

The monistic diversity of continuum informatics

A method for analysing the relationships between recordkeeping informatics, ethics and information governance

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Abstract

Purpose – The Information Age during the transition from the paper era to the digital one saw the fracturing and fragmenting of the information-based specialisations. More recently, professional norms for governance have been swept aside within new business models based on information based business applications. This paper aims to support an advance towards networked cohesion based on informatics, regenerating professionalism for the complex networked age.

Design/methodology/approach – New regulatory approaches will have to manage monistic diversity, connecting the deeper logic of continuum thinking in which information governance exists as part of a simple whole (the monistic component) with a recognition that the parts of information governance are much more complex than the whole (the expanding diversity). A continuum approach of this type involves studying things in motion as part of evolutionary processes.

Findings – The production of information is galloping ahead of its authoritative management, and this is at the heart of many of the failings of the post-truth information era. Informatics with its emphasis upon the joint operation of technologies, social processes and knowledge forming and its ability to be an umbrella term for many specialisations can be a cohering force.

Practical implications – The alignment of thought, action and ethical information governance across inter-connected practices for individuals, groups and organisations can be supported by the deeper logic and grounded experience of continuum thinking.

Originality/value – This paper will look to expand the array of sympathisers who wish to get more in touch with studying things in motion, including those trying to cope with the need to develop more adequate ways for managing nanosecond archiving processes.

Keywords Records management, Archiving, Informatics, Continuum thinking

Paper type Conceptual paper

Nanosecond archiving and monistic diversity

A century ago, the spacetime multiverse was a major topic of innovative studies and had its creative disrupter in Einstein's discovery that $E = MC^2$, a discovery that went out of control and resulted in weapons of mass destruction that have needed regulation. Today, the expanding continuum of recorded information, the archival multiverse, is undergoing creative disruption of the like that has never been seen before in the way societies form knowledge or create, manage and use evidence. Indeed, the expansion in the continuum of recorded information is giving us a new form of mass destruction, cyber-warfare. The critiques of information governance have also been growing exponentially, including within the Internet Plus business environment that is the concern of this article.



Apart from the internet's powers of creative destruction, criticisms of it have ranged from the way organisations have been held back from that power by dependence on programming within our application platform interfaces, the way the internet has reflected and entrenched inequality and the way it is having a detrimental effect on our cognitive skills. The internet has given us an Information Age beyond imagining, but in relation to governance, it is failing to support difference, creating pockets of one-talking groups, disrupting notions of privacy and identity, generating a post-truth world and because of its technocratic nature, disrupting the development and breadth of professionalism[1].

At the heart of the creative destruction has been disruption to the way archives have been formed. We have moved from the slow-moving archival pace of the paper era, through the clunkiness of leviathan information systems with gnat-like lifecycles, into an archivally ungoverned world of cloud computing that has less to do with computing as we once knew it and a lot to do with smart applications and remote storage of information on servers controlled by someone else. New technologies that are dependent upon the quality of nanosecond archiving processes during communication and action processes have become a mixed blessing as uncertainty spreads across cyber-security issues, artificial intelligence and the control of new business models. More than a century ago, the spacetime continuum drew a prophetic critique from the philosopher William James. Without an ethical perspective, it was plastic and morally indifferent (Upward, 2017). The same goes for the expanding continuum of recorded information and the apparatus that is producing it. The plasticity and moral indifference of social media, hacking, leaking and big data, for example, were all demonstrated very clearly in the US presidential election in 2016. When it comes to continuum thinking, James was right. Ethical conduct should not be an add on; it should be a starting point.

Information has always been manipulated but the difference in this century is the scale and power of such manipulation. The quick-fire nanosecond archiving processes of today and the production of information within an expanding continuum of recorded information is galloping ahead of its authoritative management. Governance processes have not kept pace with the change, and this is at the heart of the failure of internet technologies to deliver maximum benefits. The technologies are magnificent by any historical criteria, but they have not been fulfilling their potential.

Recently, an archives and records management critique has been published in a book on recordkeeping informatics which deals with the relative neglect of basic archives and records management informatics as one cause of failures in governance (Upward *et al.*, 2018):

- information cultures do not adequately support evidence and knowledge;
- business process analysis and business models often lack an understanding of what is involved in authoritatively managing the expanding cascade of inscriptions in today's smart Internet Plus business environment;
- access to recorded information is in an unqualified mess; and
- ethical recordkeeping functionality sitting underneath business applications is often inadequate.

