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The smog of ignorance: Knowledge and wisdom in postnormal times^{*}



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ABSTRACT

Using the Data, Information, Knowledge and Wisdom (DIKW) hierarchy as a template, this paper explores futures of knowledge and wisdom. It suggests that Big Data is generating gargantuan information that would radically transform what we understand as knowledge. Emergent knowledge will be a combination of objective knowledge, as defined by Popper, and toxic knowledge, an amalgam of different verities of ignorances. Plain ignorance generated by fake news, alternative facts, manufactured fake science, false history, the paranoia of anonymous on-line mobs and ‘bullshit’. Vincible ignorance produced by knowledge that generations of scholars, philosophers, writers, novelist and religious thinkers have cautioned against – attempts to create a perfect human being, or autonomous weapons of mass destruction, or to cheat death, as well as racist algorithms, weaponised disciplines, and deliberate creation of chaos for political expediency. And invincible ignorance that is the outcome of our (western civilization’s) Unthought – things we have never thought simply because they are out of the framework of the dominant paradigms, myopic disciplinary boundaries, theories, principles, assumptions, and axioms. Emergent knowledge shrouded in the smog of ignorance will make the conventional exercise of wisdom almost impossible. If wisdom is defined simply as knowledgeable expert decision making based on experience, understanding and insight, then Artificial Intelligence (AI) will be perfectly suitable for the job. Indeed, some scholars and thinkers are already suggesting that AI can, and should, be the repository of all wisdom. This paper argues that postnormal times require a new order of wisdom capable of circumnavigating the smog of ignorance. We need to move away from the notion of wisdom as a repository of individual quality, the prerogative of sagely (mostly) men, to a more profound understanding: wisdom as a collective, communal, enterprise; a social and cultural quest for life we are losing in postnormal times.

All our knowledge brings us nearer to ignorance,
All our ignorance brings us nearer to death,
But nearness to death no nearer to God.
Where is the life we have lost in living?
Where is the wisdom we have lost in knowledge?
Where is the knowledge we have lost in information?
The cycles of Heaven in twenty centuries

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Bring us farther from God and nearer to Dust.
T S Eliot, 'Choruses from The Rock'

When T S Eliot published his pageant 'play with words and music' in 1934, the world was in a different place: politically, culturally, technologically, and in almost every other way. But even between two World Wars, there was 'endless invention, endless experiment' and 'endless cycles' of change and 'progress'. Yet, we could distinguish the difference between information and knowledge, and knew that wisdom, even if we could not actually pin it down, was something to be really desired. Indeed, discourses of knowledge and wisdom go all the way back in history to Plato and Aristotle and classical Muslim civilization.

For Plato, knowledge was something to be searched for and acquired. Hence, in 'Socratic Dialogues' we have Socrates searching for truth, and the meaning of such notions as justice, goodness, and virtue. Knowledge had to fulfil three criteria: it had to be justified, true and believed. Aristotle saw knowledge, as Barry Kogan puts it, 'as the knower's complete appropriation of the intelligible content of the known, which is of course its form or structure. The appropriation, in fact, is carried to the point of identity. The knower is what he knows' (Kogan, 1985, p. 192).

In Muslim civilization, the conceptualisation of knowledge was a major intellectual activity from the tenth to the fourteenth centuries, spurred by the fact that knowledge (*ilm*) and related terms such as observation, reason, reflection, study of natural and social phenomenon occur in some 750 verses in the Qur'an. Muslim philosophers, such as Ibn Rushd, al-Ghazali, Ibn Sabin, and Ibn Hazm, who were obsessed with the notion of knowledge given its religious significance, produced over 500 definitions of knowledge from a plethora of pluralistic perspectives – human knowledge and Divine knowledge, scientific knowledge and spiritual knowledge, propositional knowledge and knowledge as practice, attitude, and/or doubt (Rosenthal, 1970). For Ibn Rushd, knowledge is a combination of sense perception and 'intellectual intuition'; an amalgam of essence and being (Kogan, 1985). Al-Ghazali suggested true knowledge reveals the reality of things as they are, and transforms the knower (Al-Ghazali, 1962). Ibn Sabin defines 'knowledge as that which clarifies the truth and gives information without leaving (the need for) anything to be investigated' (Rosenthal, 1970, p. 58). Ibn Hazm saw knowledge as the certainty of a thing as it is; a knowledgeable person epitomises four cardinal virtues: justice, understanding, courage and generosity (Chejne, 1982).

The exploration of wisdom too has a long history, particularly in Eastern cultures. Confucius told us that we may learn wisdom by three methods: first, by reflection, which is noblest; second, by imitation, which is easiest; third, by experience, which is the bitterest. He also regarded wisdom as one of the 'universally recognised moral qualities of men' (Confucius, 2008). In Islamic theology, wisdom – *hikma* – is a key term occurring a number of times in the Qur'an. It is seen as the best of all virtues given by God to 'whom He wills, and whoever has been given wisdom has certainly been given much good' (2:269). Not surprising that a legion of theologians, Sufi mystics and philosophers discussed wisdom at great length. Ibn Sina put the definition of wisdom in verse:

The soul is like a glass lamp, and knowledge
Is light (giving fire), and the wisdom of God is the oil.
If it is lit, you are alive,
And if it is darkened, you are dead. (Rosenthal, 1970, p. 40).

Al-Farabi defined wisdom as 'power of excellence of deliberation and production of the things which are most excellent and best in what is done to procure for a man a really great good and an excellent and noble end, whether that is happiness or something which is indispensable for obtaining happiness' (Bakar, 2018, p. 88). Al-Ghazali argued that knowing by itself was not enough; wisdom was necessary to act morally and distinguish right from wrong. Wisdom is also needed to go beyond sense knowledge based on speculation and ignorance. Mullah Sadra talked of 'transcendent wisdom': knowledge was a mode of existence; wisdom takes a quantum leap to another dimension (Kalin, 2010). Other Sufi mystics illuminated the notion of wisdom through deep spiritual explorations, such as Ibn Arabi's *The Bezels of Wisdom*, or moral stories, such as Rumi's *Masnawi*.

Unlike knowledge, wisdom has received scant attention from contemporary scholars and thinkers. It is interesting to note that the Wikipedia entry on wisdom contains no contemporary citations! Indeed, Nicholas Maxwell (1984) argues that wisdom has been largely forgotten. Most of the problems of academia – fossilised disciplines, bunker mentality, inertia of institutions – is an indication of the absence of wisdom. Mary Midgley, who is seriously concerned with the (lack of) social responsibilities of scientists, concurs. Wisdom that is valued and loved, Midgley suggests, is difficult and requires time to search for (Midgley, 1989). Zagzebski (1996) considers wisdom to be an 'intellectual virtue' with flawless moral dimensions. Wisdom integrates and unifies the knowledge and values of a person, it cannot be abused, and a wise person cannot be immoral.

