



# Transforming Our Worldview Towards a Sustainable Future

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## NEED FOR A PARADIGM CHANGE

### *Stuck on Economic Growth*

“Making progress towards (sustainability) is like going to a country we have never been to before... We do not know what the destinations will be like, we cannot tell how to get there, we are not even sure which direction to take” (Prescott-Allen 2001). The journey to the future is a learning process shared by everyone: learning *and* creating our common future at the same time.

However, there seems to be a great obstacle narrowing our scope of learning. We seem not to get rid of unsustainable behaviour patterns in our daily lives. Time after time we manage to collectively create results nobody wants. This is true with regard to environmental and social problems, for instance, climate change and refugee waves sweeping over Europe. These problems, and the unwanted results seem to be linked to our narrow understanding of the complex interactions between

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environmental, social, economic and cultural issues. But this does not explain the continuing bad decisions and detrimental behaviour patterns; we do not seem to learn from our mistakes.

Science has given us a framework for continued and stable existence that has become undeniable: the only way we can thrive on this planet as a species is by making ecological sustainability our first priority. Without a well-functioning biosphere there can be no society. And without a functioning society, there can be no stable economy. This framework makes clear that in a sustainable world, economy is subsidiary to ecological and social sustainability (Salonen and Konkka 2015).

Despite the alarming trends stemming from global warming and degradation of ecosystems, the imperative of economic growth holds steady as the first priority for national and global development. New sustainable development goals of the UN Agenda 2030 (United Nations 2015) are based on the idea of green and just growth, which can provide fundamentals for fulfilling the basic needs for all people on our planet. The 2015 UN Climate Change Conference in Paris also ended up seeking solutions from the green growth paradigm. However, development models that do not have economic growth as the basis for the solution seem to be politically incorrect.

### *Is Absolute Decoupling Only Wishful Thinking?*

Is there a sound scientific basis for expecting green growth to provide a sustainable solution for the future? The short answer is: probably not. The success of green growth depends on the possibility of absolute decoupling of material consumption and greenhouse gas emissions from economic growth.

A study based on the analysis of material flows associated with global production and consumption networks of 186 countries concludes that “achievements in decoupling in advanced economies are smaller than reported or even non-existent. ... By calculating raw material equivalents of international trade, we demonstrate that countries’ use of non-domestic resources is, on average, about threefold larger than the physical quantity of traded goods” (Wiedmann et al. 2013). This result implies that improvements in advanced nations measured by the Domestic Material Consumption indicator (DMC) have been mainly based on shifting abroad the manufacturing and indirect raw material flows due to extraction of natural resources (Joutsenvirta et al. 2016).

According to the Low Carbon Economic Index 2016 (PwC 2016), in 2015 a 2.8% decline in the global energy-related carbon-intensity (ratio between greenhouse gas emissions and GDP) was realised, which is the steepest improvement in the history of the index. Despite this, there is still a big gap between current progress and what is needed to meet the 2 °C carbon budget set by the Intergovernmental Panel on Climate Change (IPCC). Based on expected global GDP growth of approximately 3%, keeping us on the 2 °C trajectory would require an annual decline of 6.5% from this point to the end of the century, every year. [Note: The Paris Climate Change Conference agreed even more strict target of 1.5 °C, which puts extra pressure to the decline of carbon intensity.]

The challenge of decoupling should also be considered from the viewpoint of two growth factors: first, per capita energy consumption is estimated to increase in many developing countries, especially India (International Energy Agency 2015); second, the world population growth concentrated in developing countries will still be strong resulting in almost 10 billion people by 2050 (United Nations, Department of Economic and Social Affairs 2015). If these countries will go through a rapid development of economic growth and material consumerism, the multiplication of per capita energy and resource use and population growth becomes unbearable.

In our capitalistic economy and modern society, economic growth is strictly tied to the use of energy and material consumption. There is no such thing as nonmaterial growth (Joutsenvirta et al. 2016). Every service we use is linked with physical tools like manufactured goods, computers, data networks, roads and vehicles, buildings, energy production facilities and networks, etc. Even the green promise of digitalisation is possible only through large-scale energy use and excavating and processing of metals and scarce minerals for devices, which in turn is not possible without the use fossil fuels. In addition, the development of digitalisation requires constantly renewed devices, which even if recycled, require energy-intensive processing to become new products.

### *Are Renewables the Solution?*

An important factor undermining the potential of renewable energy sources to maintain economic growth is the fact their EROEI-ratio (Energy Return on Energy Invested) is considerably lower than the one

of fossil fuels. (NOTE: hydropower is an exception, but almost all available resources are already in use.) Also the fossil fuel reserves for current and future production show declining EROEI-figures as the new sources become more difficult to utilise. This makes it difficult or even impossible to achieve positive economic growth figures, as several authors have noted (Vadén 2010; Joutsenvirta et al. 2016; Matutinović et al. 2016).

Heinberg (2015a, b) argues that in building the renewable energy infrastructure to stop global warming, we are actually involved in one of the greatest change projects in human history. In addition to solar panels and wind turbines, we have to build an alternative transport infrastructure, farming procedures and industrial processes. This transformation cannot happen without fossil fuels. For instance, production of concrete structures and steel elements require amounts of energy that is only feasible to produce with fossil energy. Production of solar panels requires scarce and expensive minerals which must be excavated, again requiring the use of fossil fuels.

Thus, the harder we push towards a renewable energy system, the faster we have to use fossil energy for the construction process. This is not only expensive, but also an undermining factor for our efforts to cut global emissions. Heinberg (2015b) remarks that the cost of building this new energy infrastructure is seldom counted in transition proposals, which tend to focus just on energy supply requirements. He concludes that “All of this taken together suggests that the energy transition will inevitably require not only time, investment, and the replacement of an extraordinary amount of infrastructure, but profound economic reorganization as well”.

### *Playing with Our Common Future*

Some economists have awakened to the call for a paradigm shift from our current economic models. Manfred Max-Neef (2010) has concluded that for the first time in human history several crises are converging simultaneously: human-induced climate change, the end of cheap energy, extensive depletion of key resources basic to human welfare as well as the speculation bubble that is 50 times larger than the real economy of goods and services.

Max-Neef argues that what we are going through at the present time is not just an economic-financial crisis, but a crisis of humanity. He points out that most economists do not consider the fact that

economy is a sub-system of a larger and finite system, the biosphere, and hence permanent growth is impossible. Globalisation and free trade based on securing the interests of corporations and capitalists have also created human rights issues, e.g. with regard to the use of underpaid child labour and other forms of slavery. According to Max-Neef, the dominant economic growth imperative and consumer based conception of wellbeing are to a great degree responsible for the world's collision course and that the paradigm shift requires "turning away from economic growth at any cost".

Matutinović et al. (2016) have investigated the possibility that early capitalist economies, those that industrialised first, may be reaching the growth plateau naturally, in a similar way to other complex systems in nature. Empirical findings of the study suggest that the observed groups of capitalist countries may have terminated their historic phase of intensive economic growth and are entering the mature stage.

Matutinović et al. conclude that:

...it questions the usefulness of pursuing active growth policies in the North: forcing economic growth and, consequently, extending the exploitation of fossil fuels into the unconventional oil and gas reserves will only postpone the problem for a few decades as well as creating multiple adverse environmental and climate consequences. Instead, a more reasonable political agenda would be devising 'post growth' institutional solutions.

Albert Einstein has said "We cannot solve our problems with the same thinking we used when we created them". What we can conclude is the fact that mankind is taking an existential risk of disaster if we do not have any alternative plans for an economic growth model in the form we currently understand and practise. We do not have a plan B. Why do we act in such an unintellectual way despite the fact that we have firm scientific evidence on the priorities for decision-making?

## IN FRONT OF THE ICEBERG

### *Seeing Beneath the Surface*

Peter Senge (1990; Senge et al. 2012) has used the Iceberg-metaphor to illustrate thinking gaps and learning challenges of the human mind (Fig. 5.1). It is typical for us to focus on *events* with directly observable

factors—like the tip of the iceberg above the sea surface. We are very good at making instant conclusions based on what just happened and what we saw. However, at the same time we often miss the more fundamental factors behind the events and thus our conclusions (and actions) are often misleading or invalid, and may be detrimental to finding solutions.