It is easy to produce such critiques. More importantly, what can be done to mediate the disruption and produce transformations in authoritative information resource management? As a reviewer of the book noted:

Whilst we all know that we need to move away from archaic paper-based thinking and into the world of nanosecond archiving, the way forward is not a well-known path (Davern, 2018).

Fortunately, the reviewer then drew attention to ways of using the book that can enable its reader to explore the new world pragmatically with results in mind. This article, similarly, will try to clarify and condense the way continuum thinking and recordkeeping informatics can be used to begin to address information governance issues. In essence, they can be connected to a program of action providing you work out from the concept of monistic diversity and its relationship with information governance. In the book, monistic diversity is called simplicity, a neologism that combines the singularity of the continuum with the expanding complexity of its parts. The monism is the archival multiverse, a laterally interconnected universe of recorded information that is in a state of exponential expansion. Information governance exists as part of this simple whole but any simple solutions to deal with it are sure to be wrong. They will be confounded by the fact that the diversity of the parts are much more complex than the whole and are in motion, expanding in their complexity.

The continuum of recorded information is becoming more difficult to govern, partly as a consequence of innovations in the nature and use of the different apparatus for producing and communicating information and data. Whilst everything seems to be converging on to a single digital media-based storage format, if you see that as a solution you do not understand monistic diversity. It is precisely the convergence and the new connections that are forming that is the cause of much of the archival disruption. The action and storage points for all of our inscriptions are becoming increasingly chaotic in the face of cloud computing, leaking, hacking, post-truth intrusions on the operation of the apparatus and the growing arsenal of cyber-warfare techniques. If the monism points to the need for lateral integration, the diversity points to how difficult it will be to achieve vertical integration of many different specialised forms of information management and systems development. In short, the monism might give us mental images of what order might be produced, but the diversity induces disorder which for records management includes the sort of creative disruption within many modern business models.

The rest of this article will open up ideas about how to manage monistic diversity by looking at what it can mean to say “all is archive” as a base for developing continuum informatics as an integration tool. It will look at how the connections made by things in motion expand the complexity of information governance before looking at the evolution of un-governance. It will argue that there is a need to develop disciplinary integration that can spread the stress of holding new governance structures together again. The conclusion will briefly point to the significance of project work and agile forms of networking, with the goal of producing renewed forms of information professionalism operating across an expanding web of relationships. This is not an article on networking, professionalism or project methods, but it is an article on an archival philosophy that can underpin them in this century.

All is archive

The archival philosophising in this article is based on the deeply logical idea that all is archive, a notion that can be given different forms of expression. In the age of science in which continuum thinking flourished more than a century ago, the notion was relatable to any things we could study. Everything is in motion, moving from many different pasts into many different futures via the present moment. Philosophers such as Gabriel Tarde in France advised us to face up to the complexity of the connections within this simple whole. Alfred North Whitehead in Britain agreed and fought hard but unsuccessfully against the

accelerating trend to split science off from the arts. Both studied the formation of things, and Albert Einstein explored aspects of the complexity of the formation of the universe itself.

Another contemporary, Henri Bergson looked at the formation of things from the viewpoint of creative evolution. His view of monistic diversity created what Gilles Deleuze later described as a flicker, comparing it with the cinematic flicker that at the time was changing the way people viewed the world (Deleuze, 1988). The flicker was that instant when the past reconstituted itself as the future over and over again in place upon place. The flicker of the archive can be mediative, mitigating against or delaying change or transformative. The archive is the instrument of change, or represses it. T.S. Eliot gave poetic expression to the flicker in his poem *Burnt Norton*:

At the still point of the turning world. Neither flesh nor fleshless;

Neither from nor towards; at the still point, there the dance is,

But neither arrest nor movement. And do not call it fixity,

Where past and future are gathered. Neither movement from nor towards,

Neither ascent nor decline. Except for the point, the still point,

There would be no dance, and there is only the dance.

T.S.Eliot, "Burnt Norton", II.

For many archivists, as the century progressed the archive became the still point. They ignored Eliot's injunction and called it fixity. For a continuum archivist, it is the dance and there is only the dance.

