



ORIGINAL ARTICLE

Teaching with scenarios: a social innovation to foster learning and social change in times of great uncertainty

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Abstract Learning strategies are social innovations of the past. To help us cope with problems in the past, they were developed, imitated, spread and codified into practices, rules and institutions. They lose their usefulness if the conditions of the present differ markedly from those of the past that gave rise to the then successful strategies. Our world is markedly different from the past. Thus, we need to introduce new learning strategies to be able to cope with the conditions of the present. And since one key characteristic of the present is a fast turbulence, we need to accelerate our rate of introduction of social innovations. We suggest scenarios as tool to do so.

Keywords Scenario · Decision-making · Power · Adaptation · Transformation

Introduction

The way we learn, individually and socially in groups, is strongly influenced by the past. Learning strategies that were successful then were codified in processes (e.g. the scientific method and learning by being lectured) and educational institutions (e.g. the university and universal compulsory education). “Successful”, however, can only be a meaningful criteria of learning strategies in relation to conditions, i.e. problems that needed to be addressed, at the time the strategies

were established. Thus, when conditions change – especially when they change fast, dramatically or both – it is quite likely that learning strategies that worked well previously fail to do so under the new conditions. When this happens, the problems that need to be solved and the learning strategies employed to do so are out of synch.

We are currently in such a situation. The challenges of having reached, and in some instances exceeded, planetary boundaries [1], of living in an intensely networked world [2] where everybody knows everything about you all the time, and of being able to impact our geophysical and evolutionary habitat deeply into space and time [3], describe a world that is quite different from the world of the past.

Yet, the learning strategies we continue to deploy are largely those of the past. They are becoming more and more inappropriate and, as a result, we fall increasingly short of being able to cope with the challenges we face, now and in the future.

Hypothesis

Our task is, therefore, to accelerate our ability to bring forth primarily social innovations leading to social change that are better at addressing our current problems than we did in the past. “Social innovations encompass new practices (concepts, policy instruments, new forms of cooperation and organization), methods, processes and regulations that are developed and / or adopted by citizens, customers, politicians, etc. in order to meet social demands and to resolve societal challenges in a better way than existing practices.” [4] While Howaldt in the quote above does not distinguish between ‘development’ and ‘adoption’, it simplifies the discussion – of how scenarios can contribute to both - if we call the development (of new practices) ‘social innovation’ and their

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(widespread) adoption ‘social change’. Following Tarde [5, 6], all change starts with the individual and spreads, if useful, through imitation to the society at large. The imitation, Tarde hypothesizes, is not a cloning process resulting in identical duplicates, but a process that always involves variation, thus bringing innovations into social structures and practices. Where the innovation stops and the change starts is a matter of debate [7], but need not concern us here where we examine the contribution of scenarios to social innovation and social change.

An acceleration can be achieved in two ways: (1) by empowering individuals to become more socially innovative [8] and (2) creating deliberative processes [4] that in themselves are social innovations, thus speeding up the creation of social capital [9]. The hypothesis we wish to test is whether the ‘transformative scenario method’ can be used to achieve both (1) and (2) and thus allow us to cope successfully, even in turbulent times.

Method

A strong indication that scenarios are capable of (1) empowering individuals to become more socially innovative and (2) creating deliberative processes that in themselves are social innovations, comes from van der Heijden (as quoted in [10]):

“Survival in a turbulent environment requires a new response based on mobilizing the same systemic forces that generate the turbulent change in the first place. In trying to cope, we must fight like with like. That means that successful coping involves building feedback loops in the environment that can counteract the destructive autonomous loops that cause the turbulence we experience.”

Translated to the problem mentioned here, van der Heijden calls for a new way to learn, appropriate to what he calls the ‘turbulent environment’ and what we called earlier ‘a world that is quite different from the world of the past’. To be able to judge whether it makes sense to use scenarios in the accelerated creation of social change, we give a short overview of the method below. For an in-depth guide to creating and using scenarios see [11–14]. Additional detail can be found in [15–27] (Fig. 1).

