. Bitzer's view has also been criticised for being too deterministic, and thus freeing the speaker of ethical responsibility since the situation is considered to be so determining for the choice of rhetorical response. However, the model can be used to create awareness of some mechanisms in the communication process. Rather than to be freed from responsibility, it could help us to make more reflected communicative choices.

The world cannot be changed by words alone. Engineering students cannot change the world entirely, they cannot change it overnight and they cannot do it

alone. Yet we have the opportunity to create situations where the world can be changed a bit; rhetorical moments. But according to Bitzer, rhetorical situations have a life cycle; they come into existence, mature and decay (Bitzer 1968). If we do not seize the opportunity to speak, it will pass us by. Ignoring problems related to sustainability certainly will not make them disappear; they will continue to exist as a constant challenge. It is the universities' opportunity to hasten a change and to play an important role in that change that will pass, and we could be left on the side, remembered for the words we did not speak.

Chapter 15
Higher Education in a Knowledge Society: How to Close the Knowledge Divide

Richard Ennals and Hans Christian Garmann Johnsen

15.1 Introduction

In this chapter we argue that higher education faces challenges, some of which are contradictory. On the one hand higher education has been highlighted as a prerequisite for Knowledge Society; on the other hand, austerity and administrative and ideological changes are undermining the usefulness of higher education to society. Higher education is one of the prerequisites for Knowledge Society, but not just in any form. In fact, mutual competence building becomes even more important when society increases its dependence on knowledge. The knowledge people have in general becomes critical to social development. So how does higher education take on this role? Is higher education addressing the knowledge gap? Is technology the way forward? Can we offer an alternative model?

These are not simply theoretical questions. In the UK higher education is in crisis. It has been obliged to abandon traditional values such as free education, and it has been subordinated to the policy needs of government ministers who had themselves enjoyed higher educational provision. Higher education increasingly reflects and exacerbates social inequality, and social mobility is now more limited. Norway is in a different situation, and could take a lead.

New conditions must allow us to reconsider some of the ideas we have for higher education: both new technology and the Knowledge Society. We are accustomed to familiar well-tried approaches, but they may have become obsolete. We need to discuss what Responsibility is, under these new conditions. Who is responsible, and for what? Individuals are now more connected in human and technological terms. The younger generation of students regards networking, and social networking, as central to their lives. Will this approach be sustained as they become adults, and

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take on leading roles? Will the new generation repeat the patterns of behaviour of their predecessors?

This may be important for higher education, where we may previously have assumed the dominance of Liberal Capitalism and a market society. There is a case for new approaches, linked to the Norwegian model. Empowerment, Participation, Involvement and Engagement are vital elements, each facilitated by the use of new technology. We may recognise that students in the Knowledge Society are familiar with social media, probably more familiar than their teachers. The students are an integral part of the new body of knowledge, comprising young people who know. This should be a sustainable basis for the Knowledge Economy. In the Knowledge Society we should be likely to find a reduction in hierarchies, and a recognition that much important knowledge is held by young people. This may underestimate the importance of experience, skill and tacit knowledge. However, we may find difficulties in communication between the generations, as they use different tools, and for different purposes. There may be less respect for age and wisdom than older workers and academics might expect: this has implications for higher education. So many innovative new companies have been founded by young people.

In this chapter we compare two national higher education models, the UK model and the Norwegian model. We have identified four challenges: social development, public management, technology and ideological. These changes have impacted on student—teacher relations, on approaches to teaching, and, importantly, on power structures related to higher education. We see that concepts like the service university, the entrepreneurial university and the innovative university are becoming more common. They imply that new actor groups influence what is thought, and how things are thought in universities. Collaborative structures are more predominant, and students have come to be seen as customers; their demands have more impact on what is taught. How do these challenges affect responsibility?

In order to understand higher education in each of our countries, we need to see it against the background of other countries. Based on that, we discuss challenges for a sustainable higher education system, with some innovative features.

15.2 Description

15.2.1 Social Development

Higher education is undergoing change in many countries. However, the current changes are partly derived from contradictory tendencies. On the one hand there have never in history been more people who participate in higher education. The concept of Knowledge Society is used in public deliberation to highlight the need for more knowledge and education in society. Development models such as Triple Helix (Leydesdorff 2006) emphasise the need to see universities and higher education in a general perspective of economic and social development. Collaborative

models are suggested, in order to utilise knowledge from universities (Johnsen and Ennals 2012a, b). These arguments are intended to support policies to strengthen the higher education sector. However, they tend to be contradicted by other policies which focus on competition, and the pursuit of competitive advantage.

In the past, higher education was intended for a small minority, who went on to take senior positions in society. In Norway at the moment some 7 % of the population study at higher education institutions. Some 40 % of the workforce hold a higher education degree, although most of them have a so-called short higher education. The large field of professional education and especially teachers and health workers, where most take a short, higher education degree. Higher education in Norway is free, and there are scholarships and loans to cover living cost. There are government arrangements for low-income families. Still, Norway has a drop-out problem in high school and is struggling with completion rates in higher education, and we can see a clear education divide in society.

With mass higher education, UK graduates can no longer assume such futures. With the imposition of high tuition fees, and the requirement for loans to cover living expenses, many families now argue that higher education is not worth the cost. Students are graduating with debts they may never repay, and which make it harder for them to secure mortgages to buy homes. Students are more likely to consider employment implications of their courses, rather than pursuing academic study for its own sake. Increasingly undergraduates will have part-time employment during their studies, which means that, in reality, they are part-time students, taking courses which are already shorter than is normal in the EU.

15.2.2 The Case of the UK

Higher education in the UK is undergoing great change at present. Government no longer pays for most teaching. Costs are met by greatly increased tuition fees. Students are required to pay much higher fees, but receive the same or reduced provision. Researchers are under pressure to publish in particular journals. Students are building up large debts. Nationally there is under-investment in infrastructure: physical, social, intellectual, moral. The government has declared that public service salaries, including for teachers and lecturers, are to be frozen for a further 4 years. Many parents do not see universities as good value for money.

There are fresh challenges in society/university co-operation. What distinctive features does a university have to offer prospective external partners and clients? Companies are launching rival teaching programmes, often using technology in new ways, and are now seeking designation as universities. We cannot assume that companies will share traditional views of scientific discourse, not least because many leading entrepreneurs declare themselves to be proud that they did not attend universities. The flow of ideas into society is disrupted by commercial considerations. Knowledge from universities is not necessarily valued.

It may be a mistake to imagine that all universities are the same. In the UK we see the re-emergence of an elite group of universities, with intellectually able students and high levels of public research funding. This leaves the majority of universities with weaker students, little or no public research funding, and difficulty in recruiting students to courses which require payment of large tuition fees, with no assurance of eventual employment. In the UK we may see institutional bankruptcies. We have yet to see widespread interest by companies. They are happy to criticise the products of the education system from a safe distance, but they have been slow to engage as partners in change processes.

15.2.3 The Case of Norway

Norway sees higher education as an appropriate recipient of funding arising from North Sea Oil and Gas, and accompanying a programme of overseas investments. Higher education is central to plans for a future after the end of such income. Norway looks back to a time, before oil, when the country was poorer than Sweden. Standards of living have improved. In the UK, North Sea Oil and Gas were privatised, and public services have declined while income inequality has increased.

