

The perpetual motion of the change machines

Affiliation

Dr Mark Hughes (Brighton Business School/CROME) University of Brighton, UK

Corresponding author

Dr Mark Hughes, Brighton Business School, University of Brighton, Mithras House, Lewes Road, Brighton BN2 4AT, UK

Email: m.a.hughes@brighton.ac.uk

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Summary

The forward looking rhetoric of organizational change is in many ways the antithesis of management and business history. In the 1700s societies were gripped by an obsession with the promotion and promise of perpetual motion machines. In the pluralist spirit of this conference these machines are revisited offering an alternative critical metaphor to understand organizational change today. The paper's analytical framework was inspired by Bloch's (1995) interest in perpetual motion machines, the alchemy of transformation and the anticipatory consciousness of earlier centuries. This framework is applied to three high profile change machines of recent decades. Conclusions are drawn from comparing the perpetual motion machines of the 1700s with today's change machinery highlighting the importance of remembering the future, the social construction of the future and the applicability of anticipatory consciousness as a radical means of understanding innovation and change.

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Introduction

One of the defining challenges for leaders is to take their organizations into the future by implementing planned organizational changes that correspond to premeditated interventions intended to modify organizational functioning towards more favourable outcomes. (Battilana et al, 2010:422)

There is always alchemy at work within such processes and when changing and organizing are combined a particular form of magic is required. Battilana et al (2010:422) citing Lippitt et al (1958) highlighted the dilemma of persuading stakeholders that future changes are going to happen, that they will follow a plan and that they will be successful. This is not a new dilemma with Lewin (1947) and Lippitt et al (1958) working on such issues with reference to increasing American post World War II productivity. However, the challenge of persuading stakeholders about unknown futures should not be underestimated. In the context of leadership, Grint (2008:116) critically questioned a tendency to go forward to the past and as a counterbalance encouraged going back to the future ‘...to see how those futures are constructed by the very same decision-makers and consider the persuasive mechanisms that decision-makers use to make situations more tractable to their own preferred form of authority.’ In this instance, Grint’s encouragement to go back to the future has been taken literally.

In the 1700s an appetite for transformation within societies was awakened, prior to this societies had been sceptical about future progress, believing societies were in decline when compared to an earlier golden age ‘...the fluid state of constant change and improvement was not an easy idea to grasp’ (Keller, 1966:469). The promotion and promise of perpetuum mobiles (perpetual motion machines) offered a metaphor for societies which encouraged constant change and progress. Schaffer (1995) in his detailed history acknowledged that perpetuum mobiles tended to be pushed to the edge of traditional histories of science regarded as parables of the fallibilities of the human mind. However, in the context of management and organization studies they offer an alternative critical metaphor for today’s preoccupations with change machinery. This explanation will be developed through the following sections.

The next section introduces Bloch’s (1995) *The Principle of Hope*, unified through its promotion of anticipatory consciousness; its three volumes drew attention to perpetuum mobiles which are explained and elaborated upon in the following sections. Three change machines (Peters and Waterman 1982, Senge 1996 and 2006 and Kotter, 1996 and 2012) taken from the eighties, nineties and noughties are introduced and subsequently compared with five characteristics of the perpetuum mobiles of the 1700s. Firstly, they are functional, linear and mechanistic. Secondly, their development was driven by financial benefit. Thirdly, they share a common quest of more output through less input. Fourthly, elements of their mechanics remain invisible. Finally they seek perpetual motion (constant change). Conclusions are drawn from the application of this metaphor to change models, highlighting the importance of remembering the future, the social construction of the future and the applicability of anticipatory consciousness in understanding innovation and change.

Transformation and anticipatory consciousness

The change machines of today echo the hope invested in transformation in earlier centuries. The relationship between hope and change relates back to the earliest writings on planned change. Lewin (1942:80) wrote ‘...the importance of that psychological factor which is commonly called hope ... Hope means that sometime in the future, the real situation will be changed so that it will equal my wishes’. More recently hope has been described as ‘...the fuel of progress...’ (Tony Benn quoted in Younge, 2002) with Rorty (1999: xii) advocating ‘a global, cosmopolitan, democratic, egalitarian, classless, casteless society’, hope for a better world is shared by critical commentators (Smith, 2005).

