

The Postnormal Times Reader

THE
POSTNORMAL
TIMES
READER



EDITED BY ZIAUDDIN SARDAR

IIIT Books-In-Brief Series

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Edited by Ziauddin Sardar

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IIIT Books-In-Brief Series

The IIIT Books-In-Brief Series is a valuable collection of the Institute's key publications written in condensed form designed to give readers a core understanding of the main contents of the original. Produced in a short, easy to read, time-saving format, these companion synopses offer a close, carefully written overview of the larger publication and it is hoped will stimulate readers into further exploration of the original.

We live in a period of accelerating change. New trends, technologies and crisis emerge rapidly and transform familiar social and political landscapes. Established and cherished ideals, with deep historical roots, can be overturned overnight. Unconventional and uncommon notions and events can appear as though from nowhere, proliferate, and become dominant. The last few years alone have witnessed the emergence of populism and the far right in Europe and the US, Brexit, cracks in the European Union, cyber wars accompanied by the re-emergence of the Cold War. China as increasingly dominant new superpower. Pandemics like Ebola and Zika virus. Climate change leading to extreme weather events. Driverless cars. AI. 'False News'. 'Alternative Facts'. 'Post-Truth'. 'Disruptive technologies' that disrupt and often corrupt everything. All seems to be in flux, nothing can be trusted. All that we regard as normal is melting away right before us.

The postnormal times theory attempts to make sense of a rapidly changing world, where uncertainty is the dominant theme and ignorance has become a valuable community. *The Postnormal Times Reader* is a pioneering anthology of writings on the contradictory, complex and chaotic nature of our era. It covers the origins, theory and methods of postnormal times; and examines a host of issues, ranging from climate change, governance, the Middle East, to religion and science, from the perspective of postnormal times. By mapping some of the key local and

global issues of our transitional age, the *Reader* suggests a way of navigating our turbulent futures.

Abridged Edition of the Original

The Postnormal Times Reader

Edited by Ziauddin Sardar

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What Just Happened

Introduction by Ziauddin Sardar

Are you paying attention at the back? Lee Gates, in the film *Money Monster* states “You don’t have a clue where your money is. See once upon a time you could walk into your bank, and open your vault and point to a gold brick. Not anymore. Your money, that thing you bust your ass for, it’s nothing more than a few photons of energy traveling through a massive network of fibre optic cables. Why do we do it? We did it to make it go faster because your money better be fast. Faster than the other guys. But if you want faster markets with faster trade, faster profits, faster everything, sometimes you are going to blow a tyre”.

A sane and timely observation; except, it is not an odd tyre that’s had a puncture—the car and the road itself are in complete disrepair. Blowouts are everywhere and seem to be occurring simultaneously with frightening regularity. In 2016, we witnessed a string of unprecedented events. Ongoing conflicts in Syria, Libya, and Iraq leading to a refugee crisis of unparalleled proportions. Mass shootings in France, Germany, and the US. Left wing populism that produced Jeremy Corbyn as the leader of the Labour Party in Britain, and Bernie Sanders as the leader of ‘political revulsion’ in the US. Right-wing populism in France, Austria, Holland, Poland, Hungary that could bring the far right to power in Europe. Zika virus. The rejection of a landmark peace deal in Colombia. Escalating tensions between China and Japan in the South China Sea. President Rodrigo Duterte who defends the killing of the poor as necessary in his ambitious drug war in the Philippines. Brexit. Cracks in the European Union. And, of course, Donald Trump. Something is not quite right with the world.

Just what is going on?

A number of academics, thinkers, writers and commentators have been trying to figure this out for well over a decade. Essentially, what they are all

saying is that we have either lost, or are losing, our faith and trust in what we have thus far considered to be normal, conventional or orthodox.

So normal, no matter how it is defined, is evaporating. We are moving towards what I have called 'postnormal times'. This Reader charts the development of the theory of postnormal times, with its origins in post-normal science, and brings some of the key papers and articles together. My aim here is both to provide an overview of postnormal times theory and show how recent events can be understood through this lens.

The Postnormal Times Reader embodies and speaks to the values of polylogues, the essential tool for navigating our way out of the pile-up that is building on the highway to the future. The discourse of postnormal times remains a work in progress. Hence, the Reader will itself change and evolve over time with new editions. But it will always be a text with diversity and plurality at its core; and a space that welcomes your contributions.

ORIGINS AND THEORY

Science for the Post-Normal Age

Silvio O. Funtowicz and Jerome R. Ravetz

After centuries of triumph and optimism, science is now called on to remedy the pathologies of the global industrial system of which it forms the basis. The old dichotomies of facts and values, and of knowledge and ignorance, are being transcended. The science appropriate to this new condition will be based on the assumptions of unpredictability, incomplete control, and a plurality of legitimate perspectives. The appropriate science for this epoch is 'post-normal'.

In post-normal science, uncertainty is not banished but is managed, and values are not presupposed but are made explicit. The model for scientific argument is not a formalized deduction but an interactive dialogue.

In this new sort of science, the evaluation of scientific inputs to decision making requires an 'extended peer community' [1]. This extension of legitimacy to new participants in policy dialogues with mutual respect among various perspectives and forms of knowing, increases the possibility for the

development of a genuine and effective democratic element in the life of science.

Reinvasion of the Laboratory by Nature

Nature itself no longer needs to be approached as wild and threatening. Our technology and medicine together have made Nature predictable and in part controllable. The obverse side of this achievement is that it may well be unsustainable. The triumph of the scientific method has led to its domination over all other ways of knowing. Common-sense experience and inherited skills of making and living have lost their claim to authority. The rationality of public decision making must appear to be scientific. Now scientific expertise has led us into policy dilemmas which it is incapable of resolving by itself.

Centrality of Uncertainty and Quality

Uncertainty and quality are moving in from the periphery of scientific methodology, to become the central, integrating concepts. New policy issues have common features that distinguish them from traditional scientific problems. They are universal in their scale and long-term in their impact. Data on their effects are radically inadequate. The phenomena, being novel, complex and variable, are themselves not well understood. Policy cannot proceed on the basis of factual predictions.

New methods must be developed for making our ignorance usable [2]. For this there must be a radical departure from the total reliance on techniques, to the exclusion of methodological, societal or ethical considerations.

Problem-solving Strategies

Uncertainty and decision stakes are the opposites of attributes which traditionally characterized science, namely its certainty and its value neutrality. The term 'systems uncertainties' conveys the principle that the problem is concerned with the comprehension or management of an inherently complex reality. By 'decision stakes' we understand all the various costs, benefits, and value commitments that are involved in the issue through the various stakeholders. Understanding this we can characterize the three kinds of problem-solving strategies.

Applied Science

The explanation of problem-solving strategies starts with the most familiar strategy: applied science. This is involved when both systems uncertainties and decisions stakes are low. The decision stakes will be simple as well as

small. The problem is likely to be soluble by a normal, puzzle-solving approach. Where both uncertainties and external decision stakes are low, the traditional processes of peer review of projects and refereeing of papers have worked well enough despite their known problems.

Professional Consultancy

Professional consultancy includes applied science, but deals with problems which require a different methodology for their complete resolution. Personal judgments depending on higher level skills are required, and uncertainty, now more complex, is at the methodological level. The decision stakes are also more complex. For the purposes relevant to the task will be in conflict, involving various human stakeholders and natural systems as well.

Professional tasks deal with unique situations. The personal element becomes correspondingly important. The public may become confused or disillusioned at the sight of scientists disagreeing strongly on a problem apparently involving only applied science. The gain in clarity should more than compensate for the loss of mystique of scientific infallibility.

Postnormal Science

We now consider the third sort of problem-solving strategy, where systems uncertainties or decision stakes are high. We call it 'postnormal' to indicate that the puzzle-solving exercises of normal science are no longer appropriate for the resolution of policy issues of risks and the environment.

Post-normal science has the paradoxical feature that in its problem-solving activity the traditional domination of 'hard facts' over 'soft values' has been inverted. Out of this must come a set of forecasts which will provide the scientific inputs to decision processes. But all the causal elements are uncertain in the extreme; to wait until all the facts are in, would be another form of imprudence.

The uncertainties go beyond those of the systems, to include ethics as well. These new policy issues involve the welfare of new stakeholders, such as future generations, other species, and the planetary environment as a whole. Only a dialogue between all sides can achieve creative solutions to such problems.

Extended Peer Communities

In post-normal science, the manifold uncertainties in both products and processes require that the relative importance of persons becomes enhanced. Those whose lives and livelihood depend on the solution of the problems

will have a keen awareness of how the general principles are realized in their 'back yards.' They will also have 'extended facts,' including anecdotes, informal surveys, and official information published by unofficial means.

Conclusion

The new policy issues of risk and the environment are global not merely in their extent, but also in their complexity, pervasiveness, and novelty as a subject of scientific inquiry. The activity of science now encompasses the management of irreducible uncertainties in knowledge and in ethics, and the recognition of different legitimate perspectives and ways of knowing. The post-normal response is to recognize the challenge and then to start towards a reintegration, through the acceptance of uncertainty and the welcoming of diversity.

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Welcome to Postnormal Times

Ziauddin Sardar

It never rains but it pours, says the proverb. And it has been pouring a lot in recent times. If the multiple threats from climate change were not enough to give us sleepless nights, we are now in the grip of one of the worst recessions in history. Before we had time to draw breath, a pandemic of swine-flu threatened to engulf the globe. Lurking behind all this is the energy crisis, dwindling natural, the continued threat of nuclear proliferation, and the ever-present menace of terrorism. We hate the bankers, distrust our politicians and worry constantly about the security of our jobs, safety of our children and the blight of our communities. Nothing is definite, truly guaranteed, or totally safe.

Welcome to postnormal times. The *espíritu del tiempo* is characterised by uncertainty, rapid change, realignment of power, upheaval and chaotic behaviour. We live in an in-between period where old orthodoxies are dying,

new ones have yet to be born, and very few things seem to make sense. It is a time when all choices seem perilous, likely to lead to ruin, if not entirely over the edge of the abyss.

Much of what we have taken as normal, conventional and orthodox just does not work anymore. The world itself is now a far more uncertain place. There is hardly a country where politicians are either trusted or respected. Even the cycles of our weather cannot be trusted – thanks to global warming. These are times of multiple and simultaneous crises. It is not just that things are going wrong; they are going wrong spectacularly, on a global scale, and in multiple and concurrent ways. We thus find ourselves in a situation that is far from normal; and have entered the domain of the postnormal.

All of these incoherencies are related to three c's: complexity, chaos and contradictions – the forces that shape and propel postnormal times.

Complexity

Almost everything we have to deal with nowadays is complex. Complexity is a natural by-product of the fact that most of our problems have a global scale.

Globalisation enhances complexity not simply by making us interdependent but also by increasing our interconnections. Nothing exists or happens in isolation. If this wasn't enough, there is yet another trend that makes things even more complex; things change rapidly and often happen simultaneously. We find the emerging complexity hard to comprehend; and almost impossible to cope with.

Complexity teaches us an important lesson: the notions of control and certainty are becoming obsolete. In our time we no longer have the luxury of time to reflect, to observe and respond to undesired outcomes, to debate and manage with some semblance of order.

Chaos

Complexity is a precursor to, and a necessary condition for chaos. Chaotic behaviour is not an uncommon phenomenon. But it is rather unusual to see civilisations, whole societies or indeed the entire inhabitants of the globe, behaving according to the dictates of chaos theory.

Since everything is linked up and networked with everything else, a break down anywhere has a knock-on effect, unsettling other parts of the network, even bringing down the whole network. Moreover, the potential for positive feedback is enormous. Thanks to mobile phones, e-mails, blogs, tweets and

24-hour news media, we are constantly in the know. We are thus primed to react instantly, equipped with the means to set off new patterns of chain reactions.

Like complexity, chaos too has a fundamental lesson to teach us: individual and social responsibility and accountability are all paramount for our collective survival. Individualism is a recipe for catastrophe.

Contradictions

A complex, networked world, with countless competing interests and ideologies, designs and desires, behaving chaotically, can do little more than throw up contradictions. In postnormal times, there are two contradictions that need our particular attention.

The first concerns change. Things have always changed but they have not changed with the accelerating pace we are witnessing nowadays. Exponential acceleration has now become the norm. Yet, vast segments of the planet and swathes of our social life are quasistatic. The more things change, the more they seem to stay the same.

The second contradiction concerns knowledge. While our knowledge has increased, and is increasing, by leaps and bounds in almost all spheres, we also seem to be more ignorant than ever.

Ignorance is not soluble by means of ordinary research; we therefore have no notion of its existence. So, we are faced with a triple whammy of ignorance – or ignorance-cubed: the ignorance of our ignorance, the in-built ignorance of the potential risks of recent developments, and the ignorance generated from information overload. Ignorance requires radically new ways of thinking.

Uncertainty

When contradictions, complexity and chaos combine with accelerating change the only definite outcome is uncertainty. Uncertainty may be the only thing of which we can be sure, but it is not a comfortable, nor as yet a politically or socially acceptable, basis on which to debate real hard choices.

The combination of ignorance and uncertainty, as well as a tendency to chaotic behaviour, contradictory analysis and the complex issues of safety and risks – all this means that our current options for ‘business as usual’ are now dangerously obsolete.

