Improvisation and agile project management: a comparative consideration

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Abstract

Purpose – The purpose of this paper is to examine two aspects of the increasing body of research in the field of project management, namely improvisational working and agile project management (APM).

Design/methodology/approach – This is a comparative paper, considering the extant literature on improvisational working within projects and APM. The paper is essentially conceptual, and concludes with a comparative table of constructs, and their segregation into components and outputs. The growth in the recognition of improvisation as a useful addition to the armoury of the project manager stems from the shift that is taking place within the body of project knowledge generally, in that historically the greater proportion of the project management literature has been the epitome of planning in the prescriptive mode, but that a shift has taken place over the last decade or so towards a more behavioural, and as a result of this, a less structured and more improvisational focus. The second area of scrutiny within this paper seeks to position the limited emerging literature on APM within the wider project literature, and to examine overlaps and commonalities with improvisational working within projects.

Findings – Common areas across the two working styles are exposed and documented, and there is analysis of recent attempts to combine them with more traditional models. Linkages with complexity theory and complex adaptive systems are also briefly addressed.

Practical implications – There is growing awareness amongst practitioners of the potential benefits of improvisational working and "agile" methods, and some potential benefits are identified.

Originality/value – This paper moves further from the "traditional" project-based paradigm of "plan – then execute", offering insights into potential emerging best practice for practitioners in some organisational contexts.

Keywords Project management, Best practice

Paper type Conceptual paper

Introduction

There is little doubt that projects have been adopted across many organisations and within many sectors as the dominant framework for carrying out discontinuous, exceptional, or unrepeated actions (Partington, 1996; Turner, 1999). It is, however, evident that historically the greater proportion of the project management literature has been the epitome of planning in the prescriptive mode (Maylor, 2001), but that a shift has taken place over the last decade or so towards a more behavioural (Jaafari, 2003; Snider and Nissen, 2003), and improvisational (Leybourne, 2007) focus. In some instances this shift has been driven by the increased turbulence of organisational environments, or by the temporal challenges of fast-moving market sectors (Cooke-Davies *et al.*, 2007). In other instances, modern managers are becoming aware of the relative shortcomings of traditional project-based structures to deal with

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the need to effect change or alter strategic direction to take advantage of new or emerging opportunities (Williams, 2005). There is, however, an academically contested space within which there are two distinct camps: the traditional one where the management of project-based activity is related to process and control, and an emerging view that is more sympathetic to the need to resolve uncertainty caused by environmental turbulence and changing requirements, utilising creativity, intuition and the tacit knowledge built-up over time and through experience.

In the emerging camp, it is recognised that agile organisations are finding the challenges of sustained uncertainty to be relatively common, and radical non-linear changes are becoming normal (Alleman, 2002, p. 10). Consequently, there is an argument that more traditional project-based frameworks are too cumbersome to resolve some organisational situations within acceptable timeframes. This is the "contested space" mentioned above, and although some project managers have discovered an increased reliance on improvisational working, especially where there are temporal challenges, it is by no means a universal belief, and the main practitioner bodies (the US Project Management Institute; the UK Association for Project Management; the International Project Management Association; the Australian Institute of Project Management; etc) have not yet fully recognised improvisational working within their adopted or documented Bodies of Knowledge (BoKs). The improvisation literature has however been evolving significantly since the mid-1990s, and specific attention has been directed at improvising generally (Cunha *et al.*, 1999; Chelariu *et al.*, 2002, and many others, including Karl Weick, Mary-Jo Hatch and Mary Crossan), and at improvising project managers (Gallo and Gardiner, 2007; Kanter, 2002; Leybourne, 2002, 2006a, b, c; Leybourne and Sadler-Smith, 2006) since around the turn of the millennium. There has also been a move towards project-based techniques that concentrate on exploratory and adaptive management (Cicmil and Hodgson, 2006), particularly where projects are used to manage product and service development activity. These techniques utilise experimentation, intuition, creativity, and many of the principles that have been pioneered in rapid prototyping or rapid software development arenas. Recently, an arguably more academic rigour has been applied to this concept, and attached to some of the outcomes, and the emerging set of practices has been labelled agile project management (APM).