For Australians, the expression of the archive as continuum was shaped by the influence of one of Britain's great continuum philosophers, Samuel Alexander, an expatriate Australian who left his homeland for postgraduate study in England. He never returned, but in the 1920s and 1930s, his patronage-dominated appointments made to chairs of philosophy at Sydney and Melbourne University. If Aristotelian philosophy focuses on things, the study of *being qua being*, Alexander's philosophy focused on the study of things in motion, the study of *becoming qua becoming* (the formation of things as they are forming). Einstein studied the formation of the universe; Alexander, in much the same philosophical vein, advised his students to study things in motion such as chemicals combining or ants after their nest had been poked with a stick.

In Australia, a consequence of viewing things in motion was communicated in the middle of last century in an introductory text on philosophy by Quentin Gibson, a member of a family of philosophers that had benefited from Alexander's patronage. Remember that problems are not static. No matter how much you think you have resolved them, they are always likely to break out in new idioms (Gibson, 1961). Today, we call such problems wicked. They are complex, and their complexity is always expanding. The American continuum philosopher, Richard Rorty, points to why this is the case:

There is nothing to be known about anything except an initially large, and forever expandable, web of relations to other things. Everything that can serve as a term of relation can be dissolved into another set of relations, and so on for ever. There are, so to speak, relations all the way down,

all the way up, and all the way out in every direction: you never reach something which is not just one more nexus of relations (Rorty, 1999).

November, Camacho-Huber and Latour express the concept of the significance of relationships within a continuum as something which provides meaning:

An isolated image has no scientific referent – but it generates, of course, like all images, a virtual image, the “what” that it is said to be the representation “of”. Taken in isolation, an electron microscopic image of a virus, a photograph of a galaxy, and the drawing of a skeleton in a natural history museum, has no specific value (even though they might have powerful aesthetic, pedagogical, or rhetorical strength). If you want to understand what an isolated inscription means in science, you have to reinsert it inside the cascade of other inscriptions out of which it has been extracted (November *et al.*, 2010).

Within this cascading and relational complexity, however, there are patterns. If recordkeeping informatics, for example, is to have a strong future, it is likely to be built on managing business applications as fractals, as recurrent patterns of activity in which nanosecond archiving processes can be internalised and modules can be distributed in tailorable form from an application store for use in an organisation’s recordkeeping architecture. The module has to be dance-ready, and as the dance changes, it needs to be amendable or replaceable often without losing its capacity to represent a virtual image of those moments “where past and future are gathered” within business transactions or its place in the cascade, a place that gives it meaning.

Logic, experience and things in motion

The archive, as it is discussed in the previous section, can be innovative, making connections within the complexity of its parts that can be different from those parts. Gilles Deleuze called this process machinic connectivity, an expansionary relationship between ideas that produces something new. Unfortunately for information governance, the paper and the digital era are so different that new connections in information governance have proved difficult to make. Alexander’s advocacy of the need to study the formation of things as they were forming, for example, influenced archives and records management practices whilst they were dominated by paper because Australians understood the business environments that gave rise to their records continuum practices. In the middle of last century in Australia, the Commonwealth Government’s archival authority and its Public Service Board (PSB) jointly studied the formation of the archive. The PSB wanted to govern recordkeeping processes during transactions to ensure that accurate and reliable records of transactions were formed. Ian Maclean, Australia’s chief archivist, focused his attention on how to produce reliable records by studying their characteristics, by examining the records classification processes that enabled the archive to be built out coherently from transactions in the first place and by designing authoritative recordkeeping systems. He had been taught to know, however, that things would move on. As he noted.

I am well aware that, even if its main principles continue to stand up to professional criticism, it needs much clarification and adjustment, not only in terms of logical argument but also in the light of the practical experience of archivists and records managers (Maclean, 1959).

Unfortunately for the governance of individual public servants and the formation of an archive of their actions, the paper era was coming to a close, and for the next 50 years, much of the change to archival formation processes occurred outside of the ongoing immediate practical experiences of archivists and records managers. A sharp archival turn has been taking the archive away from slow linear formation processes towards dependence upon

nanosecond-based systems and applications. As a student of the turn within feminism, [Eichorn \(2008\)](#):

The archive and desktop are already synonymous. Once denoting a material repository of documents governed by an established institution (e.g., a state archive), definitions of the archive continue to loosen. For a new generation of readers and writers, the archive may be known only as a site of virtual storage ([Eichorn, 2008](#)).