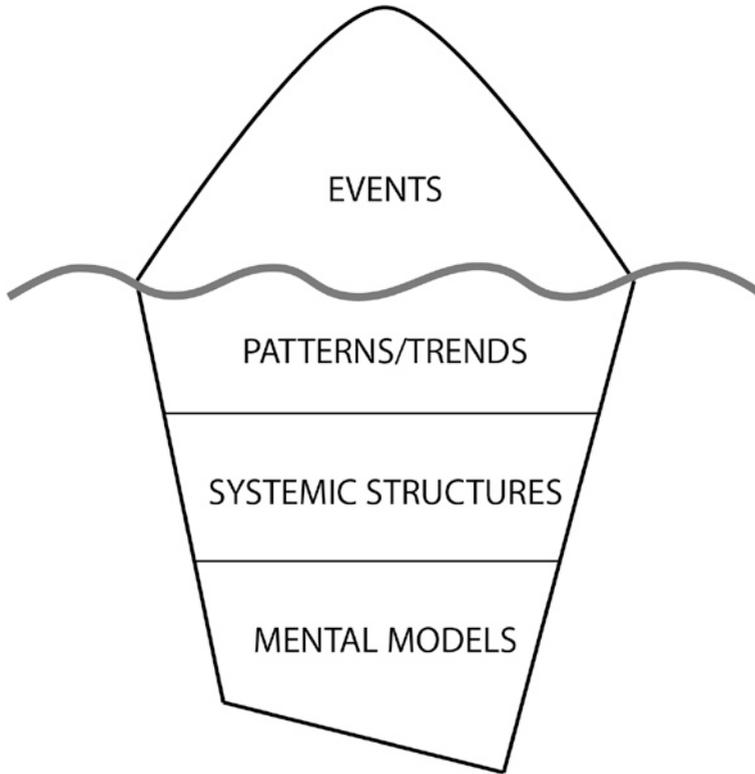
According to Senge, the visible parts of the iceberg are usually only symptoms of something larger. The important factors behind the events are hidden, like the body of an iceberg beneath the surface which contains 90% of the total mass of the iceberg. Instead of directly reacting to events, we should stop and try to recognise *patterns or trends* related to the event: has this or something similar happened before?

These findings can lead us to factors and forces that have influence on the occurrence of the event. A deeper analysis of the *systemic structure* and operation of these factors and forces may reveal the whole picture of the problem.

The bottom of the iceberg has still one deeper level: *mental models*, which are concepts, assumptions and generalisations through which we interpret the world, take actions and make decisions (Senge 1990). According to Senge, human beings are creatures of interpretation: “Our behaviour and attitudes are shaped by our mental models: the images, assumptions, and stories that we carry in our minds of ourselves, other people, institutions, and every aspect of the world” (Senge et al. 2012).

With regard to sustainability issues, identifying patterns, trends and systemic structures behind the problems and phenomena are important for finding solutions. However, our fixed mental models can often lead to malfunctioning solutions or negative externalities. Groups, organisations and societies develop shared mental models which shape our thinking and behaviour. Examples of these models are “a good citizen is a good consumer” and “GDP growth equals increased national wellbeing”.

These mental models have enormous power in shaping our individual behaviour and the behaviour of societies. They are usually tacit, and they exist below the level of awareness. Therefore, they remain untested and unexamined without a conscious effort to do so, and limit our ability to change. Senge suggests open dialogue and reflection of mental models as the means for creating better understanding between people and finding solutions to our complex problems.



**Fig. 5.1** The structure of the Iceberg diagram adapted from Senge et al. (2012)

### *Do We Have a Blind Spot?*

In front of the emerging sustainability crisis, we are all passengers on board of Titanic approaching the iceberg. We are in the phase of gradually understanding the nature of its body beneath the surface. We have been able to reveal the patterns, trends and systemic structures related to major environmental problems like climate change. But what about our mental models? Are there signs of change in our policies, decisions and behaviour?

The answer is yes and no. We have awakened to the fact that we must change our course sharply to avoid colliding with the iceberg. We have

recognised that our current production-consumption patterns based on fossil energy and disposable items are unsustainable. So, there is a cultural change emerging towards renewable energy and circular economy. These can be considered positive results of changing mental models. But what if these changes are not strong enough to avoid confronting the iceberg? What if there is something more, something that is even deeper than mental models hidden in the body of the iceberg beneath the surface?

## ON BOARD THE TITANIC

### *Transformative Learning*

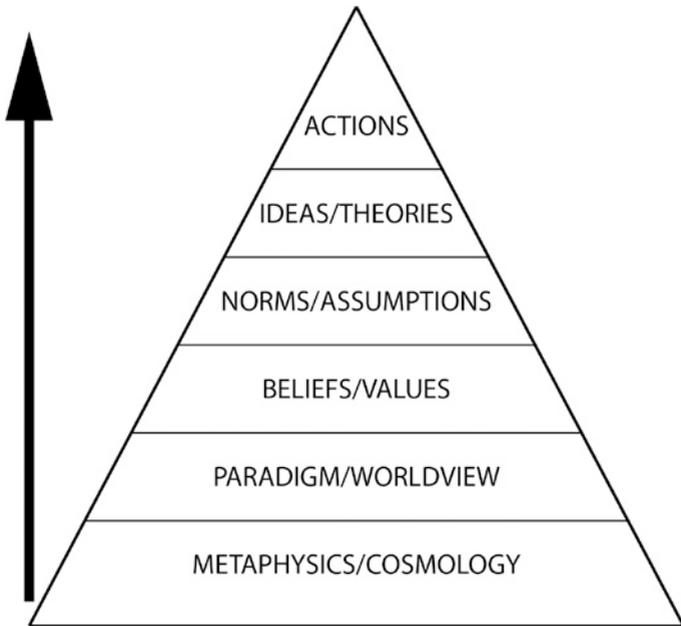
Transformative learning is a concept originally developed by adult educationist Jack Mezirow (1978). Several authors have elaborated the theory, but there is no uniform understanding of its content and no generally accepted definition for the concept. O’Sullivan et al. (2002) have proposed the following definition which has also been adopted by the Transformative Learning Centre in Toronto:

Transformative learning involves experiencing a deep, structural shift in the basic premises of thought, feelings, and actions. It is a shift of consciousness that dramatically and permanently alters our way of being in the world.

Sterling (2003, 2010) considers the lack of transformative learning being the main reason for the inefficiency of environmental education. The problem is partly systemic: our current education systems are based on societal paradigms with fixed conceptions of metaphysics, worldviews and values. It is not the purpose of education and learning to question them.

According to Sterling (2010), there is a need for a new educational approach that might “take us to the depth of things”. By the deeper levels of knowing and meaning Sterling refers to metaphysical conceptions, worldviews, values and beliefs on which our operative norms, theories and actions are based (Fig. 5.2).

Bateson (1972) has distinguished three orders of learning and change which are related to cognitive learning, meta-cognitive learning and epistemic learning (Table 5.1, presented by Sterling 2010). In addition to the learning of individuals, the model can be applied to organisational



**Fig. 5.2** Levels of knowing adapted from Sterling (2010) based on systems view of thought (Bohm 1992)

**Table 5.1** Levels of learning by Sterling (2010)

<i>Orders of change/learning</i>	<i>Seeks/leads to:</i>	<i>Can be labelled as:</i>
<b>First</b> order change <i>Cognition</i>	Effectiveness/Efficiency	“Doing things better” Conformative
<b>Second</b> order change <i>Meta-cognition</i>	Examining and changing assumptions	“Doing better things” Reformative
<b>Third</b> order change <i>Epistemic learning</i>	Paradigm Change	“Seeing things differently” Transformative

change. According to Sterling (2010), the first-order learning or change refers to doing “more of the same”, that is, learning or change within particular boundaries and without examining or challenging our assumptions or values behind our actions or thinking. He points out that most

learning promoted in formal education in schools and higher education is of the first-order variety. Sterling (2003) compares this type of learning as “not seeing the wood for the trees” which equals learning inside the current operative paradigm.

Second-order learning is more challenging and involves the learner (or learning organisation) critically examining, and if necessary changing, beliefs, values and assumptions. This perspective can be described as “stepping out and seeing the wood as a whole” and “having some idea of an alternative wood”, which equals learning on the paradigm level (Sterling 2003).

The third-order learning, *epistemic learning*, involves a shift of epistemology or operative way of knowing and thinking that frames people’s perception of and interaction with the world. According to Sterling (2003), the third level of learning means taking a helicopter view and “seeing fully that a number of alternative woods or paradigms exist and may be chosen between” (metaparadigm level).