According to the OECD *Skills strategy diagnostic report: Norway 2014, Norway* uses 7.6 % of GNP on education, which is among the highest of OECD countries. The paradox is that even though Norwegian higher education is free of change, and students get reasonable funding for covering part of living cost, as well as subsidised student loans, which is in marked contrast to arrangements in the UK, a high percentage of students do not complete their education (in addition to the drop out problem). The OECD report argues that there are challenges: about 20 % of employee find that they are overqualified for their current job, and there is a mismatch between what business needs with regard to of skills, and the structure of education. Other studies indicate that higher education has not been able to sufficiently support the development of high skills industries in Norway.

These observations have initiated a debate in Norway on the structure of education. The employers' organisation in Norway (NHO) has argued for less theoretical-based education, and more education tailored practically for industry. There is a debate in professional education, whether teachers need a master's degree, or nurse education should become more theoretical. Parallel to this, there is the structural debate on converting or merging the regional colleges with professional, short, higher education programmes, into universities.

15.2.4 Public Management

There have been changes in what is understood as higher education, and how it should be managed. New Public Management (NPM) implies new forms of steering and management through evaluation and measuring systems. Less emphasis is placed on academic communities, and academic freedom. Higher education is seen as a business. Austerity has implied new forms of financing. As more people take up higher education, the idea of free education, which helped create the big leap forward in number of student in the 1950 and 1960s, is being challenged, and in the UK it has been replaced by a system based on fees. There are many more universities than in the past. However, all too often the new universities aspire to emulate the patterns of behaviour of the old universities. The promise of innovation has not been delivered, as conformity has dominated. Even research has been distorted by government approaches to assessing and funding.

The effective privatisation of UK higher education in 1992 meant the end of "public management". Instead it has been argued that universities are simply "businesses", with much to learn from the private sector. This has been compounded by widespread outsourcing of key functions to private sector contractors, protected by commercial confidentiality. The same situation does not apply in Norway. This may present challenges for a comparative study. Universities in the UK are now required to operate as businesses, but without effective shared ownership and governance. Until 1992 the former polytechnics were owned and controlled by local government. When they became universities, they were required to become Higher Education Corporations. Government no longer accepts any responsibility for their financial health, or for sustaining the institutions, for example through building programmes. The future of universities is a matter of responding to market forces, partially created by government policies. The UK Government has abandoned concerns for institutional sustainability.

Points from the UK show how current issues in higher education have widespread implications. Undergraduate tuition fees of about £9,000 per year will leave students with long term debts, to be paid back by graduates. The Research Excellence Framework (REF) will result in changed allocation of research funding to universities, concentrating support in a reduced number of universities; this has accentuated competition and reduced collaboration; the REF has diverted attention from research. There has been reduced overall government expenditure on research: a poor example for business, who are under-investing. Much research for government is conducted by the private sector, and not published.

Increasingly we see the dominance of overseas owned companies in fields such as automobile manufacturing. The UK economy relies heavily on defence manufacturing. There is a shortfall in graduate engineers, who have low status and salaries. There are worries about maths and physics teaching in schools. A large proportion of graduate students are from overseas; few UK students progress to higher degrees. There is a confused and inadequate system of apprenticeships.

There is no policy for regional development. There is only partial and grudging implementation of the Bologna system of higher education.

The same story does not apply in Norway. In the last 10 years, three regional colleges and one scientific school, have been developed into universities, A further reform is expected in the coming years, were one might copy the experience from Denmark and merge colleges and universities into some 5–10 university institutions. This implies that there is a development from higher education being decentralised and regionalised, to now becoming centralists. Norway complies closely with the Bologna process and is increasingly using international assessment criteria to evaluate its own institutions. We might regard the UK scenario as a possible future for Norway, as a form of warning. We can outline alternatives.

At present there are many Norwegian students in UK universities, who are still not put off by the high tuition fees. Norway developed its current higher education programme in the 1960s and 1970s, when it moved from having one university (University of Oslo) to establishing three new universities (Bergen, Trondheim and Tromsø) and some 40 regional colleges with professional education (with teachers and nurse education as the largest field). There has been an incredible expansion of higher education over the last 40 years. In 1971 there were 53,000 students at universities and colleges in Norway. In 1989, there were 125,000 students, and in 2013, there were more than 300,000 students.

To what extent is experience in Norway and at Agder relevant for other contexts without the same financial resources? To what extent is there a supporting financial framework as a consequence of oil and gas revenues? The structure of Norway is similar to other Scandinavian countries without oil revenues. Is education part of national plans for the economy and society after oil? Are key aspects of the Norwegian Model reflected in approaches to Higher Education at Agder? Can lessons from the Norwegian Model be applied to the EU and Liberal Capitalist economies?

The University of Agder is adjusted to the current education system. It has not taken any major proactive approaches. It has tried to be alternative (more regional, more practical or more interaction with work life). It has globalised in many ways, in terms of teaching staff, students, education programmes in English, co-operation with foreign universities both in Europe, US and Asia. Future plans for the University of Agder emphasise Responsibility and Sustainability. That is why they have initiated this book project. They are encouraging our book to formulate further strategies. This must involve learning from overseas experience, good and bad.

15.2.5 Technology

There is the challenge of technology. Some have argued that it even creates entirely new conditions for higher education (Christensen and Eyring 2011). Each successive generation sees technology differently, as it evolves. This impacts work,

learning and higher education. For example, the current authors do not (yet) personally use Facebook or Twitter on a regular basis. However, some simplistic solutions tend to be re-introduced over the decades, such as proposing that all students should be required to learn computer coding, even when the advocates of such policies lack understanding of what is involved. Rote learning and multiple choice testing tend to form part of each educational wave. There is a danger of neglecting key aspects of the links between technology, people and organisations.

As technology has developed, it has changed the context in which we develop theories and exercise ethical judgements. This affects privacy, and even details of study habits, as definitions of plagiarism are refined, and detection is automated. In principle, the internet offers global free access to higher education. There has been an expansion in Massively Open Online Courses (MOOCs), which enable individual students across the world to access leading courses, which they may prefer to what is offered by local universities. However, relatively few students complete these courses and secure qualifications. Communication is often only one way, with a lack of tutorial support. There can be a damaging impact on other universities. This represents a dramatic new challenge, prompted in part by sudden interest by the Norwegian newspapers in MOOCs, offered by major US universities. Rather than concluding that the answer lies in Massively Open Online Courses (MOOCs), we are more likely to focus on new ways of facilitating human interaction between students.

To summarise the discussion so far, the UK and Norway may appear to have similar cultures, but their approaches to higher education have diverged. In Norway, higher education is an investment, accorded high priority for public funding. In the UK, higher education is seen as a cost to be cut, and is subject to market forces. Norway has been building up financial reserves to invest in the economy and society after Peak Oil. The UK is committed to further major cuts in public spending. Social inequality is increasing.

15.3 Discussion

15.3.1 Ideological Challenges

Current political trends may imply ideological changes in what is to be understood as higher education. Implied in the tendencies described above is that higher education is seen as instrumental to social and economic development. It is assumed that students primarily attend university in order to improve their employment opportunities. There is little discussion of how education is a key tool for democratic socialisation, partly because of the continued assumption that universities are concerned with perpetuating academic elite. This is taking place at the same time as the spread of mass higher education.

We discuss in this book the distinctive perspective of the Norwegian model, in which Responsibility and a commitment to Sustainability and Social Equity are claimed to be integral to strategy. As we consider the economic and social context of higher education, we review what is meant by Responsibility, in the context of widespread debates on Corporate Social Responsibility. Is it merely cosmetic, an optional extra? We report on the Liberal Capitalist perspective, and the European Union model, which is situated in EU Employment and Social Policy. The EU supports many academic collaborations and exchanges. The European Union can be seen as a "collaborative learning environment" and even as a "development coalition" (Ennals and Gustavsen 1999). However, many in the UK now favour withdrawal from the EU.

