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Building Scenarios With the Three Tomorrows

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Abstract

Postnormal times, as a concept and as a theory, was conceived in a futures studies context by futurists, yet there have some doubts regarding its applicability when engaging in actual futures research. The arrival of Sardar and Sweeney's article "The Three Tomorrows of Postnormal Times" seemed to provide the missing method. Yet, despite the authors' claim, the three tomorrows is not a method, nor does their article explain how to develop the tomorrows. However, it is possible to build future scenario using the three tomorrows not as a method but as an approach. As an approach, the three tomorrows offer a general structure in which it is possible to undertake a futures research. To prove it, this article presents a three-stage process that can help any researcher construct scenarios following the tenets of postnormal times theory.

Keywords

postnormal times, future scenarios, three tomorrows, futures praxis, approach

Introduction

Postnormal times, as a concept and as a theory, was born in a futures studies context. Coined by futurists and first published in Futures, the connection has never been doubted. Yet, it was not always clear how to engage in an actual futures research from a postnormal perspective or, more specifically, how to build postnormal future scenarios. The publication in 2016 of "The Three Tomorrows of Postnormal Times" by Sardar and Sweeney (2016) seemed to deliver a method to do it. Still, and despite the authors' initial claim, the three tomorrows are not really a method; but they can work as an approach. In the following pages, I will present a structured process to use the three tomorrows for building future scenarios. The process is the result of my research and teaching work at the Centre for Postnormal Policy & Futures Studies, at Blanquerna – Universitat Ramon Llull and my own consultancy practice. For more than 4 years, I have used every opportunity to explore and test different ways to engage all sorts of audiences (scholars, professionals and students) in doing postnormal scenarios. All this accumulated experience has let me design a three-stage process for building postnormal future scenarios using the three tomorrows. What the tomorrows do, as an approach, is provide guidance and insight about which method use in every case, or tomorrow, while keeping theoretical and methodological

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consistency with the postnormal tenets. They act as an epistemological structure that offers both orientation and support regarding how to proceed and what technique to use when building scenarios within postnormal times theory.

But before getting into the actual construction of the scenarios, it is necessary to understand that, in postnormal times it is not enough to improve our apprehension of reality if we are not equally and simultaneously capable of upgrading our ability to process this apprehension. Venkatesh Rao's concept of the manufactured normalcy field (MNF) (2012) plays a key role in this process. Rao essentially postulates that our mind is continuously working to normalize any situation we find ourselves in. Even more, the MNF has developed a set of cognitive strategies, developed by humans over many centuries, that have become problematic when we try to understand (and anticipate) change in a postnormal context. In synthesis, what happens in postnormal times is that a particular phenomenon will increase its postnormal potential by raising its complexity, its chaotic behaviour and its contradictions through a development known as postnormal creep. Once the creep is set, there is little chance of avoiding or mitigating it and every chance of accelerating and/or aggravating it. The odds of being able to manage it properly depend on understanding the development and its effects; however, what frequently happens is that the MNF makes it extremely difficult to perceive the scale and implications of what is occurring. Climate change is a good example of this; just consider all the time that has been spent on trying to deny it and discredit it, pretending that what was happening was normal. Claiming that what we were experiencing fell within the bounds of normalcy became the best way to prevent more effective action sooner. Such a response is much harder to maintain when using the three tomorrows as it forces us not only to improve our capacity to perceive reality but our capacity to process and make sense of what we perceive as well. Not only that, it also makes us question the foundation of our conclusions. The key lies in the fact that the tomorrows is an approach that helps us deepen and sophisticate our scenarios progressively by going from one tomorrow to the next one.

The First Tomorrow

Futures research is like any other kind of investigation. First, we establish a goal: a question to be answered or a hypothesis to verify. In order to attain that objective, we start by identifying the knowledge field that is relevant to the object, and then we compile information and data that are potentially relevant or useful. At this point, we try to gather knowledge that will allow us to reach our objective. In many cases, that will entail resorting to similar cases or analogous situations that could accelerate the process. If you think about it, ultimately, the intention is to extract the necessary knowledge on the basis of experience (whether our own or someone else's). And this means that we are working on the premise that what is going to happen is similar, comparable or equivalent to other cases that have already been experienced. In other words, the past is the source of knowledge about the future.