### *The Epistemological Error*

The three levels of learning described above arouse a question of the required epistemic changes in our thinking that would enable us to find a more sustainable paradigm for our common future. Bateson (1972) suggests that the Western thought has been characterized by “epistemological error” which he considers being the root for ecological crisis:

When you separate mind from the structure in which it is immanent, such as human relationship, the human society, or the ecosystem, you thereby embark, I believe, on fundamental error, which in the end will surely hurt you.

Bateson’s notion has its roots in the modern, dualistic worldview that replaced the perception of man being an integral part of nature. Separateness as an operative way of knowing and thinking reflects itself all around in the Western culture. We see our relations as win-lose games instead of win-win possibilities. We focus on parts of the system instead of their relations. We separate social and economic systems from nature, and base our decisions on reasoning with a false assumption of separateness of emotions and values. We believe in objective truth instead of accepting the existence of several, subjective explanations for reality.

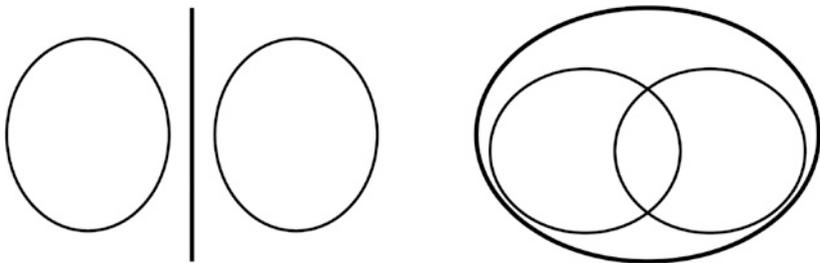
According to Sterling (2003), the tension between the parts and the whole—the dominant mechanistic and the alternative organistic worldview—lies in the heart of this epistemological battle. Sterling suggests the postmodern ecological worldview as the solution for a new sustainable paradigm. He provides an illustrative picture of the epistemic ways of perception behind our dominant Western paradigm (Decontextual Separation) and ecological worldview (Co-creation in Context) (Fig. 5.3).

The Co-Creation in Context perspective means deep understanding of mutual dependence of all living organisms and systems. As Sterling (2003) puts it:

The former [decontextual separation] position gives rise to a deep-seated belief that the wellbeing of the isolated part is won in struggle against other parts; the latter [co-creation in context] gives rise to the conviction that the wellbeing of the part depends on the wellbeing of the whole and vice versa.

### *Challenging Our Worldview*

Let us return to the Titanic. Could it be so that cognitive and meta-cognitive levels of learning including understanding the patterns, trends and systemic structures as well as reflecting our mental models are not enough to avoid crashing into the iceberg? What if we concentrate on the iceberg and our ship and ignore the existence of the sea around us?



**Fig. 5.3** I-It: Decontextual Separation (left) and I-Thou: Co-creation in Context (right) relationships (Sterling 2003). I-Thou relationship is based on the work of Austrian-born Israeli philosopher Martin Buber (“Ich und Du” 1923; English translation “I and Thou” 1937)

The sea in the Iceberg metaphor represents the deepest roots of our thinking, our epistemic and metaphysical conceptions of the world and existence. What does the sea consist of? In Western cultural history, there are several factors that have shaped our metaphysical understanding, worldview and development of our societies. Norgaard (1994) lists five metaphysical premises that are dominant in Western culture, and, as he argues, “help explain the cultural and biological destruction associated with modernism”:

- Atomism: Systems consist of unchanging parts and are simply the sum of their parts.
- Mechanism: Relationships between parts are fixed, systems move smoothly from one equilibrium to another, and changes are reversible.
- Universalism: Diverse, complex phenomena are the result of underlying universal principles which are few in number and unchanging over time and space.
- Objectivism: We can stand apart from what we are trying to understand.
- Monism: Our separate individual ways of understanding complex systems are merging into a coherent whole.

Table 5.2 summarises some implications of how the above-mentioned premises have influenced our understanding of the world around us.

An important observation by Norgaard (1994) is the fact that the five metaphysical and epistemological beliefs underlying modern rationality are rarely the basis for thought and action by individuals, families and small groups. Yet these suppositions are the only ones which are publicly held acceptable for use in public discourse and decision-making. Norgaard calls this commonly accepted cultural worldview as “Western public rationality”.

There is fresh evidence of the diverging public and individual conceptions in Finland. There is a uniform understanding across the political parties (including opposition) that Finland needs first and foremost economic growth to be able maintain the wellbeing of society. When Finnish individuals of all ages were asked their view on the presumption “Continuation of the wellbeing of people can only be based on economic growth”, 38% agreed and 39% disagreed (Apunen et al. 2015). In summer 2016, only 15.1% of 15–29-year-old Finns agreed the presumption and 46.2% disagreed (Salonen and Konkka 2017).

**Table 5.2** Factors that have shaped the metaphysical understanding and worldview in Western culture

Philosophical and scientific worldview (and metaphysical conceptions)	<ul style="list-style-type: none"> <li>• Atomistic and mechanistic worldview</li> <li>• Fragmented, positivistic and reductionist conception of knowledge and sciences</li> </ul>
Form of organisations and societies	<ul style="list-style-type: none"> <li>• Formation of societies and organisations based on the above-mentioned conceptions (industrial age society)</li> </ul>
Relation between humans and nature	<ul style="list-style-type: none"> <li>• Conception of human as a master and tamer of nature</li> <li>• Conception of hierarchy between economy, wellbeing and ecological sustainability (priorities: 1. economy, 2. wellbeing, 3. ecological sustainability)</li> </ul>
Conception of wellbeing and economy	<ul style="list-style-type: none"> <li>• Materialistic wellbeing conception</li> <li>• Techno-optimism as the basis for solving economic, wellbeing and environmental problems</li> <li>• Economic growth paradigm</li> <li>• Globalisation</li> </ul>
Conception of humanity	<ul style="list-style-type: none"> <li>• Conception of humans as consumers</li> <li>• Conception of humans as maximizers of their personal utility/value (and that this leads automatically to common good)</li> <li>• Competitive society</li> </ul>
Conception of mind & thinking	<ul style="list-style-type: none"> <li>• Conception that human mind and thinking is a closed, conscious and pure rational and cognitive system</li> </ul>

### *Truly Transformative Change*

How do the different orders of learning and change manifest themselves for example, in the case of climate change? Table 5.3 below lists the three orders of learning as described by Sterling (2010) with examples of responses to climate change. During the past decades, our responses have mainly been conformative and incremental. The industrial sector has focused on improving its processes to produce more items with less material and energy consumption. Consumers have been instructed to segregate and recycle their waste. Logistics have been optimised mainly to achieve cost savings, but at the same time, improvements have been made in cutting emissions. Emissions trading schemes can also be included as a conformative approach.

**Table 5.3** Examples of responses to climate change adapted from the orders of learning (Sterling 2010)

<i>Orders of change/learning</i>	<i>Can be labelled as:</i>	<i>Response to climate change, examples</i>
<b>First order change</b> <i>Cognition</i>	“Doing things better” Conformative	<ul style="list-style-type: none"> <li>• Energy/material efficiency</li> <li>• Optimisation of logistics</li> <li>• Recycling</li> <li>• Emission trade</li> </ul>
<b>Second order change</b> <i>Meta-cognition</i>	“Doing better things” Reformative	<ul style="list-style-type: none"> <li>• Green and responsible products</li> <li>• Renewable energy</li> <li>• Circular economy</li> <li>• Dematerialisation</li> </ul>
<b>Third order change</b> <i>Epistemic learning</i>	“Seeing things differently” Transformative	<ul style="list-style-type: none"> <li>• Subjective wellbeing</li> <li>• Seceding growth imperatives</li> <li>• Sustainable local economies</li> </ul>

Second-order change means reforming the existing production systems and consumption patterns. This is the phase underway in many societies and economies across the globe. Green and responsible products have been on the markets for some time, but their business significance is now rapidly growing due to consumer demands and increasing transparency of production chains. For many, this reformative approach is believed to be a final solution to the climate change challenge.

The three major reformative changes with regard to production systems are: a shift to renewable energy, building a circular economy and dematerialisation—the great promise of digitalisation. As discussed in section “[Need for a Paradigm Change](#)”, even these reformations do not guarantee that we will be able to reach absolute decoupling of material consumption and greenhouse gas emissions from economic growth.