There is a natural tendency for Norway to benchmark against other Scandinavian countries. Somehow attitudes in the UK are very different. The UK looks back to the imagined glory of the British Empire, and tends to benchmark with the USA. The UK lost an empire, and arguably has not yet found a role. These are big ideological issues, which are beyond our book. However, such issues cannot be avoided, if we take higher education seriously. We may want to reflect on the importance of the Norwegian and Scandinavian Models. They could be seen as representing a more sustainable approach to the economy and society than we find in Liberal Capitalism in the UK. This is reflected in views on innovation and regional development.

There may be further distinctive influences for sustainability in Norway. There has not been a strong industrial tradition, so natural resources of farming and fisheries have been crucial. The scale of recent income from oil and gas has prompted a concern for a long term future after peak oil. There is a tradition of community solidarity, and a concern for social equity, which means that social cohesion is valued. On this basis, sustainability may be seen as a Norwegian central concern, rather than an optional extra. How is this reflected in higher education? Are the academic disciplines defined and divided in a particular way to take account of sustainability? Has this been a subject for debate?

Norway is looking ahead, with educational expenditure from the Sovereign Wealth Fund derived from oil and gas. There is a strong tradition of international development, meaning that network contacts are well developed. The University of Agder is looking outwards. At Agder, "Higher Education in a Sustainable Society" can be interpreted in the international context. This book presents the set of foundations, and begins to show their interactions. In spite of these differences and in spite of the fact that there is a difference in scale between Norway and UK, there is the common challenge of the *education divide* in society that seems to go beyond social politics and education model.

15.3.2 How Could "Responsibility" Be Interpreted in Our Respective Contexts?

New conditions must allow us to reconsider some of the ideas we have for higher education: both new technology and the Knowledge Society. We are accustomed to familiar well-tried approaches, but they may have become obsolete. We need to discuss what Responsibility is, under these new conditions. Who is responsible, and for what? Individuals are now more connected in human and technological terms. Will the new generation repeat the patterns of behaviour of their predecessors? This may be important for higher education, where we may previously have assumed the dominance of Liberal Capitalism and a Market Society. As market forces spread in higher education, they often bring with them a culture of irresponsible management (Ennals 2014).

There is a case for new approaches, linked to the Norwegian model. Empowerment, Participation, Involvement and Engagement are vital elements, each facilitated by the use of new technology. We may recognise that students in the Knowledge Society are familiar with social media. The students are an integral part of the new body of knowledge, comprising young people who know. This should be a sustainable basis for the Knowledge Economy. In the Knowledge Society we are likely to find a reduction in hierarchies, and recognition that much important knowledge is held by young people. This may underestimate the importance of experience, skill and tacit knowledge. However, we may find difficulties in communication between the generations, as they use different tools, and for different purposes. There may be less respect for age and wisdom than older workers and academics might expect. So many innovative new companies have been founded by young people. We might want to develop and illustrate some arguments from 'The New Natural Resource' (Johnsen 2013), which so far reviews theory, and has held back from practice.

What would it mean in terms of society/university co-operation? What are the challenges with such a relation? How would it affect the scientific discourse? Are we facing an emancipation of students, the Service University, etc.? We begin to make sense of the implications of technological transformation. In the UK, the spread of privatisation and outsourcing has been at the expense of transparency and collaboration. We cannot ignore the significance of major government policy changes. We need to look into what is understood with responsibility; what does it mean, what and who does it address: Is it a personal matter or a structural phenomenon? The key policy point is that the UK government, through the effective privatisation of universities in 1992, has declared that it takes no responsibility for higher education. It is a matter for market forces.

15.3.3 Higher Education Beyond the National Models

What changes does the Knowledge Society represent? We have been critical of the situation in the UK. There are alternative ways forward. Students can do more than is often recognised. They need to be empowered and supported. This approach changes institutions. We need to explore cases.

The authors contributed to a Norwegian PhD programme, on Enterprise Development and Working Life: with a basis of Action Research. This national PhD programme was closely linked to enterprise development projects, combining theory and practice. In "The New Natural Resource" (Johnsen 2014), this approach is located in the sociology of knowledge. Knowledge can be seen as central to the new economy and society. However, knowledge can be viewed in different ways.

Students' Quality Circles represent an alternative paradigm, which might be seen as complementing MOOCs (Ennals and Hutchins 2012). Students can work together in self-managed groups, tackling practical problems and leading bottom up processes of continuous improvement. They can operate outside and between universities.

Scandinavian traditions offer alternative foundations, for example around Dialogue (Swedish and Norwegian traditions) (Goranzon 1995; Göranzon et al. 2006). The research field of Skill and Technology built up a formidable literature 1988–1995, then emphasised the importance of Dialogue, Skill and Tacit Knowledge. Knowledge was redefined, and located in the context of working life.

Similar approaches have been applied to Regional Development (Ennals and Gustavsen 1999; Fricke and Totterdill 2004; Ekman et al. 2011), and to Learning Regions (Gustavsen et al. 2007). Learning is seen in the practical context of seeking to bring about change. Universities are networked with other actors in development processes.

From experience in the UK, we can identify potential ingredients for an alternative future. In the UK Alvey Programme (Oakley and Owen 1989), IT was the apparent focus for a national programme to develop enabling technologies. The key issues turned out to concern collaborative working, at the levels of individuals and organisations, and with a pivotal role for universities as partners. The underlying core technology for fifth Generation Computers was Logic. This was also developed for education, through Logic as a Computer Language for Children (Ennals 1983, 1985). The younger generation have no fear regarding new technology. A declarative approach to logic enabled students to use their clear descriptions as runnable specifications for programs to solve problems. With the IT Development Unit at Kingston College (Ennals and Cotterell 1985; Cotterell 1988), a research and development unit in a Further Education college, relatively uninhibited by issues of status and disciplinary rivalries, was able to develop new working relationships with companies and community groups.

Since 1997, the UK Work Organisation Network/Workplace Innovation Ltd (Fricke and Totterdill 2004) have been focussing on collaborative working. New generations of projects are enhancing learning in the workplace. There is an

emphasis on partnership, dialogue and learning from differences. As the debate includes higher education and development coalitions, we have addressed issues such as communities of practice. We can now communicate and collaborate across borders, forming new communities and structures based on shared interests.

15.3.4 Communication, Participation and Development

Norway has had a strong tradition of Working Life research. It does not follow that this constitutes a programme, or that it could constitute a programme in the future. To a significant extent, the national enterprise development programmes called ED2000 and VC2010 provided support from this tradition (Gustavsen et al. 2001; Levin 2002). We have entered a new period. The support has ended. Chapters and books have been published, contributing to doctoral programmes. There is a substantial published literature (Ennals and Gustavsen 1999; Fricke and Totterdill 2004; Gustavsen et al. 2007; Ekman et al. 2011), and new generations of researchers have recently completed their PhDs. However, it is necessary to think afresh on how this tradition can be taken forward.

The tradition we roughly refer to here reflects many different persons and milieus, but with common features that we find relevant for future dialogue. First of all, it is based on some of the anti-positivist discussion that dates back to the 1960s and 1970s. Secondly, there is a clear reference to what was called in the 1980s and 1990s the communicative turn, the turn to practice, the narrative turn, the linguistic turn, etc. in social science. Thirdly, it is a tradition with a practice base, and with strong reflection on the theory—practice relationship, not least as the discussion has been within Action Research. Fourthly, this tradition has been based on values of collaboration, participation and democratic dialogue, as important inputs to development processes, both inside organisations, and in larger social entities such as regions, national movements, etc.