This has been and remains the standard and most used way in which we generate knowledge. It is also the departing setting for learning, and within postnormal times theory, it is conceptualized as plain ignorance. In the postnormal approach, ignorance is not solely the lack of knowledge; it is also the embodiment of our cognitive structure at any given time, including the relation between what is known and what it is not. And there can be no doubt that plain ignorance has allowed us to come a long way. The problem lies in the way in which Plain Ignorance produces knowledge and the intellectual tools it uses in the process. Let us examine four of the main ones:

1. Linear thinking: linearity was born the day our ancestors discovered that certain events preceded others. In some cases, this was a valuable discovery which gave them a competitive advantage.

Linear thinking led us to the development of causality, and this in turn allowed us to explain and predict. But in a context that becomes ever-more complex, linearity, finding a univariate cause and expecting it to provide us the explanatory keys we seek can be, if nothing else, risky. Additionally, this kind of approach is prone to intellectual rigidity or even arrogance, De Bono (1970) was one of the first ones to pinpoint it. Similar conclusions have been derived in other fields: Hernandez and Prathibha (2008) emphasize the shortcomings of this approach in medicine, while Johns (2008) poses a similar case for management.

2. Induction: the inference of a general category on the basis of a limited observation. Being able to extract a universal principle from the examination of particular cases allowed major advances in science. The problem has arisen when we lost sight of the fact that the observation that is at the root of the induction is limited and as such, open to being rendered false by another improved or more extensive observation. Hume signalled the problems of induction in his 1739 book '*A Treatise of Human Nature*': 'If reason determined us, it would proceed upon that principle that instances, of which we have had no experience, must resemble those, of which we have had experience, and that the course of nature continues always uniformly the same' (2019a, 1501). He makes a more relevant case for Futures in a later work, "An Enquiry Concerning Human Understanding" (written in 1748): 'We have said that all arguments concerning existence are founded on the relation of cause and effect; that our knowledge of that relation is derived entirely from experience; and that all our experimental conclusions proceed upon the supposition, that the future will be conformable to the past' (2019b, 411). In other words, our knowledge derived by induction is contingent, and all the more so in a world that is evermore chaotic with seemingly insignificant changes leading to major impacts and turnarounds.
3. Dichotomous thinking: a notion based on two premises: firstly, that our object of analysis is composite of two parts that, jointly, cover all the object's possibilities and secondly, that these two parts are mutually exclusive. Thus, the implication is that when something is true or right, the opposite must be false or wrong. And just because of that, analytical effort is cut in half. Once one part is established, it follows that the other part has to be the opposite. This reasoning worked quite well when our understanding of the world was simpler, Newtonian, and the cosmos worked on the basis of action and reaction. But today we live in a quantum world and things no longer are or are not, as sometimes they can also be both or neither. In fact, evidence for this can be seen in the broad prevalence of contradictions nowadays.
4. Specialization: as the accumulated knowledge was growing, some way to order or classify was required. Not only that, different kinds of people have focused in distinctive intellectual fields and thus, be it by interest, affinity or enforcement, most of us have traded scope for depth. The point here is that this cognitive arrangement made it easier for an analysis approach in which objects are decomposed into its constituting parts. Something that, in turn, lets us examine each of them in great detail but, very frequently, in a rather decontextualized manner. An exercise that could be akin to trying to make sense of a forest by studying each one of its trees discretely. For August Comte, specialization was the sine qua non condition of progress (although it could also endanger the social cohesion). Max Horkheimer, one of the main members

> of the "Frankfurt School," articulated a strong criticism to specialization objecting that 'the danger of focusing on technical minutiae is that researchers become insulated from one another, and lose the ability to use one another's resources. The result is a lack of unification and overall direction' (Berendzen 2017, 13). Yet, it cannot be forgotten here that specialization works extremely well within a linear thinking perspective and they reinforce each other making it harder to consider alternative approaches.

In summary, the use of some (or all) of these pillars of plain ignorance may be problematic in a postnormal change context. And despite this, plain ignorance is still the dominant (and often the only) way of researching. But, can we rely on plain ignorance in postnormal times?