Virtues

We need to negotiate our way towards new normal times. The problem, however, is that the space, time and willingness to engage in coherent debate has become scarcer, the more complex, contradictory and chaotic things have become. To negotiate our way out of postnormal existence we have to learn how to negotiate, how to translate aspiration into transformation.

The moral to be drawn from the characteristics of postnormal times are age old virtues: humility, modesty and accountability. Humility, modesty and accountability are indispensable virtues, essential requirements of living with uncertainty and complexity. The failure to acknowledge the uncertainty and complexity of certain situations is not only a technical error, but also an ethical one [1]. Indeed, it is ethics, and only ethics, that can guide us out of the postnormal impasse.

Every social, cultural, political, philosophical and religious outlook known to humanity needs to relearn how to engage with its own ethical precepts. The ethical debate and accountability we need to create must begin with accepting the postnormal axiom that there is no monopoly on truth. When there are no right or wrong answers everyone, every perspective, has a contribution to make, anyone is as likely as another to have some part of a potential solution. What we have to add to this is an ethical clarity, a state of mind which acknowledges we are all beset by ignorance and none of us has all the right answers. In postnormal conditions, flexibility, adaptation and sensitivity to markedly different initial conditions require that we develop our ethical acuity to increase the diversity of our response.

Imagination

The most important ingredients for coping with postnormal times are imagination and creativity.

Why?

Because we have no other way of dealing with complexity, contradictions and chaos. Imagination is the main tool which takes us from simple reasoned analysis to higher synthesis. We will have to imagine our way out of the postnormal times.

To a very large extent our current impasse represents a failure of imagination. Of course, we will learn from our mistakes and the future will be better and more prosperous. This is a dangerous illusion. We have to imagine better ways.

We need an ethical imagination that can acknowledge the uncertainty and risks we face and work through complexity and diversity cherishing the virtues we are most in need of. It is our best hope of taking responsibility for the choices we will have to make to ensure we can arrive at our imagined futures with our humanity and our planet intact.

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Postnormal Times Revisited

Ziauddin Sardar

In 'Welcome to Postnormal Times', I attempted synthesis of ideas culled from the fabric of foresight and futures studies. Postnormal analysis has now spread from science to futures studies, political analysis, economic intelligence and architecture and cultural heritage.

Here, I would like to critically engage with some of the rejoinders to the paper, attempt to answer some of the questions that have been raised, pin down a few characteristics of the postnormal condition, highlight the postnormal that lurks over the horizon, and explore what it means to 'be postnormal'.

PNT and Its (Dis)Content

An obvious question is: how can we have postnormal when there is no such thing as normal? Who defines what is normal?

In postnormal analysis, we take normal to be that which is frequently encountered: what is accepted as the dominant way of being, doing and knowing, conventionally seen as the standard, dictated by convention and tradition, backed by disciplinary structures and scholarship and what we are able to predict and control. It postnormal times (PNT) theory, the accepted normal does not work.

Those of us working on PNT theory have opted for postnormal times for five basic reasons. First, it avoids apocalyptic tones. Second, it emphasises agency. Third, it emphasizes and focuses our attention on complexity, contradictions and uncertainty that we need to really understanding how the

world is changing. Fourth, PNT has a sound theoretical base. Fifth, theoretical work enables us to develop policies in a plethora of areas and issues to actually navigate postnormal times towards positive futures.

Rakesh Kapoor [1] has argued that PNT is a western theory or concept. Nothing could be further from the truth. First, the boundaries of East and West have not only changed but have become blurred and indistinguishable. PNT is neither western nor eastern concept; it is simply a theoretical framework which describes and explains our epoch.

What about the argument that we have faced similar hurdles and ‘strange times’ in the past and, as Sam Cole [2] states, given our ‘sufficient latent reserves of knowledge’ and our superior state of evolution, we can solve all our problems and therefore should continue in our present path. This is, Merryl Wyn Davies notes, “optimism of a monumental nature based on the assumption that because we have managed to solve our problems in the past we will continue to do so forever” [3]. The conventional disciplines are part of the problem in that they have led us to our current predicament and a great deal of what modernity has produced is steeped in ignorance. We have never faced so many problems simultaneously; we have never experienced such accelerating pace of change, or such globalised interconnections and complexity, and have never been so steeped in ignorance of things that have such extensive consequences beyond our own context.

Surely, a system that is not networked or full of self-contradictions, cannot exhibit chaotic behaviour and go postnormal? The answer to this query lies in the answer to the question raised by Merryl Wyn Davies: ‘Are we there yet?’ Yes, and no. Postnormality is not a homogenous phenomenon: it does not affect all segments of the planet equally. So not every part of the world has gone postnormal; but every part of the globe can go postnormal.

The Postnormal Condition

The postnormal condition is the particular mode of existence we find ourselves in. We are facing problems that are vastly different in scale and are interconnected and embedded in accelerating pace of change. Scale, networks and acceleration generate the 3C’s of PNT, which lead us towards uncertainty and ignorance.

Recent political events demonstrate that we are no longer dealing with isolated sequences of events, local in nature, separable in time, affecting a handful of individuals or a small community, and perturbing a small number

of processes. Yet, under postnormal conditions, events and situations develop rapidly to become chaotic and envelope the world.

The Postnormal Extended Present

Postnormality is set to increase in the near future. In postnormal theory we call it the 'extended present' – that is the immediate future that will be shaped by the entrenched trends and developments we can identify today. Trend is not destiny. But if these trends continue, we are bound to find ourselves in an increasingly postnormal world.

It is worth noting that the 3Cs do not operate at equal levels on all situations. In some cases, complexity may be the biggest component; in others, it may be chaos or contradiction. But, in general, as the Cs accelerate and grow, they combine to produce a postnormal situation.

'Be Postnormal'

So how do we cope with postnormal times? How do we move forward without falling prey to chaos? How do we survive increasing uncertainty and the different varieties of ignorance that we face? The answers to these, and a plethora of other questions raised by postnormal times, begin with awareness and end with creativity and imagination.

We need to be aware that we cannot manage and control postnormal times, but we can navigate through them. We need to be aware of the fact that the multitude of problems we face simultaneously cannot be solved in isolation: when you look at a problem you also have to look at all the other problems it is connected with and to. Thus, plurality, diversity and multiple perspectives are essential for understanding and steering through postnormal conditions.

To be aware of this actuality is to 'be postnormal'.

Almost all the changes that postnormal times are ushering have deep ethical connotations. Ethics is not just about being-in the world, but also about being-with the world. It is about how we are related to the rest of the world. Futures studies cannot simply be about what could happen in the future. It has to be largely about what ought to be done for the preservation of sane, ethical futures.

Perhaps the most fundamental shift that postnormal times will usher will be in the power to define. The real power of the West rested on its power to define the key concepts of humanity and human society. But postnormal times tell us that these definitions have passed their 'sell by' date. This is where creativity and imagination enter the equation.

Creativity and imagination need to be utilized to produce new definitions of everything from art to architecture, politics to policy, science to spirituality and what it means to be human in postnormal times. It is time for us all to take a page out of the book of the Canadian experimental band, 'Post Normal'. In their song, 'Arctic Blood and Ice', they sing that something is terribly wrong with our times and that we ought to be able to do better.

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METHODS AND QUESTIONS

The Three Tomorrows of Postnormal Times

Ziauddin Sardar and John A. Sweeney

Introduction

In light of such far-reaching, rapid, and simultaneous changes an important new question arises for futurists and foresight researchers and practitioners: are existing methods able to cope with futures that are intrinsically complex, chaotic, contradictory, uncertain, and rapidly collapsing in and upon themselves? Traditionally, Futures Studies deals with plurality of alternative futures by differentiating between plausible, probable, possible, and preferable futures [1]. But what is probable in a world where uncertainty and chaos is the norm? What is plausible in futures dominated by contradictions? Are our conventional methods, such as forecasting, scenarios, and modelling fit for purpose in PNT? Do scenarios about future(s) take note of changing change? Do existing scenario modelling methods adequately allow for the requisite pluralism and polylogues, including amongst humans, non- and, un-humans, needed to confront PNT? How do we produce viable policies to navigate PNT?

Current futures methods are not irrelevant but carry inherent limitations – particularly in relation to PNT. What we believe is that futures methods are not keeping up with the forces and drivers that are actually disturbing the present and moving us toward unthought futures.

What is needed? Polylogues of various scope and scale [2]. Polylogues denote ‘multiple logics, speeches, and existences’ [3]. As we see it, polylogues require the creation of new physical and mental spaces where diversity, pluralism, and contending perspectives are present on their own terms but also deeply invested in engaging others in creating and sharing and knowledge. In addition to finding better and more egalitarian ways to share what and how we know, we must continuously seek out collaborative and dynamic means to craft and share our stories. Any analysis of the present and futures also needs to acknowledge that many things we take for granted are going to get weird.

Normalcy, Postnormalcy, Postnormal Creep and Burst

The first weird fact that we must acknowledge is that normalcy and postnormalcy both overlap and exit side by side. Many ‘normal’ systems will not continue to operate ‘normally’ in PNT – sooner or later, the 3C’s will have a direct or indirect impact on them.

The notion of normalcy itself is somewhat weird, especially in PNT. It is a decidedly ‘manufactured normalcy’ [4]. It is ‘manufactured’ in the sense that such norms have been developed by powerful international institutions and organisations that function by relying on market forces, internal, unquestioned assumptions, and subtle manipulation to generate ideological and consumer desires and dreams.

The Manufactured Normalcy Field (MNF) is a means of re-orienting our perceptions of what is and is not normal, and as a field that expands and contracts relative to our individual or communal focus, the MNF is shaped by the forces of ignorance and uncertainty.

‘Normal’ phenomena move towards postnormalcy through the process of Postnormal Creep (PNC). Although the forces driving PNC can be powerful, not all embrace the flows of such strong currents. There are some who cannot see, or rather ignore or refute, the emergence of PNC. They suffer from Postnormal Lag (PNL): a perceptual condition of denial. Thus, PNL is a disavowal—one that can only be overcome through Postnormal Burst (PNB): when the system goes totally postnormal and there is no place to hide.

The Three Tomorrows of Postnormal Times Framework

Given our age's weird characteristics, exploring futures within the PNT framework presents us with specific challenges. We need to focus on simultaneity and complexity as well as the dynamic nature of PNT. We need an appreciation of uncertainty as well as of different levels of ignorance and incorporate as much imagination and creativity in the whole exercise as possible.

The framework we have developed to understand and navigate PNT, as well as explore futures, is The Three Tomorrows of Postnormal Times (3T).

The **Extended Present** is the first tomorrow; it is what most people mean when they talk about 'the future'. The Extended Present is dominated by and populated with trends and emerging issues or weak signals that cannot be averted; they simply expand and extend the present. Here the best we can do is use the lens of PNT to identify systems that may be creeping towards postnormality, or on the verge of PNB.

After the Extended Present comes the **Familiar Future(s)**, which seems familiar because it is mediated by images and imaginings of the future(s)—from data-driven projections to science fiction. Trends embedded in the Extended Present along with images from advertising, corporate visions, popular 'futurology' and science fiction novels, films and television shows are extrapolated and projected to create a picture of the future that is all too familiar.

Beyond the Familiar Future(s) lies the **Unthought Future(s)**, a horizon of pure possibility. The Unthought Future(s) is not unthinkable but rather a horizon where something always remains unthought. The Unthought Future(s) is not simply something that is not expected or anticipated; rather, it is something outside the framework of conventional thought.

Ignorance, Uncertainty and Menagerie of Postnormal Potentialities

Each tomorrow has a particular type of uncertainty and ignorance attached to it. The most basic variety of uncertainty emerges when the direction of change is known but the magnitude and probability of events and consequences cannot be estimated. This is the situation we find within the Extended Present. We call this **Surface Uncertainty**, which can be managed to some degree with adequate knowledge and foresight tools. In the Familiar Future(s), we are presented with a broad range of alternatives and a plethora of possible futures. But we do know that many of these futures are simply a projection of common images of the future. We call this **Shallow**

Uncertainty. Finally, the Unthought Future(s), where anything can happen and nothing is known, presents us with **Deep Uncertainty**. Here, we are not only unaware of the direction, dimension and impact of change, but we are also incapable of knowing what is happening to the system because our worldview or epistemology is totally inadequate.

Each type of uncertainty is associated with a particular category of ignorance. The simple or **Plain Ignorance** (signified as i^1). This is the ignorance that may be overcome by understanding the complex networks involved, or appreciating the simultaneous ‘truths’ of actors with contradictory demands. This is the dominant variety of ignorance in the Extended Present: it can be overcome, and reduced, through learning, research, appreciating the viewpoints of others, and asking the right questions. The Familiar Futures present us with a deeper level of ignorance when we do not even know what questions to ask. We call it **Vincible Ignorance** (signified as i^2): it cannot be overcome in the present by learning as there is nothing to learn, but it creates an awareness of what we do not know and must seek to know in the future. Then, of course, there are Rumsfeld’s ‘unknown unknowns’: ‘the ones we don’t know we don’t know’ [5]. It is related to the Deep Uncertainty of the Unthought Future(s) and is categorized as **Invincible Ignorance** (signified as i^3).

