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# The University for a world with climate change: educating for crisis, change, caution and context

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The modern University was created in the era of the Enlightenment, also known as the Age of Reason. The intellectuals of that time believed that the complexity of the world could be reduced to universal formulae derived by the scientific method and the world could be improved by systematic application of such knowledge. The modern University has been a main tool of the Enlightenment since it formalized and disseminated universal knowledge. In the last three centuries, this approach of simplifying and controlling the complexity of the world brought unprecedented prosperity and social progress to the humankind.

However, in contrast to this Enlightenment model, the modern world is increasingly shaped by problems and challenges that are unpredictable and “messy”. Nothing illustrates it better than climate change. Its effects are decidedly non-linear and difficult to forecast. There are no guaranteed responses and those proposed so far are complex and context-dependent. Climate change is not an exception: most of today’s challenges cannot be solved with universal linear formulae and approaches. Examples include the financial crisis, the rise of fundamentalism, the reversal of democracy, erosion of respect for human rights, and continued misery of “the bottom billion” countries.

Consequently, the University of the 21st century should prepare its graduates not for the orderly and manageable world of the Age of Reason, but for the world dominated by uncertainty. Such a University cannot be limited to transferring existing generic knowledge to its students. This is not a call for diminishing the role of scientific knowledge. In fact such knowledge will be increasingly important and needs to become even more widely accessible, understood and applied. However, giving the young generation scientific facts is clearly not enough to prepare them for a world with climate change. The University should also find a way to teach them how to handle unpredictable crises, lead great transition, exhibit caution and reflexivity and respect the context.

## 1. Education for Crisis

Crises, disruptive and unexpected events, are the reality of our world and will become more widespread as the climate changes, but somehow Universities continue to educate their students as if crises are rare. The illusion and expectation of stability (of societies, technologies and natural systems) hinders our ability to deal with crises which we will inevitably face. The results are leaders whose instinctive and common reaction to crises is denial. We have observed it in Chernobyl and Fukushima, the BP Gulf of Mexico oil spill, Hurricane Katrina, and the financial crisis.

Young people need to be prepared to face unexpected and disruptive crises which may become increasingly frequent in the non-linear and uncertain world. Dealing with cri-

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<sup>1</sup> Many ideas in this talk are those of Yehuda Elkana and Wolfgang Reinicke

ses requires three qualities: first, the ability to recognize and admit rather than deny a crisis; second, the ability to overcome crises by finding effective, often non-standard and unique solutions; third, the ability to learn from crises, in order to become more skillful in dealing with them in the future.

## 2. Education for Change

Crises are unexpected, rapidly unfolding and short-term. Overcoming crises often means restoring continuity, retaining the status quo. However, citizens of tomorrow will also need to deliberately *disrupt* the continuity, to challenge the very nature of status quo, to build differently organized technical systems and societies. There is a consensus that tackling climate change requires urgent, rapid and large-scale transformations in energy systems, land use, urban planning, food production and other areas. Such transformations are not unprecedented: they did occur in recent history, but they were driven either by 'natural' technological and economic developments (which we cannot afford to wait for) or by brutal regimes (which we cannot agree to).

It is clear that governing such transformations might require rethinking models of governance at all levels. Yet, experts speak about changes in technologies, even "lifestyle", "culture" and "values" but somehow presume that all these changes will be brought about by the same or largely similar institutions that Western societies created during the Industrial Revolution and have used for the last century or two. As a result, bold visions of technological and lifestyle transformations needed for tackling climate change are rarely accompanied by any meaningful proposals for institutional and governance reforms that can support such transformations, especially in countries that need it most.

Graduates of the modern University are rarely capable of conceiving and implementing such changes because they often receive their education, especially policy education, in static, timeless, universal categories. They are taught to uncritically accept the nation state and its main institutions instead of considering them as products of a particular period in technological development and social organization. They are subsequently not able to contemplate, let alone guide institutional change which is both inevitable (as a natural result of technological development) and necessary.

## 3. Education for Caution

The need for critical thinking necessary for conceiving social change is pretty widely recognized, at least in the rhetoric of modern education. Ironically, many of my students are prepared to 'think outside the box' before learning where 'the box' is. This immediate unreflective readiness to 'lead the change' carries many risks. For once, many technological solutions to climate change such as geoengineering, nuclear energy, carbon capture and storage, 'the hydrogen economy', and bioenergy are not risk-free. Implementing such solutions requires extreme caution, wisdom and respect for the complexity of the natural world, technologies and societies.

In addition to these natural and technological risks there are much less discussed social and political ones associated with the change in social institutions we might need to tackle climate change. Most of the peace-time examples of rapid and radical social transformations come from dictatorships such as the USSR, China (both achieving universal access to electricity in record-short times), North Korea (the only oil-free economy) and Cuba (which rapidly gained food independence by increasing local production in 'urban gardens'). There is a risk that similar regimes may become advocated if

'eco-fundamentalism' joins forces with other "-isms" to create totalitarian societies in the name of tackling climate change.