In modern times, definitions, theories, and approaches to knowledge have come under considerable scrutiny and has been a matter of incessant debate. Plato's classical definition has been found wanting; and a number of philosophers, including Edmund Gettier, Robert Nozick, Keith Lehrer, Thomas Paxson, and Simon Blackburn, have added extra conditions. The second half of the twentieth century, questioned the objectivity of scientific knowledge with the publication of Jerome Ravetz's attack on 'industrialised science' in his boldly titled 1971 book: *Scientific Knowledge and Its Social Problems*. Science was facing a string of social and ethical problems, Ravetz argued, its ideological foundations had eroded, it was becoming 'vulnerable to corruption', and quality control was being seriously compromised (Ravetz, 1971). There followed a heated debate between the supporters of what Karl Popper called *Objective Knowledge* (1972) and those who emphasised the subjective side of scientific knowledge such as Thomas Kuhn and Paul Feyerabend: the various sides of the arguments are well presented in the celebrated book, *Criticism and Growth of Knowledge*, edited by the philosophers Lakatos and Musgrave (1979). The debate was intensified with the postmodern onslaught on knowledge beginning with Jean-Francois Lyotard's, 1984 book *The Postmodern Condition: A Report on Knowledge*. Postmodernism produced a string of disciplines and subdisciplines, not just critical theory but also sociology and anthropology of knowledge, as well as the academic

movement of social construction of knowledge. Under postmodernism, not just knowledge but truth itself became relative, and reason too lost its lustre. Feyerabend insisted that it was time to say *Farewell to Reason* (1987). In *Laboratory Life*, Latour and Woolger (1986) showed that subjective concerns were not altogether absent from ‘the construction of scientific facts’. What came to be known as ‘Science Wars’ followed with all sides taking an entrenched position on science and knowledge (Sardar, 2001a, 2001b); and the issues remain unsolved!

While Popper worried about the growth of knowledge and introduced his theory of falsification to ensure its progress, knowledge itself was said to be moving from linear to exponential growth. Buckminster Fuller noted that knowledge doubled every century but, by the end of the Second World War, knowledge was doubling every 25 years (Fuller, 1982). Along with knowledge, information too was increasing rapidly: during the 1980s and 1990s, terms such as ‘information overload’, which itself has a long history, and ‘information glut’ began to gain common currency. We had entered an ‘information age’. Information theory, first created in the 1950s to bridge mathematics, engineering and computer science, now proliferated through a string of disciplines and fields including cybernetics, systems sciences, cryptography, and communication. The old fashioned ‘computer science’ now became ‘information and communication technologies’; and computer science departments rebranded themselves as computer and information science departments.

It was against this background that the notion of Data-Information-Knowledge-Wisdom hierarchy first appeared.

1. DIKW hierarchy

The idea that data lead to information, which leads to knowledge, which in turn leads to wisdom was introduced by Ackoff (1989), a management consultant, in his 1989 paper ‘From Data to Wisdom’. Ackoff argued that there was a causal and hierarchical relationship between the concepts. Through a process of filtration, reduction and transformation, data, which was in plentiful supply, moved upwards to information, knowledge and eventually wisdom, which was almost non-existent. Ackoff’s formula has been presented both as a pyramid and as a linear progression.



Data → Information → Knowledge → Wisdom

Data came in three varieties: fact, signal and symbol. Information was processed, organised, structured, sequenced and arranged data that provided relevance and context, and could be objective or subjective, functional or symbolic, and it resolved uncertainty and provided order. ‘Data’, Ackoff explained, ‘are symbols that represent the properties of objects and events. Information consists of processed data, the processing directed at increasing its usefulness. For example, census takers collect data. The Bureau of the Census processes that data, converting it into information that is presented in the numerous tables published in the Statistical Abstracts. Like data, information also represents the properties of objects and events, but it does so more compactly and usefully than data’ (Ackoff, 1999, p. 170).

In this scheme, knowledge was processed, analysed or synthesized information that could be procedural, propositional, experiential, philosophical, objective or subjective. It provided theoretical, practical or experiential explanation or understanding of a subject. Together information and knowledge increased efficiency but not what in management terms is called ‘effectiveness’: that is doing the right thing. For that one requires wisdom. Ackoff saw the difference between the two in terms of development and growth. You do not need value to grow; but value is needed for development which requires information, knowledge, understanding as well as wisdom. Efficiency can be automated; but not effectiveness.

Wisdom, noted Ackoff, ‘involves the exercise of judgment’; it cannot be programmed. While

‘we are able to develop computerized information-, knowledge-, and understanding-generating systems, we will never be able to generate wisdom by such systems. It may well be that wisdom—which is essential for the pursuit of ideals or ultimately valued ends—is the characteristic that differentiates man from machines’ (Ackoff, 1999).

Ackoff’s Data-Information-Knowledge-Wisdom (DIKW) scheme has been severely criticised for being too simplistic. Fricke (2009) suggests it is anchored in positivism. Boisot and Canals (2004) argue that the two terms, data and knowledge, are ‘unwittingly brought into a forced marriage by having the term information act as an informal go-between’. Rowley (2007) suggests that the distinction between the terms is not adequate. Others have suggested the hierarchy is unsound and methodologically undesirable. Yet, DIKW scheme has survived extensive criticism and has become standard model in information management, information systems and knowledge managements, and information library science literature. It can be found in text books on management, information

systems and knowledge management. And, for the purpose of our analysis, it provides a good starting point and template to show how data, information, and knowledge are being radically transformed in postnormal times (Sardar, 2010, 2015a, 2015b, 2019; Sardar and Sweeny 2016), and what it implies for wisdom.

Evidently, DIKW does not deal with ignorance. But ignorance has been a silent partner of both knowledge and wisdom. It was recognised as an integral component of knowledge in Greek philosophy as exemplified in the famous Socratic paradox: I know that I know nothing. Both Plato and Aristotle argued that we can make bad choices out of ignorance, and ignorance was a major hinderance to sound judgements. For classical Muslim scholars, recognition of ignorance was a key component of wisdom. The Muslim sage, al-Sijistani, who wrote a book on wisdom, declared: 'suffice it for the value of knowledge that the one lacking it boasts of it; and suffice it for the worthlessness of ignorance that the one who knows it shies away from it' (Kraemer, 1986, p. 129). Al-Sijistani, much like al-Ghazzali and ibn Khaldun, regard ignorance as a limitation of reason. Often, we are led by the wonder of reason to overlook our ignorance. Ibn Hazm associated ignorance with the three capital vices of inequality, cowardice and avarice (Chejne, 1982).