The process can be visualized in seven steps. The phases overlap to a considerable degree with Chris Rose’s ideas expressed in “How to win campaigns” [28], and with David Kolb’s ideas expressed in “Experiential Learning: Experience as the Source of Learning and Development” [29, 30].

1. Driving question

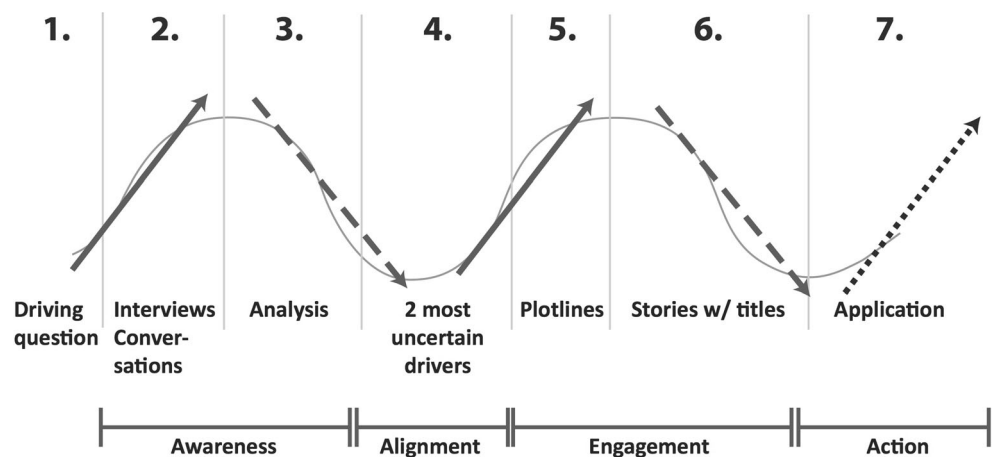
The most important requirement for a successful scenario process is a good question. The question that drives the entire process should be:

- About the future (if you ask questions about the past or the present, you will spend much time merely identifying irreconcilable differences, and you have no time and energy left to transform the future),
- something that the participants can influence, and
- something the participants care deeply about.

Some points to consider:

- A good question is open-ended, and cannot be answered by ‘yes’ or ‘no’.
- A good question has a time horizon in it, preferably explicit.
- A good question has an actor in it, someone who *causes* something to happen, or not. It can be an individual, a group, an organization, or even humanity as a whole, again explicitly or implicitly.

Fig. 1 The seven phases of scenario work



2. Interviews / Conversations

To prepare the scenarios, you interview ‘remarkable people’ about different aspects of the driving question. The interviews are open-ended and are more like conversations in which the interviewer speaks very little. The purpose is to bring the full range of concerns, views, hopes and fears of the interviewees with respect to the driving question to the fore.

Some points to consider:

- ‘Remarkable people’ are those who can see things from different perspectives, can verbalize their thoughts clearly and can develop and communicate a line of causal reasoning. They are able to self-reflect.
- Remarkable people need not be experts in their field.
- The more diverse the group of people you speak to, the better.
- Talk to young people. They will actually live in the futures being explored.
- Talk to at least three-dozen people. Once the number of conversation exceeds, say, a hundred, the additional insights you gain begin to diminish.
- The content of the conversations is confidential to all third parties, including those who pay for the exercise.
- Despite the fact that the conversations are confidential, you should get the interviewees’ permission to record what is being said. This is an effective way of avoiding to hear only what you want to hear.
- Interviews are one-on-one and take place in a location the interviewee chooses. Normally, this is their office or home.
- Interviews last for about an hour and should only in truly exceptional situations reach or exceed 2 h.

3. Analysis of the interviews

All recordings are transcribed and the identity of each interviewee removed. Often the questions themselves are stripped out. A good way to do the analysis has proven to be to organize each answer as a paragraph and then sort the paragraphs in some form. Although this removes the flow and context of the interview, making it much harder to read, it forces the analyst to pay attention to what the person said or meant.

Some points to consider:

- With your analysis team summarize each paragraph, each thought on a sticky note.
- Have members from the analysis team one by one step up to a very large white board and have them place their sticky notes in an order that they roughly explain while posting. Other members of the

analysis team are allowed to ask questions, suggest different orderings and probe the presenter’s connection between what was actually said and his or her shorthand noted on the sticky note.