It would appear that there is a similar ethos, and that there are many overlapping principles, between improvisational project-based working and APM. Notably, the tendency to dispense with many of the accepted notions of the "plan, then execute" framework encapsulated in the published BoKs of the various professional bodies that document accepted project-based practices is challenged in both areas. Specifically, improvisational work focuses on the merging of planning and execution, which then take place concurrently (Moorman and Miner 1998a, b). It follows that the more proximate the relationship, the more improvisational the activity becomes. Within APM, the emerging literature suggests that there is a shift from the classic project focus on planning, then executing the contents of that plan, to a focus on execution, and indeed often various iterations of speculative execution (Highsmith, 2004), with key decisions that determine the success or failure of the project being made during that execution (Chin, 2004).

Given this fundamental shift away from the classic project paradigm, this paper intends to evaluate, synthesise and critically appraise the common factors, and the

differences, within the two emerging literatures, and assist in positioning them within the wider academic landscape as it engages with project-based management. The intention is then to make some observations that may help in the identification of common factors, and attempt to underpin APM with some theoretical rigour, in order to evaluate the apparent ongoing shift from the prescriptive planning model to the arguably more temporally responsive "agile" model of project management.

Initially, this paper will examine the evolving literature in the areas of improvisational project-based working, and APM, and comment on similarities and differences. These emerging project management styles will then be compared and contrasted with more traditional models of project-based working, and their ability to meet the more rigorous demands of those existing models will be examined. Additionally, although there is no implied or explicit suggestion that only two models of project management exist (improvised and traditional "plan- then execute"), to some extent the academic tradition of comparing "polar types" (Pettigrew, 1988) will be honoured here. Ultimately, the intention is to offer an opinion as to whether either improvised project-based working and/or APM, assuming they are significantly different, have the rigour that is required to join the lexicon of more established theoretical project-based practices.

A review of the literature

Improvisation and project management

Improvisation is linked with aspects of time, and particularly pressure to achieve to a demanding or compressed timetable. The literature on organisational improvisation has been emerging slowly since Weick's (1979) work on sense-making, and was a topic of particular interest in the late 1990s, with important contributions including Hatch (1998, 1999), Crossan (1998) and Brown and Eisenhardt (1997) building on and expanding Weick's earlier impetus. For an excellent exposition and synthesis of the earlier generalist improvisation literature, Cunha *et al.* (1999) is recommended reading. Only recently however has attention been drawn to improvisation within project-based work, with an evolving literature on ambiguity and complexity within projects (Cicmil and Hodgson, 2006; Cooke-Davies *et al.*, 2007), and a more focused area of research that specifically addresses improvisation within the project domain (Gallo and Gardiner, 2007; Kanter, 2002; Leybourne, 2002a, b, 2006a, b, c; Leybourne and Sadler-Smith, 2006).

Although projects are usually managed according to time, cost, and scope or functionality targets, it is the temporal aspect of project delivery that often has the highest scrutiny, especially in turbulent organisational environments. Time is one of the three key elements (the other two being cost and scope) of the: "iron triangle" of factors against which the success of most projects is measured (Atkinson, 1999, p. 337), and for some time research into project success has considered performance against these criteria (Morris and Hough, 1987; Pinto and Slevin, 1987; Pinto and Prescott, 1988). Modern organisations operating within the aforementioned turbulent environments are, however, finding the classic project paradigm somewhat restrictive, hence the shift towards improvisation (Kanter, 2002; Leybourne, 2002b, 2006a) and APM (Chin, 2004; Fernandez and Fernandez, 2008; Highsmith, 2004).

Moorman and Miner (1998a, b) consider definitions and components of improvisation, and suggest that there are three key constructs; creativity, intuition,

and bricolage. Miner *et al.* (2001) argued for the inclusion of four additional constructs; adaption, compression, innovation, and learning. Compression in particular is defined by Miner *et al.* in terms of compression of timescales. A full set of definitions can be found in Table I in Miner *et al.* (2001). Improvisation in this context is defined as: "[. . .] the degree to which composition and execution converge in time" (Moorman and Miner, 1998a, p. 698). It follows from this that the more proximate the time between the design and implementation of an activity, the more that activity is improvisational (Ciborra, 1999; Crossan *et al.*, 2005) and that if this is taken to the extreme, planning and execution take place concurrently.