Postnormal phenomena are most easily seen in the Extended Present. It is like a Black Elephant in the room, which either no one can see or chooses to ignore. A Black Elephant, notes Vinay Gupta, “is an event which is extremely likely and widely predicted by experts, but people attempt to pass it off as a black swan when it finally happens” [6].

Taleb’s popular notion of the ‘Black Swan’ captures the essence of the Familiar Future(s). Black Swans are not perceptible or articulated, even by experts; they appear as ‘outliers’ and come ‘out of the blue,’ as Taleb notes, they are “very fragile to miscalculation, with a general severe underestimation mixed with an occasional severe overestimation” [7]. Black Swans can be positive, which is to say that their impact might illuminate previously unimagined opportunities. However, they can equally be negative and serve as a signal for emerging PNC or PNB.

Postnormal phenomena are not easy to foresee in the Unthought Future(s). We represent the postnormal potentiality of the Unthought Future(s) with Black Jellyfish. Black Jellyfish are ‘high impact’, but they are ‘normal’ phenomena driven towards postnormalcy by positive feedback. Black

Jellyfish are all about how normal situations and events become postnormal; how they mutate through PNC by becoming interconnected, networked, complex and contradictory.

Collectively, we call Black Elephants, Black Swans, and Black Jellyfish the Menagerie of Postnormal Potentialities (Menagerie). As an ensemble aimed at challenging deeply held convictions, illuminating entrenched contradictions, and enlivening novel considerations, we believe our Menagerie does just that.

Working with 3T

The 3T framework has three specific functions: to aid our exploration of alternative futures, with an emphasis on plurality and postnormal potentialities; to critique existing projections and extrapolation; and to structure and shape policies that are specifically geared to navigating postnormal times.

Shaping policy to cope with PNT requires an appreciation of 3T's spatiotemporal simultaneity. Collectively, the three varieties of ignorance and uncertainties and the menagerie point towards PNC: the process through which normal things and events become chaotic and go postnormal.

Postnormal Policy's (PNP) aim is to be aware of our ignorance in its three varieties, to understand the complexity and uncertainties involved, to anticipate postnormal potentialities, and thus chart a viable, even if unpalatable, way forward.

3T's Place in the Futures Field

While Futures Studies emphasises alternatives, many methods of futures and foresight seldom incorporate pluralism and diversity intrinsically in their frameworks, and few emphasise the dynamic and merging nature of futures possibilities. The 3T framework offers a multi-layered approach that can serve as a useful tool of critique and exploring critical futures. 3T can also serve as an analytical tool for situating and contextualizing trends, emerging issues, and imaginings of the future(s) and we believe it can be complimentary to many other futures methods and research.

In PNT, pushing the boundaries of plausibility requires a new kind of thinking coupled with creativity and imagination, and we must be able to deal with complexity and incomplete knowledge. Our approach must be both radical and modest to be realistic and efficacious. This is the direction the 3T framework ultimately takes us—towards the unthought.

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Infectious Connectivity: Illustrating the Three Tomorrows

John A. Sweeney

Until 2011, Le Roy, New York was only known for having given birth to the American delicacy Jell-O. All this changed when a group of teenagers at Le Roy High School began displaying uncontrollable spasms, tics, seizures, and stuttering. A diagnosis of mass psychogenic illness (MPI). Early reports note how the initial group of affected teenagers were watching videos on YouTube and mimicking what they saw. Dr. David Lichter commented "I think you do have the potential for people going online and witnessing other student's behaviour, then I think this medium has the potential to spread it beyond the immediate environment" [1].

Dr. Lichter's premonition seems to have come to fruition as Marge Fitzsimmons, a 36-year old nurse who had no direct contact with any of the students, started displaying the same symptoms. Dr. Robert Bartholomew put forward an ominous potentiality: one of "a far greater or global episode, unless we quickly understand how social media is, for the first time, acting as the primary vector or agent of spread for conversion disorder" [2].

The symptoms of mental illnesses are not fixed and unchanging, but can be modified by changing cultural milieus. If cultural background is a

contributing factor in such incidents, how might this help one understand what happened in Le Roy?

Affect has become a popular concept in theoretical circles as it points toward our inherent plasticity as “porously open systems” [3]. Affect suggests a host of social and political implications – the most profound of which is that our brains and bodies are so highly susceptible to a range of epigenetic forces that the very categories used to designate individuality are, at best, ambiguous, if not entirely arbitrary. Infectious connectivity is the nagging impulse to check your email; the desire to click the refresh button on your social media feed when you have just loaded the page.

Can affect explain the outbreak in Le Roy? Does the World Wide Web (WWW) have the capacity to infect someone? Could infectious connectivity be exploited or perhaps even weaponized? Using the lens of Postnormal Times to investigate the WWW’s infectious connectivity, this study deploys a new foresight method to explore the emerging forces and issues pushing and weighing the WWW in the years to come.

How are Postnormal Times?

Ultimately, postnormal times demand new modes of inquiry and analysis, if only to deal with the chaos, contradictions, and complexity of life in an era of recalcitrant uncertainty and accelerating change. The three tomorrows (3T) is a method to model these dynamics and provide a more robust framework and approach for futures research. 3T uses a single phenomenon or theme, in this case affect and the WWW, to investigate possibilities for what might lie ahead. As such, scenarios produced using 3T method focus on emerging issues and are meant to raise previously unthought concerns and questions.

The Extended Present’s Black Elephants

In 2013, an online coupon site performed a survey of 2,403 parents on gadget usage with small children. 86% of respondents admitted to using a smartphone to either pacify or babysit an upset child [4]. The American Academy of Paediatrics encouraged parents to “discourage screen media exposure for children < 2 years of age” [5]. As the rising ubiquity of smartphones and tablets is a fairly recent phenomenon, there are no long-term studies that can substantiate, or even speculate on the far-ranging impacts or affects. What infectious connectivity might arise from such interventions?

The Familiar Future(s)'s Black Swans

There is no shortage of scenarios for the future of the Internet. As most images of the Internet's future focus on access, services, and infrastructure, Black Swans within this horizon ought to land within convergence of the WWW's possible affects. Given the broad interest in securitization of the Internet – from personal privacy to cyber war – generating a wildcard, which might act as a push toward the Familiar Future(s), within this sphere is critical.

Zbigniew Brzezinski provides a sweeping take on a range of future possibilities. Brzezinski writes: “It may be possible to exploit for strategic-political purposes the fruits of research on the brain and on human behaviour. [...] ‘One could develop a system that would seriously impair the brain performance of very large populations in selected regions over an extended period’ [...] [6]”.

“Another devastating terrorist attack leads to not only total neural information awareness policies but legitimizes the wartime strategy of enemy mind control. Mind-altering drugs and weaponized neural technologies become standard military operations” [7]. What if the attention of non-state actors turns from securing nuclear, biological, and/or cyber arms to clandestine neurosomatic weaponry? Could one weaponize social media?

The Unthought Future(s)'s Black Jellyfish

Over the past decade, the population of Green Bank, West Virginia has swelled to 147 residents. All of the hamlet's most recent transplants relocated due to the community's position within the National Radio Quiet Zone (NRQZ). How might people endure without accessing the WWW? Although Electromagnetic hypersensitivity (EHS) remains an unrecognized medical syndrome, many report physical ailments based on varying degrees of sensitivity to electromagnetic fields (EMF). If EHS victims are not actually sensitive to EMFs but rather the perceived presence of EMFs, then the condition's pathology is acutely neurosomatic, an effect of infectious connectivity. What if a positive feedback loop emerged surrounding the perceived effects of EMF? Could the NRQZ be expanded? Might the afflicted become refugees? How might national and international interests collide and compete over the public health implications? Such inquiries are very clearly not unimaginable, but the potential ramifications require one to confront the unthought.

Scenarios

The Extended Present

A mysterious pandemic has thousands of children in 27 countries displaying a range of abnormal behaviours – from uncontrollable spasms to near-catatonic states. The only common denominator linking the afflicted is the utilization of a popular early-childhood language learning application, which became a global phenomenon in 2018. By mid-2019, the app had registered millions of downloads, although it instantly drew warnings from medical professionals concerned over its engrossing interface and addictive gameplay. An investigation by the Centre for Disease Control has not yet returned any conclusive results, and political leaders have called numerous hearings in an effort to assuage irate constituents.

The Familiar Future(s)

Following the release of thousands of classified government documents in the wake of yet another whistle-blower scandal, one report is reigniting anger amongst bereaved parents who lost their children during a mysterious pandemic that struck over a decade ago. Chronicling the government's involvement in aiding research and development of neuro-affective manipulation technology via a range of online media interfaces, which was later used to build innovative child learning applications, the report also notes how the technology was part of a cache of data lost during a massive cyber-attack in 2028. Compounding the situation, a prominent extremist group in the region has proclaimed the dawn of a new age of combat and exuberantly pronounced how “new weaponry” will secure victory and allow them to conduct large-scale offensive strikes abroad.

The Unthought Future(s)

When news outlets began reporting on the content of a recovered video from an extremist group announcing an attack on New York City using an unstoppable, invisible weapon, the public response was fear. Fuelled by rampant speculation and wariness from suspicious outbreaks in the recent past, including damaging information from an array of leaked documents, panic transformed into phobia as thousands began to seek medical attention for an array of symptoms, though most were given a clean bill of health. Online support groups for the afflicted grew exponentially driven by the hypothesis that shielding one's self from electronics, specifically Internet-enabled devices, would provide relief. What began as the migration of a few families quickly turned into the departure of thousands seeking refuge.

Pushing and Weighing the Future(s)

Much like the networks infected by a computer virus, our porous humanity is also prone to accidents, but affect as invited accident is only one way of reading the dynamics of the MPI outbreak in Le Roy, children's exposure to and usage of WWW interfaces, the possibility of non-state actors deploying neurosomatic weaponry, and the potential scaling-up of EHS into a significant public health problem.

Human beings have always employed tools to enhance the limits of our being in the world, but increasingly our tools are becoming more pronounced prostheses, which portend a range of radical possibilities whose very sociality has come to rely upon a range of things.

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Ignorance, Uncertainty and 'What-If?'

Jerome Ravetz

It is now, nearly universally, acknowledged that the heart of the scientific enterprise is no longer discovery. The leading problems for science now derive from the challenges (and threats) presented by the hitherto blind and uncontrolled growth of our total scientific-technical-industrial system.

Let us consider the following statement:

‘With issues as complex as the impact of human activity on the natural environment, the search for simple truths may obscure the uncertainty of reality. Almost anything we do, consume, or are exposed to has some risks. We have to decide which risks require tackling, with what priority, in what way, to what extent, and at what cost. Environmental science is complex; describing technical data and detailed risk evaluation is difficult, but it reflects the reality of the choices society must make. The issues are not simple and science matters.’

This quotation is from Dr. Chris Fay, Chairman and Chief Executive of Shell UK Limited. Dr. Fay received an education about the social problems of scientific knowledge which was not easily available in universities, but which was presented to him, rather unexpectedly, in the course of his work.

The quotation reminds us that the loss of certainty and the intrusion of ethics are central to this new syndrome of science. With it comes the loss of hegemony of scientific experts in the area of discussion and debate of science related policy questions. ‘Objectivity’ has been made a problem rather than a foundation for science. We use the term ‘post-normal science’ to provide a historical location for this new sort of science.

Leading Questions

Accepting the idea of different styles of research, we can proceed to my classification, which is organized around ‘leading questions’. We may start with three sorts of enquiry, which we may call research, design and exploration. For each of them, we have the relevant questions: respectively, ‘what/how?’, ‘how/why?’ and ‘what-if?’.

These ‘leading questions’ are intended to illuminate rather than to define; and the term ‘leading question’ allows us to imagine that in any particular inquiry, all three sorts of questions appear in their appropriate places.

In the context of the new challenges for science, ‘what-if?’ becomes the leading question, with a new urgency. Now our ignorance is no longer benign, but threatening. Perhaps nothing, for some, most or all of the time; but perhaps something, just once, or once too often.

With ‘what-if?’ as the leading question, our whole conception of the scientific enterprise could evolve in a fruitful way. The task is to ensure that the uncertainties of the working environment of the system intrude only to an acceptable degree so that the problem-solving exercise deals mainly with these well-defined proxies for an uncertain reality.

Along with the uncertainty of the real world, we also need to deal effectively with its complexity. This approach pervades our whole scientific and technological culture. When we are accustomed to asking ‘what-if?’, and expecting the unexpected that we fully appreciate how no single perspective can completely capture any real situation.

The adoption of ‘what-if?’ as a scientific style will also have important effects on the policy process. We now know that the application of science to policy is very different from a simple process of ‘getting the facts’. To secure them requires an initial setting of priorities so that research is supported; and then the research must be designed around appropriate questions; for every policy issue is complex, including aspects of both nature and society, and where the ‘cause’ of the problem will be equally complex.

The style of ‘what-if?’ is also an expression of the Precautionary Principle. It protects scientists against a premature choice of research problems to be investigated. Imagine a continuous dialogue among the participants of the different sorts of inquiry. Although ‘what-if?’ necessarily moves from centre stage once the research effort gets underway, it should always be fostered as an essential complement to the puzzle-solving from which the relevant ‘facts’ eventually emerge.

