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Making polychronic objects for a networked society

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Abstract: In the light of current debates on materials and the future of making, the polychronic object research combines temporal theories with material experimentation to identify possible paradigm shifts in making for a networked society. The research interrogates a triangulation of concepts. Firstly, digital aerial viewpoints proposed by theorists such as Amelia Groom and James Bridle. Secondly, the application of non-linear time in making through the act of mapping and crumpling as defined by Giles Deleuze, Félix Guattari and Michel Serres. Thirdly, a practical translation of speculative realist approaches to materiality through the writing of Jane Bennett, Levi Bryant and Timothy Morton. The knowledge gained from these three positions aids navigation through the practical experience of making, producing pleated material history as polychronic objects. This is then contextualized through a polychronic re-reading of the history of technology and an exploration of different design approaches that offer appropriate models for this practice.

Keywords: polychronic, aerial-view, materiality, crumpling, mapping.

Making Polychronic objects

This research into making polychronic objects, uses time based making strategies to combine materials from different historical eras, integrating these material times into one polychronic object. This approach opens up a different set of making possibilities by folding together materials and techniques unlikely to have been combined in previously historically linear and hierarchical approaches to materiality. My research proposes multi-temporal making strategies such as the crumpling and pleating of time, referencing Michel Serres' use of the term polychronic: "An object, a circumstance, is thus polychronic, multi-temporal and reveals a time that is gathered together, with multiple pleats" (Serres 1995 p60). The term 'polychronic' was first used in anthropology by the cultural theorist Edward Hall in his book *The Silent Language* (Hall 1959) to describe a societies or individual's ability to attend to



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multiple events simultaneously, as opposed to *monochronic* individuals and largely western cultures that handle events sequentially. The polychronic objects in this research operate as actants in a digitally networked polychronic global society, extending Hall's use of the term polychronic from anthropology to include approaches to making, materials and objects.

The conceptual framework for my research is structured across three contrasting but overlapping fields of knowledge: digital visual cultural theory; the philosophical writing on time by Deleuze and Serres; and elements of speculative realism such as Actor Network Theory and Object Oriented Ontology, all explored and folded together through emergent making strategies. Across all fields of design currently, there is what could be described as cultural vertigo and an anxiety in relation to making and progress. Will our unstoppable consumption of global resources inevitably lead to humanities downfall? Is our designing and making just contributing further to this problem? How should we progress as designers? Where should we be positioning ourselves? Embedded in this anxiety about development and progress is a reappraisal of the future itself. The visual culture blog by Ross Wolfe: *Memories of The Future* states: "Today it is well known that the future has become a thing of the past" (Ross 2012). This revision of 'futurism' has gathered momentum, bringing about a growing critique of a linear concept of time. This model of time, associated with Enlightenment ideas of endless progress and which through Modernist ideals drove mass production; has become linked to the growth of capitalism and the rise of consumerism. The nineteenth century narrative that the future would automatically bring progress, improvement and endless development has lost authority today. The Modernist dream of our democratic access to objects has in reality become a tidal wave of cheap mass-produced goods. Today these are perceived as low quality, as they often fall apart and are poisoning the planet. The wisdom of mass manufacturing's over-production is now under question and is requiring us to re-think this mantra of progress.

Meanwhile, we have shifted our sense of time to a new orientation. Amelia Groom, editor of *Time (Documents of Contemporary Art)* observes that: "the dislocation and non-fixity of networked digital space is both symptom and catalyst of the broken, multifarious time that we find ourselves in." (Groom 2013, p13) This digital 'dislocation' uncouples us from a linear viewpoint of time, shifting us to experience an aerial view that connects many different times and events laterally. We suffer a growing temporal dizziness as we adjust to this fresh viewpoint. James Bridle champion of *The New Aesthetic*, has described the aerial view as the view of our age (Bridle 2012). He suggests that our default perspective has become aerial images from Sat Navs, Google maps, drone targets etc, that offer us an apparent abundance of reference points within a sea of digital content. However, Bridle prompts us to 'remember, digital maps are animations on pause' (Bridle 2013). This aerial view of time is itself a time-based perspective that is distracting, disorientating and disturbingly difficult to adjust to.