The big question for learning and change is if they have to be truly transformative; able to fundamentally shift our worldview in order to save ourselves from the worst-case scenario of climate change. It is important to note, as Sterling (2010) explains, that “not only do current ways of thinking, perceiving and doing need to change in response to critical systemic conditions of uncertainty, complexity and unsustainability, but that old paradigms are the root of these conditions”.

Contemporary solutions to climate change based on our current worldview are not truly transformative but are only reformative. Constructing a sustainable future calls for changing our current way of living and consumer-based economic growth paradigm. It may be so that getting rid of this paradigm also challenges many other foundations of our current worldview. We may have to change our philosophical and scientific paradigms, to reposition our relation to nature, and perhaps most importantly, change our conception of the human mind.

### *Transforming Our Minds*

There are several views on the possibility for the third-level learning described by Bateson (1972). Bateson himself considered it connecting to existential and spiritual experiences and thus being accessible only for few people. Sterling (2003), as many other authors, has taken a more pragmatic interpretation of the level three learning seeing it focusing on changing epistemic assumptions, but not necessarily requiring spiritual experiences involved.

However, examples of existential experiences are perhaps the most influential proofs of the capability of the human mind for third-order learning. According to Greyson (2015), several studies of people who have gone through a near death experienced (NDE) have yielded consistent findings showing changes in the experiencers' perception of self, relationship to others, and attitude toward life. These findings have even shown deepening effect as the time has elapsed from the experience.

Ring (1980) reported the following changes in existential understanding and worldviews related to NDE's:

greater appreciation for life, renewed sense of purpose, greater confidence and flexibility in coping with life's vicissitudes, increased value of love and service and decreased concern with personal status and material possessions, greater compassion for others, heightened sense of spiritual purpose, and a greatly reduced fear of death.

Another example comes from space exploration. In *The Fifth Discipline* (1990), Peter Senge quotes a story told by astronaut Rusty Schweickart who was one of the first humans able to look at the Earth from the space. In 1969, he flew test flights on Apollo 9. It took five years before he had words to express in public what he had experienced in space. That happened in 1974 in a gathering at Lindisfarne, a spiritual community on Long Island. According to Senge, Schweickart had realised that what he had experienced was not his story, but our story.

Schweickart had experienced, what he described as an extension of the sensory apparatus of the human species: “I was looking out from my eyes and feeling with my senses but it was also our eyes and our senses”. The story told by Schweickart is not a very long quotation in Senge’s book, but those words represent perhaps one of the most valuable and touching pieces of metaphysical knowledge recorded in human history. The following is a shortened version of the quote:

You look down there and you can’t imagine how many borders and boundaries you crossed again and again and again. And you don’t even see ‘em. At that wake-up scene – the Mideast – you know there are hundreds of people killing each other over some imaginary line that you can’t see. From where you see it, the thing is a whole, and it’s so beautiful. And you wish you could take one from each side in hand and say, ‘Look at it from this perspective. Look at that. What’s important?’

And so a little later on, your friend, again those same neighbours, the person next to you goes to the moon. And now he looks back and sees the Earth not as something big where he can see the beautiful details, but he sees the Earth as a small thing out there. And now that contrast between the bright blue and white Christmas tree ornament and that black sky, that infinite universe, really comes through.

The size of it, the significance of it – it becomes both things, it becomes so small and fragile, and such a precious little spot in the universe, that you can block it out with your thumb, and you realize that on that small spot, that little blue and white thing is everything that means anything to you. All of history and music, and poetry and art and war and death and birth and love, tears, joy, games, all of it is on that little spot out there that you can cover with your thumb.

And you realize that that perspective... that you’ve changed, that there’s something new there. That relationship is no longer what it was... Because now you’re no longer inside something with a window looking out at the picture, but now you’re out there and what you’ve got around your head is a goldfish bowl and there are no boundaries. There are no frames, there are no boundaries.

### *Pragmatic Approach to Transformative Learning*

Rogers (1994) suggests that (transformative) learning process can involve the following dimensions (presented by Sterling (2010)):

- the *cognitive* dimension traditionally seen as the core of teaching, which involves the intellect
- the *affective* dimension, when emotions are connected with intellectual knowing
- the *existential* dimension where learners question their values and ways of living and start reconstructing their own sense of self
- the *empowerment* dimension involving a sense of responsibility, commitment and direction after the existential crisis has been resolved
- the *action* dimension, which, if the questions raised by the first four dimensions have been resolved, involves the development of informed choices at personal, social and political levels

Rogers's model describes the holistic nature of transformative learning which goes much deeper than traditional learning. It is important to note that the mind shift cannot be achieved without a certain amount of pain and resistance on behalf of the learner. Epistemic learning can be deeply uncomfortable, because it involves a restructuring of basic assumptions caused by the recognition of incoherence between assumptions and experience. On the other hand, this type of learning can also generate excitement (Sterling 2010).

An interesting question is if transformative learning for a sustainable future can take place without facing the feelings of pain or anxiety. Many authors of environmental education highlight the importance of optimistic and solution-based approaches, which is certainly important when educating young people. However, it is important to note that there is a great difference between changing the mind of a young person versus an adult as Gardner (2006) has pointed out. Young people do not have a deeply fixed worldview while adults have to be exposed to the emotional dissonance between new ways of thinking and their current worldview, values, beliefs and theories before transformative learning can take place.

Another way to initiate transformative learning is to understand it as a process of unlearning. At the moment, there does not exist any substantial models or theories for unlearning. However, the elementary components of unlearning have been recognised by many scholars. Unlearning is not about reframing or reconstructing our current thinking but moving away from our existing mental structures towards a position which enables a fundamentally different way of seeing the world.

The essence of unlearning is a journey to ourselves. Instead of reflecting and then criticising our current thinking, we should empty our minds to reach an openness to learning. This stage enables us to create new associations and thinking which is not locked in our current thinking and paradigm. In short, the question is about a spiritual dimension of learning.

Unlearning has to do with intuition. It is a journey from our conscious mind to the unconscious level. The conscious level, on which we usually learn and operate, equals the visible tip of the iceberg and cognitive order of learning. Reflecting our mental models beneath the sea surface (meta-cognitive learning) is a process that is partly conscious, but can benefit a great deal from the contribution of the unconscious mind. Epistemic (transformative) learning is about seeing the sea, our worldview, from a reflective perspective. It can be questioned how well we can do this from our conscious level of thinking. Stepping out of our mental box requires a fundamental shift of viewpoint, unlearning and innovative or intuitive construction of a new worldview.

As we take an organisational or cultural approach to transformative learning, we are essentially creating shared worldviews. This is important from the viewpoint of intuition. The research and theories around intuition arouse interesting possibilities for extending consciousness on transpersonal level. This could lead us to a possibility of shared understanding of the fundamentals of our common life, as well as emergence of a new community, collaboration and planetary responsibility. (Read more about intuition in the chapter by Asta Raami.)

### *Sense of Coherence*

One of the strongest leverage points for mind shift lies in the theory of *Sense of Coherence*, which defines subjective wellbeing comprising of the complexity, manageability and meaningfulness of life (Hämäläinen 2014). This theory is especially applicable for explaining the origin of mental health disorders the western world is currently facing. Our consumerist society, rapidly advancing technologies and recurring global crisis have created a living environment in which our sense of coherence is constantly deteriorating.

Despite having more capabilities, choice and freedoms than ever before, large parts of the population in high-income countries experience extended feelings of stress and fatigue, and depression and related mental health problems have become common and widespread (Hämäläinen 2014; Weehuizen 2005). This is a product of the complex world around us and life manageability problems due to our busy lives filled with often superfluous choices. Our modern society is also suffering from a vanishing understanding of what makes life meaningful to which the consumer-centred wellbeing paradigm has been unable to provide a solution.

It seems that we are as much locked in our current way of living on the individual level as we are locked in our prevailing economic paradigm on the society level. Understanding the significance of the three elements of coherence in our lives could open new kinds of possibilities for improving subjective wellbeing in society. Turning our awareness to the inside of our minds can bring us a stronger understanding and sense of the deeper meanings and factors that create true happiness. This kind of illumination could be a way to brake the chains of complexity and manageability restraining our ability to achieve greater wellbeing.

A great hope for a sustainable future lies in the fact that modern research on wellbeing brings strong evidence that the building blocks for meaningfulness and true happiness are mostly in other issues than consumerism and material things. Meaningful and happy life consists of social relationships, encounters with other people, time spent with a family, voluntary work and acting for other people, creative activities, etc. (Salonen and Konkka 2015) *In practice, these findings suggest that we are able to achieve a greater state of life satisfaction and happiness in a society that does not base its health on the continued growth of the economy and consumption.*

Without a doubt, the emergence of new ways of living cannot be promoted only by improving the consciousness of people. It is also important to provide opportunities by which people can experience the benefits themselves and truly investigate in an intuitive way what really matters to them. We need more examples that show that these better ways of living are feasible now.