Finally, there are the social implications of the ‘what-if?’ style of science. Insights and suggestions from people with different sorts of expertise or even none at all, must be accepted into the dialogue. Since so many of the ‘what-if?’ questions are prompted by such unorthodox data, the adoption of the ‘what-if?’ style is inseparable from the recognition of extended facts, extended peer communities, and the approach of post-normal science.

Conclusion: The Contexts of ‘What-if?’

What about the ‘critical science’ of a generation ago [1]? There are two related reasons for my setting aside such a politicised approach. For a while, when the reality of the ‘military-industrial-scientific complex’ was a fresh discovery for a broad public it seemed possible that a radical movement could be organized around science itself. However, that enthusiasm could not be sustained. In the meantime, politics itself has changed. If science is to become a central issue within that new context, debate will focus less on distributional aspects and more on its philosophical foundations.

This new focus is expressed in Sardar’s campaign for ‘Others’[2]. As it matures, this should provide us with the precious gift of ‘seeing ourselves as

others see us'. On that basis, we might accomplish the necessary reform of science, in its social functions, working methods, and conceptual objects. A complementary development could now be taking place within accidental culture, among the tendencies variously labelled 'green', 'feminist', or 'New Age'. The variety of names indicates the great variety of issues and styles, some overlapping but some mutually incompatible and hostile. Any consistent vision of science based on one section of this diverse movement would certainly alienate most of the other sections in some way.

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Here Be Dragons: Exploring the 'Unknown Unknowns'

Shirin Elahi

Introduction

Engraved on the copper face of the Lenox Globe are the evocative words: HIC SVNT DRACONES. This phrase, 'here be dragons', was used to signify dangerous or unexplored territories. For any user of the map, understanding where the boundaries of knowledge lay was almost as important as the knowledge itself. Illusion of knowledge was the greatest danger of all [1].

In the modern world of today, where be dragons? It is becoming increasingly clear that they lie all around us. In each instance they are the unacknowledged blind spots, spanning scientific, geographical, temporal and institutional boundaries but unrecognised due to the challenges they represent to our human desire for order and control.

Examples of 'Here be Dragons'

'Here be Dragons' are unrecognised, therefore there is little research on the subject. This paper has identified three examples, namely 'wicked problems', 'Black Swans' and 'Post Normal Science'.

'Wicked problems' or messes are ambiguous, highly constrained, tightly

interconnected complex dilemmas. Their changing nature and complex interdependencies, makes it almost impossible to define them collectively because there are so many different perspectives and issues at stake [2].

The 'Black Swan' is an unpredictable, improbable event characterised by its massive impact on the status quo [3].

Post Normal Science is characterised by high stakes, uncertain facts, disputed values and urgent decisions. In these situations, peer acceptance is low or non-existent, theoretic structures are based on statistical processing and data input and the uncertainty tends towards ignorance.

They all deal with interactions between multiple interconnected interdependent systems with many different actors, so information will always be incomplete. Another marked similarity is their ability to challenge conventional thinking and the status quo.

Acknowledging the 'Here be Dragons'

Human psychology, institutional frameworks and scientific convention have all conspired to remove 'Here be Dragons' from the collective consciousness. This process might be countered, utilising the new digital tools and processes available to draw on wider societal framing. By doing so, it should be possible to incorporate disparate cultural values and worldviews, so achieving greater societal legitimacy and also acknowledging and locating more 'Here be Dragons'.

The critical question is whether these new digital tools and processes could result in growing awareness and acknowledgement of the 'Here be Dragons'. Used in conjunction with scenarios and foresight, these tools could ensure that the 'Here be Dragons' become located on our collective mental maps.

Scenarios as Meta Risk Analysis

Foresight allows us to imagine what has not yet happened in order to protect ourselves from the harsh realities of actual experience. We undertake this process in order to understand and shape the direction in which the future might unfold.

The scenarios methodology is a foresight methodology that lends itself to the exploration of complexity as well as conflicting belief systems. Scenarios offer a means of collectively exploring uncertainties and so generating a common understanding of the underlying dynamics and issues that might impact the future.

There has never been greater need for societal adaptability in the face of exponential change. Societies today are so interconnected and interdependent that there is a great need for resilience, yet this will require recognition of the ‘Here be Dragons’ and strategies to deal with their materialising.

Conclusion

It is now time to acknowledge the ‘Here be Dragons’ and explore which ones pose the greatest risk to the society we desire for ourselves and our offspring. Ignorance, ambiguity and scientific uncertainty have all too often been conveniently airbrushed off our knowledge maps. The world is forever changing. The ‘Here be Dragons’ are around us, and human beings dependent on the complex webs of interconnected systems ignore them at their peril.

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SPACE AND TIME

Postnormal Artefacts

Ziauddin Sardar

From the perspective of postnormal times, a natural question arises: if postnormal times is a distinct epoch of history, and marks a departure from other recent periods of history, what artefacts and unique features has it produced or is likely to produce? ‘Stuff’, as the jargon has it, which identifies it as a distinct period?

If postnormal times have produced their own artefacts we should be able to distinguish them from the artefacts of other Contemporary Periods such as the Modern or Postmodern Age. Let us, for the purpose of this exercise, divide Contemporary Period into four divisions:

Classic: 1920–1950

Modern: 1950–1975

Postmodern: 1975–2005

Postnormal: 2005–

This division is just as arbitrary as other attempts to categorise history into named blocks. But the point is that we can identify artefacts and see if postnormal times have produced something that is distinctively different.

So, here then, is my cautious list of emerging postnormal artefacts.

Meaning

Classic: ‘I think, therefore I am’

Modern: ‘I progress, therefore I am’

Postmodern: ‘I shop, therefore I am’

Postnormal: ‘I share, therefore I am’

Truth

Classic: Monolithic

Modern: Monolithic

Postmodern: Relative and Pluralistic

Postnormal: Contradictory

Identity

Classic: ‘I am tradition and culture’

Modern: ‘I am science and technology’

Postmodern: ‘I am what I buy’

Postnormal: ‘I am my Facebook page’

Change

Classic: Quasi static, slow

Modern: Fast

Postmodern: Increasingly Rapid

Postnormal: Accelerating, Chaotic

Systems

Classic: Simple, Closed

Modern: Complicated, Closed

Postmodern: Complex, Open

Postnormal: Open, Interconnected, Complex, Chaotic

Key Concepts

Classic: Conquest, Supremacy, Progress

Modern: Progress, Efficiency, Modernization

Postmodern: Dissolution of Grand Narratives (meaning), Multiple Truths, Plural Voices

Postnormal: Complexity, Chaos, Contradictions, Uncertainty, Ignorance

World Order

Classic: Competing Colonial Powers (Britain, France, Holland, USA)

Modern: Bi-Polar World; 'Cold War' (USA, Soviet Union)

Postmodern: Unipolar World (USA)

Postnormal: Multi-Polar World (USA, China, Russia, EU, India, Brazil)

Knowledge

Classic: Pursuit of Reasoned Inquiry...

Modern: ...Acquired through Scientific Progress and Development

Postmodern: Socially Constructed and Relative, Wikipedia

Postnormal: 'Extended Facts', Embedded in Uncertainty and Ignorance

Science

Classic: Pursuit of Truth, funded largely by the State

Modern: Scientific Method as Neutral, Objective Truth; funded by the State and Corporations (Military-Industrial Complex); Peer Reviewed Publication

Postmodern: Socially Constructed; funded largely by Military-Industrial-Corporations Complex; Peer Reviewed Publication

Postnormal: 'Facts are Uncertain, Values in Dispute, Stakes High and Decisions Urgent'; Driven by Mega Corporations (Google, Microsoft) and Billionaire Philanthropists; 'Extended Peer Communities' but still largely funded by Military-Industrial-Corporations Complex

Technology

Classic: Slow Application of Science to Make Work Easier

Modern: Ideologically Driven to 'Improve Society', Antibiotics but also Nuclear Weapons

Postmodern: Embedded in Politics; Genome Sequencing, Biotechnology, Information and Communication Technologies

Postnormal: Human-Machine Synthesis, DNA editing, Drones, Cyborgs

Medicine

Classic: No Antibiotics, or appropriate Anaesthetics

Modern: ‘Modern Surgery’, Antibiotics, Electrocardiogram (EKG) Monitoring, Open Heart Surgery, Kidney Transplantation

Postmodern: Electronic Monitoring of Patients, Microsurgery, Face Transplant

Postnormal: Remote Surgery, Stem Cell Therapy, Synthetic Organs

Communication

Classic: Telephone, Telegraph, Morse Code, Radio

Modern: Microwave, Television

Postmodern: Mobiles, e-mail, Internet, World Wide Web

Postnormal: Instant, Perpetually Connected, 24-hour Global News Channels, Facebook, Twitter, ‘Internet of Things’

Political Organization

Classic: Empires

Modern: Nation States

Postmodern: Regional Groupings and Alliances (EC, ASEAN, OIC)

Postnormal: Power shifts to Non-State Actors

Governance

Classic: Representative Democracy

Modern: Interest-Based Democracy (neo-liberal, hyper modern)

Postmodern: Deliberative Democracy (diversity, plurality, ‘politics of difference’)

Postnormal: Complex, Chaotic, Unmanageable

Economy

Classic: Classical Macroeconomics (Adam Smith)

Modern: Capitalist (free market), Communist (centrally controlled)

Postmodern: Neo-Liberal Economic Globalization (large-scale, corporate commerce and the privatization of resources)

Postnormal: Digital, Runway Monetarism

Religion

Classic: Monotheism

Modern: Monotheism

Postmodern: New Age, Fundamentalism

Postnormal: Eclectic, Fundamentalist, Polytheistic

Equality

Classic: Legislated discrimination, Poor Law

Modern: Welfare State, Equality before the Law (assumed)

Trickle Down Effect will improve the lot of the poor

Postmodern: Multiculturalism, Integration, Assimilation

Postnormal: Acceleration of Inequality, Rich Grow Richer
at Lightning Speed

Boundaries

Classic: Fixed

Modern: Flexible

Postmodern: Porous

Postnormal: Dissolving

Nature

Classic: To be Tamed, and Exploited

Modern: Tamed, Under Control, but 'Limits to Growth'

Postmodern: Social Construction of Nature, Eco-Politics

Postnormal: Feral, Climate Change, Disappearing species

Environment

Classic: Relatively Healthy

Modern: Polluting

Postmodern: Toxic

Postnormal: Catastrophic, Climate Change

God

Classic: God is Everywhere and Everywhen

Modern: God is Truth (big T) (early Modern) God is Dead (Late Modern)

Postmodern: God is the machine or God is me

Postnormal: God is Ignorance

Religion

Classic: Religion Explains the World

Modern: Religion Helps Us Understand the World

Postmodern: Religion was a Lie; Liberal Secularism is the new
Theory of Salvation

Postnormal: Religion is Uncertain, therefore must be Open
to Multiple Interpretations and made Complex

War

Classic: 'The First World War'

Modern: 'Holocaust'

Postmodern: 'The Gulf War' (as seen on TV)

Postnormal: Drone Attacks, Cyber War, Militarised Robots

(war is a game, removed of humanity)

Protests

Classic: Civil Disobedience (African American Civil Rights Movement),

Non-Violent Resistance (Gandhi)

Modern: Anarchist Subversion, Violent Demos (Black Panthers), Peaceful Marches (CND)

Postmodern: Mass Mobilization ('Gay Pride', Gulf War Protests)

Postnormal: Propelled by Digital Media, Interconnected, Complex and Chaotic ('Arab Spring', Truckers Protests in Britain, US and elsewhere, Argentinian Public Transport Protests)

Terrorism

Classic: Urban Gorillas, Terrorism for Independence ('Battle for Algiers')

Modern: Local, with Specific Goals (IRA, Basque Separatist)

Postmodern: Global, Suicide Bombers, non-State Actors (al-Qaeda)

Postnormal: Global, Interconnected, Social Media Savvy, Seeking Territory ('Islamic State of Iraq and Syria', Taliban, Boko Haram)

Body

Classic: Muscular

Modern: Athletic

Postmodern: Androgenic

Postnormal: Enhanced

Cities

Classic: Mississippi, Cape Town (under apartheid)

Modern: New York, London, Paris

Postmodern: Tokyo, Dubai, Putra Jaya (Malaysia)

Postnormal: Baghdad (after the Allied withdrawal), Cairo (after two Uprisings), Aleppo, Ferguson, U.S.A.

Films

Classic: Mr Smith Goes to Washington

Modern: Invasion of the Body Snatchers

Postmodern: Sex, Lies and Videotapes

Postnormal: Her

Television

Classic: I Love Lucy

Modern: Mission Impossible

Postmodern: Star Trek: The Next Generation

Postnormal: Silicon Valley

Music

Classic: Jazz, Big Band Swing

Modern: Pop, Rock n Roll, Disco, Heavy Metal

Postmodern: New Age, Psychedelic, East-West Fusion, Punk, Grunge, and House

Postnormal: Yet to make an appearance (but Canadian experimental band 'Post Normal' is making an effort)

Hollywood Heroes

Classic: Clark Gable – 'Frankly, my dear, I don't give a damn'

Modern: James Dean – 'The bad boy from a good family'

Postmodern: Arnold Schwarzenegger – 'Hasta la vista, baby'

Postnormal: Johnny Depp – 'Honestly it's the honest ones you have to watch out for; you never can predict if they're going to do something incredibly stupid.'