Whilst, hope has been the subject of serious scrutiny in many academic disciplines, hope has been neglected in management and organizational studies (Ludema et al, 1997) with academics tending to dismiss hope as whimsical, abstract and not well defined (Helland and Winston, 2005 and Norman et al, 2005, Smith, 2005). However, there appears to be more subtle avoidance at work here with knowledge and hope perceived as residing at opposite ends of the epistemological continuum, with knowledge belonging to a verifiable past, and hope belonging to an imagined future (Ludema et al, 1997). One of the commonalities between perpetuum mobiles of the 1700s and today’s change machines is that they reflect and encourage hope within their interplay between a ‘verifiable past’ and an ‘imagined future’. Change machines promise to take organizations through time from a verifiable past to an imagined future, today this may appear to be very rational, but it may prove subsequently to be our equivalent of the alchemy of the 1700s.

A critical hope framework is required which transcends the rhetoric and warm words of organizational change and its enthusiastic advocates, highlighting the capitalist intent behind the perpetuum mobiles which may be applied to today’s change machines. Bloch’s (1995) *The Principle of Hope* written between 1938 and 1947 and revised in 1953 and 1959 drew attention to the perpetuum mobiles, but also to transformation, alchemy and anticipatory consciousness throughout history. Bloch’s text is extremely difficult, elusive and very long (Kellner, 1997). The three volumes feature historical coverage of philosophies, religions, works of literature and culture across the centuries.

Ernst Bloch (1885-1977) was born in Germany and emigrated to the United States in 1938, Bloch’s American exile was not a positive experience and he returned to Germany in 1949 (Kellner, 1997). Bloch has been described as; a poetic thinker, philosophical anthropologist, Marxist mystic and Messianist (Roberts, 1987), whereas for Kellner (1997) Bloch’s thoughts were rooted in humanist anthropology which grounded his critique of oppression and informed an emancipatory perspective. *The Principle of Hope* is unified through the concept of anticipatory consciousness (Roberts, 1987) with anticipatory consciousness apparent within a wide range of apparently disparate cultural forms. Temporality which informs anticipatory consciousness has been effectively unpacked as follows:

It is his conviction that only when we project our future in the light of what is, what has been, and what could be can we engage in the creative practice that will produce a world in which we are at home and realize humanity’s deepest dreams. (Kellner, 1997:81-82)

The notion of projecting our future initially appears to be very positive yet needs to be critically tempered. In introducing *The Principle of Hope*, Bloch (1995:5) made reference to ‘...the sign outside the No Future night club, and the destiny of man nothingness.’ His concern was with hope being used to deceive ‘... confined to mere inwardness or to empty promises of the other world.’ This capacity to deceive is embedded within the perpetuum mobiles of yesterday and may be present within today’s change machines. In discussing the concept of anticipatory consciousness, Bloch (1995:199) noted that even a dash of pessimism is preferable to banal/automatic belief in progress ‘because at least pessimism with a realistic perspective is not so helplessly surprised by mistakes and catastrophes, by the horrifying possibilities which have been concealed and will continue to be concealed precisely in capitalist progress.’ The overarching concept within anticipatory consciousness is an encouragement to critically reflect upon the past as integral to informing how the world could be. Bloch’s account of human temporality draws upon a dialectical analysis of the past, illuminating the present and directing us towards a better future, by association questioning life under capitalism (Kellner, 1997).

Bloch recognised the potential of technology of these times, yet remained sceptical about technological progress and mechanisation as informed by capitalism and Adam Smith’s belief in the division of labour which he believed incorporated features of false consciousness. Bloch (1995:7) well versed in philosophy was concerned that philosophy should inform studies of the future ‘philosophy will have conscience of tomorrow, commitment of the future, knowledge of hope or it will have no more knowledge.’ Bloch (1995:122) reflected upon productivity ‘more specifically, productivity extends threefold into the unarrived, growing in three directions: as incubation, as so-called inspiration, as explication. All three belong to the ability to travel forward beyond the previous edges of consciousness.’ In these slightly mystical discussions, Bloch is a pioneer beginning to model the innovation process, very little was written about innovation prior to the 1960s, with the notable exception of Schumpeter (Fagerberg and Verspagen, 2009). Bloch (1995:432) highlighted the different ways the New was mocked within popular culture and the ancient origins of such a point of view ‘...none of these new-fangled things are any good. And another reason lies in a very old, almost archetypally effective fear of innovation: in superstition as the remaining traces from a long past magical age.’