## ELEMENTS OF TRANSFORMATIVE LEARNING FOR A SUSTAINABLE FUTURE

### *Transformative learning for a sustainable future is defined as*

Learning that transforms our existential understanding and conceptions about the interdependence of humans and nature, the essence of humanity, fundamentals of wellbeing, and the role of economy in our world and daily lives. It aims at developing a holistic worldview and deep realisation and coherence of the purpose, direction, values, choices and actions of one's life. It accumulates into an emergence of learning communities and ecosystems demonstrating new, resilient sustainable lifestyles, which finally lead to a cultural transformation into a sustainable society and the world.

### *Changing the Focus of Learning*

What would an integrative perspective of transformative learning for a sustainable future look like? (See Fig. 5.4.) The centre of knowledge content is not subjects or sciences, but the wholeness of our world and our lives. Learning focuses around understanding the connections between humans, nature, society and the economy with an aim to develop solutions for our sustainability challenges and making a sustainable world real while learning. Learners' own life experiences have to become part of the learning substance, and participation in change processes within society must become part of learning.

In a rapidly changing world, the role of the curriculum must also be reconsidered. Instead of its common use as a collection of often outdated knowledge, it should be a tool for organising learning opportunities in which education, learning and the latest scientific knowledge converge around making real-life changes in the environment and society. The knowledge content and sustainability issues are handled using a set of future-oriented skills. These skills involve cognitive skills such as systems thinking, critical thinking, and future thinking, which are suggested being the key thinking skills of education for sustainable development (e.g. Tilbury and Cooke 2005). In addition, communication and interpersonal skills are vital in creating common solutions. The skills of

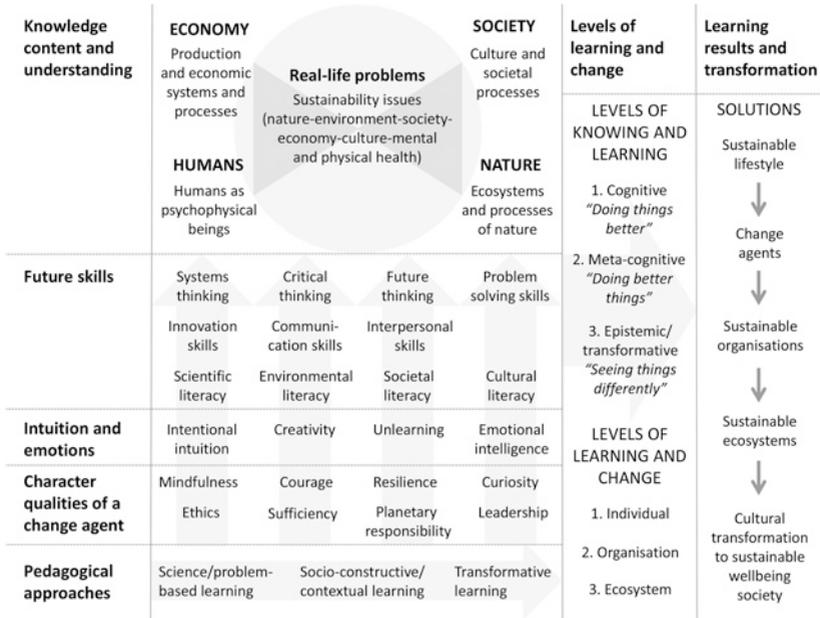


Fig. 5.4 An integrative perspective of transformative learning for a sustainable future

literature are seen as a multi-dimensional ability to perceive, interpret and understand the environment, society and culture.

### *The Intrinsic Dimension of Learning*

The cognitive competences can be seen as tools by which we can shape the clay of knowledge and create something new out of it. Our values and attitudes and conceptions behind them determine how we choose our clay and what we will shape from it. We can use our competences for the benefit of a sustainable future or support just the opposite development (our current mode). Therefore, education for a sustainable future must have a strong reflective value dimension included. This means utilising actively the second- and third-order learning described in section “[On Board the Titanic](#)” to critically reflect and evaluate our current societal values and assumptions as well as fundamentals of our shared Western worldview.

Learning for a sustainable future is an all-encompassing process. It is a mistake to consider humans as rationally behaving subjects that will take action once they have been introduced to the facts about an issue. If we only focus on the power of teaching knowledge and cognitive and practical skills, there is a danger we will miss the most important point: what generates the motivation for real, transformative actions?

People make choices and take actions based on their intrinsic values and the things that they consider important. This will be of course disturbed frequently by the environment, and many times the choices we make are based on external factors such as acceptance or admiration of other people. Therefore, one of the most important skills of learning for a sustainable future is learning to know oneself. What is truly important for me, what makes me happy, what is a good life for me?

Values, especially those that concern defining a meaningful life, cannot be taught directly. Instead, learners should be provided experiences that touch their emotions—and lead them to the springs of their intrinsic values. Therefore, versatile real learning environments (nature, cultural environments, social encounters, etc.) as well as the arts are crucial elements of education for a sustainable future.

The unconscious mind should be fostered intentionally as a source of creativity, complex problem-solving and holistic thinking. Knowing, interpreting and understanding the emotions of one's own and those of others must be seen as important as developing rational skills; rationality and empathy are brought into balance. Intuition and unlearning skills which can unleash our creativity are crucial parts of the toolbox for transformative learning.

### *Fostering Change Agency*

Encouraging individuals to adopt a sustainable lifestyle is not a sufficient target for transformative learning for a sustainable future. We must foster individuals that can generate change in the different roles or phases of their lives. Fadel et al. (2015) regard the *character dimension* as a central building block for the future of education. They state that, “character education is about the acquisition and strengthening of virtues (qualities), values (beliefs and ideals), and the capacity to make wise choices for a well-rounded life and a thriving society”. The six character qualities listed by Fadel et al. encompass mindfulness, curiosity, courage,

resilience, ethics and leadership. These characteristics play a central role in becoming a change agent for a sustainable future.

*Mindfulness* is a key to alignment of one's message and personal example: Change agents with good mindfulness abilities live their visions and are able to communicate convincingly. A mindfulness ability is also important for critical reflection of one's own behaviour and changing one's actions when needed. Mindfulness helps one concentrating fully on the present moment and listening one's inner thoughts. Thus, it is a key to intuitive thinking and unlearning.

A change agent needs *courage* to be able to cope with uncertainty and stress caused by contradictory beliefs and attitudes towards sustainability issues. A true change agent has courage to speak aloud about the insanity of our current lifestyles and the direction we are heading. Too many of us remain silent although we are feeling that this is not the way we should go. *Resilience* can be seen as internal strength helping a person proceed towards her goal despite external factors that may deteriorate progress.

The task of a change agent for a sustainable future is not to offer a ready solution (like a religion) to her audience. It is most important to awake and inspire people to start thinking critically, participating and acting to construct a sustainable future. In this process, a change agent is not a prophet but a co-explorer. *Curiosity* helps a change agent to get other people involved and inspired in actions and innovations for a sustainable future.

*Ethics* is a characteristic which is strongly linked with the aspiration of a sustainable future. Change agents can also lack ethical dimension in their action, e.g. if their goal is to promote certain selfish or narrow political interests. A true change agent for a sustainable future has to possess a great amount of ethical wisdom to use her power for the benefit of all people and the planet.

Every change agent is a leader, in a wider or a smaller context. Therefore, *leadership* is a key characteristic of a change agent. According to Fadel et al. (2015), twenty-first century leadership is about facilitating and inspiring others to pursue together the collective targets of an organisation. This kind of leadership is adaptable on a wide scale from big organisations to small communities. Therefore, developing the characteristic of future leadership is not only for those who are aiming at leadership positions in working life. Instead, it is something everyone should practice and learn.

Salonen and Bardy (2015) list two additional important character qualities for a change agent in their eco-social approach to learning: *sufficiency* as a character quality to satisfy oneself with less material welfare, and *responsibility* as a character quality encompassing sharing and caring and planetary responsibility over the human and non-human world.