What does it mean to approach materials from this aerial view of time? This radical shift offered by an aerial view of time, opens up the possibility of an ahistorical map of materials that pulls everything into the present. The resulting unfolding of this overview allows every

material to become available for use in the present, combining to make polychronic objects. This is in contrast to using a reduced palette of materials from a limited historical proximity that has often been used in design. The selection of this reduced set of materials seen as 'desirable' having largely been driven by aspirational forces, rather than a materials effectiveness for the job

As part of the polychronic research, a global map of selected materials and an approximation of their earliest use was produced and used as an interactive tool at the Polychronic Objects stand at designjunction 2014. Members of the public were invited to crumple up this time / materials map, then to read the material combinations resulting from the creasing, to discern unusual polychronic material options for themselves to make objects from. Through papers given at the Research Through Design Conference 2015 and the Making Futures Conference 2015 this materials map has continued to develop, informed by the feedback from delegates and by further material experiments in the studio.

Emergence theory has been a key approach to the polychronic objects research when combining seemingly unrelated theories and considering significant shifts in strategies for making objects, as it points to unimaginable change being achieved by small iterations that bring about a critical mass. As Eugene Holland describes in a paper on non-linear historical materialism:

"Emergence is a key concept in non-linear mathematics, complexity theory, and contemporary science: it refers to the spontaneous self-ordering of physical as well as social systems. Order emerges from chaos, without that order being imposed from above or pre-determined from before." (Holland 2011 p531)

The introduction of an aerial view of all materiality from all of history, inevitably results in an excess of information and a level of complexity that appears to be chaotic and unstructured. It is important however to resist forms of proscribed order that result from cultural trends. These simplistic selections informed by contemporary styles are often the result of a semiotic use of materials. A material as a signifier that is valued for its appearance alone rather than the properties that it has imbedded within it. Materials viewed in this way transport a pre-imposed set of social values, that are often at odds with the task at hand.

Louis Althusser coined the term 'becoming-necessary' to characterise the form of immanent self-ordering that is required (Althusser, 2006 p163–207). This becoming-necessary emerges as a set of localised material solutions. The complex range of choice that crumpled time offers through this wider material possibility and access to more technical experience, becomes self organised through the necessity of a specific need. The economical and ecological necessity for a change in how we view and use materials is increasingly calling out for an immanent self ordering, an ecological 'becoming-necessary' solution. New approaches to techniques and materials used in fabrication are need to emerge to unlocked designers from twentieth century linear ideas of material hierarchy, speed and volume of production. The shift in perspective from a linear view of time to an aerial one, facilitates the move from a localised sense of progress with global generalised manufacturing, to a globalised sense of development together with localised specialist making.

The polychronic bowl experiments followed an emergent pattern of development, where the combination of theoretical influences and localised materials in the studio resulted in the development of a series of different polychronic strategies for making. This process is often difficult to articulate, and it is always tempting to identify patterns retrospectively. However, it is crucial to recognise the value of this unstable phenomena. Deleuze and Guttari in *A Thousand Plateaus* refer to the need to retain complexity and the non-linearity of pre-existing conditions, so that an object's present being is understood as temporary, unstable and is a contingent expression of its becoming (Deleuze et al 1987 p361-374). A significant element of learning in this research has been the importance of resisting an early closing down of processes to secure clear definitions and the temptation to retrospectively fit the material experiments into existing patterns and models of making. Whilst this would have achieved consistent results, it would however have prescribed the outcomes and reduced the possibility of accessing new paradigms of making.



Figure 1. Plastic 1856 UK + Felt 6500 BCE Turkey

The polychronic making strategies for combining materials in the bowls attempted to retain this complexity by using an aleatory approach to sidestep the researcher's experience and conditioning. Themes have emerged through making such as employing a system of 'perverse partners', focused on dissonance to highlight the strangeness of the material combination. An example of this is wiping setting plastic round the edge of handmade felt bowl (Figure 1 Plastic 1856 UK + Felt 6500 BCE Turkey). These two materials, usually kept apart, contradict a view that their contact is a contamination and a failure in the object. This

bowl produced a particularly strong reaction from a number of textile designers who visited the research when exhibited at designjunction 2014, and the feedback suggested that this combination would have been taboo in the textile industry.