Much of this tradition questions the "conventional" view of social science as an independent, expert led system. It has in common an acknowledgement that social scientists engage in social dialogue, that knowledge development happens in a social setting, and that the researcher herself is part of the process that is researched. In this there is a lot of implicit knowledge that the researcher relies on. To what extent is it possible to make this knowledge explicit, for example with the implementation of Dialogue Conferences (Gustavsen 1992) or the Dialogue Seminar Method (Göranzon et al. 2006)? There is no shortage of books, but do they enable the reader to use the tool, or implement the method? We suggest that it may be the case that one learns such approaches or tools through engagement, and through shared experience. In the UNESCO "Experience Centred Curriculum" (Wolsk 1975) in 1975, the leading UK classroom teacher was an experienced colleague, in that same way as with the "Dialogue Seminar Method" with Bo Göranzon, and the "Dialogue Conference" with Bjorn Gustavsen. Each had documented the steps that are to be followed, but they could not document the expert insights which they

brought from decades of experience. Successors who simply follow the instructions cannot hope to achieve analogous results.

Young researchers have often been directed towards the use of particular development tools, reassured by the existence of a substantial literature. Perhaps the literature, and pressure to publish information in an explicit form, have developed at the expense of traditional apprenticeship. If so, there is little time to lose. Another generation of researchers are nearing the end of their working lives. The Centre for Senior Policy in Oslo organised a conference in June 2010 on "Older Workers in a Sustainable Society", resulting in a book (Ennals and Salomon 2011). The approach at the Work Research Institute is to regard older workers as a vital resource: reservoirs of experience, skill and tacit knowledge. Older researchers are no exception. How can their tacit knowledge be accessed? If we fail, what will we lose? What does this mean for higher education?

The Swedish power company Vattenfall have engaged in the Dialogue Seminar over a number of years, and have developed policies to address older workers. They now want to introduce Students' Quality Circles (Ennals and Hutchins 2012) into Adult Safety Education in control rooms of power plants. People need to understand each other in advance of an emergency, when it is too late to open communication. New programmes are being initiated and proposed, for example a Masters programme in Innovation and Knowledge Development, building on a foundation of work on "Creating Collaborative Advantage" (Johnsen and Ennals 2012). By presenting these thoughts, we are also indicating future activities that can build on the tradition that we describe. We need to reflect and learn from some past experience. Addressing what happened to "the communicative turn" could be one interesting discussion. We also see in the field of innovation that the need for wider discourses and approaches in the practice field is not met by current disciplinary based concepts. In the same line of reflection, we think that current development tools are not being discussed in relation to their foundations. This is happening at the same time as high profile economists and strategists like Michael Porter and Jay Barney are exploring concepts like sustainability, and shared values, which must imply a need to revise approaches to competitive advantage. We think the tradition we refer to here has a lot to offer in this context.

In order to offer a framework for discourse, we can think along different dimensions. What we propose is s cross disciplinary discourse addressing issues like sustainability, participation and democratic values in development processes. This framework alone allows for many different disciplinary and thematic inputs and discussions. Questions of dialogue, questions of governance, and questions of business strategy are all relevant here. Furthermore, we are thinking of a framework that is multi-level, addressing an actor level, an organisational level, and a societal level of analysis. Thirdly, we see that there is a whole "value chain" of knowledge development, that stretches from philosophical discussion to practical action and advice, which we find relevant to address. The matrix in Table 15.1 indicates the scope of our framework.

Table 15.1 can be used in order to discuss the role of higher education, both on how it contribute to individual development and society and societal structure.

Table 15.1 Engagement in sustainability

	Fundamentals philosophy	Concepts development tools	Practice, use, advice
Micro level (the individual)	Epistemology	Individual learning an development	Individualise, creativity, mobility
Meso level (the organisation, the network)	Organisational epistemology	Organisational learning,	Sharing ideas, social dialog, access to information
Macro level (society, global)	Fairness of rules, freedom of speech, common good	Democracy, communicative competence	Communicative infrastructure

15.3.5 The Penny University

Some of these developments can now be discussed together in the context of visions of the Penny University, which enables us to think more radically. An alternative approach to higher education is available: components have been tested, but have yet to be brought together.

We have outlined recent departures from traditional ways of thinking in higher education. We can add insights from the debate on The Penny University. The concept of the Penny University derives from the first London coffee houses, where for the price of a cup of coffee, there was access to newspapers, discussion, and political debate. By contrast, access to higher education, in countries such as England, is now being reduced by the imposition of high tuition fees. Universities are expected to compete in a market, to which private providers are gaining access. Having paid their fees, students expect to receive their qualifications. In many other countries, higher education is free.

There have been various long-standing traditions, such as communities of scholars, where students and academics live and study together. There have been pilot interventions. UNESCO has not provided sound foundations, beyond official credibility. Major countries such as the UK and USA have withheld support. UNESCO themes are appropriate in principle. The World Council for Total Quality and Excellence in Education (WCTQEE), which has been co-ordinating Students' Quality Circles, does not have formal legal status as an NGO. Many of the leading figures run private schools, or are Quality consultants. Physical attendance at overseas international conventions has tended to be for small elite only.

Both the UNESCO Associated Schools Project network and WCTQEE have operated largely at school level. At university level, Students' Quality Circles could usefully complement MOOCs. We need large scale pilots, but these need to be owned and self-managed by students, rather than "rolled out". Quality offers a focus for courses at undergraduate and postgraduate levels, and for work-based learning. Universities which offer open access facilities are also obliged to operate as businesses. There are mixed messages. Some international companies offer

sponsorship in kind, with distribution of materials and hosting of events, and often they expect tax breaks. This is piecemeal.

15.3.6 Beyond National Boundaries

As a stepping stone to a wider collaboration, and a possible UN Global Compact project, the focus here is on facilitating collaboration across national boundaries. The collaborative process on the web should be private, but the results can be public. There are important issues of web design and supervision. Wider readers should be able to comment, through a separate route. Such a facility should be available from the start, with pilot reader universities. These might include, for example, the University of Fort Hare in South Africa, the University of Mauritius, the University of Lahore in Pakistan, and the University of Kathmandu in Nepal. Wider readers may be distance learning students, coming together in Students' Quality Circles, and securing qualifications, for example from the Chartered Quality Institute in the UK. Outputs could include joint online publications, contributed and edited from the partner universities, but available to a wider readership. The editorial board should involve academics and students from the partner institutions. Publications could be available in hard copy if there is support from partners or corporate sponsors.

Partner universities often have the facilities to produce video material for online use, and to support videoconferencing, linking groups. Through collaboration, the range of available material, including supporting text, will be increased. Opening wider access to learning through the Penny University should not be at the expense of losing quality in partner institutions. Quite the reverse: pilot universities should benefit from engaging in international collaboration and publications. Students may engage in international exchanges, virtual placements, and joint project working. Any pilot project needs to be endorsed by Deans and Course Directors in partner institutions. Given the evident scope for expansion and further development, careful evaluation is needed. No difference is necessarily required made to existing rules and regulations of partner institutions, or of individual courses. An additional international collaborative dimension is added to the learning process.