### *Transformative Learning at the Organisational Level*

In order to achieve the transformation of society, it is also important to widen the scope of learning to organisational and societal scales. There are several important viewpoints to consider when developing a school or organisational culture and learning environments that support transformative learning for a sustainable future (Fig. 5.5).

A school must act as it teaches. The school culture must reflect different aspects of sustainability and enable students to learn the skills necessary for a sustainable lifestyle as part of their everyday school life. A good and safe learning environment and caring atmosphere is the starting point for all learning. It is essential that schools foster students' understanding of subjective wellbeing and aspire to create a learning environment that supports sense of coherence (see section "On Board the Titanic").

A school must engage all students as well as staff in a common process of learning and development toward creating a sustainable school. This is essential for internalising the skills needed for becoming a change agent. School culture must provide experiences that evoke emotions and support the origin of intrinsic values, meaningfulness and the development of worldviews and existential understanding. Students' genuine participation and influence on common issues must take place inside and outside of the school. These experiences should be linked to value generation with a target of empowering change agents for a sustainable future.

The most fundamental characteristic of school culture supporting transformative learning is that the school must operate itself as an active participant in the cultural transformation towards a sustainable future. This means, among other things, an active use of external learning environments, cooperation and networking with other organisations in the society and even international context, linking formal and informal learning, active participation in the change processes of society, and linking students' learning in these processes.

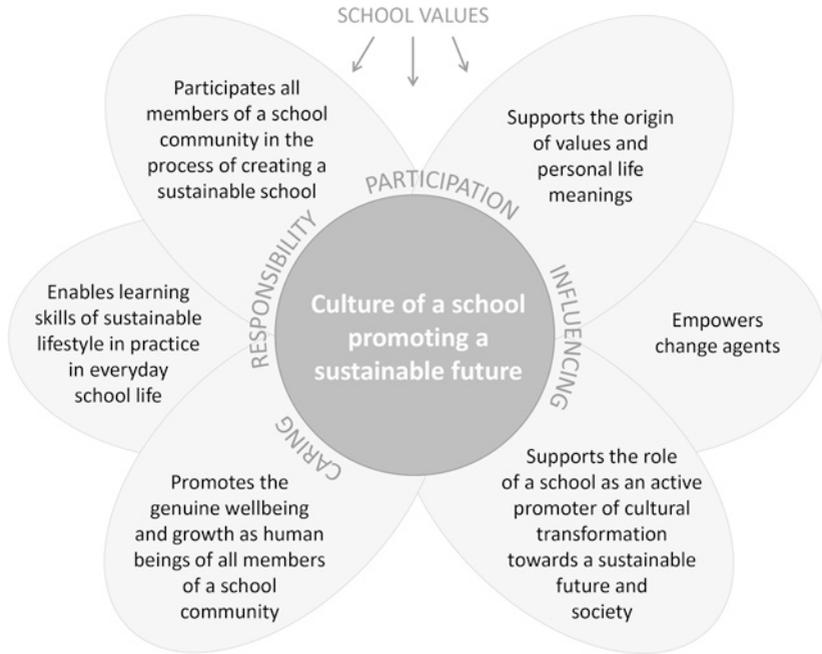


Fig. 5.5 Culture of a school promoting a sustainable future (OKKA-säätiö 2013)

## VISION OF THE FUTURE SCHOOL

### *Can We Change Schools?*

Our contemporary education system has a grand challenge with regard to enabling the transformative learning of individuals and societies. As Peter Senge et al. (2012) explains, our schools are products of the industrial era which manifests itself in the structures and power relations of educational organisations as well as targets, subjects and contents of learning. In other words, they reflect deeply our Western worldview which is the underlying cause for the sustainability crisis. School systems throughout the world are currently also in deep crisis because they are not able to respond to the requirements of rapidly changing world of interconnectedness, complexity and unsustainability.

In *The Fifth Discipline* (1990) and *Schools That Learn* (2012), Peter Senge writes about *systems citizenship*. By this, Senge refers to the ability to understand interdependencies in our world and to find solutions to complex sustainability issues. Senge sees an enormous potential for change in our youngest generation. Children of today seem to be open for understanding future problems from a holistic perspective. They are also ready to take together responsibility for their (and our) common future if they were given a chance.

Senge et al. (2012) describes the task of education as “not to create the best of yesterday’s cultures, but to foster the interrelated culture of tomorrow”. To be able to do this, we must find a meaningful consensus of the scope and substance of education for the twenty-first century. According to Senge et al., innovation is difficult, because we tend to always return the only educational goals people know: basic skills in math, science, and literature and ultimately better test scores.

Senge et al. writes with great optimism for changing the purpose of education into a vehicle for shifting societies towards sustainability. However, the problem of the education system is maybe not in teaching future competencies, but in the worldview that fixes the values, contents, goals and methods of education. These are perhaps one of the greatest means of power and continuity in our societies. What politician would give up this power and hand it to the next generation? Therefore, the implicit target of education is to convey the existing societal worldview and value system to the next generation so that they can become “good citizens” and stewards of the system.

Another important question is, can we ever reach a fundamental shift in the purpose, goals and main contents of education by a reformist approach. Even the best attempts will easily decay as diluted compromises under the pressure and interests of politicians and experts from different arenas. Schools also tend to have a conservative organisational culture, which maintains the existing status quo.

It may well be that the school system is a prisoner of its history which derives from the worldview of the industrial age and scientific reductionism. The world, society and power relations should first change before education system can do so. And even if there would be change, it is slow and gradual and not at all at a scale that would be needed to solve escalating future problems.

### *A Radical Vision of the Future School*

I dare to offer a vision how we could see the future of education in a radical and totally different way. What if the future school would not convey our existing worldview anymore? Let us forget the familiar school subjects, curricula and the philosophies, scientific traditions and political interests behind them. The future school would be based on a strong faith in the wisdom of our youngest generation. It would provide complete liberation to its students to create the world they want—even if it would mean for us adults giving up our current ways of living.

The main goal of education would be to give future generations tools for thinking and seeing the world differently, constructing their own worldviews, and acting to create a sustainable future. Learning would be embedded in creating change. Schools would be living learning organisations (or rather communities) which were shaped by the learners. Schools would no longer be physical spaces for learning. Instead of people coming to school, learning would go where people are. This can mean for example, establishing local learning circles based on face-to-face learning but also digital learning communities even at global scale.

The central idea would be to create learning communities where people learn and make a sustainable future real together. These communities would emerge self-directed around the problems and interests of learners. The future school would be for everyone, young and adult learners. They could learn together or with their peers, depending on the scope of learning and questions involved. Table 5.4 illustrates the core ideas of this vision.

The living learning communities would establish binds between each other based on common interests and targets, and form ecosystems of change. The ultimate goal of networking would be a global ecosystem of communities with the collective aspiration for a sustainable future while creating cultural transformation in societies and the world. The learners would create a web of change that led to exceeding the critical mass required for societal transformation. This would challenge the dominant institutions and systems of society.

The future school is about revolutionary learning. The solution for a sustainable world can be found in the intuitive capacity of the human mind, which we cannot utilise with conventional methods of thinking

**Table 5.4** Vision of the future school

<i>Core of the vision: the future school</i>	
Structure	<ul style="list-style-type: none"> <li>• is not a physical place, but is everywhere, takes learning to communities and networks and to interaction between people</li> <li>• has no hierarchical management, learning is supported by coordinators linking learners and facilitating their learning</li> <li>• does not classify learners based on their level, age and achievements</li> <li>• has no curriculum with subject-based learning goals and contents</li> <li>• is based on self-organisation, links people with learning communities and other people sharing the same questions and themes of interest</li> <li>• integrates learners and change makers to experts in different fields of inquiry</li> </ul>
Purpose	<ul style="list-style-type: none"> <li>• creates deeper meaningfulness, purpose of life and community for learners</li> <li>• makes learning and skills shared and accumulates individual learning into learning and change of communities, ecosystems and global society</li> <li>• acts as a change agent and accumulator of critical mass for societal transformation</li> <li>• challenges institutions and politics</li> <li>• turns global hyper-connectedness from a threat to opportunity by combining the collective wisdom of humankind</li> </ul>
Ethos	<ul style="list-style-type: none"> <li>• aims at creating a deep understanding of the essence of life and humanity</li> <li>• is committed to breaking the boundaries of thinking and knowledge, and to learning that transforms the fundamentals of life, being and worldviews</li> <li>• does not acknowledge subject or science boundaries, but looks at the world and phenomena from a holistic perspective</li> </ul>
Learning goals	<ul style="list-style-type: none"> <li>• sets aspiration of good life, realising individual and common dreams, reaching the full potential of a human being, and creation of a new, sustainable world as the main goals for learning</li> <li>• tackles the complex challenges of the future on the local and global level and seeks solutions for them</li> </ul>
Methodology	<ul style="list-style-type: none"> <li>• aims at synthesising of knowledge and understanding deeper meanings</li> <li>• focuses on developing human character qualities (e.g. courage, mindfulness, curiosity, resilience, ethics, leadership, sufficiency, planetary responsibility)</li> <li>• fosters and utilises the skills of change making (systems thinking, critical thinking, future thinking, creativity and innovation, interpersonal skills, emotional intelligence, scientific, environmental, social and cultural literacy)</li> <li>• feeds courage, experiments and demonstration of new solutions</li> </ul>