- Ask whether any kind of structure around any kind of concept seems to emerge. This goes in the direction of the important and uncertain drivers, which we will deal with in phase 4, but it is not restricted to two. On the contrary, you will most likely end up somewhere between seven and a dozen themes, drivers, or concepts, which, in the judgment of your analysis team, best represents what the interviewees were trying to tell you.
- This is a qualitative as well as iterative process. The art is to find words to describe the themes, concepts and structure that encompass the hopes and dreams, fears and concerns of all the interviewees. The odd thing about this type of clustering, which is called inductive because it goes from the specific to the more general, is that you may end up with words and ideas that in the specific form you will be using them, were never ever actually said by anyone of the interviewees. You try to surface the spirit, the essence, the underlying facts and emotions of their contribution rather than an orthographically and grammatically correct quote.
- Finally, the analysis team prepares a very light-handed summary in the form of a presentation to the participants of the first workshop which happens in the next phase.

4. Two uncertainties

The two drivers you need are those that are at the same time the most uncertain and the most important ones for the driving question of the scenario exercise.

There are two difficulties: ‘most uncertain’ and ‘two’. Somehow we are conditioned to be highly suspicious of uncertainties; we seem to have to know – even if we have to fake it. Not to know is often considered a weakness. But the paradox is that to have any chance to ensure that what we do has an impact and leads to a successful social change, we actually need to embrace uncertainty. If everything is already certain, then there is, quite literally, nothing you can do to make any difference at all.

Once that mental resistance is overcome, the next difficulty is ‘two’. We resent, even fight having to commit ourselves to such a small number. Instead, we want options, choices, room to maneuver; ten, or more, action items and long lists of demands the other side must meet before we deign to consider their grievances! And so we have become ‘list

generators', forgetting that some things are more important than others; and also forgetting that having ten or more key points you have to act on – after all, they are key – you may be busy, but not necessarily effective.

Some points to consider:

- What if small groups come up with 4, 6, 8 drivers? Use inductive clustering i.e. search in the plenary for words and ideas that in the specific form you will be using them, may never actually have been said by anyone of the small groups.
- What if participants want a third axis in the plenary? Sometimes workshop participants may suggest a third driver, especially after you've told them that the drivers will be placed at right angles to each other to create the scenario space. If you allow a third driver, coming out of the flat space (like a z-axis), this creates a sphere, and you have eight spherical segments as homes for the scenarios, bounded each by three uncertainties.

The resulting eight scenarios get very difficult to keep apart - we humans are not good at distinguishing clearly between so many possibilities. Hence, the restriction to two drivers of uncertainty is a practical limitation to increase the practical usefulness of scenarios.

5. Plotlines

The two uncertainties become the axis of the scenario space. Starting at the center of the axis, each of four small groups takes a quadrant and sketches a first story describing that future. They will then work all the way to the edge of the quadrant – i.e. throughout the entire time-space. The groups can either draw a path themselves or have the plenary group suggest one after a group has presented their initial story.

6. Causal stories with titles

The key to a good scenario story is the switch from chronology to causality. In the vast majority of cases, the first sketch created in the first workshop is a chronological sketch: A did this, then that happened, then C pushed B, D got elected, promoted or expelled, and finally F did that. The pattern is familiar because this is how we look at life and it is how history, overwhelmingly, gets taught. But chronology condemns you to be reactive. If time drives everything – as a chronological view presumes – then what can you do? Nothing at all – you can only wait. Instead, get participants to give you reasons and logic. Repeatedly ask why.

Once people think causally, get them to flesh out, repeatedly, the story with actors, events, dilemmas,

the givens¹ – all of them – titles and whatever else they can think of.

The resulting stories must be stringent, novel, challenging and plausible. *Stringent* means internally consistent; there must be a causal (see above) logic to them. To demand that stories are *novel* is a way to pull the participants into the future. We are strongly influenced by the immediate past and present, so that without continuous and insistent prodding to move into the future, you will end up with stories about things that are in the newspapers by the end of the month. A *challenging* story is one that is making the reader sit up and take notice, rather than put it on the pile of things to attend to ,later on'. And finally, *plausible* means that the story needs to be grounded in today's world. It should and must leave the here and now behind, but that is where it starts.