Discussions have begun with potential corporate partners, for whom the Penny University forms part of a strategic approach to CSR, with an international perspective. They are not competitors, but can derive benefit from both individual engagement and participation in a UN Global Compact. Having long emphasised competitive advantage, they are now coming to recognise the benefits of collaborative advantage. There will be different detailed obstacles in each case. There are many young people who need appropriate Higher Education. Going beyond Europe, there could be exciting links with the South Asian and Southern African regions, as well as Latin America. If we are looking for a rival operation, apart from the USA, we should consider the Chinese. They have over 100,000 students and scholars in the UK, and an increasing presence in Africa.

Of course, we do not have to envisage only one Penny University. There will need to be many if we are to meet the needs and aspirations of young people of all ages for Higher Education. There could be many models. One would be for conventional universities to support linked Penny Universities. This might be an extension of the current MOOCs. Another would be to extend communities of practice, which can cross borders of disciplines and countries. Civil society organisations and NGOs have established communities and links, to which learning functions could be added. We can then regard companies as falling into that category. It also offers a model for organisations such as churches to contribute. We could envisage initiatives by national governments, the EU and UN, with the objective of seeing Penny Universities as contributing to reducing inequality, and a sustainable future.

In principle there could be a UN Global Compact, initiated from the University of Agder, involving companies, universities, NGOs and UN agencies such as UNESCO. In the UK, partners could include the Chartered Quality Institute and DHI Quality College. There is a potential unifying theme of Empowerment. Operationalising this into a sustainable programme, which includes the award of qualifications, is not easy. The European Bologna process offers a consistent model in the background.

15.4 Conclusion

In this chapter we have argued that there is a knowledge and education gap in society that should be taken seriously; that there are different models of higher education systems, where none of them at the moment seem to be able to fully deal with this knowledge gap problem, and we have pointed at methods and traditions of creating engagement and dialogue on these issues. We forward this challenge to the university to address at a strategic level. Perhaps one of the reasons why the knowledge gap problem has not been solved is that it has largely been seen as a national/structural problem. It is also local and global. A way forward might be to challenge universities to address this in their local/regional context, building local relations to other actors that together can offer ways forward.

As Habermas observed, the coffee shop can be a learning environment. Similar claims can be made for some workplaces. Do we need to build new specialist university classrooms and institutions? We could take the background arguments for innovation in higher education such as the Penny University, and apply them to a practical case, such as Agder, with potential initial extensions to the set of European cross-border regions, such as the South Baltic Sea Region. This could be of interest to the European Commission. It would also be a great way of internationalising Agder.

The Penny University could continue to be the name of a minor academic discourse, divorced from practice. Alternatively it could bring significant added value to existing discourses which to date have been separate. Participants in the

existing discourses need to be able to feel co-ownership of the new collaborative practice. In The Penny University, the exchange of knowledge is separated from the exchange of money. Using available technologies, access to knowledge and learning can be extended. The challenge is for this approach to higher education to be effective and sustainable. Much depends on the approach that is taken to knowledge.

Mutual competence building can imply developing technology that links people to each other and to knowledge development, but it should also imply developing the social skills of using and discussing this knowledge in a broad sense. With the increased knowledge divide in society, it is important to focus on how to bring more people into the social, knowledge based conversation. The Penny University represents one approach: a university for a sustainable society.

Part VI
Conclusion

We have noted throughout this book the dual nature of higher education as both instrumental and reflexive. Addressing sustainability similarly invites both instrumental and reflexive approaches. Scientific studies of, for example, environmental degradation and climate change, continue to be central contributions to society by scholars within higher education. As the same time, the way to address environmental challenges cannot easily be derived from scientific studies or calculations alone. Sustainability remains an essentially contested concept and efforts to alleviate the associated challenges may trigger a range of responses, some of which may be deeply conflicting or mutually exclusive. Sustainability is, therefore, best addressed discursively: we need to open up for conversations of what are appropriate and balanced approaches to sustainability challenges. Universities can be participants in such conversations, and can, ideally, work actively with Work Life institutions to generate instrumental knowledge, as well as to reflect jointly on what are appropriate measures. This duality of the instrumental and the reflexive is mirrored by another key message running through many of the chapters in this book: scholars need to address sustainability both from scientific vantage points as well as from an emotional one. The distance that scholarly inquiry may induce in students and teachers alike may prevent us from grappling fully with the challenge that sustainability poses. As Grelland notes in Chap. 2, the role of education is both to foster an understanding of scientific inquiry, as well as to reawaken and develop our natural attitude for care.

We can increase our understanding of our physical and intellectual worlds by engaging in efforts to change them. We need committed action, and not simply detached inaction. Universities have a central role to play. Universities need to learn from experience. Their priority should be to equip academics and students with the capacity to reflect critically and to *build mutual competence*.

The University of Agder is not claiming to offer a ready-made strategy for sustainability, which can simply be borrowed by universities around the world. Our approach has been to reflect on the situation of the University against a wider background. Agder University is not seen as an institution characterised by strong

directive top down management. It is a learning community, looking within to find the basis of sustainability. A series of academics, from different disciplines represented at Agder, presented accounts of their disciplines, with a perspective on sustainability that is based on building mutual competence. As a result, we have a multi-disciplinary discussion in which sustainability is embedded in academic theory and practice, rather than being regarded as an optional extra. For participating academics, they can feel co-ownership of an ongoing bottom up process. It is for the University authorities to consider how to respond to the initiative.

In another university there would be a different set of disciplines, and a different local context, while being based in the same world. Where academics take the lead, and university managers are prepared to follow, we suggest that universities may be able to walk the talk of sustainability. We are making important assumptions about the nature and purpose of universities. Arguably those universities which cannot walk the talk may find that their own survival is in question. *Mutual competence building* has to be built. It does not happen automatically. It draws on the local culture. At the University of Agder this may involve some kind of strategy. As a first step, our book shows the initiation of dialogue across the disciplines.

Chapter 16
The Challenge of Mutual Competence Building

Hans Christian Garmann Johnsen, Stina Torjesen, and Richard Ennals

16.1 Introduction

Mutual Competence Building has emerged as a key concept when working on this book with our colleagues at the University of Agder. In this conclusion we develop and explore the concept further in relation to sustainability. Our point of departure is the definition we presented in the introduction: mutual competence building is a conversation between scholars and societal and work life partner organisations about what sustainability, and efforts to create a sustainable society, might entail for distinct sectors.

In this concluding chapter we put forward a twofold argument: addressing sustainability calls for both critical and utopian thinking, as well as instrumental and practical insights for how to undertake necessary adjustments. Mutual competence building reconciles, at least partially, these opposing approaches. Moreover, mutual competence building ties in with a more profound insight of the book, namely that a balanced society is a precondition, enabler and embodiment of sustainability. Moving towards sustainability is a profoundly complex challenge. Societies need to increase their knowledge of what kinds of alternative solutions may be possible, and they need to ensure that as many layers as possible in society have the necessary skills to relate to and discuss these solutions. This calls for more knowledge to be built and more dialogue to unfold. Universities are uniquely positioned to facilitate a quest for more knowledge and to reach out to broader segments of the population. A strong partnership with societal and work life institutions will help facilitate this. Before we proceed with a more detailed

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discussion of these issues a recap of some of the key themes and messages in the book may be of use.

16.1.1 Short Review of the Book

In Part I, *sustainability in a humanistic and cultural perspective*, we presented three chapters that all discussed sustainability and education from the perspective of personal attitude and behaviour. The argument here was that sustainability is linked to how we see our self in different roles and how we then communicate to others what are important values to hold. This creates social norms. However, it is also important to acknowledge that social norms are already there, and that our interpretation of issues like sustainability to some extent is embedded in the historical and cultural forming of our environment. Mutual competence building is something that can be brought into the pedagogical approaches, leaning students to reflect on the context and culture that are part of, and being in dialogue with the environment.