This question cannot be answered with a simple yes or no; firstly, we must examine in which situations plain ignorance might be valid. Clearly, if we are faced with a situation that is objectively similar to another that occurred in the past or somewhere else, knowledge obtained in those analogous events may be useful and valuable. In those situations where the evolution of the object under examination is incremental, it may also be useful to analyse previous change. As such, plain ignorance may be a suitable way of tackling those situations in which we know enough to predict the direction and, up to a certain point, the impact of the change we are experiencing. In postnormal times theory, this combination of comprehension and incomprehension is characterized as surface uncertainty. This is the kind of uncertainty that may be experienced upon the imminent launch of a new iPhone or regarding the result of the next election. There will be things we do not know, but the situation and what we know about it will allow us to establish a working hypothesis of what is likely. The only condition in plain ignorance is to rely as much as possible in empirical evidence. Thus, all estimates of future phenomena have to be based on (past and present) data and information. This, however, makes the first tomorrow prone to produce scenarios that include a great deal of continuity with regard to the present. And this is precisely why this tomorrow has been given the name of the *extended present*.

In order to make the three tomorrows more accessible to students, I started drafting some instructions that, after extensive testing, evolved into the process that I am presenting here. The three stages are meant to help people using the tomorrow by a recurrent procedure: firstly, what are the *key items* we have to focus in every tomorrow; secondly, the *triggering questions* that will indicate how to do it and; thirdly, the *scenarios' steps* to actually build them. In the case of the extended present, we address the key items with the first instructions:

1. What do we know about current change and the present situation?
2. What do we *not* know about them?
3. Therefore, what do we need to *learn* about them?

Extended present dwells in plain ignorance; therefore, learning is the required action here. Still, it is not always easy or evident how to address these items; this is why some triggering questions, the second stage, may help us to get started for extended present:

1. Where is current change heading?
2. What is going to be the impact of this current change?
3. How big is this impact going to be?

In order to address the items and answer the questions, there are several methods that can be used. To keep the extended present logic, we have to focus on those techniques that seek to generate knowledge on the basis of information about the present and the past. The obvious example is trend analysis. The analysis of time series can provide useful information regarding the direction and dimension of change. Despite its apparent simplicity, trend analysis remains as a hugely popular method, doubtlessly because of its deep-rooted compatibility with the

mechanisms of MNF: it is based on a linear approach, and it is consistent with inductive (it is rare to have access to a complete temporal series), specialized and dichotomous approaches. It is a good way of starting a futures research. Trend analysis has a long a wide tradition in futures and that explains why so many authors have included them as one of the reference methods: Bell (1997, 177), Coates (1996, 63), Masini (1993, 76), Sardar (2013, 59), Serra (2014, 47), and van der Heijden (2005, 252). Many others have also added trends in their methods taxonomy like Bishop, Hines, and Collins (2007), Börjeson et al. (2006), and Lindgren and Bandhold (2003). Naturally, cases may arise for which no data are available; then, a qualitative approach will be required. But the aim will be the same: to seek to distil answers for the future on the basis of the lessons of the past and the present. To do this, we will be able to use other methods such as surveys, in-depth interviews, focus groups and even a Delphi. Delphi also has a long and distinguished list of mentions being another core method: Bell (1997, 113), Coates (1996, 59), Garrett (1996, 101), Masini (1996, 107), Sardar (2013, 31) or Serra (2014, 71); although, the best historical view of Delphi is probably the one by Flostrand, Pitt, and Bridson (2020).

In any case, and in the event that there is the need to refine the results obtained by extrapolation, we might contemplate the use of another group of methods. For example, if we are quite certain about what the two most influential trends are, then we can cross them using a 2 × 2 matrix (also named the Schwartz or the Global Business Network (GBN) approach), which will provide us with four possible outcomes (we could also cross the two trends over in which there is the highest uncertainty, but this option would lead us to the following tomorrow, as we shall see next). If we want to combine more variables, other methods can be included that will allow us to pass from a univariate approach to one that is multivariate such as a cross impact analysis (Helmer 1981; Middleton and Wedemeyer 1985), structural analysis (Godet and Durance 2011), morphological analysis (Duczynski 2017; Godet and Durance 2011) or, if we focus on the behaviour of human groups, a set of actors (Godet and Durance 2011). In all of these cases, the selection of variables is crucial, and the estimation of their behaviour is even more important.

The point is that once we have obtained the information, we can face the actual building of the scenario. The process' last stage, scenario's steps, offers a path to build the extended present:

1. Use the trends you have identified to project change.
2. Look for trends' combinations with high-impact potential.
3. Build the future stories that lead to each scenario.