Most of the stories you know and tell are carried by and revolve around characters, mostly human, and their ,characteristics'. They are the ones that do something or not, are influenced by others, learn their lesson or not and face dilemmas, which are, at times, insurmountable. Scenarios, however, in order to serve as vehicles for social learning are also meant to be used as learning vehicles for others, who were not involved in the creation of the stories.

To make it easier for these others to use the stories to create social change, they are asked to enter the scenario. It is this ,stepping into'that is made more difficult the more convincing the characters of your story are. Your characters are not just placeholders, they are there! So before others can ,step-into', they need to get rid of the people already populating the story. And if the characters carry the story, once you get rid of them - to be able yourself to ,step-into'- the story may well collapse. Hence, it is better to create stories with as few characters as possible and to concentrate on the stage on which the story unfolds.

7. Application

Scenarios give us a tableau of possible futures. They allow us to pre-test decisions and social innovations. We can do this with three aims in mind:

- 1 We *adapt* our decisions, plans and ideas, at all levels, to the future landscape, so that we succeed by adapting better than others.
- 2 We *shape* the future landscape to amplify our inherent strengths. This is possible because the future is not

¹ 'Givens' are, in the judgment of the participants very important and certain drivers that shape the futures being created.

deterministic; it is full of uncertainties, surprises and chance.

- 3 We *transform* the future into what we think - with others - it *should* be.

The second and third routes are the real challenges. They require a keen and truthful understanding of one's strengths and weaknesses; it also requires a deep understanding of the room to maneuver one has; and it requires the ability to consider the set of decisions one takes as variable.

Procedurally, in all three cases you set up a matrix. Do this with the same people that will be taking decisions or are contemplating the social innovations later on. The more homogeneous the group, the easier it is. The homogeneity can come from your age, your field of study, your function in the organization, your interest, etc. The price of homogeneity is, however, that the range of decisions you come up with are often narrower than if you have a few lateral thinkers, a few contrarians in your group.

Adapt

Arrange the matrix so that the scenario titles are listed across the top horizontally. Then write down the decisions you want to test against your futures vertically down on the very left-hand side. Be as precise as you can be. Start with decisions that are pending or overdue anyway. While writing down the decisions, note that they are independent of the scenarios. They are decisions you and / or your group will take in the here and now. They are your ideas, hopefully informed by robust and challenging hypotheses. They all should be within your, or your groups, power to take. It serves no purpose to contemplate decisions you have no power to take. Next, you go through each and every cell of your matrix, making a judgment in response to the following question: If I, or we, were to take decision 1, how would that play out for me, or us, if scenario A became true?

You should note the answers as either double positive (++), i.e. really great, or simply positive (+), i.e. ok, neutral (0 or ?), i.e. not sure, simply negative (—) i.e. kind of bad, or doubly negative (— —), i.e. really, really bad. You do this with each cell, one at a time, so budget some time for this, especially when you do this with others. Next, you do the assessment of your set of decisions horizontally, by row. Then, you take the decisions that are predominantly positive across all columns and avoid taking those that are predominantly negative.

Shape

The cell-by-cell analysis is the same as under adapting. But this time, you do the *assessment* of your set of decisions

vertically, by column. You evaluate which column, i.e. which scenario, is the most positive for you and engage in activities that make this scenario more likely.

Transform

You need to redo the analysis for each cell, but, this time, asking a different question: If I, or we, were to take decision 1, would that make scenario A more likely in reality? Besides answering a different question in the cell-by-cell analysis, shaping and transforming differ in another crucial detail: how you choose your preferred future. The way to do it in 'shaping' is a very pragmatic, almost mechanical and certainly detached manner. You pick the future in which your decisions, pending, overdue and just around the corner, lead to the biggest advantage to you. This approach originates in a good, deep and honest look at yourself - what am I good at? - and answers the question of how can I shape the future so that what I am good at gives me an advantage over others in that future.