Kanter (2002, p. 81) takes this concept further, applying it to strategic planning through an approach she labels "project-by-project" improvisation. She suggests that: "an internal marketplace of ideas in which innovators initiate and sell projects replaces the usual decision-making hierarchy". Project-based work is also widespread in new product development (NPD). Akgün and Lynn (2002, p. 124) quantitatively analysed data from 354 respondents across a range of industry sectors, and concluded that: "[project] team improvisation has a positive impact on speed-to-market under turbulent markets and technologies".

Bricolage is a component construct of improvisation, and involves the use of resources that are to hand to resolve unforeseen occurrences. Indeed, in both France and Spain, the literal translation of bricolage is "do-it yourself". Lehner (2000) develops the use of bricolage, broadly supporting a positive relationship between project-based

Construct	Applied to improvisation	Applied to APM
Creativity	Improvisation requires an element of creativity, but creativity does not have to involve innovation	Suggested as an emergent result of well-functioning agile teams. Will therefore be an output of effective APM
Intuition	Improvisation can occur without intuition	Evidence that intuition is usually present in APM, and that experienced agile teams employ it to assess the effectiveness of future iterations
Bricolage	Improvisation almost always involves bricolage, as the temporal requirements do not allow for additional resources to be marshalled	No mention of or recognition of bricolage as a concept within APM. The literature assumes a sufficiency of resources
Adaption	Adaption can occur outside of improvisation, and is often involved within improvisation to apply an existing or previous routine to a novel situation. Not all improvisation is adaptive	A key element of APM, with a specific "adapt" phase, and adaption processes being a vital component of each iteration of the development process
Compression	Often present within improvisation, in order to reduce time or retrieve temporal problems	Arguable always present, as APM aims to reduce time, particularly in NPD projects
Innovation	Can be planned or emergent, so although improvisation involves innovation, not all innovation is improvisational	Present within APM, but managing the tension between innovation and process is a "key" skill
Learning	Improvisation is a specific type of learning, but there are also other ways of learning from the organisation's own experiences	Present at the tacit level, and at the explicit level within well managed APM, where the "close" phase is executed

Table I.
Summary of the constructs of improvisation applied to APM

implementation and bricolage, as: "[...] planning threatens flexibility whereas bricolage enhances flexibility of [project-driven] strategy implementation". He also discusses environments that are subject to: "high dynamism" that may: "[...] render planning futile" (Lehner, 2000, p. 4-5), thereby supporting the assertion that improvisation, i.e. the fusing of planning and execution, is widespread in fast moving commercial sectors. Chelariu *et al.* (2002) expands on certain elements of this work, offering a comprehensive review of the way learning interacts with improvisation, and presenting a typology of improvisation. There are also links with the use of improvisation within projects.

The focus of much of the research reviewed here is on the need for an underpinning structure or framework, and the need for skills and knowledge, which can be learned or rehearsed, in order for improvisation to work within organisations. Although improvisation takes place often within project management, especially towards the end of a project, when bricolage comes into play because budgets are exhausted and the completion date is near, until recently there has been little mention of projects in the literature. Projects are mentioned tangentially in Chelariu *et al.* (2002), but otherwise, a different context is used (Brown and Eisenhardt, 1997), unrelated to the use of project management to implement change.

Recently, however, improvisation within project-based work has become more recognised and documented (Kanter, 2002; Gallo and Gardiner, 2007; Leybourne, 2006a, b, c; Leybourne and Sadler-Smith, 2006), and it is evident that the impetus towards the dismantling of rigid prescriptive planning-based project management models, and the acceptance of more adaptive modes of managing projects is becoming more accepted, at least as an empirically tested academic concept. There is also evidence of practitioner take-up, although discussion with those practitioners often exposes a lack of understanding of those empirical underpinnings. Previous research (Leybourne, 2002a, b) has exposed this lack of understanding, in that practitioners are aware of a shift to working styles that deviate significantly from the project plan, but do not recognise that they are improvising, or that there is empirical support for actions such as these in the project management and wider academic literature. Also, often those practitioners who recognise the "triggers" for such deviation, and allow it to happen, tend to be driven by a requirement to quickly resolve unforeseen events, rather than by a desire to find more effective ways of achieving project tasks and activities.