In my experience, extended present scenarios are not a real challenge for students or researchers. The first tomorrow is so connected to standard research procedures that all sorts of scholars can master it pretty fast. It is worth noting though that extended present is the only tomorrow that has a singular name. This is intentional to denote that these kinds of scenarios are rooted in the idea that the future is a projection of the present. But it also signals its main problem: using experienced change in order to anticipate future change entails assuming that the forthcoming change will maintain the direction, speed and momentum of the preceding change. And this simply does not happen. If there is one thing we have learned in Futures, it is that the least likely future is the one in which nothing changes; therefore, we can establish an inversely proportional relationship between continuity and probability of occurrence. But the fact is that we are also in postnormal times, and if we accept that change is accelerated, expansive, incremental and simultaneous, expecting the future to move within the parameters of the extended present is deeply naïve, at least beyond the short-term.

And this is why we must progress towards another tomorrow that is able to include a higher level of change, ergo…

The Second Tomorrow

The main difference between the first and the second tomorrow is its willingness to explore more disruptive situations. We are no longer looking for indicators or any basis for connecting the future to the present. Now, the working assumption is that the future will (in whole or in part) be different and new. This premise will inevitably place us beyond the scope of surface uncertainty, initially at least, because we will no longer be able to be sure about which direction change will take, and still less about what its impact might be. These parameters place us squarely within the territory of shallow uncertainty and require us to change how we work because plain ignorance will be of no use here. If we accept that we are facing something new, to what extent will our past experience of other events be able to help us? At best, partially. Most likely, there will be great doubts regarding which is the relevant field of knowledge or what data or information we should look for. In these cases, trying to rigidly apply a plain ignorance approach to a situation of shallow uncertainty could cause bigger problems or lead us to conclusions that are profoundly wrong. Another approach is required, and that is why we must resort to vincible ignorance. Vincible ignorance, as opposed to plain ignorance, requires us to undergo a prior step: to become aware of our ignorance. In other words, Vincible ignorance cannot be applied unless we are conscious of what we do not know. Therefore, before heading off to find references, information or data, it is necessary to spend time considering what parts of the subject under examination we know, or are known, and what parts we do not know or are unknown. Subsequently, we will need to establish what kind of obliviousness we are dealing with; it may be that a particular behaviour is inexplicable from an economic outlook but perfectly understandable from a psychological or biological viewpoint. In this first case, our cognitive perspective will have to expand so as to incorporate other disciplines, theories, methods or ideas in order to overcome the initial ignorance. But we may also come across situations that are so recent that no perspective whatsoever can be gained in order to appreciate the full extent of the situation. In this case, there will no option but to accept that we lack experience, and we will have to speculate as to how it might evolve and what its impact might be. For example, we do not fully know what the long-term impact of climate change, or of the introduction of self-driving vehicles in cities, will be, but we can produce reasoned speculation about them. We can use insight from other sources, like transition studies, to see how changes have developed in the past on the basis of some comparable criterion. And we can also study how this possibility has been viewed in art, design or science-fiction. We have to take into account that very often the first explorations of new possibilities (whether technological, social or cultural) come from artists, designers or peripheral activists of various kinds. The use of imagination has very bad press when it comes to envisaging the future, probably because it forces the MNF to leave its comfort zone. However, the fact is that we are only just beginning to realize that imagination and intuition are other ways of generating knowledge which, in the case of the future – and possibly because they transcend plain ignorance – can work well. In any event, we must always bear in mind that the MNF constantly tends to move back its comfort zone, its default setting of plain ignorance and surface uncertainty; and this is why we will not be able to operate within the new parameters (shallow uncertainty and vincible ignorance) unless we have completed the preliminary stage of gaining an awareness of our ignorance (or, more to point, of our level of ignorance).

And given that the main objective of this tomorrow is to be able to describe situations of profound change, it is often very useful to resort to references that have been made popular by the media, the arts or science-fiction. Many people may find it difficult to understand intellectually the implications of the interaction between human beings and artificial beings, but they may be able to make a more emotional connection thanks to films such as

Blade Runner (the original and the 2049 version), *Her* or *Robot & Frank*. The fact is that we are subjected to a constant barrage of future images, and there is nothing wrong with taking advantage of them in order to try to offer a more profound understanding of the consequences of certain future options. This is why the second tomorrow is called *familiar futures*; because there is often a certain familiarity with the future that is presented (artificial intelligence, post-human beings, etc.), but it is partial, non-critical, and in most cases, disempowering. Familiar futures seek to use that knowledge base in order to promote a broader and more profound reflection on the possible effects of these changes or situations.