In Part II, *sustainability in life science* we discussed sustainability from the perspective of life science. Life science is directed towards helping people live a decent and healthy life, including getting the care and conditions that make this possible. Sustainability implies seeing welfare and health services in a sustainable perspective, reducing the potential conflicts between giving people a good life and sustaining the environment. Mutual competence building is both a question of developing skills, but also a question of developing competence in judgment and to be able to see single action in a broader perspective. To be competent to see and understand the consequences of ones actions implies having cognitive and affective abilities to handle the information.

In Part III, *sustainability in technology and planning studies* we discussed perspectives on how technological education and planning studies can approach sustainability. Technology has traditionally involved very instrumental studies, aiming at finding good, technical solutions to concrete tasks like building bridges or houses, of machines. By addressing sustainability, we argued that not only the efficiency of technology but also reflections on the social and human environment that the technology becomes part of are relevant issues. Mutual competence building is a matter of developing a balance between different concerns. However, balance does not necessary mean compromise between interests. It might as well mean that new insight is taken into account. Balancing means to both have a larger or systemic understanding of what ones actions plays into, but also a critical attitude to the alternative one is offered.

In Part IV, *sustainability and the teaching of business development*, we presented perspectives on business education in light of sustainability. We have shown that there are different and contested knowledge regimes in the field. The arguments we presented were both descriptive and normative. It is obvious that there are many cases where businesses misuse power and behave in non-sustainable ways. How can business education help avoid such misuse? In normative sense, we

argued that one can discuss what sustainability is, and what behaviour is acceptable in perspective of sustainability. In a descriptive sense we argued that one can expose misbehaviour. However, it seems that a core responsibility is in business itself. The case of the Eyde-network at Agder offers some promising hope. Here it is industry itself at high executive levels that has taken initiatives to address sustainability, and has initiated vocational training to increase that level of awareness about this issue in the whole organisation. Mutual competence building means here to develop reason, responsibility, justice and ethics. It means to see businesses in larger perspective and to see sustainability as an integrated part of management.

In Part V, *the sustainable university*, we addressed the issue of sustainability in higher education at a structural and strategic level of the university. The issue was what does the university do in terms of strategies that addresses sustainability, and to what extent are these significant for society? We have pointed at the danger of using CSR as a shield for greening, without there being a serious content related to it. Mutual competence building is to go beyond rhetoric. It's not the word alone, but the sincerity and commitment behind these word, that count. This implies to take the strategic issues seriously. Addressing sustainability will have strategic consequences.

16.2 A Balanced Society as Precondition, Enabler and Embodiment of Sustainability

As we see it, one of the greatest threats to sustainability in society is a society in imbalance. By this we mean that a society where the social dialogue has broken down, which is in conflict, or where the focus is not on the wellbeing of its citizens, is not a sustainable society, neither in social terms nor in terms of being concerned with the environment. Being able to maintain a broad social dialogue requires competence. Society is increasingly complex. Many of the things we have around us are based on technologies that are very advanced, are developed in global networks, and are produced in distributed value chains. It requires lots of knowledge to be able to understand this complexity.

Thus, as a first reflection it is important to highlight the need for higher education through society. The education gap, and a situation where society is critically dependent on experts only, creates a vulnerable and unstable situation for society.

We acknowledge that this is a complex and large field to move into, and we therefore did not have the ambition to give a comprehensive account of what a sustainable society is, and what role higher education can take in this. However, we have tried to indicate the scope of our understanding of sustainability by arguing that it includes both environmental concerns and the exploiting of natural resources, but also issue on how society is structured and organised, how inclusive and democratic it is, and to what extent the social dialogue is able to bring forward

critical, rational and competent discussions of issues of sustainability. We have called this *Mutual Competence Building*.

A balanced society needs lots of higher education. And higher education of a kind that relates to is updated on and can engage with sustainability. And give the complex insights and approaches needed to understand the issues at hand.

Moreover, universities endow their students with the necessary professional and life skills for them to embrace and enact change. The teaching at bachelor and master levels helps students use the skills easily acquired in one field in others. Executive education is likely to be more important as we move forward, as former students upgrade and reframe their skills sets in a period of rapid change. Universities have a role in enabling social mobility, which ties in a broader agenda on equality that we believe is associated with sustainability. Universities can take this role in a multitude of ways.

16.2.1 Does a Sustainable Society Imply a New Role for the University?

The University as an institution is one of the oldest in society. If we look at the most sustainable organisations in society; we will find that universities are well represented. So, universities have been able to sustain shifting social regimes. However, they have also changed over the years. During the Enlightenment, the idea of education in general was argued. Among them was Wilhelm von Humboldt who is also known for having proposed a modern form of university where research and education are integrated. Over the last decades, universities have been asked to take on a third mission, that of being a development organisation in society. Universities are increasingly seen as instruments, not only in education policies but also innovation policies. Does this affect independence and academic freedom in universities?

One could say that universities have been able to be sustained because they have had a certain independence from society. As social and political regimes have changed, universities have been able to continue their activities to some extent independent of these. This independent role of the university is so deeply rooted in society that, for instance, in the new revision of the Norwegian constitution; the independence of research is explicitly stated. In the spirit of the enlightenment, one would say that knowledge is a good thing, and more knowledge for more people will benefit society. So, one could argue that higher education and universities have survived because they have been sustainable. Or put differently, the most sustainable contribution higher education can give society is knowledge end education.

However, these more general reflections might not fully catch the issue at stake. The question is if sustainability gives directions for new policies of the university and higher education, both related to what and how one teaches, and related to the role of the institution in society. As awareness spreads of the problems of

sustainability, climate change, inequality, what is the impact on Norwegian universities? In the case of Norway, we might ask for instance if the culture of Agder is affected by links with oil and gas? "Sustainability" as the name of a conversation, to which people come from different backgrounds, and with varied emphases. There could be no overall "conclusive definition", with a perfect scientific language. The overall idea is that the discourse, and the life of humans on our planet, should continue. Perhaps there is an implied departure from the orthodoxy of "the survival of the fittest".

A complication is that sustainability discourses are often localised. Both San Francisco and Portland would boast commitments to sustainability, but the world views are not the same. We could say the same about Oslo and Grimstad. Sometimes to speak out in public can mean that one is regarded as "An Enemy of the People". Denial is not only the name of a river in Africa. We could imagine presenting an argument on sustainability supported by references to a number of Ibsen plays. Of course, many of the key arguments are not stated explicitly, but there is an appeal to the shared experience of the audience. There can be a similar discussion of Shakespeare, and arguments for Hamlet killing his uncle.

After some time immersed in such a sustainability discourse, for example in an appropriate university, "we know how to go on". However, this may not in itself give rise to the changes which some may advocate. A cynic would say that the *Harvard Business Review* only enters the debate when it is safe or necessary to do so. Michael Porter moved on to discuss collaborative advantage once his consulting company Monitor, specialists in competitive advantage, was bankrupt. This may refocus our attention: once the discourse is under way, how can actionable knowledge lead to action?