Agile project management

It is generally accepted that the concept of APM has emerged from principles adopted by software developers, and particularly from the processes that underpin agile software development (Cockburn, 2001). The principles of agile software development are enshrined in the Manifesto for Agile Software Development (www.agilealliance.org), written in 2001, and APM has evolved from the application of those principles, albeit mainly within the software development sector. Indeed, Highsmith (2004) explicitly suggests that the principles of APM revolve around creating both adaptive products that are easy and less expensive to change and adaptive project teams that can respond rapidly to changes in their project's ecosystem. This involves a dismantling of some elements of the traditional project management model in favour of experimentation, and a shift in attitude by project managers away from the prescriptive, plan-based routine

embedded in the documented BoKs. As Highsmith (2004, p. 255) highlights, Thomke (2003) has captured this very effectively, suggesting that:

> [...] experimentation matters because it is through learning equally what works and what doesn't that people develop great new products, services, and entire businesses [...] [but] today's organizations, processes, and management of innovation often impede experimentation.

APM, therefore, requires adaptive employees, operating within organisations that are themselves able to adapt to changing environments and requirements.

At the theoretical level, it is suggested that APM draws from elements of complexity theory, and work on complex adaptive systems (CAS). Complexity theory suggests that new outputs can be created in ways that are not predictable, and that the emergent results often manifest themselves at a "tipping point" between order and chaos (Stacey, 2001). The basic premise is that such systems produce these so-called emergent outcomes, and that these outcomes occur as the rigidity imposed by process and detailed planning is diluted in favour of flexibility and improvisation. The next step is towards CAS, where the emergent structures alluded to above generate the capacity to learn from the collective experience of those involved, generating a library of potentially re-usable actions (Cooke-Davies *et al.*, 2007; Stacey, 2001).

The assertion or "premise" of APM is that the combination of elements of complexity theory and what Highsmith (2004) refers to as "adaptive teams", operating together towards a common goal, will produce outcomes that are closer to actual requirements at delivery than those produced by traditional project teams that rely on traditional project routines and procedures. The implicit understanding is that agile APM is more closely focused on deliverables, and therefore those deliverables will be closer to the requirements than the output of traditional APM (Fernandez and Fernandez, 2008). The concepts of experimentation and improvisation are implicit in this model, and there is a view that this abandoning of structure can also offer temporal and financial advantage. Allegedly, the potential danger is that within a managed environment such as a project or a programme of linked projects, complexity may spawn complex sets of rules and procedures, but APM suggests that this is not a necessary or a desired outcome.

The fundamental principle of APM is, therefore, a shift from the traditional and prescriptive "plan-then execute" project paradigm, which embraces the fundamentals of Adams and Barndt's (1988) four stage project life cycle, towards a new five phase model. The five phases within the APM model are envision, speculate, explore, adapt, and close (Highsmith, 2004), and the underlying ethos is that in attempting to meet the requirements of a given project (which may or may not be documented), team members should explore different ways of arriving at the outcomes of a project, and test and adapt the more acceptable solutions on an on-going, iterative basis until the requirements are met. In essence, team members are encouraged to start the development of prototypes quickly, without the constraints of a rigorous conceptual and planning process, and often without a detailed set of requirements.

The emerging literature stresses the importance of context, and makes the point that APM is not suggested as: "universal best practice" (Highsmith, 2004, p. 23). Indeed, a principal requirement of a shift toward less structured project-management styles is a willingness to at least partially abandon a reliance on planning, reporting and overt and documented management of risk in favour of flexibility, informal

communication and evolving requirements. For obvious reasons, many organisations are uncomfortable with this approach. However, Chin (2004) sees APM as a means of dealing with internal and external uncertainty which is not tempered by experience, with internal uncertainty encompassing areas that can be controlled by the project manager (including the "iron triangle" of cost, scope and time). Scheduling also falls within this internal domain. External uncertainty includes factors not under the control of the project manager, such as environment, competition and high-level strategy.

As both internal and external uncertainty adds to the dynamic, flexible and adaptive nature of the project, it follows that some elements of complexity theory and work drawn from the study of adaptive systems may apply to APM. There are however attempts within the emerging literature to offer an increased element of control by combining agile and traditional concepts (Karlström and Runeson, 2005), and perhaps this is a manifestation of the project manager's natural tendency to attempt to dictate and control the activity within his or her designated project domain. Additionally, it could be construed that as traditional project management moves towards a more behavioural and responsive stance, the gap between traditional and APM is closing. Although, there is modest evidence of this, a deeper analysis and discussion falls outside the scope of this paper.