My process will start here, once again, with the first stage by listing the new key items that need to be met:

1. Where does novelty come from?
2. What other perspectives, theories or disciplines do we need to bring in?
3. How can we enhance our *awareness*?

Awareness is the key word in familiar futures; we need to abandon the rigidity of plain ignorance and be open to new inputs and perspectives, and in order to get us in the right mindset, we can proceed to the second level, the next batch of triggering questions:

1. How can we expand our comprehension of change?
2. What new elements or ideas can we or do we need to bring in?
3. Where can we get these new elements or ideas from?

In order to find the answers, we will have to resort to new methodological tools. But – and this is very important – we should not discard or repudiate preceding trends. The results of the first tomorrow may be an excellent basis for developing second tomorrows. We simply have to try to work out where the weak points in the previous scenarios are, or rather, what are the postnormal weak points? For example, do the scenarios of the first tomorrow adequately reflect the complexity of the analysis' subject? Have we managed to capture the tapestry of relationships or connections between the components of the scenario? Or have we oversimplified the situation? Another point: have the aspects with the highest potential for chaotic behaviour been identified? Has it been possible to determine in what circumstances the system under analysis may experience a chaotic leap? This is something that an extended present finds very hard to do because it takes itself right where it does not want to go. Finally, a relevant point from a postnormal perspective: do the preceding scenarios contain contradictions? This may be more difficult to detect because, in principle, a scenario ought to be consistent and coherent; nevertheless, many extended presents are based on logic that is unsustainable or contradictory in the long run. In other cases, the contradiction will be implicit or simply the result of not taking into account the possibility that the change will accelerate, expand, increase or happen simultaneously to other phenomena. In all of these cases, it will be relatively easy to build a second tomorrow using the first tomorrow as a base.

Fortunately, there is no shortage of methods to introduce novelty or to disrupt trends in futures. Trend analysis may be enriched by trying to identify emerging issues. Dator (2009b, 2018) may be the main promoter of the use of emerging issues analysis, but the work of Carbonell, Antonio, and Belén (2015) provides a more contemporaneous approach to it. Yet, the important question when dealing with new things is to assess its potential impact. And, to estimate this impact, we can use techniques like the futures wheel, originally conceived by Gleen and Gordon (2009), or the middlecasting as proposed by List (2004). In some cases, it may be that what is of greatest interest is none other than pursuing the most uncertain or disruptive aspects. In this case, a 2×2 matrix using the Schwartz (1991) approach or a morphological analysis (Duczynski 2017; Wissema 1976) can also work very well. Still, here we have to understand that the game has changed, instead of trying to ground estimates on empirical evidence; the aim is to

argue for speculations on the basis of any possibility that may occur (no matter how improbable). Evidently, qualitative methods can also function in an optimum manner here: interviews, surveys, Delphi and even in approaches that are openly participatory: future workshops, focus groups, etc. Finally, it may turn out, initially at least, that it is difficult to articulate alternatives to the extended present. In such a case, it may be useful to resort to incasting archetypes, as defined by the Manoa School (see Dator 2009a).

Whatever method we decide to use, it should be able to respond to the triggering questions and, by doing so, provide the elements to build the scenario. In this case, the third stage of my process proposes the following scenario's steps:

1. Look for emerging issues that convey a substantive or relevant impact for previous trends or scenarios.
2. Look for alternative ideas or perspectives from other disciplines or fields.
3. Reassess the relevance or validity of the extended present trends:
   a. Under the impact of those emerging issues.
   b. From the perspective of other disciplines or theories.
4. Generate new scenarios based on greater departures or disruptive impacts.

Familiar futures can be more difficult for people with a more rigid mindset and very easy for imaginative and creative participants. However, they usually denote the boundaries of what we deem as conceivable. Over the years, we futurists have learned that, despite our best efforts, some future options are seldom truly included or considered in our stock of scenarios. Something that Jameson (2003, 76) captured in his famous quote: 'it is easier to imagine the end of the world than to imagine the end of capitalism.' The point is that, in a fairly systematic and implicit way, we tend to prefer or privilege certain future images at the expense of others. It is not unusual to find ourselves in situations that have previously been considered to be unlikely, if not directly impossible, to happen, and despite everything, they occur. How is this possible? Can our futures knowledge be so defective to let us make such blatant mistakes? Or are we so dim-witted that we fail to see what is in front of our eyes? It is precisely to resolve these problems that the next tomorrow exists.