Already [Eichorn's](#) statement needs revision in the light of the experience it captures. The site of virtual storage even in 2008 was beginning to be connected to many devices other than the desktop computer. It also needs to be expressed more adequately in terms of deeper archival logic. Only in some times and places has the notion of an archive been so specific. There is a much deeper logic to the idea that all is archive. And, in relation to information governance, is it too optimistic? The new archival sites built out of nanosecond archiving processes are always likely to be a source of fleeting virtual images rather than of meaningfully connected cascades of related inscriptions using, for example, hypertext connections or the new blockchain technological developments.

[Maclean's](#) original approach to the records continuum foundered on the differences in experiences between the paper era and the emerging electronic one in which archives were being formed outside of the conventional location of archival experiences. To address this disjunction and as a way of uncovering logical patterns for archival formation processes across both paper and electronic experiences, a records continuum model emerged from Monash University in 1996 with which some readers might be familiar ([Upward, 1960](#)). It attempted to depict a topology [a logical shape] for the archive by which the experiences of archival formation processes in different times and places could be read dimensionally. The first dimension was the creation of an inscription, a term covering any form of document or data which in the original model was called an archival document. The inscription acquires its meaning through its relationships with other inscriptions in the archives. Accordingly, the subsequent dimensions involved its capture as a record, its formation as part of an archive and its pluralisation with other archives. The dimensions as thresholds for the cascade might or might not all be crossed in particular instances, or might get uncrossed at a later date.

The model was not an implementation model nor a guide for how to form archives. It provided a logical shape for readings of the formation of archives in any era. To further guide such readings, four vectors that have a tendency to shape the nature of archives were depicted dimensionally as axes on the model. The vectors were:

- transactionality (the nature of the business);
- evidentiality (whether adequate evidence of the transactions was being formed);
- memory and evidence (the ability of the archive to function as useful and usable memory); and
- storage (the recordkeeping containers).

These are the major vectors of a professional recordkeeping archivist or records manager, and the model has been used in many teaching and training programmes globally to help explain the evidence base for their professional activity.

The survival or otherwise of any human activity today depends upon how successful we are going to be in bringing ethical governance to nanosecond archiving processes that support the formation and use of evidence. Accordingly, the original model as a way of analysing the formation of evidence has continuing relevance, but it was obvious even in

1996 that the formation of archives was moving beyond the scope of the single recordkeeping mind it depicted. A number of other models were developed covering information management, information systems development, publishing, digital forensics and cultural heritage management, all of which have some bearing on archive formation today. The models were based on the same four dimensions but set out different vectors. In terms of monistic diversity, the dimensions represent the monism, the logic of formation that can be found across all forms of information in any time and place. The vectors represent the forces that can connect machinically, producing different results in particular times and places and expanding the archival multiverse[2].

The goal of the modelling was to carry the emphasis upon deep logic and grounded experience in continuum thinking about things in motion across the paper and digital divide. This was achieved, but as usual, just when you think a problem has been resolved, it breaks out in a new and more wicked idiom. Maclean had worked in an era that placed a lot of value on information governance. We live in one where information governance has been in decay. Will the twenty-first-century re-learn how to form useful and usable archives because that is the way authoritative information resource management can begin to keep pace with the expanding productive power of our technologies?

The evolution of information un-governance

Since 2016 and Brexit and the election of Donald Trump, there has been a torrent of books and articles explaining how we have got to a post-truth stage in which there is widespread distrust of politicians and/or suspicion about the technocratic drive to disrupt existing business models. Widespread awareness that there is a crisis in governance might be recent, but it has been a long time in the making. In Australia, for example, the strengthening of authoritative information resource management in the 1950s began to shrivel up in the 1980s after the PSB had been abolished, and the archival authority focused its greatest efforts on storing permanent records that were at least 30 years old.