Similarities and differences

It is evident from the limited review of the literature, and the further discussion offered here, that there are some overlaps and common areas within improvisational project-based working and APM, and it is now appropriate to consider them. Much of the work on identifying the constructs that make up improvisational working comes from the work of Christine Moorman and Anne Miner in the late 1990s and through to the early years of this millennium (Moorman and Miner 1998a, b; Miner *et al.*, 2001). Miner *et al.* (2001) offers seven constructs, and it is proposed to use these as a starting point. If the known attributes of APM are mapped onto these accepted and empirically derived constructs of improvisational working, the overlaps and common areas can then emerge. These constructs are creativity, innovation, bricolage, adaption, compression, innovation and learning. The specific definitions of these constructs are included in Miner *et al.* (2001), and abbreviated definitions are contained in the analysis in this section. The first three of these constructs were documented in Moorman and Miner's (1998a, b) papers, and the latter four were identified and discussed in Miner *et al.* (2001). It is now proposed that these constructs are discussed in turn, and in each case, parallels with concepts of APM will be addressed. The original three constructs from the work of Moorman and Miner (1998a, b) will be considered first.

Creativity

Defined by Amabile (1983) as intentional deviation from standard practice, creativity is an essential part of some improvisational work, although it is of course, possible to be creative without improvising, in that planned work can be creative. Miner *et al.* (2001, p. 315) do however suggest that: "creativity may [. . .] represent an unusually valuable competence for improvising organizations", and it is accepted that creativity is linked to mental agility, providing at least a linguistic connection to APM.

Within the project domain, creativity is supposedly harnessed to develop new and better ways of executing project-based work, although there is evidence to suggest that it is also applied in an unplanned way to resolve the constant demands of the so-called "iron triangle" of constraints mentioned earlier. The delivery of benefits measured in terms of time, cost and quality is a challenge to project managers, and the application of creative thought may assist.

There is little doubt that creativity is a required element of improvisational working, and Highsmith (2004) identifies that within APM, there is a tension between structure and creativity, and that too much structure can stifle creativity. He also (p. 21) suggests that: "creativity and innovation are the emergent results of well-functioning agile teams". This would seem to confirm that creativity is important within APM, but there is evidence that it is a component of improvisational working, but an output of APM.

Intuition

Crossan and Sorrenti (1997) define intuition as individual level choice made without formal analysis. Given the temporal characteristics of improvised work, pressure to deliver against challenging deadlines is common, and time to apply formal analysis to decisions or choices is limited. An intuitive feel for a rapidly executable solution is therefore often sought, and the literature includes references to "gut feeling" (Leybourne and Sadler-Smith, 2006). This can cause problems within the classic project management model, as the "plan, then execute" paradigm, based on rational and analytic logic, is deeply ingrained, although arguably becoming less influential (Cooke-Davies *et al.*, 2007; Williams, 2005). Often a mixture of serendipity, intuition and intentional processes may be drawn upon to influence the direction or scope of improvisational work (Leybourne and Sadler-Smith, 2006). It must be stressed that this activity is far removed from guesswork or ill-informed "snap" decisions, as the competent improviser tends to call on a personal library of previously effective and tacitly held routines, and this is equally likely in improvised work and in APM. The intuitive element is employed in applying a nuanced judgement of the likely effectiveness of such routines in a given scenario, although it can also manifest itself as a means of dealing quickly with large amounts of conflicting data (Burke and Miller, 1999).

Both improvisational working and APM draw on an intuitive feel for what will work in a given situation, and it is suggested that experience and the build-up of tacit knowledge over time will assist the project manager or project team member in assessing how to meet the often undocumented requirements of a specific situation. That aforementioned personal library of previously applied and successful routines is being constantly updated, modified, and refined through action, and within both improvisational working and APM it can then be employed to execute or contribute to the requirements of a current project. Cooke-Davies (2002, p. 189) assists in identifying the role of experience in the acquisition of tacit knowledge, and suggests that learning from experience within the project domain involves: "combin[ing] explicit knowledge with tacit knowledge in a way that encourages people to learn and to embed that learning into continuous improvement of project management processes and practices". There is, however, an unfortunate side-effect to this, in that often such continuous improvement does not occur, as many organisations do not have to

mechanisms or processes in place to codify and record the successful combination of tacit and explicit knowledge for future application.