Sex Symbol

Classic: Mae West – 'Is that a gun, or are you just pleased to see me?'

Modern: Marilyn Munroe – 'Gentlemen Prefer Blondes'

Postmodern: Madonna – 'I am a material girl'

Postnormal: Laverne Cox – 'Faking It'

Sex

Classic: The Hayes Code (no double beds, no kisses lasting more than ten seconds, no nudity)

Modern: 'Wham, Bam, Thank You Mam'

Postmodern: Cybersex – Log on, Log up, Log off.

Postnormal: Pornography is Normal

Marriage

Classic: Monogamy

Modern: Serial Monogamy

Postmodern: Serial, Multiple, Monogamy

Postnormal: Hetero, Homo, Trans, Serial, Plural

Buildings

Classic: The Empire State Building, New York

Modern: The Guggenheim Museum, New York

Postmodern: The Portman's Bonaventure Hotel, Los Angeles

Postnormal: The Clock Tower, Mecca

Painters

Classic: Picasso

Modern: Jackson Pollack

Postmodern: Andy Warhol

Postnormal: Banksy

Novels

Classic: Fitzgerald, *The Great Gatsby*

Modern: Camus, *The Stranger*

Postmodern: Rushdie, *Midnight's Children*

Postnormal: Wilson, *Alif the Unseen*

Global Weirding

John A. Sweeney

Bandar Mahshahr is no stranger to heat. It is not uncommon for this northern Iranian hamlet to experience consistent highs above 45 degrees Celsius during the summer. But, when the heat index topped 74 degrees Celsius, the second highest heat index ever recorded globally, the world took notice. For years, reports have warned that extremes would overtake the global climate system. However, just because we have been told to expect more extremes does not mean that we have, or will gain, the capacity to forecast and/or mitigate them. The climate system as we know it is going postnormal, and attempts to map the territory ahead are appearing increasingly Sisyphian.

How weird are things going to get? This might be the defining question of the 21st century.

The Mauna Loa Observatory reported in May 2013 that atmospheric carbon dioxide reached 400 parts-per-million. The last time atmospheric carbon levels were this high ‘the globe’s temperature averaged about 3 degrees C warmer, and sea level lapped coasts 5 meters or more higher,’ one absent of humanity. We have weirded the global climate system, and as this process is ongoing, we live in a world subject to extreme weirding.

Global Weirding, rather than global warming, is more than just a play on words—it is a prognosis. Global weirding ‘is a fitting moniker for the emerging meshwork of

- increasing technological advancement, dependence, and ubiquity,
- impending ecological catastrophe(s), and
- the transnational drive and reach of postnormal actants.’

When a street cart vendor immolated himself in Tunisia in 2010, few could forecast the impacts to come. In a time of extreme weirding, Mohamed Bouazizi is a quintessential example of a postnormal actant. Thanks to networked media, the uprisings across the Middle East and North Africa spread like wildfire. How can we think through such changes? What conceptual lenses might aid in making sense of the seemingly implausible? How weird are things going to get?

The advent of the ecosystem concept did much to further the systemic analyses of human activities on the biosphere, but a host of thinkers around the turn of the century were already making grander claims about the role and possible outcomes of human-driven changes to the planet’s operations, which is to say that some had theorized the world as a single, unified system—one increasingly coming to grips with the extremes of human control.

So many things we take for granted as ‘normal’ have now become extreme that it is not easy to have all extreme behaviour encapsulated in a single term. Our technology has become extreme, modernity has acquired extreme connotations, our economic system is extreme, corporate behaviour is extreme; almost every ideology has gone extreme.

The extreme weirding brought about by climate change has led some to consider radical ‘solutions.’ While some believe that the only way humanity

might abate extreme weirding is through climate modification initiatives, others have turned to consider more confined ‘remedies.’ Arguing that “the biomedical modification of humans” should be on the table in the light of the extreme weirding to come, the authors suggest that enhancing empathy, fostering a pharmacological intolerance to carbon-intensive products like red meat, and engineering shorter people are reasonable and less risky than largescale climate engineering initiatives [1].

In a world overcome by extreme weirding, humans might not only have to worry about novel threats but also dangers from the past that are expected to resurface as the global climate system goes postnormal. This dynamic is most apparent in the tundra region where permafrost traps the things of nightmares. Scientists concede the possibility that ‘dangerous viruses do lurk in suspended animation deep belowground’ as the prehistoric permafrost creates conditions whereby infectivity endures. Although such a scenario comes off sounding like science fiction, the effects of extreme weirding cannot be underestimated. This is what the epoch of extreme weirding can teach us: the unthinkable is increasingly becoming the unavoidable.

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East-West in Postnormal Times

Ziauddin Sardar

OH, EAST IS EAST, AND WEST IS WEST,
AND NEVER THE TWAIN SHALL MEET,
TILL EARTH AND SKY STAND PRESENTLY
AT GOD’S GREAT JUDGMENT SEAT [1].

Ideas conquer more territory and maintain more authority than all the armies of the Queen Empress eulogized by Kipling. Despite the evidence of history, politics, economy and culture, Kipling’s simplistic dictum still remains the preferred approach to understanding the world.

What is just so about Kipling’s lines is not its beginning. East and West are different, and the differences are substantive and of enduring import. The problem arises because difference is taken to be an unbridgeable gap: ‘never

the twain shall meet'. What is encoded by this negative value is the basis for fear, doubt of the other, perpetual insecurity and prejudice. The East, in all its complexity, continues to be seen as the provision of 'bogey men' and villains to the West.

But time has now come for us to transcend this pernicious binary logic. The boundaries and dividing lines of East and West have not only changed but have become blurred and indistinguishable. There is as much East in the West as there is West in the East. The potency of the ideas that impelled western imperialism is alive and well and operated by the East within itself, by itself.

Searching out the original miscreant and apportioning blame is a way of continuing the game of implacable opposition – suspicion, military preparedness, manipulation of public opinion, double standards and neglect of pressing human needs. The East has been complicit in the perpetuation of the ethos of binary oppositions. Condemnation of the West for its acts of commission suffices. East is East and West is West serves everyone.

Any attempt to move from binary oppositions must take into account the goodness in East and West as well as the evils within both. Only by acknowledging there is no-one with clean hands can we accept that we all have to find new ways of washing away the grime of our own imperfections.

The need to bring East and West together becomes even more urgent when we consider the truly global nature of many problems that beset us. None of these problems can be 'fixed' by individual states; and they affect every person on the planet. The first decades of the twenty-first century have made it abundantly clear that we are living in postnormal times.

East and West both need new methodologies for dealing with the predicaments of postnormal times. Diversity and plurality are essential both to understand and deal with complexity. Chaos teaches us that individual and social responsibility and accountability are all paramount for our collective survival. In postnormal times, the world can really be laid to waste by the actions of a few individuals.

Postnormal times have brought specific types of contradictions to the fore. We need to negotiate the future in a state of constant uncertainty, and if not in total ignorance, then at least with only partial or inadequate knowledge. That means we need to put our differences aside, East and West, and manage contradictions and complexity through negotiated consensual dialogue, where all participants are given equal voice. There are no violent means to

resolve contradictions or dealing with complexity. Humility, modesty, accountability, responsibility, diversity, and dialogue are not added extras but an essential requirement for surviving postnormal times

There is no place in postnormal times for Kipling's simplistic dictum. East and West have to come together and employ the best that their tradition, history and societies have to offer to negotiate our turbulent times with our sanity and humanity intact. To get beyond the impasse of the just so predicament of our times we need new questions and new insights before we can hope to have new, better answers.

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European Union's Contradictions

Jordi Serra

A spectre is haunting the European Union (EU) — the spectre of its own contradictions. These contradictions suggest that the EU is turning into a truly postnormal institution. The contradictions are a product of the EU's economic policies, the main driving force that shaped the Union. But it is its political, social and even cultural dimensions that will ensure its significance in the future.

The evolution of the EU was founded over a multiplicity of treaties. By 2001 it was clear that the Union needed a qualitative step forward, a European constitution. The aim was to unify the diverse legislation and to galvanize its political momentum. But the fact is that what should have been the foundation of a truly supra-state entity became the blueprint of a state-only members club.

The European constitution emerged as the first contradiction ailing the EU: it falls short as an international body and it goes too far as a state club. Bluntly put, too often the EU lacks the muscle to deploy joint policies, but the states also frequently lack enough influence to defend its specific interests. As a result, many policies are not ambitious enough to tackle the deep issues affecting Europe.

Nevertheless, the EU was seen as an example of successful international

governance; at least, until the 2008 crisis came along. The specificity of this crisis is that it is systemic and global. On the whole, the financial meltdown presented both a challenge and an opportunity for the EU. But the challenge was not taken up, and the opportunity was missed. The European institutions embraced austerity with the faith of new converts and told the people of continent to accept it without question or be doomed.

Paradoxically, the severe budget cuts look like the most consistent solution given the constraints of the European design. The Euro was defined in 1995, enacted in 1999, and turned into usable coins and banknotes in 2002. It epitomized the political push to attain a higher level of integration, a common currency for a stronger Union; it has also become a metaphor for a lack of political will. The Euro was and is insufficient to generate a joint economic policy and without a joint policy it is doomed.

Thus, the Euro suffers from two severe weaknesses. First, it defines a common currency for countries with deeply divergent economic conditions and dynamics. Second, its management is in the hands of an institution, the European Central Bank (ECB), which is totally independent from state control. The ECB has only been able to offer cheap money to European private banks in the hope that these banks would help their national states. Ultimately, austerity has been more an attempt to provide a dubious moral foundation for budget cuts than a real economic argument.

The obsession with austerity has led to the emergence of a second contradiction: capital comes before people. The EU has poured millions into a programme to ensure the viability of the financial systems, but very few of them have been lending to struggling businesses or hard-pressed mortgage dependent individuals. Still, let us not forget that the source of this funding is public money, money that comes from citizen's taxes and ultimately from the pockets of everyone in the Union. The rationale has been that the fall of the banks would have had a systemic effect that would have worsened the crisis and extended its effects.

The end product of the EU's attempts to navigate the financial crises has produced a deep fracture within its boundaries, generating more contradictions. Currently, there is a split amongst citizens within the Union; people from rescued countries versus the rescuing ones. The real division within each country is between those who are doing well and those who are not. More and more Europeans are coming to terms with the certainty that their children and grandchildren may never achieve the welfare level they have

enjoyed. Globally, the bailout has revealed just how fragile the fabric of the European Union is. But within the Union, the bailout has reinforced the perception that the EU favours economic stability over democratic legitimacy.

The EU has to make a transcendent decision. Is its purpose to unite its citizens, promote flow of people and labour between European states, bring the people of Europe closer, celebrate their intellectual and cultural histories, or enrich its bankers and financial institutions? At the very least, the European Community has to ask, is it:

- A market?
- A currency?
- An unfinished project on supra-state governance?
- All of the above?

The future of the EU and its relevance in the postnormal age depends on the answer.

I would argue that limiting the EU to its economic dimension, or letting economic logic dictate how it functions, is a great mistake. Europe has always been a tapestry of territories, peoples, cultures and all sorts of allegiances; it has never operated in harmony and it can hardly be considered as a homogenised unit by any stretch of the imagination. But even when it is made to work as an economic unit, economic features do not really reflect the real essence of the EU. As a coherent union, its real success lies elsewhere.

Two examples come particularly to mind: rights and environmental protection. If we consider the normative corpus of the EU, the so-called 'Community acquis', we can acknowledge that it is a remarkable compendium of rights that perhaps define the most democratic region in the world. The EU has developed one of the most advanced legislation on environmental questions. European commission reports on subjects such as health, education, gender equality, labour conditions, and minority rights have forced several states to move forward in their respective legislations to conform to EU principles.

I would argue that most citizens of the EU now realise that a turning point has been reached. The European elections in 2014 were the first sign. With far-right parties on the rise, the parliament accommodated the highest percentage of anti-Europe representatives in its history. For the right (and

far-right) wing parties the solution is less EU, for other the only logical alternative is just the opposite: more EU.

Yet, the events in 2015 proved both sides right and wrong. Millions of refugees, from Syria and other countries started to get into Europe. Few rejected them openly at the beginning. But as the numbers escalated, objections grew as well. The management of this humanitarian crisis has been a source of shame for many Europeans ever since. Nowadays, very few people feel that the EU serves their interest or needs; and it is no wonder that most consider that there is nothing in the Union for them.

The option now is either to take the EU to a civilized and dignified end, or for it to transcend its contradictions, and navigate postnormal times with insight and anticipation. First, the awareness of the people about the importance of regional dimension in a progressively interconnected, complex and chaotic world has to be improved. Second, the EU needs a new design fit for postnormal times that takes into account both the economic wellbeing of its entire people as well as its governance structure. Third, the European Union is in urgent need of new leadership. To survive the future, the EU needs a new generation of ethical leaders able to navigate postnormal times.