(continued)

**Table 5.4** (continued)

<i>Core of the vision: the future school</i>	
Revolutionary learning	<ul style="list-style-type: none"> <li>• has the aspiration to question things and seek solutions outside the prevailing thinking patterns and paradigms</li> <li>• revolutionises the concepts of knowledge, learning, humanity and life, and takes intuition as integral part of learning</li> <li>• has a target of achieving fundamental transformation in worldviews, thinking, actions and behaviour of people, organisations, communities and societies</li> <li>• aims at educating individuals as change agents</li> </ul>

and learning. This potential must be unleashed on the individual level and be networked on the community and global levels. Intuitive knowing can bring forth the best of us and show that in the end goodness is the deepest part of humanity. We can create shared wisdom that will save our planet from eco-disaster and lead to a renaissance of humanity over the supremacy of technology.

This form of future school challenges the existing formal system from every side. It is not dependent on politics, norms or structures. It does not ask permission from the society and it is not accountable to the public system. Its origin evolves from the crisis of the world, societies and education systems. It challenges them by providing solutions for the problems that our current systems cannot solve. Its status is not based on formal competencies, evaluations and grades. The future world, its societies and organisations will not need professional titles, but deeper understanding, skills and change makers.

The future school links its learners to other learners and communities within society. The learners will prove their competence directly by acting together with other people and creating change as they learn. They will be recruited to future labour markets straight from their learning networks, as it is easy to imagine that at some point in the future, degrees will lose their significance. This is a radical and un-authoritarian vision of education. I believe this can happen if the current formal education system cannot make a fundamental change. If the change will not take place inside the system, the challengers will come from outside.

## CULTURAL TRANSFORMATION

*The World Has Stringent Tuning*

Our current world has a stringent tuning in many ways. We are living in an interconnected global society with a rapid flow of information, capital and people. Into our financial system are embedded expectations which cannot be met without constantly rising profits. Demands for increasing efficiency and productivity are strangling a work-life balance. At the same time, we are also taking significant risks with regard to accelerating environmental problems. In a world of scarce resources, inequality, political crisis and wars seem to be unavoidable.

This stringent tuning together with interconnectedness makes our societies and global system vulnerable to disturbances and crisis. Resilience is a term related to ability of an organism or a society to cope with external stress and maintain its ability to operate. Resilience is put under pressure in crisis situations, but it also seems that resilience is sought from “putting more steam” into the system to maintain its stability, an example of this being the measures taken by central banks to medicate the financial crisis. The side effect is that this strategy increases tension in the system and makes it even more vulnerable to disturbances.

We find ourselves currently with only one unsecure societal paradigm, which creates an unbearable risk for global ecosystems and the existence of humankind. Having no alternatives for this paradigm is not a precautionary and resilient policy. The latest scientific understanding suggests sharply changing the relationship between humans and nature as well as finding less destructive means for seeking wellbeing. In practice, this probably requires relinquishing growth imperative and releasing the tension in our global system. How can we do that if there is a great risk of a sudden economic collapse and a resultant human disaster if we begin to remove steam from the machine?

A solution could be found in planning alternative futures. An ideal way to do this would be to adopt policies for exploring and testing alternative solutions for how to organise society and collect learnings that could be adopted from these experiments. The idea would be to avoid collapse by establishing “for the other foot” a solid ground on which we could safely step. A problem with this approach is the fixed paradigm of institutions, corporations and decision makers. In a desperate search for short-term remedies and quick solutions, it is not very likely that this kind of policy would be supported.

A more realistic approach for creating alternative futures is a bottom-up strategy (Fig. 5.6). A cultural transformation for a sustainable future can emerge from individuals and communities developing new solutions, such as organising local economies, improving subjective wellbeing, and creating meaningful interaction between people. These communities can become self-sufficient and demonstrate real resilience against complex future problems. A key for cultural transformation is learning, sharing and disseminating these experiments and building ecosystems of communities with new worldviews, purposes, values and behaviour patterns.

This perspective provides interesting possibilities for educational organisations. Sterling (2003) has developed a model of “ecology of education systems” in which education system, educational institutions and environmental education are represented as sub-systems of the society. The challenge of education, as Sterling puts it, is that “education is

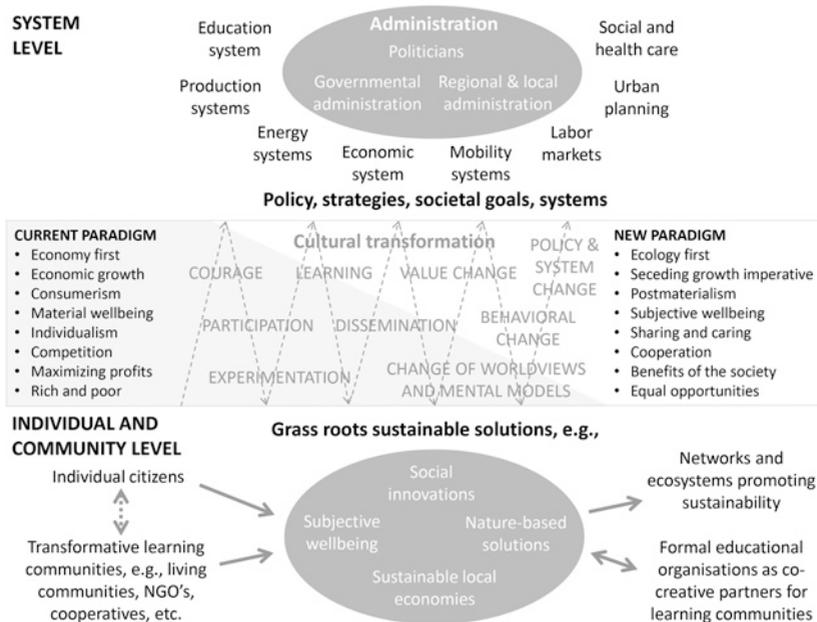


Fig. 5.6 A bottom-up strategy for creating alternative futures and establishing cultural transformation

seen as a means of effecting change in the social and cultural context—and yet it is the same context which has overwhelmingly prescribed the role of education as socialisation and maintenance, rather than transformation”.

Sterling sees systems thinking as a partial solution to this dilemma: educational institutions should transform in co-creative learning process together with society. Could the above-mentioned emerging learning communities be co-creative partners for formal educational institutions? This would enable students to become co-learners in creating a sustainable society. This would also make educational institutions active agents in the societal change. The process would create a reinforcing loop where education changes society which will again have an impact on the design of education system.

Perhaps the future of transformative education will become poly-morphic. Formal education system may find a co-creative transformative relationship with society, and radical modern learning organisations (as described in section “[A Radical Vision of the Future School](#)”) may emerge from side to amplify transformation, entering their influence in all sectors of society. In society the cultural transformation is based on a constant interaction between the individual, organisational and system levels. At some point, the bottom-up demands will become so strong that the system is forced to change.

### *Searching for Direction*

It is important to note that we cannot know in advance what a sustainable future will look like. We have only good science-based descriptions on the features of a society that can be sustainable. In developing alternative futures, it is wise to use this scientific knowledge to understand the relationships between economy, wellbeing and ecological sustainability. This can give us a direction from which we can search for possible solutions.

Max-Neef (2010) states five postulates for a, new sustainable economy:

1. The economy is to serve the people, and not the people to serve the economy.
2. Development is about people and not about objects.

3. Growth is not the same as development, and development does not necessarily require growth.
4. No economy is possible in the absence of eco-system services.
5. The economy is a sub-system of a larger and finite system, the biosphere, hence permanent growth is impossible.