Alchemy certainly did not find any gold nor was it capable of finding this goal with its fantastic process methods...The enthusiasts in this area however, sitting in front of the same furnace, and also thoroughly inclined towards the prospect of as many ducats as they liked also had in mind another transfiguration of nature as a goal of metamorphosis. (Bloch, 1995: 646)

Alchemy acts as a sceptical metaphor for the advance of business and more broadly the transformation of the world ‘and, in a business which could never come to an end anyway, there always remained the possibility of putting failure down to one’s own impurity, to inadequate preparation’ (Bloch, 1995:640). In the current era when Harvard professors (Beer and Nohria, 2000a; Beer and Nohria, 2000b) attempt to break and crack codes of organizational change they connect with earlier aspirations of alchemists, although their attempts may prove as unachievable as transforming metal into gold.

Remembering perpetuum mobiles

Perpetuum mobiles are introduced within Bloch's extensive coverage of technological utopias. Bloch was writing during the middle of the last century, a time of great innovation and change whilst simultaneously surveying developments of earlier centuries. Bloch acknowledged the L'Homme machine of 1750, which was the materialist catchphrase of La Mettrie being greeted with a shudder of horror.

But the new element was in fact added as the shudder of exposure, precisely in mechanics: the fact that living man is a piece of clockwork which is self-winding. This sort of thing seemed to become apparent in the automata which emerged at the time: in the singing nightingale, the mechanical violin-player, the mathematical wizard, all made of wax and inside only clockwork but alive as it were. (Bloch, 1995:631)

Bloch was fascinated by perpetuum mobiles, in particular as a manifestation of mechanics within his historical review, both in terms of the gullibility of their proponents and as a larger metaphor for social and economic gullibility about technological advances at this time 'every Perpetuum mobile was interesting anyway; since it fulfilled in the most radical fashion the mission of newly-begun capitalism: cheaper production' (Bloch, 1995:632).

Perpetuum mobiles cannot be fully understood without understanding their promoters - the projectors. Bloch (1995) highlighted a saying that a liar 'invents' something, reflecting upon advances of 17th and 18th century inventions. Bloch believed that the ambiguity of the word 'invent' found adherents at that time, among bankrupt and bored princes, these adventurers were called 'projectors' in the Baroque and moved into technology with an often complicated mixture of conning and ardent enthusiasm. The term 'projector' was applied to mechanical inventors and promoters of schemes for large scale industrial expansion (Keller, 1966). Projectors had a bad name for deceiving themselves and others and dazzling their victims with technical terms (Keller, 1966). However, they did serve as '... an essential prologue to future progress, marking out the main directions for research, and creating an atmosphere favourable to innovation' (Keller, 1966:469). More subtly the perpetuum mobiles projectors promoted offered a tangible illustration of technological advances within societies, for example, perpetuum mobiles acted as an important precursor to now taken for granted technology transfer (Schaffer, 1995). Projectors promoted technological advances such as perpetuum mobiles which were enabled through capitalism and only under capitalism did larger technological projects get under way (Bloch, 1995). Bloch conceded that it was business interest and the pursuit of capitalist profit emerging at this time which was facilitating the technological imagination. Perpetuum mobiles may now appear as an eccentric episode in history, certainly failing to deliver their promise of perpetual motion, however for Bloch they demonstrated how with financial backing scientists were encouraged in this era to invent.

Schaffer (1995) eloquently told the story of perpetual motion setting the context as the high summer of 1721, a time of riots and bankruptcies, when parliament had to deal with the stock market crash resulting from the South Sea Bubble. Schaffer's implication was that there would be plenty of scepticism at this time with regards to business fads and fashions.