Postnormal America at the Movies

C Scott Jordan

At moments of key transformation, American cinema has used Others to measure itself against. The pre-war classics used African-American characters. Post-World War II cinema was haunted by the spectre of communism. Orientalist imagery came to the vogue in the 1960s and 1970s, before the 'Arab terrorist' emerged as a menace in cinema [1]. There has been a slight shift during the last decade: the fear of the Other has now replaced the fear of our times: the fear of climate change [2]; the panic about financial crisis; the anxiety about the internet; and the apprehension about automation, artificial intelligence and cloning. Given this zeitgeist reflected, it is not surprising that contemporary film now tackles postnormal times.

I would like to discuss two films that I think reflect postnormal America: Clint Eastwood's *American Sniper* (2014) and Alejandro González Iñárritu's *The Revenant* (2015). Ostensibly, they appear to have little or no relation to postnormal times. But we can derive metaphors [3] that shed considerable

light on America's fears, ignorant angsts, and its apprehension of uncertainties.

American Sniper gives us the story of the late Navy SEAL, Chris Kyle – a man who became famous for killing people. An American hero. Clint Eastwood's film takes this tragic American alloy and turns his story into a surreal metaphor for postnormal America. Much of the film has the all too familiar feel of your prototypical dystopian post-9/11 American war flick. By its conclusion, Kyle remains, at the very least, a metaphor for the good ole U. S. of A.

A metaphor of what the United States has become since its rise to global dominance, leaving the audience with a choice as to the trajectory of the future course. Kyle loves Texas, he loves guns, and he wants to be a cowboy. More importantly he has the classic American, preternatural sense of justice. The metaphor used resembles countless other empty metaphors that exists in the radical realist American psyche. In the film, Kyle watches a news report of the U.S. Embassy bombings in Kenya in 1998 as though he is seeing his little brother beneath a bully's pummel. A society so bent on a fundamentalist individualism suddenly feels for strangers only when connected to them by the word 'American'.

The news commentary spews forth chaotic fear and a deep uncertainty over the new enemy, and then there is 9/11. The Communist, The Japanese, The German, all with distinguishable characteristics easily caricatured, now are usurped by a shadow. The enemy is a spectre, almost inhuman. Thus, America must also lose its humanity. We watch Kyle's SEAL training, which is expected to be a striping of humanity, but instead the training feels more like manual online training. Then reality settles in.

Just as Kyle has it all, a perfect bride, a child on the way, the American dream, we learn shooting game or paper targets is no preparation for killing living humans. America watches the world through a high-powered scope and to be the shield the world needs. The very term 'hero' is put to the pitch like a soccer ball, kicked back and forth, transformed before the audiences' eyes. Chris Kyle is our hero. All the clearly shown contradictions in his values pull Kyle into the deep uncertainty of postnormal times. The result is a self-detached, quixotic hero whom the audience is perpetually shifting between rooting for and hoping he fails.

But the world is no longer that simple. The hero of postnormal times cannot

simply defeat the bad guy or defuse the bomb. The postnormal hero is a navigator above all. The postnormal hero is faced with taking our old conceptions, putting them to the test, and demanding that we re-educate ourselves or be doomed to fall at the hands of the true enemy – ourselves.

The first of these heroes are almost certainly damned to become tragic heroes, for an unfamiliarity with postnormal times will prove a deadly challenge. Some will accept the complexity and contradictions all around us, others will look to transcend it, and still others will be killed by it. These characters will be swallowed by the uncertainty surrounding them; and their options are limited to how they handle their own ignorance.

Quite unconsciously, the film portrays the basic dilemmas, internal contradictions and deep ignorance of America in postnormal times. I live in an America where there are more guns than human beings, campus shootings are the norm, and exporting war is foreign policy. *American Sniper* is a mirror presented, revealing our half-cocked mind-set that is hurling us towards perpetual violence.

Postnormal Times are turbulent and uncomfortable. A hint of how America can come to terms with postnormal times is provided in Iñárritu's *The Revenant*. Iñárritu provides us with his attempt at a navigation of these worrisome times.

To set up our navigation, the film begins in running water, a key element of life. A father and a son. Glass and Hawk. Then there is something not of the Earth per se, their guns. A buck with countless delineation within its antlers, the tree of life made flesh. BANG! The unnatural sound begets our journey. Nearby we see an encampment of men living in nature. The progression of morning is paused by the gunshot. John Fitzgerald expresses concern over the unnatural noise to the authority figure of Captain Andrew Henry. The ominous Other lurks all about.

The story here is essentially a father's guide to postnormal times. Glass's role as a father is interestingly complicated. The simple metaphor is that Glass, like the misguided political view of America, is carrying the beaten uncivilized world into prosperity. Glass cannot foresee a light at the end of the tunnel in this journey. He is just trying to get them to the safety of a nearby fort. He is coerced into being the father of this group of white men who look to only him to save them from the ever-present possibility of another attack by the Arikara tribe. The quest has a high probability of failure, and even upon reaching the fort, what then?

Fitzgerald, likewise, is a sort of father. Let us call him the father of ignorance and Postnormal Lag. Fitzgerald takes the young Bridger as his son, corrupting him with the old paradigms that are slowly crumbling at the end of an epoch. His philosophy is every man for himself, suffering is completely unnecessary, and lying is justifiable. All of these will collapse in the face of uncertainty.

Captain Henry is the false father. This is the father that we demand our governments and various subscribed organizations be. The tragedy being that they are at the mercy of experts and public opinions, both subject to the damning fate of chaos and inevitable contradictions. Henry cannot save his children, his men. Chief of the Arikara provides a sort of antithesis to Captain Henry. He is motivated, and thus his tribe, to find his daughter. He remains true to his identity but embraces the advantages of the white man's guns and learning their language. His defiance of ignorance provides a potential for all the false fathers as they face tomorrow's uncertainty.

This film is a story of the convergence of these various fatherly technics and gives us an interesting experiment in postnormal times. This convergence is wrought with confrontation, the most noticeable being that of Glass with the Grizzly Father, or in this case, Mother.

My own father's view of bears is greatly influenced by his Cold War life. The Soviets. The Reds. In my own life time, bears have gone from pacified cartoon to force of nature. I grew up with Winnie the Pooh, Yogi Bear, and Baloo. Then came Werner Herzog's *Grizzly Man* (2005). This documentary was fuelled by the spirit of saving nature and respecting its beauty, but taught us a valuable lesson. Nature is wild and those who walk on its territory are bound by its rules. The bear is the king of the American jungle. So why not let it be the natural father in Iñárritu's film?

The tragedy of this film is that the conflict is amongst fathers. Like a father-son picnic, the winner of this competition is not dependent on who loves the most, who has the most innate fatherly prowess, or some other sense of the romanticized parental bond. Glass, Fitzgerald, Henry, the Arikara Chief, nor the Bear are heroes in this story. These characters only converge due to the ignorance they all bear and in their approach to the uncertain future.

One of the closing images of the film leaves us with running water charging through a tundra landscape, but now a massive blood stain dements the water's bank. Wind, water, and a fresh snow can return it to the beauty at the film's start. These are the stakes of postnormal times. The truth is not simply

empirical, but requires the second degree of reflection. Ignorant breaths will be defeated by nature's wind.

How will America make its breaths in postnormal times?

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Postnormal Governance

Jordi Serra

Modernity appeared as the answer for a new kind of power that needed a new legitimate source that would break up with medieval traditions and structures. But these assumptions of an assumed monolithic world, with a single source of power are no longer valid in a multipolar, multicultural world. Modernity is in a state of crisis; and its successor, postmodernism simply turned out to be a “new imperialism of the Western culture” [1].

The conventional modes of governance are becoming dangerously obsolete; society is in a state of total confusion. As a result, most people have lost all interest in politics. The zeitgeist of the moment is a mix between uncertainty and anxiety provoked by our inability to understand what is happening. Truth and facts lose their value. Populism is a natural outcome of postnormal times. Political developments emerge and proliferate at such a pace that we barely cope.

Consider the case of Ukraine. It all began with demonstrations against the government in Kiev. President Viktor Yanukovich's government was indeed corrupt but it was democratically elected. His main crime was that he wished to align Ukraine with Russia. The western preference was that he instead move to join NATO. Soon armed protestors in Kiev took over government buildings and demanded a change of government and constitution. When the parliament voted to oust the Yanukovich, he fled to Russia; and the equally corrupt former Prime Minister, Yulia Tymoshenko, was wheeled out from jail to address the demonstrators.

A decade or so ago, that probably would have been the end of the affair. Western powers would have established a government of their choosing in Ukraine, just as they had done in numerous other places. But the generalized acceptance of the conventional distribution of power and the hierarchy of interests are not valid. The reality that power has genuinely shifted is hard to comprehend let alone face.

Notice the complexity and the resulting contradictions in the Ukraine affair. It is not just the interests of two competing powers that are at stake, Ukraine has 120 different minorities, each with its own reasonable and unreasonable demands. The contradictions were equally glaring. Western interests were paramount, but Russian interests were irrelevant. The democratically elected president was replaced by an entirely unconstitutional and undemocratic takeover. The democratic demands of the mob in Kiev were seen as legitimate; but the democratic demands of the mob in Crimea, where a referendum was held, were deemed 'illegal'. Our fascists, who are an integral part of the new government in Kiev are benign; their fascists are racist brutes.

If you light a touch paper in the postnormal world, you are as likely to burn yourself as much as your intended target. This is well illustrated in the case of Egypt. The initial demonstrations against the Morsi government were initiated through Facebook and rapidly escalated into a chaotic phenomenon that led to the overthrow of the regime. The Egyptian military took advantage of the chaos, and the secularists played into their hands. The end product: a legitimate, democratically elected government, albeit an autocratic one, was replaced by military rule. A 'coup' was not a coup. Far from nudging Egypt towards more democracy, the secularists succeeded in turning it into a nightmarish police state.

Consider the postnormal plight of Spain. After a golden period in real estate business, the subsequent burst of the housing bubble came as a chaotic implosion. Spain asked for a European Union bailout to sanitize its banking system. Spain had to endure severe budget cuts and some structural reforms that have resulted in a drastic reduction of the Spanish welfare system. The unemployment rate in Spain escalated over 20% producing no less than five million unemployed people during this period. For a number of years, Spanish politics grinded to a halt thanks to a four-way deadlock. The resulting deadlock has kept Spain paralysed for several years.

The resolution has brought Spain back to the status quo with a caretaker government. The population is interested only in making profit at the

expense of the society. Roy's conservative government won the 2010 elections. The conservative government ended up doing just the opposite of what it said it would do: far from reducing, they increased taxes, far from decreasing unemployment, they saw it rise sharply. But the economy was not its main challenge. That came from Catalonia. Catalonia wanted to secede from Spain and become an independent state.

So, what have the Spanish Conservative government, the 'acting' and previous one, done to tackle these issues?

First, it granted the Catholic Church an authoritative position on several social issues. Second, it truncated or simply abolished many democratic rights. The right to demonstrate has been curtailed by the so-called 'Gag Law'. The strategy is to turn street rallies and demonstration into administrative misdemeanours [2]. Third, policy has made it so that Spanish mortgages are not really mortgages; they are personal credits with real (meaning housing) guaranties. In this case, the loss of the property only entails the end of credit if the selling value covers the total amount of the credit, otherwise the former owners will still owe the remaining part of the borrowed money. By 2015, it was estimated that over 100,000 families have been evicted from their homes. The real tragedy is that most of these people are unemployed and still owe a lot of money to the banks.

Policies are made on the conventional direct linear cause and affect basis. Nowadays phenomena are the result of complex networks of causality in which many causal factors are intermingled; in such cases, action on just one element is not only futile but often also quite dangerous. Policy has to take a quantum leap to be meaningful in postnormal times.

We do not really know how to shape viable policies for postnormal times. But there are three basic principles that can guide us. First, we need to acknowledge that no one is in control. So, policymaking must consider and involve a host of different perspectives and competing, even contradictory, interests. Second, we need to appreciate that in a complex environment the guiding mechanism must itself be complex. Plurality and diversity have to be at the heart of governance for democracies to endure. Third, a policy worthy of the name must consider the impact of positive feedback loops. How are we going to cope with myriads of unintended consequences? How are we going to negotiate chaotic upheavals? While we cannot predict the outcome of a policy, we ought to have some awareness of its potential consequences.

The answer to postnormal challenges is to understand and embrace the dynamics of postnormal times and act accordingly.

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Postnormal Japan

C Scott Jordan

There is nothing 'normal' about Japan. Japan has been dealing with internal chaos, uncertainty and contradictions for decades. The movement towards, turned hastily into an endorsement of, postnormal times in Japan was not a killing of tradition, but rather a systematic shedding of classical elements from its society. An extrapolation of Japanese policy and actions reveals how the country practically navigated itself through postnormal times.

How this system of navigation developed provides needed insight into the concept of change. In the past, change has been a concept states have kept a close eye on in their efforts to maintain control and order. The Republic of Japan, standing currently without a national motto, has bravely donned the 3c's of postnormal times: contradictions, complexity, and chaos as it paces towards a new tomorrow.

To understand why Japan is best equipped for postnormal times, we must first see how the country navigated the 3c's in history.