For 'transforming', the choice of your preferred future originates in a - often moral based - sense of how the future should be. Morally, or normative, based choices are often harder to arrive at, and much harder to convey to others. You then need to rearrange, i.e. drop from, add to, modify, etc., your set of decisions to strengthen your chances in real life that your preferred future scenario will come true - that your social innovation will become social change.

Discussion

As with any social learning intervention, it is notoriously difficult to measure any impact [31, 32]. This is due to the 1) the near impossibility of cleanly isolating both input and output variable(s), 2) the lack, so far, of longitudinal studies, and 3) the difficulty of setting up any meaningful double blind test designs. Nevertheless, we would like to report two anecdotal successes, one on the individual and one on the societal level of learning, of using scenarios for learning and invite readers to challenge our findings by making them more rigorous.

Example 1, High school students in the Aachen, Germany area - individual learning

Our first example was started, and is still ongoing, with high school students and teachers in the area of Aachen, Germany. As a result of a regional scenario process in which students and teachers participated, the teachers suggested that we develop a way to enable them and their students to create and use scenarios in a normal class room setting. Over the course of several years, we developed and tested with a group of 10 to 20 teachers a practical guide to create and use scenarios as part of their

normal course work [33]. We also ran two three-day workshops as part of their normal continuing teacher training to give them the necessary practical knowledge, as well as the confidence to introduce a significantly new teaching method to their students.

Over the past several years, the approach was used in five schools and in hundreds of school hours. Over 500 students participated so far in subjects like geography, history, religion, information technology and social studies. The feedback from both students and teachers is positive: “By now, I have used scenarios four times with of various age groups. It is easy to connect this way of teaching to existing curricula and thus easy to legitimize. The students like it and the feedback is continuously very positive. The guide is excellent and very well suited for the practical reality of school life”, report one teacher. An example from a student is “What I personally learned from [scenarios] is that I have to be very thorough in choosing my profession, because the future determines my job and my job determines my future.” Or, another student who wrote: “We all are somehow afraid of the future. Scenarios are one way to give the fear of what lays ahead a name, and to do something about it.”

In one of the participating schools, the Realschule (junior high school) Baesweiler, scenarios are now mandatory in social studies. In all of them, scenarios teach students a set of skills that enable them to create maps of the turbulent future for themselves. This works best in situations where the maps of the future have a direct relevance to the lives of the students, as is the case, for example, in their choice of career.

Additionally, we have found that creating scenarios teaches several key competencies that normal classroom interaction rarely does. These are personal competencies, like ethics, respect, self-reflection, making plans for your life and self-expression; social competencies like verbalization, solidarity, control, criticism, conflict management, listening skills and conversations; methodological competencies like research, inductive clustering, facilitation; and decision-making competencies like curiosity, initiative, creative restlessness and deliberation. A scientifically valid appraisal of these findings has so far not been undertaken for lack of time and research funding.

Example 2, The ‘Mont Fleur’ scenarios, South Africa – social learning

“The Mont Fleur Scenario Exercise, an experiment in ‘future-forging’, brought together 25 South Africans ... All were committed in their own ways to building a better future for their country. From starkly different perspectives, they built a shared map of South African reality. Their ... report, published in July 1992, summarised these discussions in the form of four stories. Each

scenario imagined how events might unfold over the coming decade from 1992 to 2002.

Ostrich told the story of a non-representative white government, sticking its head in the sand to try (ultimately in vain) to avoid a negotiated settlement with the black majority. *Lame Duck* anticipated a prolonged transition under a weak government, which, because it purports to respond to all, satisfies none.

In *Icarus*, a constitutionally unconstrained black government comes to power on a wave of popular support and noble intentions and embarks on a huge and unsustainable public spending programme, which crashes the economy. In *Flight of the Flamingoes*, the transition is successful, with everyone in the society rising slowly and together.

These stories reflected key choices facing South Africa in 1992, with particular emphasis on the nature of the political settlement and the economic policies that would follow. Of the four scenarios, the path of South Africa since 1992 has been closest – although certainly not identical – to *Flight of the Flamingoes*. By rehearsing a variety of possible futures ... the Mont Fleur process made some contribution to this much-better-than-it-might-otherwise-have-turned-out result.