The problem for the formation of archives globally and in Australia was that archival formation processes have been progressively disrupted by new management approaches, changing values in information management, large-scale information systems development and data management techniques, all of which were outside of the immediate experiences of archivists from the paper era. The Information Age in the last half of the twentieth century saw the fracturing and fragmenting of the information based specialisations, and most archivists and records managers found themselves relegated to back rooms managing the growing quantity of paper records on shelves. They had to look after the end products of the expanding continuum of recorded information, even if it took them further away from the activity base that was producing inscriptions in an increasingly wide variety of formats and media. Professionals who were close to the centre of the expanding continuum of recorded information were now on its periphery, and those amateurs closest to the expanding technical powers of production were at the centre of the storm. A few noticed the absence of archivists or records managers, but not many. For many technocrats and managers, archival formation processes were increasingly identified with repositories that were cost centres divorced from direct engagement in business processes.

That is an over-simplification of course. The recordkeeping strand of information governance is crucial to regulating and ordering the formation of a reliable archive, and this has always piqued the interest of some technocrats and managers, whilst the importance of recordkeeping is beginning to be noticed by more professionals within the "Internet Plus" business environment. The plus component has been expanding exponentially within the development of new business models all dependent upon nanosecond archiving processes

combined with innovative smart devices and artificial intelligence. An awareness is growing again that all is archive, but what often can go missing is a practical emphasis upon the relationship between any form of governance, recordkeeping processes and our management of things over spacetime, our mutual associations and the connection between the formation of an archive and our life chances. These relationships do not go away just because too many people who are at the forefront of technical and managerial change ignore them or because no-one is providing reliable and stable advice on how to form an archive as a thing in motion.

In part the problem for information professionals is that, as the twentieth century progressed, there have been splits between archives and records management, information management and information systems development and between all these pursuits and the formation of the archive. Yet, paradoxically, one of the things to carry forward to address regulatory control of the formation of archives is the expansion of the specialisations. Their inability to integrate laterally or carry that integration down vertically into the complexity of archive formation might have been a problem in the past but that was during a period of fragmentation followed by current over-simplified views of convergence. Monistic diversity as a logical concept and driver of new practices can help remedy the blind spots in top-down approaches promoting both lateral and vertical integration. Specialisations can continue to expand within shared understandings of the need to address the galloping expansion in the continuum of recorded information by jointly studying things in motion whilst not neglecting their own skill and knowledge bases.

The popular study of the formation of things is beginning to bounce back from its promising start a century ago when in Britain, many people, influenced by Samuel Alexander, went out and bought microscopes to study things like the cheese they bought as it changed composition over spacetime. As more and more people understand that managing cascading inscriptions in this century creates nanosecond archiving problems that are changing the archival game forever, becoming *qua* becoming will open up a new front for discovery. Whether you are an auditor, a lawyer, a businessman or a scientist, you need to monitor the formation of information objects within an archive and work collaboratively with others. This forecast of a widespread and deeply logical archival turn might sound too optimistic, but scratch below the surface of the many fractured and fragmented disciplines and there are rich studies of things in motion to be found. If you are an architect, you will have been taught continuum mechanics to counter the effect of movement in your structures; sociologists have their structuration theories in which structure and action are in constant motion producing new idioms; mathematicians have their theories of patterns and expanding relationships; archivists and records managers have their records continuum practices.

In English language literature, continuum thinking of this type tends to be constructivist directed at building a structure including, in records continuum thinking, building an archive. However, we live in an era of deconstruction in which much of the modern energy in technological innovation is openly directed at creative destruction. All is still archive; it is just that, for ideas that have explored the disruptive power of the flicker of spacetime, it has been more useful to trawl over Bergsonism and French literary philosophers. In the 1990s, American academic literature, for example, was rife with studies of Michel Foucault's theories of recommencement as ideas from the past emerged from defeat in new idioms, with Deleuze's rhizoid thinking in which blocks of becoming representing tendencies for things to form in particular ways gather force, with Derrida's deconstruction of ideas as a way of freeing the archive from its own past, with Lacan's topologies for reshaping the mind and

with Lyotard's postmodernity in which the future exists as an unknown variation of many small stories from the past.

Lyotard presented what might at first glance seem to be a pessimistic view of those in the vanguard of dealing with things in motion:

The artist and the writer, then, are working without rules in order to formulate the rules of what will have been done. Hence the fact that work and text have the characters of an event; hence also, they always come too late for their author, or, what amounts to the same thing, their being put into work, their realisation (*mise en oeuvre*) always begins too soon (Lyotard, 1984).

