

The Crystal Ball is not a Black Box: Futures Research in Scientific and Organizational Perspective

Patrick van der Duin
Fontys University of Applied Science
Netherlands

Introduction

If there is one activity that needs to stay up to date on change and innovation, it is futures research. I argue that futures research can be innovated first of all by exploring the scientific nature of futures research, and then by approaching the variety of methods used in futures research in a contingent way and, finally, by making futures researchers more aware of the organizational context of the use of their work.

Futures research as a science

It is often argued that futures research is actually not science. And some authors make that claim with a certain measure of pride and certainly without remorse. Apparently, many futures researchers are not concerned about that their work does not count as science, perhaps because it gives them more freedom. After all, science imposes specific, strict conditions that have been determined and imposed in advance by the scientific community.

I do not agree with this perception and will explain why on the basis of three arguments. To begin with, it is often said that there are no so-called “future facts”. In one of the classics in futures research, “The art of *conjecture*” (my italics), Bertrand de Jouvenel (De Jouvenel, 1967) writes that “‘knowledge of the future’ is a contradiction in terms”. And because there is no knowledge, there are no “future facts”. Apparently, the future does not exist, and there is no science without facts.

I do not see the supposed non-existence of the future as a problem as such, nor that the future would not exist or that there are apparently no future facts. However, I do take issue with the claim that that means the future cannot be studied. I am originally an economist, so I know that inflation does not exist. Nor do economic growth and social structures. Not to mention the natural opposite of futures research: history. History does not exist either. The only things we know about history, we know from stuffy archives or tall tales from times gone by. Of course, I am exaggerating a little, but the fact remains that there is little solid evidence of the past.

Granted, the social sciences, which I believe include futures research, are a tricky phenomenon. According to A.F. Chalmers (Chalmers, 1999), observations are always

theoretically charged, so it is virtually impossible to establish facts on which we all agree. Due to a lack of facts, there are many things on which social scientists do not agree 100% and objective measurements are difficult. However, social scientists have found a pretty neat solution by using the term “social construct”, which refers to the social reality that people experience. In other words, social reality is not so much an objective phenomenon on which we all agree, but it is constructed in our minds, perhaps according to our ideals. As W.I. Thompson puts it: “If men think it is real, it is real in their consequences” (Thompson and Thomas, 1928). In other words, if people think the earth is flat, they will not venture to far into the sea, for fear of falling off. So inflation does exist, because we have defined them as such and because society needs it to function effectively.

Which brings us back the future. Because the future does exist, as a social construct. Because we have certain expectations, hopes, desires and fears about the future, it affects the way we think, act and decide in the present. How factual do you want it? The self-fulfilling and self-denying prophecies are well-known. Predictions that affect the ‘real’ future, simply because they are spoken. So if someone important in the financial world predicts that a certain bank will fail, that will happen because people rush to that bank to withdraw their money. A good example of a self-denying prophecy is the report by the Club of Rome in 1973, which predicted that, if we continued to exhaust our natural resources, we would have serious ecological problems in the year 2000 (Meadows, Meadows, Randers and Behrens III, 1972). Although our world is still in a tough spot ecologically, the fact remains that, since that prediction was made, saving the planet has been high on the political and social agenda. Note that these predictions about the future do not have to be true, but they do prove that the future can be very real in the present. As a social construct. It is a fact that the future exists, if only in our minds.

That social constructs relate to the present is expressed in the frequent argument that studies of the future often say more about the present than they do about the future. We project current issues onto the future. In 2006 we looked back at the first major futures study by the Dutch Scientific Council for Government Policy in 1977, about Dutch society in 2002 (Van der Duin et al., 2006). The idea was to see to what extent the predictions that were made back then came true. However, what was far more interesting was that the choice of subjects said a lot about back then and much less about the present. Anyone conducting a futures study in 1977 about 2006 would discuss things like terrorism, the Internet, and the multicultural society. But back then, people worried more about things like social well-being and the price of oil. So every futures study really ought to begin by analyzing which subjects will be relevant in the future. We called that a meta-analysis. However, such an analysis would in turn be another study of the future, which again would beg the question what the relevant subjects would be. Often, I take a practical approach to these matters by mentioning this problem and asking the participants whether the subjects they want to address are really future-proof, if they really believe that the subjects will still be relevant in a number of years. Like history, the future is rewritten again and again in each period.