The Enlightenment banished ignorance. But it has returned with a vengeance more recently – not least because of ignorance perpetuated by certain corporations: denial of harms by smoking, asbestos and proximity to nuclear power plant, denial and suppression of climate change science, and the rejection of evolution by creationists. In modern science, ignorance often emerges through the suppression of what Steve Rayner calls 'uncomfortable knowledge' – knowledge that does not support dominant theories and hypotheses or cannot deal with complexity or 'wicked problems', which is excluded from policy debates (Rayner, 2012). Yet, ignorance is a natural product of every advance in knowledge; it comes, 'after knowledge' (Firestein, 2012), the more we know the more our ignorance comes to the fore. 'Even as knowledge knows no bounds, so does ignorance' (Rescher, 2009, p. 2).

We can define ignorance, as is the convention, simply as lack of knowledge. But that does not take us very far as 'there are many sorts of ignorance as there are sorts of things to be ignorant about' which makes it 'difficult to obtain a taxonomy of ignorance. For the realm of ignorance is every bit as vast, complex, and many faceted as that of knowledge itself' (Rescher, 2009, p. 2). Nevertheless, Gross (2010) offers a threefold taxonomy. Nonknowledge: lack of sufficient knowledge which is acknowledged for future planning. Negative knowledge: acknowledging about what is not known but ignored or considered dangerous. Extended knowledge: 'new knowledge based on planning and/or research with nonknowledge' which 'can lead to new ignorance by uncovering limits of the newly gained knowledge' (Gross, 2010, p. 68). The emphasis here is on the relationship between ignorance and knowledge.

In contrast, postnormal times theory deals with ignorance per se. Ignorance is associated with increasing uncertainty and with complexity, contradictions and chaos – the 3Cs' of postnormal times (Sardar and Sweeney, 2016) – and categorised as Plain, Vincible and Invincible. Plain ignorance is not just the absence of knowledge but also common prejudices like anti-Semitism and Islamophobia, deliberate manufacture of falsehood and lies, denial of established truth or scientific research, and their weaponization. Plain ignorance can also arise in complex or contradictory situations, with different actors making contradictory demands or perceiving 'truth' from different perspectives. Vincible ignorance has three basic components. (1) The knowledge that there are things we do not know, such as how consciousness works, or why dreaming is important, or why are moths attracted to light. (2) Constructed misrepresentation based on knowledge, which would not only include Rayner's 'uncomfortable knowledge' but also Orientalism, epistemological bias of western disciplines (Elmessiri, 2006; Lal, 2002), literary ignorance, ignorance generated by rigid disciplinary boundaries and the weaponization of disciplines (Gross & McGoe, 2015; Price, 2011). (3) Ignorance that requires knowledge that can only be acquired in the future such as impact of genetic engineering on society or geoengineering on the planet. It is vincible because it can be overcome, overtime, with serious, conscious effort; and what we do not know in the present we may know in the future. Invincible ignorance is unknown unknowns; things we do not know we do not know. It is essentially a product of our Unthought: what lies outside our central mode of thinking, beyond the parameters of our confined imaginations, external to the dominant paradigms of all our disciplines. It is invincible because it cannot be tackled with existing, conventional tools of our worldviews. 'It is the ignorance that compels us to action with a false sense of confidence in existing paradigms and modes of knowing, being and doing. We can only grapple with invincible ignorance by questioning our axioms, by critiquing our basic and long cherished assumptions, by totally rethinking our worldview' (Sardar & Sweeney, 2016).

The movement of ignorance from the periphery to the centre of knowledge production, as well as the emergence of postnormal times, has and continues to drastically alter the relationship between data, information, knowledge and wisdom. The beginning of the twenty-first century saw major shifts in the DIKW scheme. It all began with the arrival of big data.

2. Big data

The S-curve for data had been rising steadily over the twentieth century. In his 1961 book, *Science Since Babylon*, the American historian of science, Derek de Solla Price, showed that scientific knowledge, and hence scientific data, was growing exponentially. Concerns about increasing quantities of data were regularly expressed during the 1960s and 1970s – particularly after the emergence of Algorithmic Information theory with merged information theory and computer science. But the first use of the term data appeared in an August 1999 paper by Steve Bryson et al entitled 'Visually exploring gigabyte data sets in real time' (Bryson et al., 1999). Bryson and colleagues pointed out that powerful computers were generating data of around 300 gigabytes which researchers were finding difficult to handle. The numbers were just too large. But it wasn't just researchers and scholars who were producing data. Individuals too were generating raw data. In 1999, original data created by individuals and stored on paper, film, CDs, DVDs and magnetic tapes hit 1.5 exabytes, around 250 megabytes per person. And it was growing rapidly: there was an explosion in the quantity, and sometime quality, of available and potentially relevant data. In 2003, the estimated data humanity had accumulated had reached approximately 12 exabytes (Floridi, 2010). By 2007, stored data was estimated to be 300 exabytes. 'Between them', observes Matthew D'Ancona, 'Google, Microsoft, Apple, Facebook and Amazon – the "Big Five" – outstrip by a huge margin all the

databanks, filing systems and libraries that have existed in human history' (D'Ancona, 2017, p. 48). Big Data had arrived.

But big data is different from the conventional data which basically consisted of facts, signals and symbols; or as Davenport and Prusak (1998) define it 'a set of discrete, objective facts about events'. To begin with data on a humongous scale enables us to gain new insights and create new values that radically change markets and organisation, relationship between individuals and communities, and citizens and governments. The era of big data, 'challenges the way we live and interact with the world' and 'overturns centuries of established practices and challenges our most basic understanding of how to make decisions and comprehend reality' (Mayer-Schonberger & Cukier, 2013, p. 7).

A good way to see the difference between conventional notions of data and big data is to compare a page from an old Atlas and Google Maps. The data on the atlas fulfils the criteria of the old definition: it consists of names, 'sets of characters, symbols, numbers' and 'visual bits' represented in the raw form. It is discrete, static and localised. The Data on Google Maps contains all the necessary symbols, signals and facts but provides a whole range of new facts: weather condition, how long a journey takes by various means, and indicates what goods and services are available in the area you are exploring. The map adjusts itself as you change your position (walk or drive) and updates itself almost instantaneously. And it is available throughout the planet at all times. In contrast to the data on the page of the old atlas, the big data that drives Google Maps is dynamic, instantaneous, global and complex.