Complexity can be illustrated with the example of the Rubik's Cube. At first look, with all the small squares mixed up, the Cube is found to be quite complex. Yet, there is a pattern by which the cube can be solved, making each of its six sides one solid colour. In fact, the Rubik's Cube is not complex, but rather simple. Let us change the rules slightly. First you are colour blind, second for every shift you make in the cube, another automatic and random shift is made.

Complexity is by no means a foreign concept to Japanese society. Life and the structures of society in Japan are riddled with rigid expectations of hierarchy, loyalty, respect, and ritual. Japanese history is more a story of the

fusing of the new, the outside, with what was local and indigenous, to make something anew, yet that retains its traditional values.

Always new and yet always thoroughly Japanese. Education is still held paramount, yet new concepts are added to the curriculum and student gain a conglomerate education accumulated abroad. The absolute rule of the emperor is supplemented by a very Western style parliament, but this parliament practices ritualistic respect alongside the idea of democracy. Eventually, all elements of a warring society are removed, only to be reshaped, years later, to a military loyal to 'peace and the security of all humanity'.

The Japanese have morphed into an organic flux of East and West. Let us add an extra layer to our now complex Rubik's Cube. For each shift you make in the cube, one of the nine squares on each side randomly changes. Chaos now grips the reins of this postnormal ride and the smallest changes produce radical outcomes.

Chaos in Japan has largely been observed through its power struggles. The object of power, and those who sought after it, drove a tumultuous military evolution, ending in its eventual extinction. Post-war Japan was heavily influenced by foreign inspiration and the embrace of such ideals as efficiency and development heavily controlled Japanese Policy. Most recently, tight ropes are walked between economic dominance and economic catastrophe, technological leadership and environmental plunder, and harmonious peace and hostile security.

Let us return to our Rubik's Cube. A random move is made for each one you make and a random square is allowed to change its colour with each move you make. The random changing of small squares allows, for example, for the cube to contain ten red squares. This contradiction prevents the game's objective from completion.

Contradictions are seen in the post-war Diet; meant to be one of the greatest success stories for democracy. Although the country had many opposition parties, there was only one clear ruling party, the Liberal Democratic Party (LDP). A current debate is the contradiction between the security of the state and the strict mandate presented in Article 9 of Japan's Constitution preventing the formation and maintenance of a standing military.

Even in the business world, Japan's approach to capitalism appears conflicted to Western business professionals. Capitalism is fuelled by competition. Japanese tradition does not regard competition as a virtue. Monopoly is not

a dirty word in Japan, if one business comes to control a certain market, the Japanese respect that and other businesses look else ware. Internal competition is virtually non-existent. Instead, Japanese businesses compete on the global market against other corporations on a global scale.

Three elements of the Japanese navigation plan provide important knowledge for postnormal times.

The first one is simply the Japanese Diet. What started as a council of scholars for the emperor has evolved into civic minded academics fighting to preserve Japan's deeply rooted ritual; a ruling body of many voices. While other legislative bodies tend to be comprised of duelling extremes, the Diet has been reformed so as to allow for the greatest representation of the Japanese voice.

The second element of Japanese postnormal navigation is having a global consciousness. Japan knows it both effects and is affected by what is going on around the rest of the planet. Their very survival depends upon it.

The third element is forward thinking. It sounds simple but in balancing domestic and foreign policy it proves difficult to move beyond the extended present. Japan must remain several steps ahead in its policy in order to survive. Being a nation without a standing military, with neighbours who have rapidly become major military powers, and historical tensions resurfacing, the country is forced to give priority to international peace. Becoming a top economic power requires more than a casual understanding of international markets and finance.

As the phenomenon of postnormal times becomes ever more evident, it would be interesting to see how Japanese decision makers shape their state policy and adjust to an increasingly uncertain global environment. The new randomized Rubik's Cube cannot be solved, but from it we can learn a great deal about ourselves and how we ought to walk upon this planet.

LIVES AND WORKS

The Game of Religious Thrones

C Scott Jordan

You have your opinions and I have mine. Until I chose to kill you. We think we live in a secular age, yet God is everywhere. Power over decision-making has been ceded to God. We are left wondering, why the youth are joining Christian evangelical movements in huge numbers or flocking to the cause of the Islamic State in Iraq and al-Sham (ISIS) and other such radical religious extremists so prevalent in the day's headlines.

The world George R. R. Martin created in his book series, *A Song of Fire and Ice*, made popular HBO television series, *Game of Thrones* [1], respects and explores religion as it exists in the real world. In doing this he gives us a clever allusion to the religious interactions of our own world and the contradictions that arise therein.

The episode titled 'What is Dead May Never Die', Tyrion Lannister, Hand to the King of Westeros, is posed a riddle. "Three great men sit in a room, a king, a priest, and a rich man. Between them stands a common sell sword. Each great man bids the sell sword kill the other two. Who lives? Who dies?" The question poser, Varys, responds to Tyrion's silence with his wise lesson: "Power resides where men believe it resides. It's a trick, a shadow on the wall and a very small man can cast a very large shadow."

Varys has explained the postnormal state of the Seven Kingdoms, but also gave us a vital reflection on religion in contemporary times. But something strange has happened: thanks to social media, 24-hour news channels, and other forms of instant communication, small men can now cast really large, global, shadows.

Consider, for example, the Reverend Fred Phelps and his followers known as the Westboro Baptist Church (WBC). They are known for their extravagant and pot stirring protests against funerals of military service members and the LGBT community. This church at the time of Phelps' death was reported to have 40 members [2]. Phelps' has managed to accumulate a lot of America's attention, the world's attention, and thus cultivated enormous power.

Pastor Terry Jones of the Dove World Outreach Center in Gainesville, Florida gives us another example. He was one of many anti-Islamic Christians who announced one day that he is going to burn the Qur'an [3]. Through the actions of Jones, who had no more than two dozen followers, and the speed with which communication technology turned his intention into a global phenomenon. Jones did not end up burning a Qur'an and it is unclear that he had any intention of carrying the act out.

What we witness is not a simple paradigm shift, but a fundamental reconstruction of what is and what is not normal in religions. The outreach of the extremist, the literal fanatic, the puritan and violent adherents, who would normally exist on the fringes, has expanded: it has become global in scale and scope.

Ironically, while we are constantly connected to virtual communities, real communities have almost disappeared. Rather than talk to each other face to face, people increasingly prefer to communicate via text, Facebook, Twitter, and other social media platforms. Young people have become more and more alienated. In an age where meaning has been abolished, they seek meaning in their increasingly alienated, uncertain, ambiguous lives.

Recent headlines have been painted with the youth flocking to the cause of the Islamic State. This is not a phenomenon of the oppressed and secluded. It is global. And it is a specific product of our postnormal times, where the God-shaped hole in people's mind can only be filled with something spectacular.

The analysis of Hans Küng [4], Talal Asad [5], and Karen Armstrong [6] suggests that religion often expresses itself as a super-self belief: not just a belief in the supernatural but also a belief in one's conviction of possessing the Absolute Truth. Religion moves out of the boundaries of faith and becomes a decision-making process; and inevitably comes in conflict with other decision-making processes such as politics, science, state and secularism. Now, religion becomes the sole source of certainty for the believers. An attack on religion is perceived as an attack on the Self, the abandonment of religious principles in society is seen as a loss of the Self. And the lost Self is a dangerous thing.

In postnormal times, this phenomenon is going to multiply manifold: the cycle of a lost Self making an unpalatable pronouncement that gets tweeted endlessly on social media till it breaks a trending threshold and goes out of

control. The platform developed to bring people together, only brings us together to push us apart, and demolishes our Selves in the process.

In postnormal times, the actions of separate individuals assemble into an intricate stage play of false stereotypes and billowing ignorance. Yet, the individuals themselves can also exist in an insulated cocoon: exposed only to views that reflect their own and they can acquire all the necessary skills and equipment needed to enact their plans with the click of a mouse. You thus exist in a manufactured normalcy: a field is created giving you the impression that everyone believes like you, thinks like you, behaves like you, and wants to be like you. And if you are a believer, it is a small step to conclude that it is the will of God. That's what God wants you to do.

Postnormal times produce a feeling of helplessness in those with religious and spiritual leanings. In a world where very little makes sense, meaning evaporates. But our longing for meaning increases – and we often find it wherever we seek it. And beliefs often translate both as identity and meaning. This dementing of the self's identity, far from providing a true sense of belonging and meaning, actually increases alienation.

Yet, there has never been a greater need for people and communities with genuine religious and spiritual values. Many of the contradictions of postnormal times require old fashioned religious virtues of humility, patience, love, compassion, and compromise to transcend. I would suggest that the purpose of religion cannot be to perpetuate super-self belief but to show love, compassion and provide service to others. The diversity and plurality of postnormal times can only be navigated by acknowledging that the faith of others is as important to them as our faith is to us. Above all, religion must stand against ignorance of all types, and see uncertainty not as a threat but an opportunity to shape more desirable futures.

A beautiful optimism resides in the initiative known as 'hug a terrorist' in Denmark, where citizens welcome back and help reacclimatize, as appose to ostracize, youth who have fled to Syria to join ISIS [7].

Postnormal times have made 140 characters as powerful as any quote from the religious text of your choice. We return to Vary's riddle and are left wondering who lives and who dies. And are forced to ask: where do we want power to reside in the future?

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Islamic Futures in Postnormal Times

Ziauddin Sardar

Prelude

Today's Islamic discourse is, for the most part, a future free zone. The future is a subject that should concern every Muslim. Yet, talk of the future is conspicuously absent in Muslim circles.

Why is this so? It doesn't help that there are hardly any scholarly works on the future of Islam and Muslim societies that one could engage with. There are some books where the word 'future' appears in the title. But the term 'future' here is an appendage; there is no acknowledgement that 'the future' is a developed and sophisticated field of exploration and study.

For a book that lives up to the title, we have to turn to Wilfrid Scawen Blunt's *The Future of Islam* [1]. Blunt was concerned with certain trends in Muslim societies; these pointed towards a particular future. Blunt illustrates the basic ingredients of a futures-based analysis. It is about understanding change and the rate of change. It is about understanding trends and extrapolating them to see what kind of future they could generate. And it is about formulating policies and taking actions in the present that promote a desirable future [2]. Blunt also illustrates another key point: if Muslims do not engage in thinking and shaping their own futures, others would happily do it for them [3].

The only way out of the current impasse is to think boldly in terms of long-

range futures. We need to chart a path towards a desirable future, develop insights into managing and anticipating change, and work systematically to achieve our desired goals. Most of all, we need intellectual boldness and imagination, to imagine what has been impossible to imagine, to develop ideas that have hitherto been seen as heretical or exist only on the margins, and envision alternative ways of what it may mean to be a Muslim in the coming decades and centuries.

In other words, we need to develop a vibrant future consciousness.

Locating the Future

What exactly do I mean by a ‘future consciousness’? I mean an appreciation of accelerating change, an awareness of potentials and pitfalls lurking over the horizon in the not-too-distant future, and a commitment to shaping a desirable future.

Thinking about the future is daunting. The future is unknown; and in most Muslim traditions it has largely been consigned to the domain of ‘God’s will’. The difficulty is compounded by the fact that the future does not really exist: it is always a time that has yet to arrive. However, just because the future does not exist, and indeed cannot exist, it does not mean that we cannot study it, develop ideas, images and metaphors about it, and attempt to understand and shape its direction. The future may be elusive and uncertain but it is a domain over which we can exercise some power.

How can we proactively shape futures of Muslim societies a generation or two from today, twenty or forty years from hence?

We need two essential tools. We need to have an understanding, a picture, or what futures await us if things continue as they are. And we need an image, a vision, of alternative possibilities: the futures we desire and prefer. Both require creativity and imagination; and there are different types of methods for dealing with each approach.

Positioning the Past

Our futures are also a product of decisions our ancestors took in the past. All societies have living histories, often described as tradition, which mould their identity. A future without identity is no future at all. However, not all our history has a part in our futures.

Consider also the idea that ‘Islam is a complete way of life’. The statement suggests that all issues of ethics, morality, law, governance, indeed all human

life, have been settled in history. If this were so then ethical and moral evolution, developments in law and other critical areas of human thought, come to a grinding halt.

They (we) are responsible for the fact that Muslim societies have been drifting from one undesirable future to the next for centuries; and represent the most serious threat to shaping viable and more fruitful futures for ourselves.

Muslim history also brims with concepts with liberating potential that open up the future to multiple alternatives. Perhaps the most proactive idea, that involves constant engagement with the present as well as the future, is *ijtihad*, normally translated as ‘independent reasoning’. Clearly, reasoning is not something that can be done once and for all; and reasoning often leads to innovation. It’s about thinking boldly and imaginatively about possible, probable and desirable futures.

We can also see an awareness of the future in the life of the Prophet Muhammad. For example, he forbade cutting of trees and hunting of wildlife in the woodlands around cities because they provided sustenance for humans and animals and protected the cities with a green belt. The *hijra* was planned meticulously, and the path for the migration was systematically cleared over several months. The Prophet anticipated the Quraysh uprising against him. Months before the battle of trenches the Prophet anticipated the coming conflict and prepared to defend Medina by digging a trench around the city thus actually preventing a major conflict.

I would argue that Islam is intrinsically future oriented; and insists that the believers should actively shape their futures.