Secondly, an important part of futures research involves studying how organizations and people look at the future and how that future affects the way they make decisions. This aspect of futures research is very empirical in nature and is strictly speaking not concerned with the future as a subject but how organizations

and people deal with the future. This type of futures research is comparable to research into, for example, what kinds of management techniques businesses apply or how government organizations use IT. In that sense, this aspect of futures research is a part of management science or public administration, depending on whether we are dealing with business or government organizations.

Indeed, there are more and more interesting empirical studies looking at the use of futures research. For instance a recent article in *Futures* by Van der Steen and Van Twist about futures research at Dutch ministries points to futures research as a kind of boundary work between policy and knowledge about the future (Van der Steen and Van Twist, 2014). An important condition for this type of research is that futures research needs to be carried out somewhat explicitly. A few years ago, I examined how techno-starters from Delft looked at the future and, because techno-starters tend to be organized rather informally, that was not an easy task (Van der Duin and Hartmann, 2007).

The third reason for considering futures research science requires some explanation regarding the term “science” and the question when knowledge can be considered to be scientific. I would argue that to decide that, we need to look not only at the content of the knowledge involved, but at the way it was gathered. If I were to tell you that the outcome of a certain study was 3.68, and I then ask you to tell me whether that study was scientific, you will surely asked me to tell you how the study was conducted. Only then will you be able to tell me whether both the study and the outcome are scientific. Important scientific process requirements include transparency, repeatability, systematic, theoretical embeddedness and validity, for instance, internal, external, and conceptual validity.

Science philosophers usually focus on the scientific process and the question as to how science comes about. An exception is Karl Popper, who focused not on the question how science comes about, but on whether the hypotheses and outcomes can be falsified. In fact, in Popper’s view, hypotheses could have a mystical origin, as long as it was clear when they could be confirmed or rejected. As such, the claim that “tonight, everything became twice as big”, or more interesting, from a futures research perspective, “tomorrow it will either rain or it will not rain”, are not scientific, because it is impossible to indicate when they would be false.

Falsification plays a role in another area as well, which is the denial of the future, by which I mean that many people see the future as a simple, linear continuation of the past. In particular historians have a tendency to do this: “History repeats itself” and “There is nothing new under the sun”. The more things change, the more they stay the same. Twitter, WhatsApp, Snapchat? Well, is it not all about communicating, which man has done since the dawn of time? We used to have smoke signals and now we have Facebook. All amazing examples of blowing up concepts until they include everything, making it impossible to falsify them and making them meaningless in the process. By seeing the future as a continuation of the past, and by coming up with a historical parallel for every “new” development, every trend becomes something that we have seen before, making it impossible to falsify the past and, again, denying the existence of the future.

For futures researchers, Popper is an interesting person. His falsification theory is based on the idea that there will never be enough evidence to prove a theory for all eternity, so it is better to look for where elements of a theory can be disproved. This in turn is based on the famous induction problem that was formulated by David

Hume, which is that empirical regularity does not lead to theoretical certainty. In other words, the fact that the Sun rises in the east every morning is no guarantee that it will do so again tomorrow.

So Popper was no fan either of predicting the future. He was also against approaching the social sciences as a “hard” science, with its emphasis on discovering laws with predictive value. In fact, Popper thought that was a dangerous idea and pointed to the dangers of societies that are based on ideas that approach the social sciences as a “hard” science. Although communism is probably the best example, in fact every utopian society is based on this assumption. Popper called the projection of the natural sciences on history “historicism” and did not believe that history or the future unfold on the basis of social laws and big stories (Popper, 1957). He was a proponent of an incremental approach to change. However, his modest approach to the future did have a major impact on everyone who is in favor of a vision for the future and does not want to move closer to the edge of the cliff by taking tiny steps. That is, these days having a vision is considered utopian and that is a damning term. Personally, I think that although our society and our future do have a certain structure, there is enough room for “human agency”.