In early August the President of the Royal Society Isaac Newton, a major investor in South Sea stock, and the Society's curator John Desaguliers, doyen of the city's projectors, learned of a new commercial scheme promising apparently automatic profits, a project for a perpetual motion. (Schaffer, 1995: 157)

Schaffer's analysis highlighted how the mechanisms of perpetuum mobiles remained hidden (see also Bloch, 1995 for his sarcastic discussion of the potential inclusion of hunchbacked dwarfs in the perpetuum mobiles). The machines themselves were heavily promoted by projectors catching the popular imagination and although hopes and expectations grew, the inner workings of this machinery remained hidden. Schaffer's (1995:159) analysis focussed upon the Orffyreus Wheel.

It was not possible, regrettably, to inspect the inside of the wooden wheel though the witnesses could hear a number of weights gently falling when it turned...He reassured his guests that there was no deception involved, no hidden moving parts.

Ord-Hume (1977:16) in his overview of perpetuum mobile promoters highlighted the different motivations at work including two types of charlatan. There were those who embarked upon fraud from the outset and those who '...finding their labours frustrated, employed some form of trickery to make out to the public at large that they had succeeded.' Perpetual motion machines to this day capture the public imagination with *The Times* reporting upon Mr McCarthy in Dublin claiming to have created a perpetual motion machine, yet being unwilling to let the journalists and their physics expert see his machine which remained hidden beneath a cloak of invisibility (Sharrock and Whipple, 2006).

The cultural change, learning organization and leading change machines

Hidden logics or motors of change have a long history in ancient and modern philosophy (Morgan and Sturdy, 2000). Philosophies are expressed in the ideas of their age (Bloch, 1995) and change machines express something similar to what was being expressed in the 1700s through perpetuum mobiles. Anticipatory consciousness (Bloch, 1995) informed the development of perpetuum mobiles, as well as, today's change machines with hope invested in change machines as a means to deal with an unsatisfactory present by '...projecting an imaginary future in which satisfaction is miraculously secured' (Smith, 2005:47). In a similar manner, Gioia et al (2001:623) captures organizational change thinking being couched in the future perfect tense 'that is, people envision a desired or expected future event and then act as if that event had already transpired, thus enabling a "retrospective" interpretation of the imagined event' (see also Clegg et al, 2006). There are parallels with these conceptualisations and Bloch's anticipatory consciousness projecting the future in light of what is, what has been and what could be. Machine metaphors are nothing new, with Morgan (1986) giving considerable impetus to their application within management and organization studies. The intention here is not to revisit those debates, but rather to use a metaphor of a machine when comparing perpetuum mobiles (discussed in the previous section) with change machines (discussed in this section). The three selected change machines which have been influential in recent decades are now introduced (see Figure 1 for a summary of the three machines).

The Cultural Change Machine	The Learning Organization Machine	The Leading Change Machine
<i>In Search of Excellence</i> (Peters and Waterman, 1982)	<i>The Fifth Discipline</i> (Senge, 1990 and 2006)	<i>Leading Change</i> (Kotter, 1996 and 2012)
1. A bias for action	1. Systems thinking – thinking in terms of systems	1. Establishing a sense of urgency
2. Close to the customer	2. Personal mastery – defined as high levels of proficiency	2. Forming a powerful guiding coalition
3. Autonomy and entrepreneurship	3. Mental models – understanding the mental models at work	3. Creating a vision
4. Productivity through people	4. Building a shared vision – developed by people working together	4. Communicating the vision
5. Hands-on, value driven	5. Team learning – team intelligence exceeds that of the individuals.	5. Empowering others to act on the vision
6. Stick to the knitting		6. Planning for and creating short term wins
7. Simple form, lean staff		7. Consolidating improvements and producing still more change
8. Loose-tight properties		8. Institutionalizing new approaches

Figure 1 – The cultural change, learning organization and leading change machines summarised.

Each machine was promoted through a best-selling book and this section briefly and without critique introduces the three featured change machines (see Figure 1) which are further elaborated upon in the subsequent section.