Managing things in motion within information governance is, indeed, going to be a hopeless task this century if you focus on end products rather than the cascade of recorded information of which they are part. Managing nanosecond archival formation processes requires monitory responses probing the too soon/too late conundrum by paying attention to the flicker and things in motion. In recordkeeping informatics, for example, it is highly unlikely, if not impossible, that modern problems with leaking, hacking, criminality, corruption, accountability and information transparency will be solved by firewalls, encryption and other techniques for protecting end products. They are too late to protect the formation processes and too soon to counter the next wave of technical sophistication. There is a need to monitor the ongoing cascades, and in the process to monitor, the integrity and ethics of the recordkeeping processes, rules, and resources underpinning the formation of an archive.

Continuum thinking might not be rocket science; it just looks like it. In the 1990s, in Australia, for example, it was argued that archivists, including records managers, should be auditors not undertakers (Acland, 1991), but the problem then was that traditional audits started out from end products. It was an activity based on shutting stable doors after the horse had bolted. It is also true that governors have always had a preference for watching others over watching themselves. That means they can avoid facing up to the complexity of the flicker, but not to monitor the formation of your own archive is to risk placing yourself in a hopeless position when it comes to information governance, minimising criminality or corruption in your own or your outsourced ranks or successfully implementing transparency and accountability programs. When things go wrong in a world of nanosecond archiving, they can involve unprecedented cascades of inscriptions and extremely costly fraudulent acts. If we are to manage the ethical and creative evolution of today's expanding continuum of recorded information, there is an obvious need to keep archival formation processes under constant scrutiny. It is monitoring the cascade that is feasible these days, not a traditional audit relying on expensive and often futile searches for virtual images of smoking guns within that cascade.

Continuum informatics and the spreading of the ethical stress of building an archive

Unless mediative factors are introduced, the transformative impact of the digital technologies and the archival disruption of new business models will continue to extend chaos, accelerating the growth of a lack of confidence in information governance in particular and governance in general. Monitoring on its own, as suggested above, probably means monitoring the archival mess, whereas building a stable archive these days is much more complex than identifying the areas of chaos. Arguably, like more conventional forms of architecture, a form of continuum mechanics will be needed to spread the stress of forming the archive as a thing in motion.

The archival architects of this century will need an ethical compass. The expanding continuum of recorded information is proving itself to be as plastic and morally indifferent as its parent, the spacetime continuum. Anyone can enjoy this period of creative archival buckling and go along for a productive rollercoaster ride to what might prove to be an unsustainable future, or they can strive to be a new archivist, looking to generate mediative forms of authoritative information resource management that are equally innovative. So far, the new archivist has been lagging a long way behind the power of the technology. The aforementioned Jean-François Lyotard predicted this dilemma 40 years ago in a polemic advising that, flicker fashion, we either opened up our information and data banks giving innovative problem-solvers information-based parity or we faced a future of accelerating terror (Lyotard, 1984). His metaprescription for us all was to direct information at justice and the unknown, and that can be part of the new idiom for forming archives in the face of a deconstructive flicker, along with the more traditional constructive emphasis upon evidence and its role in authoritative information resource management.

In some places, the development of innovative approaches to mediative practices for this century has begun under an informatics banner. At Monash University, for example, the Centre for Organisational and Social Informatics (COSI) has been at the leading edge of a worldwide trend to use informatics within research programmes designed to increase societal and organisational trust in technology. Within the Internet Plus environment, technical innovations are regularly running out of control by their creators. The most obvious examples in the post 2016 era of studies of the mess we have been getting into in our governance processes have been Facebook and Twitter. Organisations like COSI and others have a longer history in encouraging research into how to accommodate diversity whilst promoting healthier information cultures, but the front has not been broad enough to spread the stress of forming ethical archives. Informatics is not yet specifically focussed on playing the role it can in promoting the monistic diversity needed to manage the expanding continuum of recorded information. The potential for the growth of continuum informatics is there, however, in a number of existing features that can be used to encourage the necessary lateral and vertical integration of different professional approaches.