Big data also captures what we have conventionally not regarded as data. To the conventional varieties – facts, signals, symbols – big data captures behaviour, emotions, actions, and attitudes as raw data. Consumer behaviour is captured as data routinely by on-line shops. Mood and emotions in images, videos, audio and other digital media can be recognised and captured as data. Whereas laborious surveys gathered data on attitudes, now it is instantly acquired simply by clicks. All of our interaction on such platforms as Facebook, Instagram, Twitter, our language and expressions, our likes and shares, are turned into data.

Indeed, almost every aspect of what makes an individual truly individual, a community, the fundamental properties that define their identities are quantified and seized by big data. In short, big data incorporates the *essence* of individuals, groups and communities.

Data, as we have known for centuries, can also be made up. In the most extreme case, says Daniel Levitin, researchers 'report data that were never collected from experiments that were never conducted. They get away with it because fraud is relatively rare among researchers and so peer reviewers are not on the guard. In other cases, an investigator changes a few data points to make the data more closely reflect his or her hypothesis. In extreme cases, the investigator omits certain data points because they don't conform to the hypothesis, or select only cases that he or she knows contribute favourably to the hypothesis' (Levitin, 2017, p. 181–182). To this type of data manipulation, we can add a string of new entrants.

As Peter Pomerantsev notes 'we live in a world in which the means of manipulation have gone forth and multiplied, a world of dark ads, psy-ops, hacks, bots, soft facts, deep fake, fake news, Putin, trolls, Trump' (Pomerantsev, 2019). There are a whole variety of fakes: fake news and 'alternative facts', fake science manufactured, for example, by climate deniers and anti-vaxxers, alternative, none the less fake, history promoted by white supremacists in US and Europe and Hindu nationalists in India, fake individuals on Facebook, and fake followers and 'likes' on numerous social media platforms harvested by bots. Not to mention the vast network of conspiracy theories – there are even conspiracy theories about conspiracy theories – which are essentially political in nature and advanced to promote ideological objectives (Cassam, 2019). All this is scooped up as data in Big Data.

Lies and falsehood have existed since the beginning of history; and propaganda has become more and more sophisticated over time. But in the post-truth age lies have taken a quantum leap. Lies have been industrialised, incorporated: an ever expanding industry now exists 'to create and disseminate fictitious public policy "facts" on behalf of business and ideological interests will to pay for them' – designed and strategically coordinated 'to hide the truth, confuse the public, and create controversy' (Rabin-Havt & Matters, 2016, p. 5). Indeed, there are specific media outlets devoted to propagating lies. The American Fox News serves as 'a conduit for conservative lies and propaganda, manipulating the political process on behalf of the Republicans Party and right-wing organisations'; the breath of lies the network spreads is truly 'astonishing' (Rabin-Havt & Matters, 2016, p. 5). The Russian RT network does the same on behalf of President Putin and his administration. In Britain, as the former editor of the Guardian, Alan Rushbridger notes, newspapers like the *Telegraph*, *Express*, the *Sun* and the *Mail* routinely spread 'front-page falsehoods' and journalists on these papers have turned propagandist (Rushbridger, 2019). Then there are countless on-line platforms, from 'InfoWars' to 'Breitbart News', whose sole function is to spread lies.

It is not unusual for politicians to lie but the lies have not only become omnipresent but have also changed in nature. 'The traditional political lie was designed to cover up an unpalatable fact', writes Catherine Fieschi. There was contrition when they were caught, and often a public racking. But contemporary political lying, which Fieschi dubs 'populist lying', is 'designed to be seen – it is the opposite of cover up'. It is lionised, employed as sedition, and used as an open declaration that 'the liar will stop at nothing to "serve the people"'. Lies are used to demonstrate that the populist politicians are authentic and 'instinctively connected to the experience of "the people" who are authentic' (Fieschi, 2019). Lies are paraded to demonstrate the audacity of the politician; he or she rejoices in the falsehood itself.

In addition to ubiquitous lies, there is also bullshit. In his celebrated short essay *On Bullshit*, Harry Frankfurt points out that liars and truth tellers are both playing the same game: the later accepts the authority of the truth and responds to it, while the former refuses to accept its authority. Both care about their respective positions. But a bullshitter does not reject the authority of the truth – he does not care at all. Frankfurt regards bullshit as much more dangerous – 'the greater enemy of truth'. Bullshit often emerges when a person speaks on a topic with limited or no knowledge; a common occurrence in democracies where everyone is required to have an opinion on everything. But there is also a deeper source for the spread of bullshit: 'various forms of scepticism which deny that we can have any reliable access to an objective reality, and which therefore rejects the possibility of knowing how things truly are' (Frankfurt, 2005, p. 60–61)

Big Data does not differentiate between facts and ‘alternative facts’, truth or lies, knowledge or bullshit, news or fake news, politics or conspiracy theories, legitimate concerns of dissidents or the paranoia of anonymous on-line mobs, genuine comedy or racism and bigotry masquerading as ‘earthy humour’, irony and sarcasm. All is shovelled up. As such, Big Data is a repository for plain ignorance: blatant lies, obvious bullshit, and all the dark paraphernalia we find on social media, on-line platforms and other digital apparatus. Big Data serves as an engine for plain ignorance – enticing it, generating it, and multiplying it geometrically.

All this means that Big Data is far removed from the conventional notion of data as defined by Ackoff: ‘symbols that represent properties of objects, events and their environment’. It is essentially a postnormal phenomenon. The main drivers of postnormal times - the 4S’s - are clearly exhibited by Big Data: Speed (it is instantaneous), Scope (it is global), Scale (it reaches not just the individual level but also extracts the very essence of what makes an individual truly unique); and Simultaneity (it works simultaneously across all aspect of human and planetary life). As such, Big Data incorporates the 3C’s of postnormal times. It is complex: interconnected, and networked. It is contradictory: it accumulates widely diverging truths, falsehoods, behaviours, orientations, ideologies, and worldviews. And it is chaotic: there is constant potential of feedback loops leading to chaos.

Big Data radically changes the nature of information which acquires a gargantuan dimension.