The cultural change machine The success of *In Search of Excellence* (Peters and Waterman, 1982) was fuelled by and lent further impetus to managerial interest in cultural change. Peters and Waterman (1982) highlighted relationships between organizational culture and performance, based upon their studies of (at the time) successful companies including IBM, Boeing, Walt Disney and McDonald's. The potential benefits of successfully managing cultural change appeared to be considerable the book drawing 'lessons from America's best run companies' in order to identify eight cultural attributes of excellent companies (see Figure 1). The plausibility of what Peters and Waterman proposed captured the imagination of many at the time giving impetus to the belief that culture could be changed and that such changes could be managed.

The learning organization machine Peter Senge's (1990) *The Fifth Discipline* (revised and updated in 2006) gave impetus to burgeoning interest in building a learning organization (Mintzberg et al, 2009). The appeal of the learning organization concept was the promotion of individual self-development in a continuously self-transforming organization (Starkey et al, 2002).

Senge (1990:4) employed a simple yet persuasive rhetoric when he promoted the learning organization ‘learning organizations are possible because, deep down, we are all learners... Learning organizations are possible because not only is it our nature to learn but we love to learn.’ Senge identified five component technologies or disciplines required for a learning organization (see Figure 1).

The leading change machine In 1995, *Harvard Business Review* published *Leading Change: Why Transformation Efforts Fail* (Kotter, 1995). There were high expectations within organizations and amongst academics that with the right recipes organizational change could be effectively managed. So Kotter highlighting transformation efforts failing challenged such orthodoxy. In *Leading Change* Kotter, (1996) employed a simple yet clever idea, positively focussing upon eight best practice leading change steps with each step the reverse of a transformation error (see Figure 1). The language of creating a sense of urgency, creating and communicating visions became part of the lexicon of management and organization studies and in 2012 a new edition was published with a revised preface.

These three change machines each offered the promise of moving organizations from an unsatisfactory present to a successfully imagined future in which cultures were changed, learning organizations were built and change was successfully led. How does our learning about the experience and operations of perpetual mobiles in the 1700s inform understanding about the workings of these change machines?

Discussion – Comparing perpetual mobiles and change machines

In this discussion, comparison of perpetual mobiles with change machines is organized around five themes; functional, linear and mechanistic machines, machine development driven by financial benefit, a common quest for more output through less input, invisibility of machine mechanics and encouraging the quest for perpetual motion (constant change). Each theme is initially specifically introduced with reference to historical accounts of perpetual mobiles, which subsequently inform critical comparison with the featured change machines (Figure 1).

Functional, linear and mechanistic machines Perpetuum mobiles were functional rather than being merely conceptual, they were linear in that their operation involved inputs transformed into an output of motion and they were mechanical employing often complicated (although hidden) mechanics. However, despite these inputs ‘...the ineluctable laws of motion and energy conservation, of which they could have had no knowledge, systematically denied them success’ (Ord-Hume, 1977:16). Whilst, they could be remembered as follies they informed developments within physics and mechanics, as well as, potentially informing cultural understanding about innovation and change.

The three change machines each had clearly defined functions; to manage culture, to build learning organizations and to lead change. Promoters of these machines implied that these functions would be achieved in a linear manner. Cultures would change through attending to eight attributes (Peters and Waterman, 1982). Learning organizations would develop through cultivating the five disciplines; systems thinking, personal mastery, mental models, building a shared vision and team models (Senge, 1990 and 2006). And successful transformation would be achieved through following the eight steps of leading change (see Figure 1) (Kotter, 1996 and 2012).

All three change machines implicitly embraced an assumption ‘...that living man is a piece of clockwork which is self-winding’ (Bloch, 1995:631). Whilst, they didn’t employ mechanistic language, their operation to varying degrees was mechanistic.

As with most machinery, change machines came with user manuals and operating guides. *In Search of Excellence* (Peters and Waterman, 1982) spoke directly to managers and leaders seeking to develop the cultural attributes of successful companies with a follow up, *A Passion for Excellence: The Leadership Difference* (Peters and Austin, 1985) divulging the secrets of long-term excellence. *The Fifth Discipline* (Senge, 1990) was followed up by *The Fifth Discipline Field Book: Strategies for Building a Learning Organization* (Senge et al, 1994). And *Leading Change* (Kotter, 1996) was followed up by *The Heart of Change* (Kotter and Cohen, 2002) which helped people more deeply understand the eight-step formula. *The Heart of Change Field Guide: Tools and Tactics for Leading Change in your Organization* (Cohen, 2005) was symptomatic of these change machines association with using tools and techniques.