For a start, informatics offers a way of approaching the modern need for the convergence of disciplines without interfering with the continued development of specialisations. As mentioned above within the brief reference to the modelling of the continuum of recorded information, the common dimensions of create, capture, organisation and pluralisation can give some coherence to the vectors of specialisations that in the twentieth century broke off from each other and then fractured within the pieces they had formed. A host of blocks of becoming, tendencies to form the archive in different ways, developed. They can, however, be brought together coherently using the creation, capture, organisation and/or pluralisation needs of particular cascades of recorded information as thresholds that might or might not get crossed or uncrossed within particular applications, thereby spreading the stress of archival formation processes across any or all disciplines involved in designing and implementing them.

The single word informatics also offers a form of coherence that does not interfere with expanding diversity. For example, in the recent book on recordkeeping informatics, the many meanings that can be given to the word in particular times and places are over-ridden by the deeper logic of its coverage of technical, social and cognitive issues. The expanding diversity within the word comes from the way it encompasses galloping expansion in the development of information and communication technologies, the social changes being wrought by the technologies and new business models based on them and the fact that both knowledge construction processes and ways of forming and managing evidence are in flux.

To get down into managing the complexity without losing contact with the whole, all you have to do is add another word in front of informatics as a qualifier. Add continuum and you get the monism, continuum informatics, which is the whole thing in motion. Add particular areas for studies of things in motion and it becomes a specialisation whether it is large one like medical, health, legal, data or recordkeeping informatics or a more specific area of study such as food informatics.

As part of the development of an archival science of continuum informatics, it might help to think in terms of the internal and external mechanics of archival formation processes. Within a recordkeeping informatics strategy, for example, the internal mechanics can be compared with the ongoing monitoring of the materials used in building a bridge. What recordkeeping functionality supporting nanosecond archiving needs to be included during the design stages and operation of an application that manages cascading inscriptions? Are any of the modular parts in the overall recordkeeping architecture showing signs of fatigue? How will fatigued parts be upgraded and/or replaced without damaging the integrity of the whole or losing valued or required information? How have information governance processes been internalised within an application using multiple input integrated laterally (across the whole) and vertically (within the complexity of the application)? Has this internalised functionality been based on adequate analyses of information cultures, business processes and access requirements?

The external mechanics relate to recordkeeping architectures and their operation in a particular situated context, as well as over time and in other places. Organisations need to gain control over their recordkeeping architectures to make sure they meet their business needs and ensure that they are tailored and modified to meet their access and storage requirements. The technologies provide many options, but many of those marketing them want to keep the options as skinny as possible, putting their own commercial benefits and profits ahead of the interests of their clients. Archival institutions, as an external authority, can play a role in appraising fractals, those applications in stores which when drawn down can be tailored for use within organisational architectures and be modified or replaced when outdated. Such applications should be capable of being monitored for their ethical operation by approved auditing arrangements. Both organisational and external authorities need to develop joint monitory methods for assessing “becoming as becoming”, i.e. how the applications are performing whilst they are in action. Authorities can also advise on controlled processes for updating and replacing the applications.

There is still a long way to go in terms of the evolution of control mechanisms, but at last, using smart applications innovative forms of authoritative information resource management are emerging or can be envisaged. As an example, blockchain technological developments show that the idea of recordkeeping informatics operating within the simple whole whilst managing the expanding complexity of the parts is not fanciful. Blockchain is the sort of tool for tracking source and transmission information from which innovative forms of governance of cascading and related inscriptions can evolve (e.g. the provenance of food in supermarkets). It can be internalised within business applications and promoted externally across fractals. The external appraisal and monitoring of its use within applications can keep it developing as both a ledger mechanism and as a more general provenance tracking tool, rather than stagnating as an old technology. It might have started out within the dubious parameters of bitcoin as part of an attempt to disrupt the archive that is the modern approach to currencies, but removed from these origins blockchain could be the beginnings of many innovations related to the management and control of the nanosecond archiving of cascading communications. Its future, of course, depends upon what is going to be carried forward in the flicker.

Archival networks, projects and intellectual sympathisers

Cyber-maturity has often been a euphemism for information governance when used by those marketing solutions, a substitute for lifecycle thinking. All will be well because the technology is maturing. In fact, it is not, and there is no good reason to think it ever will. The technological advances over the last 30 years have been remarkable but if modernity is any guide only ever offer a prelude for a new wave of immature but even more remarkable technologies. So much birth and so few clear paths maturing towards a timely death! Maturity, from a governance viewpoint, is not just a technical issue. Indeed using the clunky leviathan style information systems and architectures of the 1990s and the lifecycle concepts of the time upgrading authoritative information resource management could not be done.