Figure 2. Concrete 800 BCE Italy Nylon 1939 USA Rubber 15th C Mexico

Another emergent technique for object making centred around ‘triple crumpling’ which pleated three different strata of time together. An example of this is the bowl, (Concrete 800 BCE Italy Nylon 1939 USA Rubber 15th C Mexico) where concrete, 800 years BCE Italy is combined with nylon (1939 USA) and rubber (pre 15th century Mexico) but used by Europe and America in the nineteenth century and therefore viewed as modern. This bowl seems to highlight our inconsistent perceptions of material time, with materials in contemporary use being regarded as modern, and a collective colonial amnesia silting over their historical origins. Another theme that exemplified a similar approach is ‘historical stretch’ evidenced in the bowl (PLA 2011 USA, Shellac 3000 BCE India) which perhaps demonstrated the biggest span of historical time crumpled together. The result of this particular material combination is interestingly difficult to place visually, experienced designers have expressed surprise at the bowl’s 3D printing origins but also struggled to recognise the shellac exterior. It is almost as if both materials transform each other through their temporal combination.



Figure 3. PLA 2011 USA, Shellac 3000 BCE India

A theme that perhaps pushes against the simple idea of historical stretch is 'competing cousins' identified in the bowl (Boiled Leather 13th C France, Plastic 1856 UK) Here material properties are replicated and overlaid in a single object. The use of plastic with leather for example layers up two materials that have been employed for similar functions historically. Many of the objects currently used such as plastic water bottles would previously have been made from boiled leather, and both the materials share similar properties. The combination of these two in one object questions both material's function and historical position.



Figure 4. Boiled Leather 13th C France, Plastic 1856 UK

The polychronic bowls were formed largely by casting from generic plastic bowls. This process of casting from mass produced plastic bowls suggests a Deleuzian iteration, a stuttering development from plastic mass manufacturing, a generation of the next generation. This approach also repositions the plastic bowls as a valuable tool rather than an end product, having progenerative value rather than being merely a consumable object. This in turn suggests a more horizontal and rhizomatic relationship between objects, shifting the relations between these objects towards a network of actors. This way of working with materials seeks to map crumpled time through making. The importance here is not tracing by returning to pre-existing materials and techniques or histories of crafts, or illustrating pre identified concepts, but proposing through material/time experiments in functional objects such as bowls, ways to discover different making relations. As Deleuze and Guttari observe: “What distinguishes the map from the tracing is that it is entirely oriented toward experimentation in contact with the real.” (Deleuze & Guttari, 1980:13). It is only through actually making these experimental bowls that this contact with the real is made. Deleuze and Guttari’s use of the map as a motif re-emphasises the need for an aerial view to democratise the material and object plane, and to spatialize time.

Kevin Clayton, writing in *Time Folded and Crumpled: The Methodology of Michel Serres*, suggests that Deleuze presents a more technical description that explains time as a self organising emergent phenomenon, Serres, whilst agreeing with the description of the

emergent process, contrasts traditional forms of knowledge organisation that groups elements translating them into a unity, with a more experiential fluid textured approach.

“The former method produces stasis, stable objects and “processes”, linear logic, statues; the latter produces fluid and turbulent patterns – patterns, ... that can actualize into any number of different forms in different spatial and temporal locations, patterns that are relational in a topological or non-Euclidian sense rather than relational in a conventional geometrical sense, patterns that are fluid, turbulent, non-linear and very adaptable.” (Clayton 2011: 955)

The polychronic research seeks, through making, to reveal textures and patterns in material combination that are relational in this fluid and non-linear sense. That are adaptable enough to be relevant to personal and localised situations, whilst informed by a digital global field of information. This approach favours a bricolage strategy that improvises with materials at hand, and leads to localised emergence. The result of this is an extended customisation, a flexible globally informed relevance that maps against the local real.

Jane Bennett and William Connolly in *The Crumpled Handkerchief* raise the question:

“What initiates the congealing that makes objects? Is it possible to identify phases within formativity, plateaus of differentiation? If so, do the phases/plateaus follow a temporal sequence? Or, does the process of formation inside Becoming take the shape of a non-chronological kind of time?” (Bennett and Connolly 2011, p 3419)

This research suggests that polychronic making may indeed be a form of non-chronological time as referred to by Bennett and Connolly. Serres uses this description of a crumpled handkerchief as a different form of temporal map. He presents a crumpled handkerchief as a model of crumpled time that then could be extended as a model to produce polychronic objects:

“Time can be schematised by a kind of crumpling, a multiple, foldable diversity... this intuition is clearer than one that imposes a constant distance between moving objects, and it explains more... An object, a circumstance, is thus polychronic, multi-temporal, and reveals a time that is gathered together with multiple pleats.” (Serres 1997, p16)

The time pleated together in polychronic objects offer a map-like aerial view, connecting knowledge and experience of materials, cultural forms, and historical functions from many different times crumpled or folded into one object.