Machine development driven by financial benefit Bloch’s own hope was invested within the emancipatory nature of anticipatory consciousness. However, whilst acknowledging that capitalism drove technological progress over the centuries he believed that such developments had been deceitful and exploitative. Bloch (1995:199) was highly sceptical about capitalist driven progress ‘...the horrifying possibilities which have been concealed and will continue to be concealed precisely in capitalist progress.’ Perpetuum mobiles illustrated such deceit ‘every perpetuum mobile was interesting anyway; since it fulfilled in the most radical fashion the mission of newly-begun capitalism: cheaper production’ (Bloch, 1995:632). Today such beliefs are echoed in critical depictions of the financial markets between 1980-2008 acting as perpetual money machines (Sornette and Cauwels, 2014). Schaffer (1995) writing from a different ideological perspective highlighted projects for perpetual motion promising apparently automatic profits and it was this promise which drove interest. Ord-Hume (1977:17) highlighted ordinary people, industrialists, financiers and politicians investing in perpetuum mobiles in the belief that they would give them in the future untold wealth.

The development and promotion of change machines was also financially driven. The driver for cultural change was success through embracing the cultural attributes of successful companies. The driver for becoming a learning organization was gaining competitive advantage over other companies. The driver for leading change was the successful transformation of corporations. Regardless of their outcomes (good or bad) these machines were driven by similar capitalist motives to the development and promotion of perpetuum mobiles in the 1700s. Schaffer (1995:159) offered a warning from history ‘it seems self-evident that neither nature nor technique can generate endless profit, so faith in perpetual motion is seen as a parable about the fallibilities of the human mind rather than about the capacities of technique’. It is difficult to gauge if the change machines delivered the profits that were anticipated. However, change scholars have commented upon the difficulties of such evaluation ‘...evaluating the success of change initiatives is replete with practical difficulties. What is success in the management of change? Definitions of success can include notions of the quantity, quality, and pace of change’ (Pettigrew et al, 2001: 701).

A common quest for more output through less input Ord-Hume (1977:19) succinctly caught the essence of perpetuum mobiles as ‘find something that does more work than the energy you put into it – and you have solved perpetual motion!’ In terms of what was and what is now known about physics and mechanics this was impossible, however laws of thermodynamics did not dampen the enthusiasm for perpetual motion machines.

Not only had the perpetual mechanism to be capable of overcoming the laws of physics; it had to overcome them with sufficient margin in hand to serve as an unmistakable source of power to drive the wheels of industry. (Ord-Hume, 1977:26)

Wheels being mankind’s first mechanism (Ord-Hume, 1977) (see also Bloch, 1995) were very prevalent within the story of perpetual motion. However, ‘wheels of industry’ are also very relevant to the operation of the change machines. Cultural change, learning organization and leading change machines had a capacity to extract surplus value from labour and increase management control over labour processes (Braverman, 1974). In the case of the cultural change machine, managing culture was a form of management control ‘to be able to manage staff without their knowing or resenting this control; to get workers to accept managerial goals, authority and decisions so that they don’t need managing or controlling...’ (Salaman, 1997:252). Learning organization machines were far subtler in their operation however the underlying ideology of depicting learning as always a good thing within learning discourses was problematic (Contu et al, 2003; Clegg et al, 2006; Ortenblad, 2007). The leading change machine’s applicability to practice has been questioned as offering an ideal and generic agenda, rather than reflecting contextual differences, interrelationships between the steps were not explored and the view that conflict is an outcome of communication failure is questionable (Buchanan and Badham, 2008; Hughes, 2015). What all three change machines potentially promised was greater employee output with less management/leader input, the goal originally driving the promotion of the perpetuum mobiles.