Situating the Present

This very moment in history – now – is the present; and it has a natural role in determining our futures. But the present is not static. Indeed, the present is forever changing. So, we need to see the present as dynamic, changing and constantly incorporating new elements and situations of contemporary reality. There are five distinct elements of this dynamic present that we need to consider in shaping sustainable futures.

First: the obvious fact that we live in a globalised world. Second: the problems we face nowadays are not simple. Third: we are constantly on the edge of chaos [4]. Fourth: the present is full of contradictions and they cannot be resolved; they can only be transcended. Fifth: uncertainty is the norm [5].

There are other options: possible futures, an amalgam of different possibilities we can imagine; plausible futures, that is futures we determine, given current conditions and historic momentum, that has a high probability of being realised; and preferable futures which we actually desire and consciously work towards.

Preparing for Futures

Suppose we were to ask a random selection of Muslims what kind of future they envision for their societies. Most of them would surely want a future that is free of sectarianism and civil strife, violence and terror, torture and brutality, where their children can grow healthy and prosperous and where society is at peace with itself and people of different faiths and people of little or no faith.

We need a new base from which to move forward. This requires us to bring back the human in Islamic discourse. The Prophet is seen not as a human. But, contrary to what the Qur'an declares, as a superhuman whose every action is perfect, to be copied to minutes detail. The problem is if everything is God given there is no role for human effort and imagination. The believers have no agency. No mechanism for the evolution of religious thought and morality, no way of constructing a new ethics for our times.

Ironically those who are most concerned and obsessed with 'Islam', beat their chests and shout the loudest about 'defending Islam' and 'Islamic Sharia', insist on politicising their identity and expressing it stridently and visibly (in their niqabs or hijab, or the lengths of their beards), represent the greatest threat to Islam and its future.

There are two prerequisites in preparing and working towards preferable, plausible and viable futures. First, the goal that Muslims cherish above all others: to impose a single truth on a diverse society and a plural globe. Second, we need to appreciate that the Sharia is a human construction of fallible man in history.

Coda

In our quest for preferable, worthwhile futures for Islam and Muslim societies, we need to ensure that the future is open to all potential and dissenting possibilities. We don't wait for things to change; but actively change things and thereby make history.

By far the biggest problem in thinking about the future from an Islamic perspective is the absence of an appropriate language. A language is not just

a tool of communication; it is also a tool through which social and cultural needs required to survive are negotiated. There is thus an urgent need to infuse Islamic discourse with future consciousness and develop a language that motivates us to look forward rather than backwards.

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Science and Scientists in the Postnormal Age

Jerome R. Ravetz

It is well known that the new technologies of information are revolutionising practice in a great variety of fields. The powers of research science in many fields are being enhanced and even transformed. They are important new developments, but not necessarily 'new forms' of science. Here we consider the practices and structures that cause surprise and concern when they are noticed, and that have their own momentum to continue rapid change.

Historical Background

About a half-century ago there was an awareness among scientists that things had changed. The current situation of science is one of very rapid change.

The changing self-consciousness of science during that previous period is a reminder that in the socio-technical system of science, the intellectual and material aspects of the system are deeply implicated in one another.

Science became ‘industrialised’ in several respects: in overall size, in scale of individual enterprises, and in its ever-closer relations with industry. It also became ‘incorporated’ [1], that is involved in a variety of ways in the affairs of the state. Somewhat naively scientists believed that they were being asked to speak ‘truth to power’, when their clients frequently wanted ‘policy-based evidence’. In its relations to the broader society, the manipulations and distortions of research that are now familiar in connection with profit-making industry are mirrored in the less notorious, but equally important practices of ministries and state agencies.

Structures of Scientific Activity

It is now commonly appreciated that the old picture of ‘the scientist’ making a discovery and then turning it over to ‘society’ is very radically oversimplified. First, the possible motivations for engaging on, or supporting, research are varied. That initial motivation is but the first step in a multi-phased cycle that explains the complexity and confusion that attends debates when science is involved with policy.

More to our present concerns, quality has replaced truth as the effective guiding principle for science. It requires an ethical commitment, one that must be seen to be practiced at the top of any institution. In its absence, corruption and vacuous research is sure to follow.

Persons

There has been a growing recognition that policy-relevant science is done better if the early stages draw on a broader experience than that of politicians, science advisors and experts. Involvement of citizens has become increasingly accepted as desirable and useful. In conventional scientific research, there is a long continuous tradition of amateurs making a contribution, but more recently they had been relegated to the role of lower-status assistants. But a more active involvement is developing all the time. As a result, the status of ‘scientist’ is being progressively diluted.

Procedures

A similar process of change, variously seen as erosion or democratisation, affects Procedures. For a long time, there was a common belief in a Scientific Method, those procedures whereby science unerringly produced the correct

answers to its problems. With the rise of uncertainty and then of complexity in knowledge and policy, this motivating faith gradually lost plausibility. The inability to specify a Method that is not logically fallacious has contributed to the difficulty. As to models, the best that can be said is the classic 'all models are wrong; some are useful'. But there does seem to be a much-heightened awareness of these problems within scientific communities; and this could simultaneously have the opposite effects of stimulating reform while also reinforcing cynicism.

Property

In the previous epoch, the social relations of Property had not been changing with great rapidity; there was a steady displacement of the traditional 'public knowledge' by what we might call 'corporate know-how'. However, there has been a recent recognition of a deeply paradoxical situation in the management of intellectual property. There has been a recent warning that the progress of the field is being seriously impaired by the thickets of property rights that surround the various bits of knowledge and technique that are necessary for research.

Publicity

Innovation is even more rapid in the phase of Publicity, which is after all the life-blood of science and which consists of information. What is significant for the self-consciousness of science is the sudden discovery that there actually is an urgent and deeply problematic political economy of publicity. Scientific publication is not free, nor even particularly cheap. The problems of cost and recompense in the digital age that had already afflicted the creative industries have suddenly arrived in science. Thanks to digital publication, the on-going inquiry can now be a focus of a continuous flow of communal dialogue and development, in which there may be a temporary crystallisation of a 'product' as a matter of convenience.

Quality Assurance

The effects of the new technologies on the quality assurance cycle are, if anything, even more dramatic. Traditionally the quality assurance systems of science were run largely informally and largely confidentially. As Wikipedia itself has shown, all the editorial processes can be both convenient and transparent. What had been a remarkably closed institution, with little public scrutiny of its workings and hardly any investigative journalism is now starting to be opened up.

Consequences

Near the end of the cycle is Consequences. Traditionally, the consequences of science were assumed to be essentially good and overwhelmingly benign in practice, and so the scientist could, with a good conscience, turn over his products to society. Now the issue of consequences is recognised as crucial in policy debates on new technologies as well as in broader policy debates. We will know that science has genuinely entered its new epoch, when the science of bads becomes recognised as a subject worthy of being taught as part of a liberal education in science.

A Role for Post-Normal Science

Consciousness always lags behind practice as the world changes. The task of forging a new ideology for science under these new conditions is urgent, for the corruption of the scientific enterprise is well advanced. There is no guarantee that science as we know it will survive.

Since in the course of a scientific education students are totally shielded from such problems, they become disoriented when they first encounter them in practice. When they try to share their worries with colleagues, they are frequently shunned as the bearers of uncomfortable knowledge. In many cases, the thesis of postnormal science has served as liberation.

Postnormal science opens the way for plurality of perspectives, of the right to be wrong, of awareness of ignorance, of humility. With its simple core ideas, it enables us to see how the received image of science has fostered narrow-mindedness, intolerance and pride. In this sense science as an institution is being forced to look at itself realistically and not through ideological spectacles. That may still be a little way in the future.

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Creativity and Leadership in Postnormal Times

Alfonso Montuori and Gabrielle Donnelly

Introduction

The complexity, pluralism, and uncertainty of life appear overwhelming. Imagination, and its broader umbrella, creativity, are essential 'to imagine our way out of the postnormal times.' Creativity has gone from being a fascinating, marginal, odd and inexplicable phenomenon to becoming the engine of social change and transformation.

In transitional time such as ours, we need to understand where we have come from, and how we have been shaped by our times, in order to move towards a different future.

Historical Roots

Until the 1980s, research on creativity in the West was situated mostly in the discipline of Psychology. It focused primarily on Person, Process, and Product [1]. The unit of analysis was almost exclusively the exceptional or 'eminent' individual [2].

The Changing Face of Creativity and Leadership

The way we understand, practice, and express our creativity is changing. Creativity leads to change, and change leads to creativity. Three main trends involve a) viewing creativity as a more networked, collaborative process, b) as an everyday, everywhere, everyone process, rather than something confined to exceptional geniuses [3][4], and the articulation of creativity as a form of leadership and leadership as a form of creativity [5][6][7][8][9][10][11].

Leadership and creativity are shifting from a Heroic, Great Man view to a more relational, distributed, everyone/everywhere/everyday process. Leadership can be a form of self-creation in the context of social responsibility and the development of possibilities and alternatives in the world. How do we channel our creativity? Leadership needs to account for and be responsible for the direction and application of human creativity, and creativity needs to infuse leadership with new possibilities and opportunities to move beyond postnormal times.

Transforming Creativity

Research on the psychology of creativity now includes a strong emerging focus on everyday creativity. The Where of creativity is now potentially everywhere. This can be found in new research on innovation, group creativity, jazz, and an increasing appreciation of ‘the wisdom of crowds,’ the creative potential of ‘open innovation,’ where difficult problems are shared with the public and useful answers emerge [12][13][14][15][16][17][18].

Questions are now being raised as to whether what we are calling ‘everyone, every day, everywhere’ creativity will lead to a growing narcissism, a consumerist self-absorption, and a flattening of all values that will make the ‘Me Generation’ seem positively altruistic, or whether it can be channelled towards worthy human aspirations [19][20][21].

Reinventing Leadership

In an era of transition, we are not bound by fixed roles or destinies. The new leadership does not assume one has to be a leader all the time. Leadership is also increasingly viewed as heteroarchival, based on aptitude for a particular context, task, and situation.

Tribes and Factories

Seth Godin’s popular Tribes provides us with two useful images that can orient us to the emerging understanding of leadership. His argument is that we are moving out of the age of the Factory and are now in an age of Tribes. “A tribe,” he writes, “is a group of people connected to one another, connected to a leader, and connected to an idea” [22].

Factories are large, hierarchical, unwieldy, inflexible, and generally not prone to innovation. In a factory, leadership is confined to a few. Command and control are the central features of leadership in factories. Tribes are networked, flexible, and heteroarchival, allowing leadership to emerge in a plurality of sources [23]. The democratization of leadership is becoming an increasingly mainstream perspective.

Concluding Reflections

We live in postnormal times. Creativity and imagination are necessary to envision the new world. Creativity is leading us into this new world – it is the way we conceive of alternatives. This means that creativity requires more responsibility than ever before. Creators are leaders. People are learning to work together, across differences, to develop creative solutions to old problems. Life may never be ‘normal’ again, but we may actually have something to look forward to.

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Ziauddin Sardar, writer, futurist and educator, is an internationally renowned public intellectual. He has published over 50 books, including *Rescuing All Our Futures* (Adamantine, New York, 1998), *Islam, Postmodernism and Other Futures: A Ziauddin Sardar Reader* (Pluto, London, 2003), and most recently, *Future: All That Matters* (Hodder, London, 2013). He was editor of *Futures*, the monthly journal of policy, planning and futures studies, from 1999 to 2012, and served as a Commissioner on the UK Equality and Human Rights Commission from 2006 to 2009. He is the Director of the Centre for Postnormal Policy and Future Studies.

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John Sweeney is a futurist, consultant and educator. He has worked with universities, international development and humanitarian aid agencies, nonprofit foundations, and educational and cultural organizations, including UNICEF, UNESCO, UNDP's Global Centre for Public Service Excellence, the Joint Research Centre of the European Commission, and the International Federation of Red Cross and Red Crescent Societies. Co-author of *Mutative Media: Communication Technologies and Power Relations in the Past, Present, and Futures* (Springer, Dordrecht, 2015), he is the Deputy Director of the Centre for Postnormal Policy and Futures Studies.

The Centre for Postnormal Policy and Futures Studies (CPPFS) is an international research and consultancy network with a particular focus on marginalised peoples and communities. The Centre promotes futures literacy and an understanding of postnormal times, with emphasis on new means of navigating contradictory, complex and chaotic situations and phenomenon. It aims to foster critical inquiry, action learning, and an ethical imagination for shaping decolonized, alternative, and preferred futures.

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Postnormal times are best defined as 'an in-between period where old orthodoxies are dying, new ones have yet to be born, and very few things seem to make sense'. or, as Ezio Mauro puts it: 'we are hanging between the "no longer" and the "not yet" and thus we are necessary unstable – nothing around us is fixed, not even our direction of travel.'

The postnormal times theory attempts to make sense of a rapidly changing world, where uncertainty is the dominant theme and ignorance has become a valuable community. *The Postnormal Times Reader* is a pioneering anthology of writings on the contradictory, complex and chaotic nature of our era. It covers the origins, theory and methods of postnormal times; and examines a host of issues, ranging from climate change, governance, Middle East to religion and science, from the perspective of postnormal times. By mapping some of the key local and global issues of our transitional age, the *Reader* suggests a way of navigating our turbulent futures.