The third reference point in this research is speculative realism. Objects from this view are no longer on the end of a long, narrow, evolutionary chain of improvement, but sit side by side in horizontal relationships. As Bruno Latour states in *We Have Never Been Modern*: “I may use an electric drill, but I will also use a hammer” (Latour 1993, p166). We are accustomed to viewing objects in terms of function, cost of materials, or by their semiotic reference to cultural values. Valuing the combination of different ‘material-times’ within an object offers a different paradigm for both making and consumption. Time as a reference point significantly shifts our value systems, displacing humans at the centre, and shifting to a crumpled present tense that folds materials and humans into new links as relational actants. As Levi Bryant, the founder of OOO, states:

“In short, the difference between humans and other objects is not a difference in kind, but a difference in degree. Put differently, all objects translate one another. Translation is not unique to how the mind relates to the world. And as a consequence of this, no object has direct access to any other object.” (Bryant 2011 p26)

The selection of materials for the polychronic bowl experiments is based on a personal contact with and experience of materials during my time of making, and as such reflects the impact of these materials on my experience and my knowledge of them. The bowls therefore reflect a community of materiality and actants, of which I am one element. The maker is then an element to be crumpled with any number of locally available materials and construction techniques to produce a polychronic object that utilises time as experience, time as making, time as material knowledge and time as visual historical language.

The growing interest by Western society in hand making and localised customisation, means it is increasingly important to develop a thorough critique of the resurgence of artisan craft and localised design making situated in places such as Fab Labs. This is a vital current task for designers and makers. Dunne & Raby, writing on the collapse of Utopian design that explored alternative options for the future, identify 80's neoliberal capitalism as responsible by defining Speculative Design as “economically inviable and therefore irrelevant” (Dunne & Raby 2013, p8). In our 2008 post-financial meltdown, what are the alternative options to this model? Franco ‘Bifo’ Berardi in *After The Future* observes: “In the Middle Ages, perfection was placed in the past” (Berardi 2011, p167). Perhaps today objects can be constructed from the futurability that is all around us.

So what does it mean to approach making from this aerial view of time? Is this just extending our consumerist thirst for disappearing materials and skills, re-packaging them as the new and the interesting? This research would suggest not: crumpling together materials and techniques from different times, from an informed overview, stabilises the rush for the next trend, and offers localised solutions in post mass-manufacturing societies. The same object can be made from different time combinations in different places, reorienting historical making practices. Argentinian writer Jorge Luis Borges offers an aerial approach: “Every writer creates his own precursors. His work modifies our conception of the past, as it will modify the future” (Borges 1962, p195). This suggests that making and objects have a dynamic relationship to time, and that material combination has the potential to rearrange the past and re-construct the future. This perhaps indicates a more fundamental shift in making. By crumpling materials and time, we can incorporate the dynamic scope of the aerial view, and potentially withdraw from a linear hierarchy of materials.

Making in a Networked society

It is important to put material use into context by considering the impact of social attitudes to manufacturing. It is of little use proposing polychronic material selection if society as a whole does not shift from a linear developmental viewpoint that prioritises a developmental modernism. Increasingly elements of manufacturing in different countries are restructuring as global networks, connecting different time zones and a range of cultural approaches to

time. However, the predominantly western modes of manufacturing that have been exported around the globe are still prioritising historically linear modernist models of production. The benefit of viewing these historical modes of production from a polychronic perspective is that this highlights how anachronistic a linear approach is, and it enables us to see some of the strange anomalies that a relentlessly modernist approach to manufacturing has produced.