Modern Universities do not reduce such risks by repeating the mantra of "educating the leaders". This slogan often explicitly fosters students' aspirations to attain high positions in government or business in order to "lead the change" for the better. Henry Mintzberg calls this "heroic leadership", i.e. the willingness to force change without consideration of complexities, risks and side-effects. Arguably, such 'leadership' was at the roots of many catastrophic social failures, including the totalitarian regimes of the 20th century.

Fortunately "educating the leaders" is becoming less appealing as young people less and less aspire to follow the footsteps of the leaders who have recently led the world from one crisis to another. The University should build on this sense of disillusionment in current leaders to move from educating 'heroic leaders' to educating 'concerned citizens', i.e. people who are prepared to both lead and follow, but who more importantly have the ability for self-reflection and doubt.

Young people have always been good at doubting existing systems. At present they also need to learn the art of doubt at a higher level. They need to doubt themselves before they doubt everything else. Such doubt, or awareness of one's own fallibility is closely connected to reflexivity. Reflexivity is absolutely essential for dealing not only with financial markets, but also with climate change and other great challenges. This could help avoiding major risks and harnessing the complexity of natural and social systems.

## 4. Education for Context

There are no universal solutions for climate change in the same way as there are no universal solutions for economic growth, democracy, and other major problems. Each country, region and even locality will need to find their own way to mitigate its impact on climate and adapt to the unavoidable change.

Such context-dependence poses a challenge to the modern University which by its very name promotes *universal* knowledge and generic solutions. In contrast, the University of the 21st century should train the students to pay attention to diverse contexts and to understand the limitations of generic approaches.

Context-dependence is sometimes confused with claims of uniqueness of a particular nation or a community so that it can disregard common values and ignore global inter-connections. The University of the 21st century should not allow its students to fall into either an illusion of context-independent panaceas or a trap of isolationism denying global realities. Instead it should teach "global contextualism" where solutions to global issues are developed within local contexts.

## Mindsets and talents for the future

Thus the University of the 21st century should prepare its students to deal with pervasive crises, while promoting radical transitions, not as reckless 'heroic leaders' but rather as concerned and reflective citizens who have practical skills to relate global issues to local contexts.

Each of these abilities is difficult to acquire, but finding the four together is at best an improbable mix and at worst an impossible contradiction. Dealing with crises requires

short-term focus on protecting against disruptions to ensure continuity. On the other hand, driving transformations presumes focusing on long-term change defying continuity. While leading change requires resolve and certainty, avoiding risks requires caution and doubt. Another contradiction is that both envisioning transformations and reflexivity require abstract thinking, but there is rarely room for such thinking in dealing with crises or practically engaging with a local context.

Some of the great contemporary thinkers have identified the paradox that the University of the future needs to foster very different, sometimes contradictory, qualities. In 2003, Henry Mintzberg wrote about "Five Minds of a Manager" and in 2009 Howard Gardner wrote about "Five minds for the future". Inspired by their ideas I developed a course "Five minds for sustainability" where students learn both the potential and the limitations of different ways of thinking about the environment. I also coordinate a Master's program which is based on the idea of different 'mindsets'. Within this program my students move from one setting to another to absorb different perspectives. They observe politics in Budapest, water management on a dry Greek island, waste treatment in laboratories of North England, 'green economy' on shop floors in South Sweden. This helps them to understand why very different perspectives on environmental problems are not only inevitable but also necessary.

But this 'multi-mindset' approach may not be enough. It is not always possible to train a student to be a cautious, reflective and doubtful analyst, an effective pragmatic "doer", a visionary leader, and a fearless crisis-buster all at the same time. In fact, if one side of the Enlightenment's idea of universality is that generic knowledge can solve all problems, the other side of the same idea is the belief that all people have similar minds and hence should be educated in equal ways. An opposite idea with more and more evidence from cognitive science is that people have different talents for leadership, caution, or managing crises or contexts. Perhaps, in the University of the 21st century, these differences in talents should be recognized and built upon rather than glazed over. In this way it may be possible to train some students with leadership talents to champion radical change and to educate other students with inherently cautious and analytical minds to identify and manage risks.

In summary, the modern University born in the Age of Reason is facing difficulties in preparing the students for the increasingly unstable, unpredictable and context-dependent world under a threat of climate change. The proposition of this talk is that to prepare young people for the future Universities should educate for tackling crises, leading change, managing risks, and respecting diverse contexts. The challenge of developing such competencies is that they are associated with very different, even opposite cognitive qualities. Students should be explicitly trained in all these different mindsets, while at the same time recognizing their initial inclinations or talents for particular roles. Climate change can only be tackled if seemingly opposite mindsets productively cooperate rather than annihilate each other. Foundations for such productive interactions should be laid in future classrooms where students should learn not only to think in different ways, but also to understand, appreciate, and respect perspectives, mindsets, and roles of people, different from themselves.