There is therefore significant evidence that intuition is used in APM, and that project managers and members of agile project teams intuit which of a library of previously executed routines can be adapted and used to meet current project requirements as a component of their "agile" activities. The ability of those managers and team members to convert such routines to codified processes is however rather more contested.

Bricolage

The concept of bricolage stems from the work of Levi-Strauss (1967), and is applied to a managerial and organisational context in Weick (1979, 1993). The term as defined by Levi-Strauss (1967) describes the requirement to make do with those materials that are to hand, and as improvisation within the project domain often requires rapid action to meet unforeseen requirements, it is logical that in such instances, there is little opportunity to mobilise additional resources. Bricolage can of course, also occur in non-improvisational contexts, and not all improvisation will involve bricolage. There is, however, evidence that successful improvisation is often more effective if the improviser (the project manager or project team member in the project context) is an effective bricoleur (Lehner, 2000).

Project resources can be human, financial, or physical, and Lehner (2000, p. 2) proposes bricolage to: "describe ways of finding and deciding upon implementation alternatives which may be used independent of planning or incremental adaptation" when resources are scarce. He also suggests (p. 6) that in such cases: "it is necessary to recombine given resources in a creative way", providing a link to another agreed construct of improvisational working. As we have already established, bricolage is not an essential component of improvisation, but it is often present. Within APM, however, bricolage may be a more disputed concept, as no mention is made within the emerging APM literature about managing agile projects with scarce resources, and the underlying assumption from the literature is that APM requires and involves the allocation of resources at the beginning of the project and throughout its life cycle. Arguably therefore, bricolage or scarcity of resources are not recognised or addressed within that literature.

Initially, the foregoing three constructs were deemed instrumental in understanding the concepts of improvisational working. However, the work of Miner *et al.* (2001) has proposed and discussed a further four related constructs, and it is now appropriate to consider these, and discuss any emerging parallels that apply to the workings of APM.

Adaption

It is argued that adaption is a construct of improvisation, but that not all improvisation is adaptive (Moorman and Miner, 1998a). Adaption, the definition of which revolves around the adjustment of a system to external conditions (Campbell, 1969; Stein, 1989), can be pre-planned, and is often a legitimate manifestation of planned work. Some change or transformation is foreseen, and the opportunity to adapt without the temporal pressure of improvisation can be invoked. It is also possible to adapt to different potential future scenarios by developing multiple adaptations to fit different unfolding situations. These adaptations may, and often are, based on existing routines

or processes that are reworked to fit new or varied circumstances, and this has already been discussed.

Adaptation can be, but is not essentially, a part of improvisation. Adaption is however a key element of APM, and Highsmith's (2004) five phases of APM include an "adapt" phase, with adaption practices being a vital component of each iteration of the development process. The inference is that adaptation is a constant within APM, and those adaptations take place as a result of feedback from key indicators, which may be time, cost, performance, or project based. It is suggested that adaptive action is based on responding to a need rather than correcting an error (Highsmith, 2004). It can involve inputs (increased resources), or outputs (performance; cost savings; time saving), and is often utilised to address newly identified risks or to negate or reduce existing or previously identified risk.

Compression

In the context that it is used within improvisational work, compression is a temporal action. Eisenhardt and Tabrizi (1995) define it as shortening and simplifying steps in order to reduce tasks or the total process. It is applied to reduce time taken to carry out tasks and activities, and by definition, to shorten the total project time-line. This is an important aspect of project-based work, where the major milestone is usually at the end of the execution phase. In the aforementioned turbulent business environments encountered today, delivery is always paramount, and much improvisational activity is therefore focused on the compression of delivery timescales, in order to gain competitive advantage.

Compression of time to market is also an important component of APM. Highsmith (2004, p. 3) suggests that: "time is [. . .] a driving factor in New Product Development" and Wujec and Muscat (2002) indicate that during the 1990s time to market in the USA fell from 35.5 to 11 months, largely due to process improvements. Chin (2004) suggests that APM is better at identifying alternative pathways to an agreed end-point, allowing more development iterations within a given time window. Proponents of APM argue that their way is quicker, more efficient, but less documented, concentrating on delivery rather than process. APM may compress time to market in NPD projects, or it may allow more development within a given time period. Compression is therefore often present, but is not necessarily assumed.