3. Gargantuan information

As big data processes, organises, categories, and orders information instantaneously and simultaneously across a number of fields, the conventional distinction between data and information dissolves. It is transformed both quantitatively and qualitatively. The sheer magnitude of information that is constantly gathered on a global level is truly dumbfounding. The subtitle of James Gleick’s, 2012 book, *The Information*, sums up the situation: *A History, A Theory, A Flood*. But more than a flood, information has now acquired gargantuan dimensions. ‘With information’, note Mayer-Schonberger and Cukier,

as with physics, size matters. Hence, Google is able to identify the prevalence of the flu just about as well as official data based on actual patient visits to the doctor. It can do this by combining through hundreds of billions of search terms – and it can produce answer in near real time, far faster than official sources. Likewise, Etzioni’s Forecast can predict the price volatility of an air plane ticket and thus shift substantial economic power into the hands of consumers. But both can do so well only by analysing hundreds of billions of data points. (Mayer-Schonberger & Cukier, 2013, p. 11).

The qualitative transformation is just as profound. If information is data processed to provide meaning, as conventionally defined, then what meaning is it actually conveying? The meaning gargantuan Information conveys is that it can be bought and sold: in other words, information is nothing more or less than a commodity. And as a commodity, information acquires three main properties that differentiate it from all other products and services. It can perform contradictory functions: it can be used by people holding divergent views to support their arguments and justify their positions. It is all consuming and does not differentiate between, say, private or public domains. And it can be reproduced, passed on, and proliferated *ad infinitum* at (almost) zero cost. Moreover, gargantuan information evolves continuously from interconnected local and global networks. It is therefore complex. As such, far from reducing uncertainty it actually increases uncertainty.

Gargantuan information has two additional dimensions. The first emerges thanks to the instruments of ‘surveillance capitalism’. Surveillance apparatus – cameras, drones, CCTV, gait recognition technology (that can recognise individuals from their shapes, movements or silhouette from up to 50 m away, even if their face is hidden) – record every movement, every action, every gesture, of a person. Racial profiling pins down the race and ethnicity of a person. Thus, gargantuan information can record:

Biology – the natural physiology, function and development of a person

Race – the physical characteristics of a person

Ethnicity – the cultural identity of a person

Orientation – the religious, political, sexual and health of a person

In other words, it captures and commodified the absolute reality of individuals, groups and communities – or their very *being*. How gargantuan information imbibes the beings of individuals is well summed up by *Consumer Report*: ‘welcome to the age of ordinary objects that stealthily spy on us – from inside our cars, our homes, and our office. That smartphone game you play in a waiting room, the mobile app that gives you a weather forecast, the photo you share with online friends – all have the ability to reveal intimate details about your life’ (Consumer Report, 2019). The smartphone knows where you are and where you have been, what you bought and what you did, and who you were with and what you ate and did when you were with them. Surveillance technology charts your every move and every gesture. The logical consequence of the entrapment of being in gargantuan Information can be glimpsed from China where surveillance technology is being employed to monitor citizens on a mass scale. In addition to an estimated 170 million CCTV cameras – the equivalent of one for every 12 people in the country, flocks of robotic birds equipped with high-resolution cameras, and gait recognition is being used to observe citizens. The extensive surveillance network feeds into the country’s social credit system, which gives citizens a ranking based on their behaviour. If you get a low ranking you suffer the consequences: anything from being turned down for government jobs to denial of desired schools for your children.

The second dimension is another layer of ignorance – vincible ignorance. Unlike plain ignorance, which is largely manufactured, this new layer is both constructed and intrinsic to the nature of gargantuan information. It is socially constructed not just to distorts truth and justify erroneous beliefs but to promote political and ideological goals; and it can as much a work of scholarship as of fake news. In gargantuan information, there is no such thing as causality; there are only simple correlations, which can be used to validate everything and anything. Mass racial profiling, for example, can be used to reinforce racial stereotypes. The behaviour, movements, needs, and gestures of migrants can be analysed, structured and ordered in the form that can be used to demonise them. The way

governments can control, manipulate, limit or suppress access to information can leave the citizens in a state of complete ignorance; the citizens may not even be aware of their ignorance. The denial of truth itself becomes a form of information that generates more correlations that further enhances ignorance. Indeed, a nation state can construct ignorance to specifically make its citizens docile and compliant. Gargantuan information continuously produces predictions and forecasts on problems and issues we face today but whose potential answers can only be discovered sometime in the future - that is, information on known unknowns, which can be true or false but can be taken as knowledge. Much of scientific research is based on investigating, hypothesising and testing known unknown. But gargantuan information masks the known unknowns and continuously projects predictions and forecasts based on complex correlations. It thus reinforces current trends, amplifying our prejudices, and pushes us towards disturbing futures. Vincible ignorance can be overcome provided we are aware of its existence. But gargantuan information makes it difficult to recognise; and since gargantuan information is a product of interconnected, complex systems, complex strategies are required to overcome it.

Big data and gargantuan information have radically transformed modes of the production of knowledge as well as the nature of knowledge itself.

4. Emergent knowledge

Knowledge is no longer what it used to be. Given that the structure of information has radically transformed, the hierarchical and linear distinction between data and information is evaporating, and far from increasing certainty information actually increases uncertainty, knowledge itself is set to transformed fundamentally. To the conventional sociological definition, 'knowledge is any set and every set of ideas and acts accepted by any one or another social group or society of people - ideas and acts pertaining to what they accept as real for them and for others' (McCarthy, 1996, p. 23), we must now add big data driven information as 'a collective process that emerges as discordant symphony of humans, machines, violent and non-violent histories, symbols, and algorithms, not to mention our fantasies about the future' (Amaro, 2019, p. 125–126). It is 'discordant' because the process of generating knowledge is complex and full of contradictions: big data incorporates all the elements of plain ignorance - the lies of the post-truth age, fake news as well as deep fake, fake science and fake history - into the knowledge system; and gargantuan information transforms vincible ignorance into knowledge, racism, xenophobia, politically and ideologically motivated constructions about citizens and other people are correlated as knowledge patterns and structures. As such, the notion of 'consensual knowledge', 'the sum of both of technical information and of theories about it that command sufficient agreement among interested actors at a given time to serve as a guide to public policy' (Hass, 1990, p. 74), is increasingly becoming obsolete. The modernist idea of autonomy of knowledge - 'the conviction that some beliefs do not stand in need of any explanation, or do not need a causal explanation' (Bloor, 1976, p. 5, [who deconstructs it magnificently](#)) - is simultaneously enhanced and disbanded: the autonomy now belongs to AI which generates knowledge solely on the basis of patterns and correlations.

We describe big data and gargantuan information driven knowledge as emergent because it is a product of interconnected, networked, evolving components: that is to say it is a complex system, that can spontaneously generate order, adaptation, feedback loops. Emergent knowledge has no borders: it is intrinsically multi-, inter- and transdisciplinary; it is simultaneously global and local; it codifies both the external and internal features of its subjects and objects. It incorporates and commodifies both the essence and being of individuals, groups and communities. It is contradictory and chaotic. And it can produce totally new manifestations of itself - which cannot be predicted, or indeed bear no relation to, its component forms.