The Third Tomorrow

This tomorrow allows us to deal with certain questions that extended presents and familiar futures cannot resolve:

1. Identifying and then properly dealing with these preference mechanisms, which are implicit and integrated in our cognitive systems and which end up privileging certain future options.
2. Being able to process those situations that go beyond shallow uncertainty and cannot be resolved with vincible ignorance while never overlooking the fact that the MNF always seeks to process any question via its default settings (plain ignorance and surface uncertainty), something which we judged to be risky for the previous tomorrow and which now is nothing short of reckless.

To address the first situation, postnormal times theory has developed the postnormal menagerie, a combination of its own and borrowed concepts, to configure a system that allows cognitive biases to be detected. There are three members in the postnormal menagerie:

1. The first is the black elephant, first cousin of the elephant in the room. According to the CPPFS, this refers to 'events that are highly likely and widely predicted that are usually ignored either by many or by society as a whole'.[1] As such, black elephants are used to recognize those cases where preferences (whether positive or negative) are allowed to prevail over reason. To a

certain extent. they describe those situations where, more or less explicitly, we choose to think in a particular way with regard to the future because it is less contradictory with our future preferences. Once again, the case of climate change is relevant, and another good example was the scarce credibility given to forecasts of the 2008 financial crisis. Despite the fact that both situations were preceded by numerous warnings, some of which were based on extensive empirical evidence, many people preferred to believe that they would never happen, and when they started to occur, many appeared surprised and spoke of black swans. It should be understood that black elephants work because, once again, they fit with our MNF. Ultimately, we believe them because they are consistent with what our field defines as normal.

2. The second member of the postnormal menagerie is the black swan, a concept coined by Taleb (2007) in his book of the same name. Black Swans are *things totally outside and way beyond our observations (...) they are not perceptible or articulated, even by experts; they appear as 'outliers' and come 'out of the blue.'* They are the proverbial exception, except that they no longer serve to prove the rule, but rather signal the shortcomings and cracks in the rule. A little like those extreme values that traditional futures studies schools would advise us to disregard because they were just 'noise'. Now, we know that they may be indicative of deeper or less-visible questions that need to be tackled. What happens is that, as opposed to elephants, with swans, there is little or nothing to be seen, even if we try really hard. We are instead talking about the opposite, voids or gaps, failures or glitches in the system, elements that do not fit, absences or silences that clash with the whole. They are often the direct result of cognitive short-cuts, of believing that our knowledge is error-proof and of allowing the MNF to convince us that what we have in front of us works according to plan or within the bounds of normality.
3. The third and last member of the postnormal menagerie is the black jellyfish. The animal that alerts us to phenomena and events that have the potential of going postnormal. That is, events which, in certain circumstances, may undergo sudden and exponential escalation like jellyfish themselves (see Sweeney 2017, 141), challenging our knowledge and prior behaviour. Their essence is the appearance of normality, of *things we think we know and understand but which turn out to be more complex and uncertain than we expect.* Jellyfish warn us of the dangers of our intellectual arrogance, of taking things for granted or believing that we have the situation under control. Under this view, jellyfish allow us to identify which elements or situations may be more sensitive to the effects of postnormal change.

Thus, the main feature shared by all members of the postnormal menagerie is their resolute opposition to uncritical acceptance of any notion of normality. Ultimately, what may be deduced is that the idea of normality is, of itself, toxic from a postnormal viewpoint.

In order to tackle the second question – phenomena which fall beyond shallow uncertainty and vincible ignorance – the postnormal times theory establishes the need to conceive of a new kind of uncertainty that allows us to conceptualize those situations or events for which we have no answers and in the face of which we are sometimes not even able to formulate the questions. These are questions such as the emergence of (genuine) artificial intelligence (that which is self-conscious), the collapse of the European Union, the rise of global fascism, a new mass extinction, etc. The common trait running through all these questions is that no sooner do we begin to perceive