Innovation

Defined in Miner *et al.* (2001) as deviation from existing practices or knowledge (Zaltman *et al.*, 1973; van de Ven and Polley, 1992), it can be argued that all organisations innovate in some way, either with product, process, or managerial application. Roberts (1988) suggests that innovation involves three stages; conception, invention, and exploitation, and it is only when an idea is exploited for gain that it becomes an innovation. In the same vein, van de Ven and Angle (1989) suggest that invention is the creation of a new idea, but that innovation is more encompassing in that it also includes the process of developing and implementing the new idea. Innovation may be planned, or it may be created through improvisational activity. Miner *et al.* (2001, p. 315) consider this, stating that: "innovation is a necessary feature of improvisation, but this does not imply that all innovation is improvisation – only that improvisation is a special type of innovation". At the project level, Highsmith

(2004) identifies a $125 million project where Austin and Devlin (2003) document an instance where the "plan, then execute" paradigm was embedded, and refusal to improvise led to: "a costly and destructive course of action" (p. 11).

Within APM, the onus is on rapid development through many iterations, although arguably APM can be used for both the creation of new products, or enhancements to existing ones. Enhancements rely on improvement, efficiency and optimisation, whereas the creation of something new is more reliant on innovation. Chin (2004) discusses balancing the needs of process against the needs of innovation and the need to integrate the two with effective information flows to allow agile projects to produce the required outcomes. He also suggests that this is where project managers with the right mix of technical, business and interpersonal skills add value. There is therefore an indication that innovation is an important element in APM, but only when the requisite skills are present to manage it effectively. It is also evident that there is a fundamental tension between the formality of process, and the more relaxed and informal practices embedded in both improvisational working and APM, and organisations or managers that manage this tension effectively are arguably able to manage the innovative aspects of their projects in a more useful way.

Learning

There are many definitions of learning, which can be experiential or more formalised. The Argote (1999) definition speaks of experience informing a systematic change in behaviour or knowledge. Learning therefore implies a different internal state that may result in new behaviours and actions, or new understanding and knowledge. It can be spontaneous, or it can be planned, and within improvisational working, those new ways of achieving constitute "emerging best practice", which can then be re-used or added to a personal library of successful interventions. Miner *et al.* (2001) suggest that improvisation can be seen as a special type of learning, and that the degree of divergence from standard process is critical. They also go further, identifying three types of learning that are capable of producing novel outcomes, of which improvisational learning is the least radical, as it only requires enough variation to address the immediate problem or possibility (p. 318). In addition, Moorman and Miner (1998a) offer a number of ways that learning from improvisational activity can assist future improvisational interventions.

Highsmith (2004) has suggested that knowledge management practices have shifted away from an emphasis on explicit knowledge, to an understanding that tacit knowledge, effectively applied, is an essential part of project-based work, and APM specifically. Some aspects of the "close" phase of APM are similar to the final phase of Adams and Barndt's (1988) traditional four phase project life cycle, in that a review of the project should take place. There is much literature that identifies a tendency to disband project teams early, before learning from a retrospective review of project activity has taken place. It is however one of the strengths of project-based work that there is a review and feedback phase, where inter and intra-team learning can be formalised. May be APM is an area of project management where adaptive processes can be identified and codified for future benefit. It is certainly an area where learning arises from practice and application, seemingly mirroring improvisation in this regard.

Discussion

Having made some basic comparisons between the accepted constructs that combine within improvisational working, and the fundamentals of the emerging methods and processes of APM, it is apparent that there are some similarities, and a number of areas of overlap. Significantly, in one of the key early empirical papers that position improvisational working within the academic landscape, Moorman and Miner (1998b, p. 8) suggest that: "real-time information flows enable actors to learn the consequences of their actions as they improvise". This style of working is embedded in APM principles, where (particularly in product development projects) a version that meets most of the initial requirements is delivered quickly, and often with the minimum of supporting documentation (Chin, 2004; Highsmith, 2004). The performance of this iteration of the product is then assessed in real-time, and improvements are made. The assumption within APM is that this may happen a number of times, supporting Moorman and Minor's (1998b, p. 8) further assertion about: "repeated iterations in the product development cycle – which [...] provide real-time feedback [and] are important to the success of the new product outcomes". Clearly, not only is there significant commonality of thought and practice here, but this also indicates a possibility that the principles of APM will percolate through to other areas within the project domain.