I conclude that futures research is a part of the social sciences and that it is highly empirical in nature by looking at the practices of futures research, making it part of management or public science. Futures research is also able to gather information about the future via a scientific process, provided that knowledge is falsifiable, transparent, and reproducible, theoretically embedded, and meets the various requirements of validity. And I do see futures research as an applied science based on an “open system” in which different approaches and different methods belong.

Broadening futures research

As I mentioned above, Popper felt that predicting the future was a hazardous affair. Although I do not subscribe to the idea that the future cannot be predicted, it is true that many futures researchers, as well as decision-makers and the public at large, believe that the future can indeed not be predicted (which is in itself a prediction) and, here is the crux, that the future can therefore not be investigated, let alone scientifically. The most telling example of this, as well as an interesting anecdote, is from the oration by Van Vught as Professor of futures research at Twente University (Van Vught, 1985) in which he argued that, because of the induction problem, the future cannot be predicted and that it is therefore not scientific. During the oration, someone remarked that, if the prospective Professor of futures research did not consider his own subject scientific, why on earth did he accept the position. Hole in one, I would say.

Futures research is much more than predicting the future and, by now, there are dozens of methods to explore the future and some even speak of “method fetishism” (Van Asselt, Van der Molen and Veenman, 2010). To make sure that the broadening of the portfolio really adds something, a different question must be answered: when should which futures research method be applied?

I include futures research in the social sciences and, as such, in management science. Many management studies focus on identifying success factors, for instance by asking: what is the most innovative company? Of course, people are very curious about the underlying success factors. Because, when you know what they are, you

can apply them in practice and success is bound to be yours! After all, if you are so smart, why are you not rich?

Of course, it is not that simple. To give an example, one of the most famous studies into the success factors of businesses is “In search of excellence” by Peters and Waterman (Peters and Waterman, 1982). Some years later, many of the companies on their list of most successful businesses had gone bankrupt, disappeared from the Forbes top 20, or had been taken over by other companies. Of course, they were scorned and jeered, especially when it later became clear that they had made up many of their research data.

But is it really that strange that success factors have an expiration date? Futures research clearly teaches us that knowledge is ephemeral. And is it so strange that, what works for one organization, does not work for others? Like the quest for the Holy Grail, the search for success factors is based on the idea that, like in the ‘hard’ sciences, there are universal laws, the idea being that the success of organizations could be explained by certain factors that have eternal value.

But success does not last, especially in management science. The approach that identifies with this principle is the contingency approach. According to Donaldson (Donaldson, 2001), the essence of contingency is that the effectiveness of organizations depends on how they adjust to certain characteristic factors of their situation or environment. And because these contingency factors vary, “one size does not fit all”.

No matter how logical and plausible this notion may be, in my work at Delft University of Technology, I meet a lot of people that find it hard to accept or understand, which is, of course, because my students and colleagues grew up with the natural sciences and have learned that every algorithm or problem has a unique solution. We also see that attitude among many consultants who want to apply the same trick always and everywhere. And it is true, if you are wielding a hammer, everything looks like a nail.

I have a lot of faith in the application of the contingency approach on the broad pallet of futures research methods, based on research in the area of ‘contextual innovation management’ where we look for contingency factors that explain why innovation approaches vary between organizations (Van der Duin, Ortt and Aarts, 2013). This approach is also based on the fact that businesses that have more innovation methods at their disposal are more successful than those with only one method. And I do not see why that would not apply to futures research as well.

The intended method broadening of futures research needs to lean heavily on this contingency principle. It is only then that there can be a meaningful discussion about when to apply which method and to answer which question about the future. To determine which method is the most suitable, it is important to question the users of futures research projects. I know from my own experience that it is important to know whether clients really believe that their environment, and with it their future, is determined by external forces. In that case, an explorative method, like the scenario method, is very useful, while a more malleable future is suitable for a predictive method.