The craft writer Tanya Harrod, discusses social influences on manufacturing in her book *The Real Thing*. She describes how it is social attitudes that have driven the choice of materials and modes of production in the twentieth and twenty-first centuries, and identifies a strange conflict between aspiration and reality: 'In the early twentieth century, part of being modern was to be anti-modern.' (Harrod 2015 p329) During that time there was a considerable concern expressed about the 'lost domain' of craft skills. This was due to an anxiety about the changes in material use and production skills that mass-manufacturing was engendering. Alongside this there was a concern about the disappearance of specialist knowledge embedded in previous ways of making. Harrod identifies the bias that underpinned these fears: 'Our ideas about the effectiveness of goods and materials are skewed in the favour of newness' (Harrod 2015 p332) This may be easier to understand now, but it was only felt as a vague unease at that time and not fully articulated. As the social historian Jose Harris observed there was 'a sense that change was inevitable, in many respects desirable, but that its gains were being purchased at a terrible price' (Harris 1994 p36). This contradictory behaviour led to strange decisions in many areas of manufacturing. The most serious of which was the abandoning of particularly useful materials, processes and skills because they were not deemed modern enough; whilst at the same time publicly mourning the loss of this tacit knowledge and the mode of production that went with it.

Sociologist David Edgerton's book *The Shock of the Old* highlights the mismatch between our perceptions of technological progress, and the reality that happens in day to day manufacturing. Edgerton stresses the importance of terminology and the way that it reveals the perspective of the viewer. He compares the perspective of *invention* and *innovation* with a user perspective. To consider technology from a broader use-based history, gives a different perspective on the history of technological development. As Edgerton stresses 'alternatives exist for nearly all technologies... but too often histories are written as if no alternative could or did exist.' (Edgerton 2008 pxiii). With a linear developmental view of technology, the range of alternatives that sat alongside the chosen processes have often been disregarded and written out of our manufacturing history. When this happens equally valid options or combinations of materials and making processes are lost to this incessant drive for the new with the result that 'our accounts of significance have been peculiarly invention-centric, and tied to particular accounts of modernity where particular new technologies were held to be central.' (Edgerton 2008 pxii). This has given us a warped and inadequate historical account of invention and innovation, as only technologies and materials that were perceived as modern were the ones that became recorded. Edgerton suggests that when considering the history of invention and innovation we 'need to focus on

all inventions and innovations at a particular time, independent of their later success or failure' (Edgerton 2008 pxiv) This underlines the need to move from a linear modernist viewpoint to an aerial overview of invention and innovation to gain a more realistic understanding of the history of technology.

As a prime example of this, Edgerton describes the transition from using wood to metal in aircraft construction in the interwar years, describing how material choice and manufacturing process was hijacked by cultural perception:

'Moving to metal was often taken as an index of technical progress – metal was obviously better, and the quicker designers switched to metal the more advanced they were made to appear. Conversely, the late use of wood was seen as the result of some eccentricity. But the assumption that wood was inferior to metal does not hold. What drove the shift from wood to metal was the *belief* that metal was the material of the future and thus inherently more suitable for aircraft, an ideology later subscribed to by historians of aviation' (Edgerton 2008 p10)

it is interesting to note that successful aircraft such as the British de Havilland Mosquito of the second world war continued to be manufactured with wooden sections until the 1950s. Automobile designers at Toyota have recently returned to considering the benefits of using wood for cars, and are due to debut the Setsuna concept car made primarily out of wood at the Milan Design Week 2016. In other forms of transportation such as bicycles, the fast growing wood bamboo, which was used for frames in 1896, is finding popularity again in public projects such as the Ghana Bamboo Bike Initiative and in local projects the US and Brazil.

The increased danger today of a linear approach to materials and manufacturing based on perceptions of newness, is that Web 2.0 has speeded up communication and with it the consumption of this perceived 'new'. This has led to an accelerated privileging of the new. There is now an enlarged global networked demand, driving inflated consumption of an increasingly skewed range of desirable modern materials and technology. With the result that this has accelerated consumption into an ever narrower and more rapacious beam, threatening a global depletion of this narrow range of modern materials such as oil based plastics and rare minerals.