The analysis has tended to focus on the apparently radical differences between APM and traditional project management models, and on the shift from those traditional "plan-then execute" paradigms and improvisational working. It could however be argued that in temporal terms APM is an extension of the "rolling wave" or phased project planning methodology, rather than a dramatically different way of achieving project-based work. There is some credibility to this argument, although the underlying principles of APM tend to have an arguably more "fragmented" and *ad hoc* approach to the scheduling, apportioning, and progression of work.

It is appropriate at this time to summarise the various aspects of the seven agreed constructs of improvisational work as they apply to APM, and Table I addresses this. Much of the content of the improvisation column has been adapted from the work of Miner *et al.* (2001), and the application of those constructs to APM is drawn from the analysis within this paper.

It can be seen that although there are fundamental and significant differences between improvisational working practices and APM, the same basic constructs are utilised, but often in different ways and in different contexts or application modes. As the maturity of the improvisation literature is more evolved then that of the APM literature, it is anticipated that over time, additional constructs will be identified as components of APM. This will however require additional research activity.

Although the various existing constructs of organisational improvisation can be applied to the concepts of APM, it is evident that in the cases of both improvisational working and the agile management of projects, a number of those constructs are components, i.e. the "building blocks" of the particular style of working, and some are outputs. Table II makes this distinction in respect of both improvisation and APM, although within the "agile" model, there are a number of differences, in that there is no evidence of Bricolage within the APM literature, adaption could be construed as more important than other components, and innovation is both an output, and an input into the next cycle or iteration. This classification of the constructs is presented in a basic

form at present, drawn essentially from an analysis and synthesis of the emerging materials and extant published literature.

This is essentially a conceptual paper, which commences the process of contrasting and comparing the more mature improvisation literature against the newer, and evolving APM material. Much of that APM literature is focused on software development, rather than the wider project-based work environments that are being addressed elsewhere. Over time, as academics pursue more rigorous and highly documented outcomes, there is a future opportunity to design a significant study to derive the tentative outcomes derived from the two literatures in a more empirically supported fashion. This issue is expanded upon in the conclusion to this paper.

Conclusions

It is evident that, notwithstanding the rapid evolution of both the improvisation and APM literatures, there are a number of parallels that can be identified, and that given the increasing turbulence in the environments in which organisations are seeking to survive, and the need for responsiveness to exploit opportunity in changing markets, agility and improvisation are required attributes. Given the difficult conditions facing organisations today, these requirements are unlikely to abate.

The speed with which the literature and practice of APM in particular is evolving is already leading to a discrediting of the "agile" label, in favour of terms such as pliant, and non-linear (Fernandez and Fernandez, 2008). Regardless of the semantics of nomenclature, it appears that there will always be a need to manage projects that are beset with ambiguity and complexity in ways that unravel uncertainty and manage delivery, and both improvisational working within projects and techniques that have been labelled as APM have components of practitioner value. Notably, the literature supports the notion that more experienced project managers, who over time are able to assemble a personal "library" of successful improvisational or agile interventions, may be able to adapt those interventions to resolve ambiguities in their project-based work, and shorten delivery time as a result of such interventions.

One of the difficulties that have arisen in the comparative work attempted here is the aforementioned relative immaturity of that APM literature. There are some practitioner-based texts, and a slowly emerging recognition that APM – notwithstanding any future semantics of nomenclature – may have something to offer within the wider project landscape. The limited extant literature is however not especially empirically grounded, and has only been applied to a limited sectoral territory, principally that relating to software and NPD. It should, however,

	Components and outputs	
Construct	Improvisation	APM
Creativity	Component	Component and output
Intuition	Component	Component
Bricolage	Component	No evidence in the literature
Adaption	Component	Key component
Compression	Output	Output
Innovation	Component	Output (and input into next iteration)
Learning	Output	Output

Table II.
Components and outputs of improvisation and APM

be appreciated that a decade or so ago Moorman and Miner (1998b) were publishing early empirical work relating improvisational working to NPD, and identifying the constructs of this style of working. This work has now been expanded and refined into a markedly more mature literature that covers many sectors and disciplines, and the rigour of this output has increased significantly over that period. There is no reason to think anything other than that the APM literature will evolve in the same way. Given the shift from tools and techniques to behaviours within the evolving project management literature, and increased interest in trading process for outcomes within the project domain, it is likely that both improvisational working, and the early manifestations of APM, will have something to offer the project practitioner that can assist in more effective execution of project tasks and a higher quality of project deliverables.

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