The contingency method is also rooted in a specific idea about science, which is that the social sciences is essentially different from the natural sciences. Bhaskar draws a distinction between a closed and an open system (Bhaskar, 1975). He argues that natural laws can be discovered because the natural sciences are a more closed

system that our social reality. In the social sciences, there are no actual laws. The economic law of supply and demand is not really a law, because there are plenty of goods of which the price elasticity is zero or positive. According to Bhaskar, in the social sciences it is better to use the word “tendencies”, forces or mechanisms that detect a certain connection between two variables, but it can be a weak or changing connection. That does not make it easy to detect tendencies. Think of a tug of war in which both teams are equally strong. If you were only to watch the rope, you would swear there is no force at work, but there are forces and tendencies there nonetheless. Personally, I am very interested in seeing trends as tendencies. Often, trends are posited with a lot of certainty, and the existence of trends and counter-trends, like individualization and community formation, show that there are various, often opposite, social forces at work.

The contingency principle is linked to the notion of the social sciences as an open system, because that explains why there are no eternal laws and why there are different good practices for different situations and why these good practices change over time.

Professionalization of futures research

Although many consider the future to be important, we must not exaggerate the success of futures research. The success of Shell in the 1970s with its scenarios remains a great example of the value of thinking in terms of various possible futures. However, to be honest, it does not go much further. Although there are, of course, numerous success stories on a smaller scale, it is hard to find major success stories of futures research projects. A first response to this could be to say that futures researchers do not do their jobs well. However, futures research faces a tragic paradox: the need to look at the future, namely the fact that it takes time to change and that we need to be prepared, means that, in that future, there is no longer a connection to what we have once decided. Who remembers what was decided back then? As such, the added value of looking at the future is by definition hard to determine.

There is another reason why futures research has not had enough of a positive impact on organizations, one that will not surprise you if, like me, you are faced with the current economic crisis. It sounds oversimplified, but there is, of course, only one reason why we have been in an economic crisis since 2008, and that is the fact, shown in various studies, that both the public and the private sector are ruled by short-term considerations. Apparently, everyone agrees with John Maynard Keynes’ famous motto: “In the long run, we’re all dead”.

What should we do? I want to make a number of suggestions to enhance the impact of futures studies. I use the term professionalization, because it means that futures researchers need to increase their organizational awareness.

First of all, futures researchers must realize that they work for clients who, although they are interested in the future, have short-term targets and incentives, which means they are less interested in the future as such, but more in what they must do now to be able to face that future. However, too many futures researchers see the future as a goal in itself, rather than as a means for making better decisions in the present. Many futures researcher are afraid to lose their independence and see futures research as their first priority, and their clients come second. You may

think this is an open door, but a few years ago, I presented a paper at a conference in which we argued that the style of futures research needs to adapt to the needs of the organization (Van der Duin and Den Hartigh, 2007). I was tarred and feathered from the building. What were we thinking, allowing ourselves to dance to the tune of the clients! Raised voices let me know that futures researchers needed to be independent.

Make no mistake, I am not saying that futures researchers must do what their clients want. That would certainly not be good, because futures researchers would say exactly what their clients want to hear, which would not sit well with the critical attitude that every futures researcher needs to have. What I am talking about is that futures researchers need to be aware of the style and nature of their clients, that they need to develop enough organizational awareness to understand their clients and to allow them to position their futures research projects better.

Secondly, futures researchers can use an insight from management science, which shows that successful companies are characterized by ambidexterity. It turns out that businesses that are able to connect the short term and the long term in their business activities are extremely successful. These businesses do not see the short term and the long term as competitive entities, but as communicating vessels. This is an almost dialectic relationship: both perspectives presupposes each other, and one cannot exist without the other. To describe ambidexterity in simple terms: during renovations, the shop stays open.

I think that futures researchers can use the idea of ambidexterity to better relate their work to decision-making. Of course, that will require some work, because it is not an idea that has so far been approached often from a futures research perspective. Also, we need to recognize that, although realizing an ambidextrous organization may be a success factor, it does require a contingency-based approach (see Broadening futures research). Futures research can connect the short term to the long term, and vice versa. At the moment, ambidexterity is approached mainly from an organizational perspective (centralize or decentralize the innovation department. By demonstrating the concrete significance of futures research to decisions that are made in the present, futures research can focus on the process and content of ambidexterity, by showing what a company should do to develop longevity.