In the mainstream narrative of a history of technology, this acceleration of development is perceived through Moore's Law as an increasing rate of technological improvement throughout history. In the #Accelerate Manifesto by Alex Williams and Nick Srnicek, there is an attempt to take this narrow beam and focus it in an even more concentrated way to enact a recovery of the future. Through doing this, they are seeking to push 'the process of technological evolution' beyond what Williams and Srnicek view as the constrictive horizon of capitalism. The manifesto states 'an accelerationist politics seeks to preserve the gains of late capitalism while going further than its value system, governance structures, and mass pathologies will allow.' (Williams and Srnicek 2013 03.2) Their perspective is one of highly linear modernism, and their stated wish is to accelerate what they view as 'technical evolution'. In this manifesto they discuss the need for a legitimate vertical authority to avoid

a ‘capricious emergent order beyond our control’ (Williams and Srnicek 2013 03.22). This traditional linear and hierarchical model of manufacturing and economics will inevitably be threatened by new material combinations and modes of manufacturing that are emerging in a horizontal and polychronic plane. Dispersed models of making that emerge in an unpredictable way through a becoming-necessary coalition of forces are however much more likely to address diverse need, as they emerge from it. Rather than the old authoritarian models that impose solutions from the top down, without understanding localised context.

Writing on these accelerationist proposals, economist Paul Mason speculates about economic futures after the linearity of capitalism has faded. Possible futures in a post-capitalist global economy. Mason refers to postcapitalism as an emergent process that will become-necessary and find its form from within the current modes of production:

‘technology has created a new route out, which the remnants of the old left – and all other forces influenced by it – have either to embrace or die. Capitalism, it turns out, will not be abolished by forced-march techniques. It will be abolished by creating something more dynamic that exists, at first, almost unseen within the old (capitalist) system, but which will break through, reshaping the economy around new values and behaviours. I call this postcapitalism. (Mason 2015)

Mason suggests that signs of new modes of production are already emerging, using approaches and techniques that have existed alongside capitalism throughout history. He proposes that these familiar modes of manufacture and exchange might yet offer solutions to the approaching problems of rising population, market instability, and job losses through automation. Mason’s model of recuperative postcapitalism operates in a horizontal plane similar to the polychronic treatment of materials that have been cast to one side in the linear rush for modernity.

‘Almost unnoticed, in the niches and hollows of the market system, whole swaths of economic life are beginning to move to a different rhythm. Parallel currencies, time banks, cooperatives and self-managed spaces have proliferated, barely noticed by the economics profession, and often as a direct result of the shattering of the old (capitalist) structures in the post-2008 crisis. (Mason 2015)

One such example of the contemporary recuperation of older forms of making is ‘Distributed production’, a theme in Ezio Manzini’s book *When Everyone Designs*, which considers the democratising of digital knowledge and skills. Manzini identifies key relationships between multiple social crises, social innovation and models of a sustainable society; all informed by emerging design tactics such as design for innovation in projects such as ‘Riace a welcoming village’. Here a depopulated village in Italy has welcomed Syrian migrants and in the process, reopened local schools, shops, craft businesses, reinstated regular refuse collection and restored public parks. (Manzini 2015 a). Manzini differentiates between the ‘diffuse design’ done by everyone at a local level and ‘expert designers’ who have been trained. Manzini comments that ‘Experts’ are needed to assist and enable the solving of localised requirements through linking global special interest groups. Forming a ‘distributed

globalization' (Manzini 2015 p23). They do this through connecting historically embedded local knowledge that can be brought to bare on the design issue. The role of the specialist designer here appears to be operating as a polychronic connector and communicator in a democratic horizontal field of production.

The media activist Franco Berardi, in his book *AND* draws attention to the concern that the hyper capitalist accelerationist model is inherently toxic. He criticises Acceleration for impoverishing experience saying we have become stressed to the point of exhaustion. The speed and volume of information on the internet superhighway is beginning to outstrip human neurological capabilities the cause of many of the current anxieties and psychological problems experienced by the generations that are digital natives. He observes that 'Beyond a certain limit, the experience of acceleration leads to a contraction of the time available for conscious elaboration and thus to a loss of sensibility – which also has ethical consequences.' (Berardi 2015 p44) The faster you travel in a straight line, the less you see around you and the less time you have to assess options effectively. In contrast an aerial overview slows down the speed of travel, but allows comparisons to be made across a bigger landscape of options. An aerial view offers the opportunity for a more informed and qualitative assessment of a wider range of material properties, manufacturing techniques and social innovation opportunities. This is due to a far greater critical distance. It is important then for the sound mental health and functioning of society, as well as the future of manufacturing and social innovation that a more polychronic perspective is adopted.

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