Invisibility of machine mechanics Wizardry and superstition (Schaffer, 1995) and charlatans (Ord-Hume, 1977) were never far away from debates about perpetual motion. However, even the promoters of the high profile Orffyreus Wheel did not allow inspection inside the wooden wheel (Schaffer, 1995:159). Even contemporary claims to have created a perpetual motion machine remained concealed beneath a cloak of invisibility (Sharrock and Whipple, 2006). In a similar manner, elements of change machines remain invisible, ‘black boxes’ integral to operations yet intangible and out of sight. In the case of cultural change machines successful companies had cultural attributes which other companies sought to emulate. However, accounts of culture which depict existing ideas, beliefs and values as problematic with change initiatives offered as a solution have been critically questioned (Alvesson, 2002). Again whilst plausible, all five disciplines; systems thinking, personal mastery, mental models, building a shared vision and team learning (Senge, 2006) of a learning organization are very intangible aspects of organizational cultures. Finally, the eight steps of leading change (Kotter, 1996) emphasised cultural and communications intangibles, particularly with regards to visionary aspects of leadership. And whilst elements of the change machines remain unseen, their outcomes remain equally intangible (see Pettigrew et al, 2001).

Encouraging the quest for perpetual motion (constant change) Inventors of perpetual mobiles were caught within an impossible obsession to achieve perpetual motion, similar to today's management fads and buzzwords (Collins, 2000). Qualified and respected scientists, charlatans, as well as, ordinary people clamoured to invest their life savings. The objective of discovering something that did more work than the energy you put into it (Ord-Hume, 1977) proved elusive. If anything the opposite was achieved with far less output, than the input put into the quest.

Today the contemporary equivalent of perpetual motion is constant change. Peters (1988:2) asserted that 'excellent firms don't believe in excellence – only in constant improvement and constant change' and this became the often repeated mantra within organizations. The change machines are promoted as part of a discourse of constant change. Peters and Waterman (1982:111) cited Norman Macrae, deputy editor of *The Economist*, 'constant reorganization is the main reason why I judge that big American corporations are still often the most efficient day-to-day business operations in the world.'

Senge (2006:272) cited one of the motivations compelling people to build learning organizations as 'some are trying to build an organization's overall capacity for continual adaptation to change.' One of Kotter's (1996) eight steps (see Figure 1) even encouraged 'consolidating gains and producing more change.' As Child (2005) paradoxically warned change became the organizational norm. Dawson (2014:291) in his critical reflection upon temporality and change acknowledged '...the distinction between an emphasis on organizations as being in continuous flow of change and organizations as generally stable entities has been used to characterize very different approaches to change management and has generated considerable debate and discussion.' In terms of the change machines featured here, they align with the characterization of organizations as being in a continuous flow of change. Possibly the legacy of the perpetual mobiles was not the illusory achievement of perpetual motion, but rather their contribution to today's progressive belief in the perpetual motion of constant change?

Conclusions

Bloch's (1995) encyclopaedic history of hope unified through the concept of anticipatory consciousness inspired the writing of this paper. It was Bloch who originally drew attention to perpetual mobiles as manifestations of gullibility within individuals and societies with regards to the future. When, Bloch (1995:912) wrote that 'the future in the past is the only one that pleases, inspires and teaches' he was engaging in a historiographical process. Societies obsession with perpetual mobiles in the 1700s was not just a moment in the history of progress, it offered a critical illustration of how in the future anticipatory consciousness would be manipulated and people would be deceived in the name of capitalist progress, just as they had been in the past by projectors promoting perpetual mobiles. In seeking to test this contentious line of reasoning, five characteristics of perpetual mobiles were identified and applied to the metaphor of models of change as change machines. The major limitation of this paper has been the breadth of the analysis at the expense of the depth of the analysis requiring coverage of centuries, paradigms and change machinery each informed by extensive literature written from competing perspectives. The paper has surfaced a new metaphor from history - the perpetual mobile, believed to be particularly pertinent to critically understanding organizational change.

A metaphor builds on the mixing of two elements. This means crossing or carrying over a concept or idea from one field to another (source and target domain respectively). It is the interaction between the two elements that is of interest. (Spicer and Alvesson, 2011: 35)

The five characteristics of the perpetuum mobiles when carried over from history to the field of organizational change, informed understanding about contemporary change machines. As Wren (2011) commented the overarching task of the historian is the analysis and explanation of change. Three conclusions may now be drawn with regards to remembering the future, the social construction of the future and anticipatory consciousness offering a new critical perspective to understand innovation and change.