Finally

With the title of this essay, I wanted to show that futures researchers need to make it clear what they do, why they do it, and how they developed their knowledge about the future. Not only to be considered scientific, but also to be useful to society and provide added value to businesses. Futures researcher cannot allow their results to be fully dictated by a personal, creative twist to data the origin of which is unclear.

Both at Delft University of Technology and at the Fontys University of Applied Science, I try to educate my students to become generalist, future-oriented and strategic “creative professionals”. They need to develop a ‘strategic ability’. They have to be a part of society and be able to take a step back. Be able to switch between theory and practice, between business and society, between commercial interests and grand challenge, with a focus on a certain industry or social domain, but with an eye on developments in other sectors and domains. I want to teach them how they can make a positive contribution to every organization they work for,

from multinational to one-man business, within or outside the creative industry, and how they can reflect and act on the question that is relevant to and represents the livelihood of that organization.

Correspondence

Patrick van der Duin

Assistant professor at Delft University of Technology,
associate professor 'Futures Research & Trendwatching' at Fontys University of Applied Science, Academy for Creative Industries
Jaffalaan 5, 2628 BX, the Netherlands
Email: p.a.vanderduin@tudelft.nl
Phone:0031-15-2781146

References

- Asselt, M. van, A. Faas, F. van der Molen and S.A. Veenman (Eds.) (2010). *Uit zicht: toekomstverkennen met beleid (Out of sight: looking to the future carefully)*. Amsterdam: Amsterdam University Press.
- Bhaskar, R. A. (1975). *A realist theory of science*. London: Verso.
- Chalmers, A.F. (1999). *What Is This Thing Called Science?* (3rd ed.). Queensland, Australia: University of Queensland Press.
- De Jouvenel, Bertrand. (1967). *The art of conjecture*. New York: Basic Books.
- Donaldson, L. (2001). *The contingency theory of organizations*. Thousand Oaks, CA: Sage.
- Duin, P. A. van der and D. Hartmann. (2007). Young dreamers: An explorative study on how techno-starters look to the future. *Journal of Futures Studies*, 12(2), 23-36.
- Duin, P. A. van der and E. den Hartigh. (2007). Linking futures research with management science: improving innovation and strategy processes within companies. Paper presented at the Cost-A22 conference 'From oracles to dialogue: exploring new ways to discover the future', Athens, Greece, 9 – 11 July 2007.
- Duin, P. A. van der, C. A. Hazeu, P. Rademaker and J. S. Schoonenboom. (2006). The future revisited. Looking back at The next 25 years by the Dutch Scientific Council for Government Policy (WRR). *Futures*, 38(3), 235-246.
- Duin, P. A. van der, J. R. Ortt and W. Aarts. (2013). Contextual innovation management using a stage-gate platform: the case of Philips Shaving and Beauty. *Journal of Product Innovation Management*, 31(3), 1-12.
- Meadows, D. H., D. L. Meadows, J. Randers and W. W. Behrens III. (1972). *The limits to growth*. New York: Universe Books.
- Peters, T. J. and R. H. Waterman. (1982). *In search of excellence. Lessons from America's best-run companies*. New York: HarperBusiness.
- Popper, K. P. (1957). *The poverty of historicism*. London and Henley: Routledge & Kegan Paul.
- Steen, M. van der Steen and M. van Twist. (2014). Foresight and long-term policy-making: An analysis of anticipatory boundary work in policy organizations

in The Netherlands. *Futures*, 54, 33-42.

Thompson, W. I. and D. S. Thomas (1928). *The child in America: Behavior problems and programs*. New York: Knopf.

Vught, F. A. van (1985). Beter dan Nostradamus en Campanella? Over de wetenschappelijke status van de sociaal-wetenschappelijke toekomstkunde ('Better than Nostradamus and Campanella? About the status of social-scientific futures research. Assen: Van Gorcum.