We might further develop Table 1.1, that we presented in the introduction, and be more specific on the issue of what we know and what we can do: Our pedagogy needs to change so that care and scientific inquiry both come to take centre stage. We need to co-operate more actively with work life institutions. We need to continue generating scientific knowledge on local regional and global sustainability challenge. Table 16.1 has two dimensions: (1) Knowledge of important limits to development and growth, (2) Knowledge of cause/effect in areas that are potentially in conflict with these limits. By combining these, we can envision different challenges related to developing a sustainable society.

Of course the table above relates to discussions of what is a sustainable society. As presented in the introduction and throughout the book, there are many and different discussions about the sustainable society. Some argue that sustainability means that we need to change the current capitalist economic regime. This view has received increased attention after the financial crisis in 2008, which showed how the current financial regime was unable to self-adjust. Some call for an alternative market model, called the ethical market model. Some even argue that certain national economic models are more ethical than others. In example Atle Midttun in the book *CSR and beyond*: *A Nordic perspective* (Midttun 2013), makes the argument that the Nordic countries represent a form of civilised capitalism.

Table 16.1 The extent of our knowledge of limits to growth and remedies

	High knowledge of important limits to development and growth	Limited knowledge of important limits to development and growth
Good knowledge of cause/effect in areas that are potentially in conflict with these limits	Example: We know how much CO_2 is released and one can set limits for emissions of and. Implies international standards and national commitment	Example: Sustainability is not just about CO_2 and climate. In many industrial and technological areas, we know too little about what the planet can withstand and also how the social impact is. So, the technology is known, but we do not know where the boundaries are, therefore, a need for institutions based on academic research combined with international panel-institutional solutions
Limited knowledge of cause/effect in areas that are potentially in conflict with these limits	Example: We know what emissions of methane gas can mean but little is known about the impact of warming on methane emissions. Increase research organized by independent institutions like universities	Example: We now have available a vast amount of knowledge about the technologies that could potentially save the planet, but also potentially undermine sustainability. Encourage entrepreneurship and innovation that takes the available knowledge used in new ways

On the other hand there is a strong CSR movement that argues that social responsibility can go hand in hand with the market economy. It is a matter of business strategy. Large, multi-national enterprises like Nike or Starbucks use CSR as part of their branding and positioning in the market. But there are sceptics. Die Zeit asks on the front page on 9 January, 2014: Is Ethik käuflich? Perhaps being good (meaning moral) and being efficient (meaning being strong in the market) simply are two different things that cannot be seen as one. Also, concepts such as "good" and "efficient" may be seen as culturally situated.

A further argument in the debate is that, to the extent that we are facing a sustainability challenge, not least related to climate, we can only solve it through the market. This is the argument of William D. Nordhaus in his 2013 book: *The Climate Casino*: *Risk*, *uncertainty and economics for a warming world*. The issue here is how do we solve the climate challenge? Can we solve it through binding, international rules? Many years of attempts to do that, has shown how difficult it is. Nordhaus' argument is that a combination of rules and market is needed. This is an argument that has strong support in a country like Norway. However, in many other countries this is not the case.

What then about issues those are less specific than climate change? Climate change, although we can disagree about its causes, can at least be stated and

measured in terms of temperature. With issues like urbanisation or social inequality, there are fewer consensuses about what this is, how it should be measured and what it implies. Similarly if we talk about sustainability in terms of a social model of moral or ethical rules, we will find that consensus decreases. Some argue optimistically that new technology is the road into a new, more sustainable future. Information technology has made it possible for people to communicate over longer distances and with more people, making social mobilisation and counter cultures possible. This is seen as a development towards more democratic societies, and as a treat to authoritarian regimes.

16.3 What Is Mutual Competence Building?

Across these five parts of the book we found some recurring themes and approaches. These address the particular challenges associated with the sustainability agenda for higher education.

Sustainability as a personal concern: The chapters in the first part of this book in different ways exemplify and explain how sustainability is founded in a personal concern. This has implication for teaching, both in the sense that teaching should give room for personal reflections, and the fact that teaching should acknowledge the context in which it is embedded. In both cases it is argued that *mutual competence building* is a result of mutual reflections. In this sense one can say that reflections are encouraged by the meeting between scientific knowledge and the life world. It is a perspective that implies a critique of instrumentality in teaching. Our learning is dependent on our ability to refer more abstract concepts and thinking to an interpretation of the concrete situation of our experiences. The same point is made by Vasstrøm and Lysgård in Chap. 9 on planning. Planning might have overall intentions that are good, but needs to relate to the lifeworld of people what put into practice. There is a danger if there are planning experts with their own knowledge regime, which dictates what should be the content of a particular plan. Actually even if there are agreements on overall themes like sustainability, there might be many different and conflicting opinions on what it means in practice. Deliberative planning is a way to address this. A similar argument is found in Chap. 8 on sustainable manufacturing.

Sustainability as a holistic perspective: Several chapters in this book argue for a more comprehensive and holistic perspective in discussing topics of sustainability than is found in the present, disciplinary divided structure of higher education. Chapter 7 on technological education, calls for seeing the different topics in technology in a system perspective. It also addresses the nature/society divide. *Mutual competence building* is in this perspective a matter of learning across disciplines. Being context sensitive: Many contributions in this book point at the need for a discussion of sustainability that is sensitive to context, like type of business or type of education. This means that sustainability in practical terms

will mean different things. It supports the argument that competence building in a local as well as a universal challenge.

The cross disciplinary insight: Many of the chapters argue for a cross disciplinary insight in order to address sustainability. Sustainability is not about one thing alone, but about things in their complex interrelations. Therefore a single discipline can hardly address that alone. In fact, sustainability implies that different aspects of society are in tune with each other. Doing improvement in one place can harm another. The discussion between development and perseveration is an example. To handle the complexity of externalities, one has to develop broad insights. MCB is about developing these interdisciplinary skills.

Learning from practice: Many of the chapters in this book argue that sustainable education has to relate to practice. It is the issue of MCB of improving ability to apply theory in a specific context, but also of taking back to theory experiences from practice. This require context of learning and reflection. Society needs places for discussion in a nonpartisan and open way. Higher education can take that role.

Addressing the knowledge gap: The university should, instead of window dressing or rhetorical gestures like profiling it as green, look at what it does in real terms of building a sustainable society. Ethos is an expression of the sincerity of the ambitions one have. One of the biggest sustainability issues that higher education can address is the knowledge and education gap in society. MCB is about bringing the broad mass of people into the knowledge discourse should be a major objective for higher education.

Beyond care: The second chapter in this book argued that care is an inherent part of being human, taking care of others is natural to the human being. So sustainability is just a natural extension of our human reason. However, we argue that there has to be a social, communicative and institutional infrastructure that makes it possible to utilise human care. This is part of MCB. Higher education plays a natural part is such an infrastructure.

The above themes highlight the complex meanings and challenges that scholars associate with sustainability. Holistic and interdisciplinary approaches are essential, yet at times we need to understand the specific sustainability issues that manifest themselves most strongly within a given discipline. Moreover, our contributors encourage us to activate and draw on our ability to care, while at the same time maintaining a critical distance.

It is, clearly, impossible to develop a synthesis of these diverging approaches, if indeed that would have been desirable. All approaches and themes listed above offer useful guiding principles and insights for scholars that are engaging with sustainability issues. However, even if outlining a comprehensive account of what sustainability in higher education entails seem futile, a more practical mode for working on sustainability issues can be elaborated.

16.3.1 A Mode for Addressing Sustainability in Higher Education: Mutual Competence Building

The entries in this volume have highlighted the collaborative relations that groups of scholars within universities develop with industry or other work life institutions. We believe such collaborative relations constitute an ideal arena where distinct sustainability challenges and potential solutions can be explored. Embarking on such joint exploration will initiate a process of mutual competence building on sustainability for scholars and for work life partner organisations.