Remembering the future Bloch recognized memory as an important repository of experience and value within an inauthentic capitalist world (Geoghegan, 1997). It was the future in the past that was the only one that pleased, inspired and taught Bloch. Philosophically grounding hope in the wider economic and social environment appeared to be crucial to Bloch's analysis. When exploring basic human drives Bloch reviewed the writings of Freud and Jung and was respectful of Freud, yet critical of Jung whom he labelled a fascist. In contrasting the perpetuum mobiles of the 1700s with change machines similarities were evident. For Bloch (1995) these similarities may be explained as not yet conscious elements of anticipatory consciousness. However, Jungian (1958) analysis offers an alternative explanation for belief in perpetuum mobiles and change machines as illusionary social processes driven through feelings of helplessness. People wanted to believe in the perpetuum mobiles in the 1700s and today they want to believe in the change machines, just as Jung encountered people wanting to believe in flying saucers, a pattern is at work here.

Socially constructed futures Grint (2008:116) encouraged going back to the future '... to see how those futures are constructed by the very same decision-makers and consider the persuasive mechanisms that decision-makers use to make situations more tractable to their own preferred form of authority.' The development and promotion of perpetuum mobiles and the change machines were driven by the requirements of capitalism, they potentially offered a functional, linear and mechanistic means to gain more output through less input. However, for Bloch (1995:5) instead of the honest '... sign outside the No Future night club, and the destiny of man nothingness', a progressive future had been socially constructed.

...None of these new-fangled things are any good. And another reason lies in a very old, almost archetypally effective fear of innovation: in superstition as the remaining traces from a long past magical age. (Bloch, 1995:432)

In this way, change machines share a history with the perpetuum mobiles speaking to ancient societal fears from a magical past with regards to innovation and change. The perpetuum mobiles and the change machines projected a positive future, although for Bloch this future was a deceit. Today's management gurus (Collins, 2000) are the contemporary equivalent of the projectors of the 1700s they seek to reassure, despite '...the horrifying possibilities which have been concealed and will continue to be concealed precisely in capitalist progress' (Bloch 1995:199).

Anticipatory consciousness informs innovation and change Bloch (1995:7) was concerned that philosophy should inform studies of the future 'philosophy will have conscience of tomorrow, commitment of the future, knowledge of hope or it will have no more knowledge'. It was the deceit within representations of progress which troubled Bloch with his writings pre-empting later critiques of modernist progress (see for example, Wright, 2004).

He appeared to be going further than encouraging extraction of lessons from history and the need for scholarly critique. In reflecting upon reading *The Principle of Hope* a useful analogy would be reading an existentialist novel, at times deep despair is invoked, yet mediated through shafts of sunlight on balance you appreciate the sunlight all the more for having experienced the despair. This may be illustrated in one of Bloch's more despairing quotations:

Even disappointed hope wanders around agonizing, a ghost that has lost its way back to the cemetery and clings to refuted images. (Bloch, 1995:195)

Bloch repeatedly reminds us, that people are hoping beings and that the principle of hope has always been evident throughout our human history, regardless of the prevailing economic system. He challenges the capacity of capitalism in general and entrepreneurs in particular to realise the very real hopes people possess. Instead channelling this despair informs and encourages human hopes of a better world in terms of medicine, social systems, technology, architecture, geography, art and wisdom. The future in the past and willingness to acknowledge how it is and what might be lead us to the unifying concept of anticipatory consciousness. This paper has revisited the 'disappointed hope' that haunts the cemetery of perpetuum mobiles. Whereas, today change machines still promise to change cultures, build learning organizations and lead change these manipulated hopes may be destined for Bloch's cemetery of disappointed hope. Critical academics wearily see the whole future-orientated management as tainted '...the intellectual credibility of radical utopian thinking is deeply compromised by the ever growing piles of pro-managerial futurology' (Parker, 2002:217). Bloch originally intended *The Principle of Hope* to be entitled *Dreams of a Better Life*, he was troubled by the re-occurrence of 'disappointed hope' throughout history, but he still maintained belief that anticipatory consciousness within a different social and economic context could deliver to all of us a better life.

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