them than they split into multiple ramifications and impacts which demonstrate how little we understand them and/or how unreliable the little we think we know about them is. We are facing deep uncertainty, but unlike previous uncertainties, which may be seen as a quantitative gradation with regard to what we do not know about the subject under examination, deep uncertainty is not just simply the fact of knowing very little; it also has a qualitative aspect. In other words, it affects the value or reliability of what we think we know, and this is connected to another postnormal times theory nuclear concept, the unthought. Originally conceived by the philosopher Arkoun (2002), the unthought refers to what lies beyond the situations or axioms of our worldview. Even so, it should be pointed out that it is not unthinkable, but it is difficult to apprehend because it is beyond the realm of our imagination, which is in turn determined by our worldview. For instance (and following the previous example by Jameson), for a convinced capitalist, the end of capitalism is an unthought, not because he cannot conceive of such a possibility, even hypothetically, but because a significant part of the construction of his worldview is based on the principles of capitalism. Likewise, a true believer cannot truthfully consider that God does not exist; it may be an argument in a theoretical debate, but it cannot be something he countenances with all of its implications. If we consider it carefully, we realize that the conclusions of all kinds of futures' works are often conditioned by implicit unthoughts, which by not having been made explicit, become transparent, invisible to criticism. Questions such as the superiority of science over other forms of knowledge, the inevitability of the laws of market forces, the omnipresence of heteropatriarchy, the intrinsic evil of terrorists (and that they are never us), etc. The deep uncertainty associated with these examples often does not derive from what we do not know about them, but precisely from we believe to know about them and, also, from a rigid inability to conceive credible alternatives in the form of future scenarios.

How can we face this uncertainty? Firstly, by accepting that both shallow uncertainty and plain ignorance are not going to be enough, and that a new approach, invincible ignorance, is needed. And as in the case of the uncertainties, this is not just a difference of degree, but once again a qualitative shift. Normally, when we first tackle an issue, we will use a plain ignorance approach (remember, the MNF default mode) and just try to learn whatever we do not know. At a posterior stage, and maybe because we are aware of a postnormal creep, we may find ourselves willing to advance towards the approach of shallow uncertainty; then, we will have to determine the limits of our knowledge, consider alternative sources for the generation of new knowledge and if all this fails, find ways to speculate in a reasoned manner, vincible ignorance. But when we reach invincible ignorance, it is an entirely different game, and it is no longer about being aware of the scope of our understanding, but rather about asking what it is that we truly comprehend. The one thing that we cannot forget is that the MNF will bestow any fact that can be empirically corroborated with huge credibility, making sensorial perception the main criterion for accepting any information. However, when we arrive at the third tomorrow, it is vital to ask oneself this question:

Do we think what we think because of what we see, or do we see what we see because of what we think?

This is not a word game. The more we know about how our mind works, the more we discover about its ability to make us believe things that are not real. This is the basis of prestidigitation, and it works because our brain is always trying to save energy. Thus, if our perception is in line with our MNF, it will be much more difficult to fight that perception, no matter how mistaken it may be. Furthermore, by the mere fact of being social beings, with our culture engrained in a specific social context, many of the implicit axioms and premises of our worldview will be the basis of the unthoughts that affect our futures analysis. And this is why, in invincible ignorance mode, most of the times, the problem is not so much what

we do not comprehend, but rather what we actually think we understand. Therefore, having reached this point, we have no option but to call into question that part of our knowledge that prevents us from making progress. In order to emphasize that this third tomorrow requires a deeply different way of engaging with it, it has been labelled unthought futures.

And how can unthought futures scenarios be developed? As usual, the proposed process will start in its first stage by identifying the key items in this tomorrow:

1. Are we under the effect of a cognitive bias?
2. Could it be that our worldview's implicit assumptions and axioms are limiting our capacity to anticipate the future?
3. Is there a part of our knowledge that we need to *unlearn*?

If we accept that our knowledge is part of the problem, we need to be ready to question and deconstruct it. But this kind of reflection can be hard for some people. Therefore, the triggering questions, the second stage, propose a more circular approximation to unlearning:

1. Are the trends, emerging issues and scenarios we have used so far tuned with this new reality and change?
2. Could it be that our worldview somehow limits our future perspective?
3. Are we, consciously or unconsciously, leaving out any future option?

There is no an easy way to directly answer these questions. But I have found that the application of the postnormal menagerie helps, and it does not really require the use of a particular method. It is more a matter of retracing our steps and seeking to discover if some of the preceding scenarios may contain elephants, swans or jellyfish. If we believe they do, then the question is to focus on establishing in what way the existence of one of these animals alters our previous conclusions; what possibilities they require us to include or to discard. In most cases, the postnormal menagerie will allow us to enrich or enhance the sophistication of the preceding scenarios and even generate new sub-scenarios that may expand our perspective.