The more significant lesson, however, is not in the scenario stories themselves. The process itself is typical of one of the most important innovations of South Africa’s transition: the multi-stakeholder dialogue forum. From 1990 onwards, South Africans created – in parallel with the formal negotiating structures – hundreds of such informal forums. These dealt with a variety of challenges – local development, health, education, security and constitutional reform. Some adopted the scenarios method. More importantly, all created a safe and open space in which the primary political, business and civil society actors could come together to chart a way forward.

The key concept here is ‘we’, an assumption of shared interest and identity which, at first, was often denied. The forums encouraged South Africans sense of being engaged in a shared national project. The old was not yet dead and the new had not yet been born, and in this interregnum the forums provided a space for the people with a stake in the future to create it together.

The sense of ‘we’ – of incremental trust – was a foundation for the larger political settlement in 1994 and the transformation, which followed. ‘There was a high degree of flux at that time,’ Trevor Manuel [a participant and later Minister with various portfolios in a variety of governments of South Africa] recalled later. ‘That was a real strength. There was no paradigm, there was no precedent and there was nothing. We had to carve it and so perhaps we were more willing to listen.’” [34]

Conclusion

In the first example, the predominant outcome was the effect it had on the individual students. They were empowered to actively make use of the future, rather than passively endure it. Recall the student who wrote, “What I personally learned from [scenarios] is that I have to be very thorough in choosing my profession, because the future determines my job and my job determines my future.”

Whether participating in scenario processes resulted in the students being more likely to initiate social innovation is too early to tell. We are examining this aspect of scenario work in another, still ongoing, project with Syrian refugees in Sweden, where we try to measure this impact with the help of a questionnaire modelled after Aizen’ theory of planned behavior [8]. We will report on the outcome in due course. The work did result in a small social innovation: In the social studies department of one school, participating in scenario work is now compulsory for all students. Whether this social innovation, by way of imitation [5, 35] or otherwise, will result in social change remains to be seen.

In the second case, the Mont Fleur scenarios, social change was created through the social innovation of using the scenario process as a deliberative and cooperative way to reach agreement. Up until then, the change from white-only rule to majority rule was often accompanied by violence and civil war. While it is very difficult to assign a direct causality to the benign effect of scenarios, Trevor Manuel, the Minister of Finance in South Africa and a Mont-Fleur participant, credited the process with playing a significant role in the country’s economic and political transition. “It’s not a straight line from Mont Fleur to our current policy,” he said in 2000. “It meanders through, but there’s a fair amount in all that going back to Mont Fleur. I could close my eyes now and give you those scenarios just like this. I’ve internalized them, and if you have internalized something then you probably carry it for life.” [36] While South Africa is today not a paradise on earth, it is a country that chose a much more peaceful path for its future than it could have.

A similar social change resulted from the scenario work in Columbia. Kahane devotes a large portion of his book “Transformative scenario planning: working together to change the future” to this work and its impacts [10]. In both the Mont-Fleur and the Columbian example, as well as project the authors are currently undertaking on Levsos, the Greek island that in the fall of 2015 dealt with 500 000 arriving refugees – more than five times the number of summer residents, using the scenario process as deliberative cooperative process speeds up the creation social capital so crucial for our coping in turbulent times [9].

Outlook

To the scientific researcher, the evidence of scenarios being able to (1) empower individuals to become more socially innovative and (2) create deliberative processes that in themselves are social innovations may be wanting – although progress is being made [37–39]. As teachers, our task is to help prepare our students for life, their own life as well enabling them to contribute to a just and a sustainable society. A life that has gotten more complex, more risky but also holds more opportunities than even our grandparents could ever imagine. We should equip them with tools that are adequate for the new complexity, risk and opportunity. Scenarios are one such a tool, rudimentary so far, but promising. Promising because the tool is easy to learn, easy to apply and powerful in its results. We have found this to be true in numerous settings. We hope to have inspired you to try for yourself with your students. And we hope to have inspired more research on the impact of this method.

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