In an ideal form, mutual competence building on sustainability has the following features. First, work life partners are able to tap into basic research and long term thinking that resides within universities. Universities for their part are brought up to speed with the current challenges facing industry and scholars and can learn from the attempted solutions that are being forged. In the sphere of climate change for example universities are able to forecast long-term ecological and political trends that will matter to companies, while the industry can offer insights into the current adjustments being undertaken and progress on utilising and implementing applied research.

Second, universities are uniquely position to critically and independently assess societal trends and the role of work life organisations in these. The critical and independent assessments are of vital importance to work life organisations, even if, potentially distressing. These critical insights can help, at least indirectly, guide long-term strategy and quests for improvements in performance. Work life institutions are, by contrast beholders of vast instrumental insights, which will be importance for the adjustment of social and productive trends. In relation to consumption for example, universities must expose the and explain negative features of current consumption patterns, including an understanding of how consumption shape identities and culture, while in ecological terms how current consumption place an overly strain on finite resources. The industry for its part, hold considerable knowledge on how to practically allow for shifts in consumption that may improve both social and environmental patterns. Crucially, however, the potential of the critical assessments and the instrumental knowledge will only fully be utilised if there is a substantial dialogue between universities and work life organisations.

Third, universities are uniquely positioned to uncover unfolding patterns of inequality in society in all its forms, including in social, economic and ecological terms. They may also be uniquely positioned to elaborate responses to these, including profoundly utopian ones. Work life organisations, simply by virtue of being active players in the economy and society, form part of, and help reproduce patterns on inequality. An exposure to the mechanisms producing inequality and universities' ideas on how to respond can provide important insights to work life institutions, while for universities, a dialogue on these matters can help reshape utopian ideas into more workable responses.

Fourth and finally, mutual competence building can be closely tied to provision of lifelong learning for industry and government organisations. Universities can

provide employees in work life organisations with new knowledge needed in order to explore or embark upon adjustment and transformation of activity that are more sustainable. This will typically take the form of tailor made executive education programmes that can be offered to employees at all levels in an organisation. The design of these courses will enable for considerable exchange of perspectives and insights between universities and work life organisations.

This ideal form of mutual competence building outlines above is **Mutual**, rather than hierarchical and top down. It implies reciprocity and parity of esteem, and provides a suitable foundation for dialogue. The focus is on **Competence**, implying engagement and practical action. This is not to denigrate theory, but **MCB** implies a recognition that people need to know how to do things, rather than just talking. The objective is **Building**, with a continuous iterative process. Complete success is not possible: we may get close, but we will never arrive. We could argue that **MCB** is a radical but pragmatic approach, which captures the essence of Sustainability, and locates it in institutional and relational contexts across the economy and society. If such an approach were to be applied in education, industry and politics, they would be transformed.

We therefore call for the development of *mutual competence building*, and have challenged different aspects of higher education in this regard. Firstly, this concept challenges the disciplines in defining sustainability, and to see how knowledge development can happen in a sustainable way. It also addresses the relation between theory and practice. We have identified three "levels" of this discussion; the disciplinary level, the teaching level and the strategic level of the university.

Sustainability is often presented as a response to externally driven crisis. This book demonstrates a more proactive and positive perspective. As with Disaster Recovery Planning, **MCB** sets an alternative agenda, and creates an atmosphere of resilience. By being prepared for serious challenges, **MCB** also underpins routine social, economic and political operations.

One interesting complication is that **MCB** is recursive, rather than simply iterative, and it is embedded in social capital. At each stage the foundations need to have been mutually built and tested. Education has a fundamental and irreplaceable role. The transition to industry should be smooth. Intergenerational relations are vital pillars of sustainability. The Penny University and Quality Circles offer bridging structures.

The above outline of mutual competence building in its ideal form is not, of course, without problems. One particularly stark difficulty pertains to the idea that critical thinkers and ideas may easily interact and mesh with the instrumental knowledge and practices residing in work life organisations. This may not always be the case, indeed overzealous efforts to bring about a dialogue may risk of diluting important critical aspects, or alternatively risk confusing or undermining progress within the instrumental sphere.

Moreover, there are a number of preconditions that most likely will need to be present if mutual competence building is to succeed. One important precondition is associated with the strength of universities. Clearly, university scholars and units need to match the level of expertise and excellence that may reside with work life

partner organisations, and they must be sufficiently updated on new trends in order for a meaningful dialogue to be initiated. The entails a sufficient level of funding for universities and it demands of scholars that they take serious efforts to stay current within their fields. A second vital precondition relates to the level of trust and dialogue in general in a society. The Nordic countries have a particular advantage in this respect due to the strong tradition for cooperation and trust building across sectors. However, trust and dialogue are likely to be possible in a range of other settings, although efforts to establish the necessary trust to be established may be called for.

16.4 Conclusion

We have noted throughout this book the dual nature of higher education as both instrumental and reflexive. Addressing sustainability similarly invites both instrumental and reflexive approaches. Scientific studies of, for example, environmental degradation and climate change, continue to be central contributions to society by scholars within higher education. As the same time, the way to address environmental challenges cannot easily be derived from scientific studies or calculations alone. Sustainability remains an essentially contested concept and efforts to alleviate the associated challenges may trigger a range of responses, some of which may be deeply conflicting or mutually exclusive. Sustainability is, therefore, best addressed discursively: we need to open up for conversations of what are appropriate and balanced approaches to sustainability challenges. Universities can be participants in such conversations, and can, ideally, work actively with Work Life institutions to generate instrumental knowledge, as well as to reflect jointly on what are appropriate measures. This duality of the instrumental and the reflexive is mirrored by another key message running through many of the chapters in this book: scholars need to address sustainability both from scientific vantage points as well as from an emotional one. The distance that scholarly inquiry may induce in students and teachers alike may prevent us to grapple fully with the challenge that sustainability poses. As Grelland notes in Chap. 2, the role of education is both to foster an understanding of scientific inquiry, as well as to reawaken and develop our natural attitude for care.

We can increase our understanding of our physical and intellectual worlds by engaging in efforts to change them. We need committed action, and not simply detached inaction. Universities have a central role to play. Universities need to learn from experience. Their priority should be to equip academics and students with the capacity to reflect critically and to *build mutual competence*.

The University of Agder is not claiming to offer a ready-made strategy for sustainability, which can simply be borrowed by universities around the world. Our approach has been to reflect on the situation of the University against a wider background. Agder University is not seen as an institution characterised by strong directive top down management. It is a learning community, looking within to find

the basis of sustainability. A series of academics, from different disciplines represented at Agder, presented accounts of their disciplines, with a perspective on sustainability that is based on building mutual competence. As a result, we have a multi-disciplinary discussion in which sustainability is embedded in academic theory and practice, rather than being regarded as an optional extra. For participating academics, they can feel co-ownership of an ongoing bottom up process. It is for the University authorities to consider how to respond to the initiative.

In another university there would be a different set of disciplines, and a different local context, while being based in the same world. Where academics take the lead, and university managers are prepared to follow, we suggest that universities may be able to walk the talk of sustainability. We are making important assumptions about the nature and purpose of universities. Arguably those universities which cannot walk the talk may find that their own survival is in question. *Mutual competence building* has to be built. It does not happen automatically. It draws on the local culture. At the University of Agder this may involve some kind of strategy. As a first step, our book shows the initiation of dialogue across the disciplines.

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