Emergent Knowledge is an amalgam of three distinct but interconnection components.

First: what we may (still) call true knowledge - that is, objective knowledge as defined by Popper (1972) that can be verified again and again and survives the test of falsification. There will still be scientists working in laboratories collecting data, processing it into information, testing hypotheses, developing theories and solving puzzles within paradigms, and publishing in refereed journals. Researchers will still gather data in conventional way to product new insights: such as the work done by the Climate Accountability Institute to show 'how fossil fuels companies have driven climate crisis despite knowing dangers' (Taylor & Watts, 2019). Much of clinical work is still based on the DIKW system. Data is often a clinical measurement and a descriptor, for example, heart rate = 50 beats per minute (bpm). It has to be contextualised; a heart rate of 50 bpm gives some information to the clinician about the child. The clinician structures and organises this information as knowledge and provides written guidelines for treatment. What is different is that the availability of large amounts of data enables the clinicians to look for information and relationships that may not be obvious. Often, data mining in medical datasets reveal large amounts of 'new knowledge'. And in the future, Cooper suggest, 'mining of large, complete, well-structured datasets to reveal previously unrecognised knowledge is likely to become important as the gold standard of double-blinded randomized clinical trials in discovering medical knowledge' (Cooper, 2016). There will always be journalists of integrity, with appreciation of truth and objectivity, who will stand against all that is false. As such, emergent knowledge will preserve a core of what is - historically seen as - true, real, objective, rational.

Second: what we may call toxic knowledge - that is knowledge based on plain and vincible ignorances as well as emerging technologies that will transform the human landscape. This includes what Shattuck describes as *Forbidden Knowledge* (1975), that is knowledge that scholars, philosophers, novelist and most particularly religious thinkers have cautioned against - attempts to create a perfect human being, or weapons of mass destruction, or to cheat death. The concerns expressed by science journalist, Tom Wilkie (1993), about the 'Human Genome Project and its implications' in *Perilous Knowledge* (1993) are on the verge of being realised. Advances in genetic engineering, synthetic biology, neurobiology/technology, even 3-D body printing will transform our notion of what it means to be human. A display in the Barbican's exhibition, 'AI: More Than Human', announces: 'The US, China, Israel, South Korea, Russia, and the UK are developing increasingly autonomous weapons'. Lethal Autonomous Weapon Systems (LAWS) or Killer Robots, over which humans could have no meaningful control, which can cause mass destruction or target people on the basis of their

race, ethnicity or culture, are a product of toxic knowledge. But toxic knowledge also include technologies that undermine statecraft, democracy and accountability: algorithms, data targeting, techno monopolies, and the types of technologies used by the Cambridge Analytica (Bartlett, 2018; Runcimen, 2018); and the use of opaque and uncontested mathematical models to produce absurd products (for example, subprime mortgages) and reinforce discrimination and cultural, ideological and political bias, weaponised disciplines (such as anthropology (Price, 2011)); and deliberate creation of chaos to disturb an existing system in order to gain financial or political advantage (Martinez, 2016; Owen, 2015). Toxic knowledge is based on the ‘confidence of the cognitive powers’ of ‘the automation of calculative reason’; on the fantasy that machines can imagine a better future; it is the psychopathology of *The Madness of Knowledge* (Connor, 2019).

Third: emergent knowledge adds yet another layer of ignorance, invincible ignorance – ignorance that is the outcome of our Unthought – things we have never thought simply because they are out of the framework of the dominant paradigms, disciplinary ignorance due to myopic boundaries, theories, principles, assumptions, and axioms that are the basis of both: true knowledge and toxic knowledge. As such, all emergent knowledge contains ignorance – including the ignorance of our ignorance – as its integral component. This ignorance is invincible because it cannot be overcome within the exiting dominant paradigms that shape all varieties of knowledge. Alternatives, and sane futures, are located far, far beyond the predominant paradigms that shape our thought and actions in postnormal times.

Thus, emergent knowledge is TRIGOXIC: a complex, evolving entity that combines true and toxic knowledge that is shrouded by the smog of Ignorance. It will be shaped less and less by humans and more and more by AI, a form of intelligence we have never encountered before. We do not know how AI systems actually make decisions; indeed, we may never know. They have a huge data point and carry out massively complex statistical analysis. What we do know is that AI is ‘everywhere and nowhere. Often hard to see, AI has the potential to find its way into every aspect of our lives. It can be defined in different ways, but fundamentally, AI is the endeavour to understand and recreate human intelligence using machines’ (Barbican, 2019). It is changing how we live, how we relate to each other, how we perceive ourselves and others. It is amplifying our biases and prejudices. It is affecting our privacy, freedom and truth. It can predict our behaviour before we know it; and it has knowledge of what we will do before we will do it. It is both shaping and defining our future.

Thus, AI will determine not just how we know but *what* we know. The very fabric of what we regard as knowledge will be transformed profoundly. TRIGOXIC knowledge is the logical culmination of historical and continuous merger of knowledge with power (Ravetz, 1990; Rouse, 1987). It is the apotheosis of the postmodern experience of the last few decades, a direct product of the total relativization of truth and morality. Whereas postmodernism was ‘the new imperialism of Western culture’ that aimed to consume and regurgitate non-Western culture (Sardar, 1998), the postnormal embodiment of knowledge aims to commodify the very essence and being of all on the planet.

5. Wisdom

So, how do we, ‘talk (more wisely) about wisdom’ in the face of such gigantic changes and challenges? ‘If our world is too complex, our knowledge too broad, our information too great for one person to fully understand, what is another option for wisdom?’ (Ramirez, Ravetz, Sharpe, & Varley, 2019). If we accept the conventional definition of wisdom, dating back to antiquity, as the quality and exercise of good judgement and sound decision making, and the ability to think and act using knowledge, experience, understanding and insight, what exactly is required of a wise person? I would argue it requires an appreciation of uncertainty and some capability to navigate the three Cs’s of postnormal times: complexity, contradictions and chaos. It also entails an awareness of various varieties of ignorances and ability to negotiate the smog of ignorance. It necessitates using what we do know to engage with what we do not know. And, as Laila Varley suggests, ‘wisdom necessary for a wise future does not lie in knowing’ but ‘in the ability to take disparate pieces of knowledge, sometimes incomplete, and see a bigger picture’. The ‘big picture’ involves seeing the whole elephant. Valey recalls Rumi’s story, told in the *Masnavi*, in which blind men touch and feel an elephant in the dark. Depending on where they touch and what they feel, they believe the elephant is like a pillar (leg), a water spout (trunk), a fan (ear). ‘Unlike the blind men, wisdom would have been to recognise that each perspective could be partially correct, and find a way to perceive the elephant: taking into account the collective information’ (Ramirez et al., 2019). Finally, it involves stepping out of the dominant ways of knowing, being and doing into the Unthought, to anticipate the unknown, and imagine and create more desirable futures.