But in order to detect the unthoughts at work in our scenarios, we might need specific techniques. In this regard, the postmodern methods of genealogy and deconstruction may be useful to demonstrate or expose the implicit parts of our worldview, or to put it another way, the sources of our unthoughts. Again, there is no shortage of futurists that have engaged in the application of postmodernism to futures, but Inayatullah (1990) is a quite obvious choice. He not only pioneered in this endeavour but he also later developed on the causal layered analysis (1998), a technique that can be very useful here. This layered analysis allows for a progressively deeper exploration of the roots of our position with regard to the future evolution of any given subject. Having said this, we cannot ignore that most postmodern methods are very effective for critical analysis, but frequently, they are not equally suitable for building scenarios. In other words, these techniques can help us to identify the unthought, but once we have managed to detect it, using other techniques may be more operative. For example, if an unthought is characterized as a 'what if…?', then List's middlecasting (2004) might work very well. In other cases, it may be good to contemplate new alternatives in a morphological analysis. Or, if it helps us to understand how a specific agent might react, our set of actors may be improved. In other words, this is not so much about there being specific methods for exploring the unthought, but rather about incorporating the unthought into our scenarios.

At this stage we may be in disposition to build the scenarios that in my process would be the third stage with the following steps:

1. Identify the unthought in the previous tomorrows.
2. Articulate the unthought as divergent future hypotheses.
3. Use the menagerie to double-check against cognitive bias.

It is not uncommon that the development of a new tomorrow provokes the need to reform or change the previous one. I do not forbid it, but it is not really necessary. The function of the following tomorrow is not to refute the previous one. Each tomorrow allows us to capture a different perspective or shard of the future. It is by having all of them, actually many of each, that we can have a more comprehensive perspective of the future. What is shocking from an extended present viewpoint may be logical from an unthought futures one and vice-versa. At the end of the day, the only real legitimation of the three tomorrows is if they really let us attain a more comprehensive and insightful perspective of what may happen next and how we can best navigate postnormal times.

Conclusion

My teaching and lecturing work prove that despite the three tomorrows not being a method, it works very well as an approach. As such, the tomorrows provide a structure within which it is easier to build each scenario; they define an epistemological framework that allows us to select the most suitable methods in accordance with both the object and each tomorrow's logic. The fact of being an approach also means that the tomorrows are not only useful to tackle the generation of scenarios, it provides a way to analyse how these scenarios have been created as well. In other words, they do not just determine the best way of deciding how to generate the scenarios; they also help us to understand why our scenarios will go in particular directions, and most importantly, how we can acquire a deeper understanding of the future. In a typical postnormal dynamic, the three tomorrows require us to examine both our perception of reality and the cognitive processes we use to apprehend this reality. Finally, the progress from one tomorrow to the next tomorrow is not just a way of increasing the sophistication of our future anticipation; it is also a suitable way of understanding and foreseeing postnormal creeps, and as such, the tomorrows become a holistic way of studying the evolution of any subject.

The three tomorrows' last function is to aid us transcend or elude the notion of normal in our futures analysis. Normalcy is problematic for two reasons:

First, it tends to obscure and hinder the influence of the MNF and will nudge our conclusions in a particular direction (the one that fits the most with our MNF). And because we will see it as 'normal', it will make it a lot harder to uncover if we are in shallow or deep uncertainty.

Second, because normalcy becomes the Trojan Horse for slowing down, silencing or sidelining the really crucial debates on the future. What better way of avoiding a future option than to denounce it as abnormal? The concept of normal is too influential, too biased, too overvalued (often implicitly) and tends to conceal a particular status quo. And the fact is that a futures analysis that cannot criticize or put forward alternatives to the status quo that does not live up to its name.

The three tomorrows do not preclude the addition of new methods that can be developed in the future or the use of disruptive knowledge. It simply gives a path to engage in futures in these postnormal times. My proposed three-stage process goes a bit further by providing a workable manner to use the three tomorrows in a futures research. By moving from key items to triggering questions and then scenarios' steps, the process offers an accessible way to build scenarios within a postnormal perspective.

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Note

1. This quotation and the next ones are taken from the CCPFS' Postnormal Times website. Specifically the references to postnormal menagerie come from https://postnormaltim.es/essentials/menagerie-postnormal-potentialities.

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