The Internet plus business environment, however, is starting to provide an approach to the archival multiverse in which an application jigsaw suiting an organisation's needs can be assembled, updated and replaced in agile fashion within perennial start-up processes. Business and its governance are becoming the embodiment of Henri Bergson's flicker. Fitting the jigsaw of complex pieces together in timely fashion in our organisations can help them retain contact with things in motion. To remain in contact, the business environment will need to be constantly monitored and innovative responses produced using archival networking and a project focus.

For a continuum thinker, cyber-maturity will only have started to arrive when we can hold easy yet sophisticated informatics-based discussions on the management of what can be carried forward for authoritative information resource management purposes within this flicker of newness. The technology matters, but maturity will come from the social and cognitive capacities we have to study and manage things in motion. We need continuum informaticians who can spread the stress of systematically building and implementing rules and resources for applications that deliver orderly spacetime management, mutual association, life chances, justice and perhaps above all else, help individuals, groups, organisations and societies to cope with the flickering of time and the constant expansion of the web of relationships in which everything exists.

The archival networks that are needed to manage the web of relationships can be modelled on those described in the actor-network theory (ANT), at least as it has been described more recently by Bruno Latour. He helped build the theory, but in French philosophical fashion is quite happy to point out it is not about actors, networks or theory[3]. It will be evolutionary and will take many shapes. For information governance, it can be about actants. An actant can be a relationship, an instrument, a person or a thing involved in an action. As a network, ANT can be more like a rhizome, spreading and making machinic connections. It can be about flexible and agile teams of like-minded but differently skilled people who can be assembled within projects. They are like-minded not as one-talks but as lovers of diversity who enjoy explorations of deep logic across varied experiences and as sharers of the ethical purposes underneath authoritative information resource management. And, they are not theorists preferring to tie together academia and workplaces in ways that creatively connect authoritative information resource management with the powerful evolution of information production.

Ethics must drive any archival form of ANT. The complexity of archival formation processes connected to evidence, authoritative information resource management, justice and the unknown have to be respected if we are to move beyond the continued cascading of sludge and deceit. Monitoring the unknown that is evolving in the flicker is something that individuals, groups and societies do not yet know how to do adequately – but learning to do so quickly using flexible teams brought together within a host of possible projects is not an impossibility. Any application of artificial intelligence, for example, can benefit from

absorbing continuum informatics as can the development of regulatory controls or the direct monitoring of the operation of our business applications, and thus the rhizome can spread. The development of organisationally exploitable common fractals, projects that deliver bang for their developmental buck at low cost to our businesses, would also be a priority within a rhizome-based continuum informatics program.

Team members will need to consist of those who are sympathetic to and understand the challenges of monistic diversity. They will welcome explorations of ethics and justice because they like exploring the unknown and finding new idioms for addressing problems. They cannot afford to ignore the expanding productive power of technologies, but they should want to find mediative rules and resources for the ordering of archival formation processes. (There are already enough teams out there disrupting the archive.)

Cyber-maturity, then, would involve discussions about flickering change and how to monitor and study things in motion. Modern Silicon Valley forms of innovation focus on disruption. Continuum informatics will focus on the disruptions and strive to be just as innovative but with an appreciation of the importance of mutual reciprocity and association, with an understanding of what things can be disrupted and what we want to carry forward, and with meaningful assessments of how the changes can improve individual, group, organisational, and societal life chances. Governance is in trouble unless those promoting it learn to be as creative and as evolutionary as the forces and people that are deconstructing it.

Notes

1. Criticisms in the opening paragraph are crudely drawn from the works of Joseph Schumpeter, Jaron Lanier, Astra Taylor, Nicholas Carr, Anthony Appiah, Aleks Krotzki and Andrew Keen.
2. See Chapter 7 of *Recordkeeping Informatics for a Networked Age*, cited above.
3. Bruno Latour was one of the developers of the ANT which is succinctly described in its Wikipedia entry in ways which overlap with many ideas in this article (viewed September 2018).

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