Max-Neef points out that “the most important contribution of a human scale economy is that it may allow for the transition from a paradigm based on greed, competition, and accumulation, to one based on solidarity, cooperation, and compassion”. He suggests that new economic models must accept the limits of the carrying capacity of the Earth, move from efficiency to sufficiency and qualitative wellbeing, and solve the present economic imbalances and inequities. Transition must be towards societies that can adjust to a reduced level of production and consumption, and favouring localised systems of economic organisation.

Post-materialism can provide a possibility to safeguard ecological sustainability and at the same time to improve subjective wellbeing of people. The Eco-Social approach (Table 5.5) represents a model based on a post-materialistic view. Shift from a materialistic paradigm to post-materialism would require reassessment of the role of the economy: it would no longer be the ultimate goal by itself but is a means for improving subjective wellbeing based on the true needs of human beings. This could possibly lead to an abandonment of the sacrosanct necessity of economic growth and the introduction of an alternative economic system focusing on the subjective quality of life.

**Table 5.5** Differences between the popular view and the proposed Ecosocial Approach to Well-being (adapted from Salonen and Konkka 2015)

	<i>Popular view</i>	<i>Ecosocial Approach to Well-being</i>
Good life	material consumption, individualism, needs of our generation	non-material consumption, sharing and caring, needs of future generations
Economy	competition, “more”, maximizing of owner’s profits, rich and poor	cooperation, “better”, benefits to society, equality of opportunity
Time	short-termism, intra-generational equity	long-term orientation, intra-generational and inter-generational equity

The journey to the future is about unlearning our current worldview and learning a new sustainable one to replace it. This learning is truly transformative.

## CONCLUSIONS

Green growth is the current economic and societal paradigm inside which we are searching for sustainable global solutions for our common future. However, our chances to succeed in solving environmental and social problems while staying on economic growth path seem to be questionable. Mankind is taking a substantial risk of disaster if we do not have any alternative plans for the economic growth model in the form we currently understand it. It seems that the reason behind this unintellectual strategy is our deeply anchored Western worldview which derives from atomistic and reductionist thinking, mechanistic industrial age societal and economic models as well as a materialistic conception of wellbeing.

In front of the threat of climate change and other complex sustainability problems, reformist changes in our economy, production and energy systems and consumption patterns can turn out to be inadequate. From the viewpoint of learning, reformist improvements are the best we can achieve by cognitive and meta-cognitive thinking. Changing our worldview requires third-order transformative (epistemic) learning which requires critical reflection between assumptions and experience and reconstructing one's own sense of self.

Transformative learning is about seeing our worldview from a reflective perspective. It can be questioned how well we can ever do this on our conscious level of thinking. Stepping out from our mental box and transforming our thinking requires a fundamental shift of viewpoint, unlearning and constructing a new worldview. Intuition can help us to unlearn our prevailing worldviews and assumptions and to create innovative new solutions. It is also a key for seeing the world from a holistic perspective, by our *common eyes* instead of one's own eyes.

A strong leverage point for mind shift lies in the theory of *Sense of Coherence*, which defines subjective wellbeing comprising the complexity, manageability and meaningfulness of life. This theory is especially applicable for explaining the origin of mental health disorders the Western world is currently facing.

Consumerist society, rapidly advancing technologies and recurring crisis of our world have created a living environment in which mental

and life management problems have become commonplace. Modern society is also suffering from vanishing meaningfulness of life to which the consumer-centred wellbeing paradigm has not been able to provide a solution.

Modern wellbeing research suggests hope for a sustainable future. It provides strong evidence of the fact that the building blocks for meaningfulness and true happiness are mostly factors other than consumerism and material things. True happiness and meaningful life consists of social relationships, encounters with other people, time spent with family, voluntary work and acts in the interests of other people, creative activities, etc. In practice, these findings suggest that we are able to achieve a greater state of life satisfaction and happiness in a society that is not based on the continuing growth of the economy and personal consumption.

In the future school, transformative learning for a sustainable future should be the core mission of education. Learning should be focused on understanding the connections between humans, nature, society and economy. This requires moving from subject-based orientation towards solving real-life problems with future skills like systems thinking, critical thinking, future thinking and interpersonal skills. Other than cognitive skills, the unconscious mind must be utilised intentionally as a source of creativity, empathy, complex problem-solving and holistic thinking. Character education with qualities such as mindfulness, curiosity, courage, resilience, ethics, leadership, sufficiency and planetary responsibility are an integral part of fostering change agents for a sustainable future.

In order to achieve large-scale transformation, it is important to widen the scope of learning to organisational and societal levels. School must include all students as well as the staff in a common learning and development process of creating a sustainable school. School culture must provide experiences that provoke an emotional response and support the origin of intrinsic values, meaningfulness and the development of new worldviews built on existential understanding. Students' genuine participation and influence on common issues must take place inside and outside of the school.

Reforms to the education system may still not be enough to achieve transformative learning. The problem of our education systems may not be in teaching future competencies, but in the prevailing worldview of our society that fixes the values, contents, goals and methods of education. Thus, the implicit target of education is to convey this worldview

and our value system to the next generation so that they can become “good citizens” and stewards of the system.

It may be that our education system is a prisoner of its history which derives from the worldview of the industrial age and scientific reductionism. The world, society and power relations may need to change first before education system can do so. And even if there would be change, it is slow and gradual and not at all on a scale that would be needed to respond to escalating future crises.

Thus, a revolutionary approach that challenges the contemporary education system from every side may be needed to achieve true transformative learning. A vision for the future of school is based on a strong faith in the wisdom of our youngest generation. It would give complete liberation to its students to create the world they want—even if it would mean for us adults giving up our current ways of living.

The future school would give coming generations tools for thinking and seeing the world differently, constructing their own worldviews and acting to create a sustainable future. However, it would be open to everyone and learners of all ages. Schools would be self-organised living learning communities which were shaped by the learners. These communities would unite people and experts from different fields of inquiry to learn and make a sustainable future together.

The aim of these future learning communities would be to create deep meaningfulness, purpose and community for learners and act as active change agents. In the very heart of these communities is aspiration for a deep understanding of the essence of life and humanity. They are committed to breaking the boundaries of thinking and knowledge, and to learning that transforms the fundamentals of life, existence and worldviews. They unleash intuitive knowledge and combine the intuitive potential of individuals.

The living learning communities would establish binds between each other based on common interests and targets, and form ecosystems of change. The ultimate goal of networking would be a global ecosystem of communities with aspirations for a sustainable future through creating cultural transformation in society. The learners would create a web of change that formed the critical mass required for societal transformation. This would challenge the dominant institutions and systems of society.

Even the most visionary future learning community cannot make a cultural transformation happen in a blink of an eye. One challenge to rapid change is the stringent tuning of our world which is related to interconnectedness and rapid flow of information, capital and people.

Keeping the financial pyramid standing requires ever-increasing profits. It seems that the only way to keep our global system on a track is to constantly increase its volume. But how can we change if there is a great risk of a sudden economic collapse or human disaster if we tinker with the machine?

A solution may be found in planning alternative futures. With only one unsecure paradigm for the global economic system, how can we explore and test a precautionary approach and necessities such as resilience? An ideal way to do this would be to adopt societal and global experimental policies for alternative solutions to organising society. The idea would be to avoid collapse by establishing “for the other foot” a solid ground on which it could safely step. A problem with this approach is the fixed paradigm of institutions, businesses and decision-makers. In a desperate search for short-term remedies and quick solutions, it is not very likely that this kind of policy would be supported.

A more realistic approach for creating alternative futures is bottom-up strategy. A cultural transformation for a sustainable future can emerge from individuals and communities developing new solutions such as organising local economies, improving subjective wellbeing and creating meaningful interaction between people. These communities can become self-sufficient and demonstrate real resilience against complex future problems. A key for cultural transformation is learning, sharing and disseminating these experiments and building ecosystems of communities with new worldviews, purposes, values and behaviour patterns.

This perspective provides interesting possibilities for educational organisations. The above-mentioned emerging learning communities can be co-creative partners for formal educational institutions. This would enable students to become co-learners in creating a sustainable society. This would also make educational institutions active agents in societal change. The process would create a reinforcing loop where education changes society which will again have an impact on the design of education system.

Perhaps the future of transformative education will become polymorphic. Formal education system may find a co-creative transformative relationship with society, and radical modern learning organisations may emerge from side to amplify transformation, entering their influence in all sectors of society.

The cultural transformation is based on constant interaction between the individual, organisational and system levels. At some point, the bottom-up demands will become so strong that the system is forced to change.

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