All this is perhaps too much to place on the shoulders of individuals. The capabilities and competences required are truly monumental; and it cannot essentially be the characteristic and prerogative of ‘knowledgeable’ and experienced individual minds. Ramirez rightly asks: even if an individual could be wise at one level, could he also be wise at other, lower or higher, levels? (Ramirez et al., 2019). The postnormal condition suggests not.

Perhaps AI could come to our rescue. If wisdom, as Swartwood (2013) suggests, is ‘the same kind of epistemic achievement as expert decision-making skill in areas such as firefighting, and military tactics’, then AI would be perfectly suitable for the task. Indeed, there is emerging literature that argues that AI can, and should, be the repository of all wisdom. As Vallor (2017) points out, ‘the current trajectory of computerised automation, driven by advances in new algorithmic techniques for machine learning and mobile robotics, risks gradually displacing human wisdom from many of the roles it has historically occupied in the moral and intellectual order of society’. Thus, in postnormal times, the DIKW pyramid ceases to be a pyramid. The hierarchy evaporates as AI gathers data, processes information, synthesises knowledge, and dispenses wisdom. The postnormal shifts now become clear. We move from:

Data → Big Data

Static, accumulative, localised information → Dynamic, Instantaneous, Simultaneously globalised and Localised Gargantuan

Information

Knowledge → Emergent Trigoxic Knowledge, and
Wisdom → AI

But there are a couple of nefarious ghosts in the machine.

First: AI operates with the smog of ignorance. AI contains all the biases, prejudices and ethnocentric judgements of those who produce them in the first place; and it utilises plain, vincible and invincible ignorances – the toxic component of emergent knowledge – in its judgments and decision-making processes. We saw that when Microsoft chat bot, *tay.ai*, released in 23 March 2016, acquired racists and misogynistic overtones a few hours after its release; it had to be shut down within 16 h after its launch. A year earlier, Google's photo app happily labelled African-Americans as 'gorillas'. Google's BERT, launched in 2018, demonstrated similar gender and racial bias. Indeed, almost all AI's such as ELMO, ERNIE and GPT-2 have faced similar issues. The very fact that these AI's are named after the characters in American children's show, Sesame Street, indicate the problem here: AI's pick up prejudices and biases 'in the way a child mimics the bad behaviour of his parents' (Metz, 2019).

This paternalism is the very foundation of Eurocentric hegemonic epistemological and ontological orthodoxy. The West has conventionally seen the non-West as a child to be disciplined, taught and told how to behave and think. So, AI not only retains all the dominant and totalising discourses but also enhances and makes them prevalent. Ultimately, AI would have the power to define everything, every idea, every concept, in the image of its creators. Not only will AI engendered knowledge and wisdom enhance the conventional dichotomy of us and them, West and East, rich and poor, but it will also outlaw – and define out of existence – pluralistic perspectives, tacit knowledge, situated experience, mystical understanding and other ways of seeing, being, doing and knowing.

Second: if wisdom is simply a mechanical endeavour, based on knowledge and certain set of rules, how then we actually measure AI wisdom? How would we *judge* that AI has actually made a wise decision? There are, as Weststrate, Ferrari1, and Ardelt (2016) tell us, three scientific methods of examining and measuring implicit claims to wisdom: 'descriptor-rating, person based, and experimental methods'. The first simply 'asks individuals to rate, rank, or sort adjectives or short statements potentially indicative of wisdom'. The second, person based approach, asks a selected group to nominate wise individuals and provide an example of their wisdom in action from their biography. The third, so-called 'experimental approach' asks 'individuals to judge the wisdom of fictional characters who differ in age, gender, or other characteristics'. In other words, it is human being, even in scientific experiments, who are the ultimate arbitrators of what constitutes wisdom and who actually possess it. So, we may safely conclude that in the final analysis wisdom is essentially a human attribute; only humans have the ability to judge what is and what is not to be wise!

This point was made amply clear in a 2018 workshop at NordiCHI, a biennial conference that functions as the main Nordic forum for human-computer interaction research. A multidisciplinary group of researchers, academics, philosophers and ethicists explored the role of AI and Human Computer Interaction (HCI) in the future of wisdom during the coming decades. 'What will be the long-term consequences of HCI, AI, IoT, Big Data and Smart Technologies 50 years from now – in 2068?' (Pragman, Eriksson, Comber, Kirman, & Batesb, 2018). Wisdom, the concept paper for the workshop stated, 'relates to the ways in which we make decisions and act, based on our experiences, knowledge and reasoning. As a critical lens on computing, it includes both questions on our epistemologies (i.e. ways of knowing) and our ontologies (i.e. what is and can be). For instance, Augmented Reality proposes new forms of "hybrid" objects that are both "real" (i.e. we can interact with them), and "imagined" (i.e. they are not physical), that interact with our environments and change our perceptions and sense-making in those environments'. As a Design Fiction workshop, the participants had to utilize fictional abstracts 'from research papers that have yet to be written' so they could 'explore possible consequences of the technologies they themselves are developing by conducting critical thought experiments' (Pragman et al., 2018). The fictional abstracts describe futures where AI replaces human decision making, encourages humans to make wiser decisions, and uncovers the impact of wiser decision-making on the environment and resources. However, the participants found that the technologies they described 'may not have been that wise', 'there is no abstract where wisdom lies in the technology in itself', and 'we didn't find any of the technologies that our abstracts were talking about to be wise. The closest was the one that depicted [AI] trying to get people back involved with science'. The conclusion: 'the gut feeling from the workshop was that wisdom is primarily found in humans' (Pragman et al., 2019).

So, wisdom may not be an attribute that could be transferred to a machine – however 'intelligent' it may be. It is one thing to provide selected traits of wisdom to AI and quite another for AI to actually act wisely. And if we are teaching wisdom to AI, exactly what kind of wisdom is being imparted? Is it the philosophical wisdom of Socrates? Or the practical wisdom of Aristotle? Or the compassionate wisdom of Jesus and Mohammad? Or the paradoxical wisdom of Buddha, who never made a judgment in his life, but dispensed wisdom through enigmas and maxims. Or the wisdom of Rumi who taught with parables and moral stories. Or should we emulate the metaphysical wisdom of ibn Arabi?

Wisdom cannot be simply reduced to a set of rules. There are certain key aspects of wisdom – often absent from the discourse that focuses solely on rules and logical components – that are specifically human: empathy, compassion, love, forgiveness, sincerity, humility, patience, gratitude, courage, modesty, introspection, contemplation – the old fashioned, time honoured, virtues so essential for acting wisely but so demanding to teach a machine. The very virtues we need to navigate postnormal times (Sardar, 2010). Moreover, human wisdom also incorporates the rather essential notion of responsibility. As Vallor (2016, 2017) notes, AI cannot take responsibility for its decisions and judgments; only humans can take responsibility, and can be held accountable, for the decisions and judgments made by AI. Responsibility and accountability are essential moral components of the virtuous state that is wisdom. So, the wisdom of AI, in the final analysis, is as artificial as its intelligence. AI may help us tackle so many intricate, interconnected, contradictory and rapidly changing 'wicked' problems we face in these postnormal times. It would help us discover new treatments dreaded diseases and dangerous cancers. It may even augment and encourage humans to make better decisions. But for real and authentic wisdom we will have to look elsewhere.

6. Postnormal wisdom

Navigating postnormal times requires a new order of wisdom. It is quite clear that the depth of knowledge, and insight to circumnavigate the smog of ignorance, required at any one level is far too much for an ordinary human being. We thus have to rethink wisdom not so much as an individual but as a communal virtue. We need to move from the conventional notion of wisdom as a repository of individual quality, the prerogative of sagely individuals to a more profound understanding: wisdom as a collective, communal, enterprise. In postnormal times, wisdom has to be seen as a collective moral acumen; a rational cooperative learning how to live sustainably; a communal effort to create what is truly of significance; what enhances quality of life, human well-being, and augments the health of the planet; and what plants the seeds for a genuine future of justice and equality. Maxwell provides a wide-ranging definition of wisdom more suitable for our age:

Wisdom includes knowledge and understanding but goes beyond them in also including: the desire and active striving for what is of value, the ability to see what is of value, actually and potentially, in the circumstances of life, the ability to experience value, the capacity to realize what is of value for oneself and others, the capacity to solve help those problems of living that arise in connection with attempts to realize what is of value, the capacity to use and develop knowledge, technology and understanding needed for the realization of what is of value. (Maxwell, 2007, p. 79).

Maxwell suggests that such wisdom can be institutional and social; but I would argue it has also to be communal and networked. Just as knowledge is nowadays acquired in communities of researchers and scholars (Sloman & Fernbach, 2017) wisdom too has to be spawned by communities that share common norms, values and goals.

Such communal wisdom will have a couple of extra layers of genuine knowledge that AI could never require: tacit knowledge and what we may call handheld knowledge. Tacit knowledge is culturally embedded, it makes sense, and provides sense of direction, within a particular cultural milieu. It is the knowledge of indigenous cultures, traditional societies, and scholarly communities, where it is passed from generation to generation. It is possessed by individuals, who may not even be conscious that they hold it, and shared in communities. Like the ability to speak Urdu, play the sitar, or design building and cities, it is complex, abstract, embedded, deeply causal, difficult to articulate, and as such cannot be transferred to other people. The only way to acquire it is to join the community. Handheld knowledge is knowledge of a more intimate nature: knowledge we acquire through deep listening, inner reflection, or metaphysical speculation, or numinous elation, or communion with nature - ethereal insight and understanding we can all possess in the palms of our hands. It is the kind of knowledge that brings people together for mutual erudition, caring, healing, and for growth. 'And it is just this gathering, which enables spaces to open up between people, for people to learn from one another. Through the hands, sharing a wisdom so old yet so contemporary - a wisdom capable of creating networks between people and land, and between cultures. Handheld knowledge unpacks what it means to deeply listen, growing a "slow-time-space" that is more in alignment with our inner rhythms' (Sayerer, Knutsdotter, Harrod, Cranfield, & Sherwin, 2019).

Besides well-established old virtues, wisdom communities will also have a complex, holistic virtue essential for postnormal times: what Vallor calls 'technomoral virtue' - the ability to see the moral dimension of accelerating technological change. Technomoral virtue is somewhat different from established virtues such as honesty, flexibility, humility, and self-control in that it is not a precise temperament but 'a *general condition* of well cultivated and integrated moral expertise' (Vallor, 2018, p. 154). It functions as a lens through which we contextualise and cultivate old virtues 'with a *new and explicit adaptation* to our emerging global technomoral environment' (Vallor, 2018, p. 153). Technomoral virtue then serves as a collective intellect that enables us to see what is really good in a changing context and choose viable and wholesome futures from a plethora of destructive and inhuman options.

We have to consciously create wisdom networks and communities where the collective can provide a modicum of capabilities and competences to see through the smog of ignorance and navigate postnormal times. That is, networks and communities bound together with aspiration to transcend contradictions, with intellectual acumen to raise ethical and moral concerns, to appreciate that complex issues require complex approaches, and to act, when necessary, with, as the advocate of Extinction Rebellion say, 'love and rage'.

But communal wisdom is not just about when to act but also when to stay still: questioning the perpetual quest of arrogant and toxic knowledge, of the lust, fantasies and dreams of intoxicating knowledge - 'the madness of knowledge' (Connor, 2019) - and gathering together the knowledge and capability of stillness. Communal wisdom is about how communities learn not just when to speak, but also when to stay silence: for the more we express ourselves in postnormal times, the less we say and the less power we have; the more information we generate the more agency and independence we lose, the more dysfunctional our communities and societies become.

History, said ibn Khaldun, moves in cycles. So, we return to Eliot's lament, written over 80 years ago, and the opening verses of 'Choruses from The Rock':

The Eagle soars in the summit of Heaven,
 The Hunter with his dogs pursues his circuit.
 O perpetual revolution of configured stars,
 O perpetual recurrence of determined seasons,
 O world of spring and autumn, birth and dying!
 The endless cycle of idea and action,
 Endless invention, endless experiment,
 Brings knowledge of motion, but not of stillness;

Knowledge of speech, but not of silence;
 Knowledge of words, and ignorance of the Word.

Wisdom is the quest for the life we are losing in postnormal times. It is discovering ways of transcending such modes of life and living, of seeing through the smog of ignorance, learning to navigate postnormal times towards safer, more desirable futures for all our diverse communities as well as the Earth, the very abode of our terrestrial journey.

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