Research Article

Is project management the new management 2.0?

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Abstract

This paper considers the evolving nature of project management (PM) and offers a comparison with the evolving nature of management generally. Specifically, we identify a number of management trends that are drawn from a paper that documents a proposed 'Management 2.0' model, and we compare those trends to the way in which PM is maturing to embrace the challenges of modern organizational progress.

Our investigations identify strong and robust parallels between the six forces identified by McDonald (2011), who suggests that the proposed trends are drivers of a future model of management. We also suggest that the direction in which PM has been evolving over the past decade or so is very much in the same manner as McDonald's forces. As a minimum, PM is responding to the same forces, but perhaps in a more coherent manner than traditional management.

Some theoretical frameworks are offered that assist in explaining the shift from the historically accepted 'tools and techniques' model to a more nuanced and behaviorally driven paradigm that is arguably more appropriate to manage change in today's flexible and progressive organizations, and which provide a more coherent response, both in PM and traditional management, to McDonald's forces. In addition, we offer a number of examples to robustly support our assertions, based around the development of innovative products from Apple Inc. In using this metaphor to demonstrate the evolution of project-based work, we link PM with innovation and new product development.

Introduction

There has been much speculation lately about the future of work, and the forces that are redefining and shaping organizations. This brings up the interesting question of how both business managers and project managers will need to change in order to accommodate the needs of employees, customers, and markets (Gratton, 2011). It is also inevitable that as management evolves, and project-based management grows in scope and influence, such speculation will also affect the way in which the field grows and develops, and the way it is perceived by academics, practitioners, and other involved parties.

A number of views of management and management evolution exist, and one that is tied to the theme of this paper is that of Saynisch (2010: 23), who suggests that our historic understanding of management is: "based mainly on a mono-causal, non-dynamic, linear structure and a discrete view of human nature and societies and their perceptions, knowledge, and actions. It works on the basis of reductionist thinking and on the Cartesian/Newtonian concept of causality". Following on from this, McDonald (2011) suggests that 'Management 1.0' was founded on the industrial age paradigm and that this view of management has reached the limits of its relevance. He further proposes that it is time to consider a new conceptualization, which he calls 'Management 2.0', based on the global, information age paradigm in which modern businesses compete. Saynisch also takes up this theme, calling for a new management and project management paradigm that is: "based on inductive knowledge, the qualitative paradigm,

constructivist epistemology, speculative thoughts, nontraditional logic, and moving beyond the classical management perspective" (2010: 25). In this respect, both management and project management seem to be moving on parallel paths.

There have been many attempts to chronicle the need for change in the management of organizations, from Taylor's (1911) Scientific Management treatise, behavioral theory encapsulated by the 'Hawthorne Experiments' in the 1920s and 1930s (Mayo, 1933), through to the work of Burns and Stalker (1961), Handy (1995), Senge (1990), and Kanter (1983). Later contributions tend to focus on technology and cultural behaviors as enablers of organizational change, including the aforementioned McDonald (2011), and Saynisch's (2010) work which is specifically focused on project-based management.

As one of the chroniclers of the changes facing modern managers, McDonald (2011) defines six forces that he suggests are 'redefining the future of management' and with which forward-looking organizations will have to engage: the virtualization of work, open source work practices, the decline of organizational hierarchy, the rise of Generation Y values, the tumult of global markets, and the imperative of business sustainability. McDonald's forces are already making themselves felt within organizations, and require a new kind of management thinking. This paper seeks to investigate those forces within the context of project-based management.

'Automation has reduced the contextual domination of the factory floor; a metaphor which for many years constrained management thinking' (McDonald, 2011: 797). This is typified by companies such as Google, who now overshadow one-time giants such as General Motors. This transition to a 'knowledge based' economy (von der Gracht, Vennemann, & Darkow, 2010) has been discussed since Peter Drucker (1969) developed the phrase, and requires significant changes in management thinking.

While McDonald's (2011) forces are intended to reflect general management trends, many of them already have direct project management (PM) relevance. In fact, we claim that while McDonald's view is undoubtedly more extreme and futuristic, and his concepts may have originated outside the project management community and may not therefore be formally recognized by PM practitioners as an overall approach, or some sort of integrated trend, McDonald's forces are woven throughout current PM thinking.

This paper will document how the forces identified by McDonald are inherent in the PM way of doing business, albeit with different vocabulary, and perhaps as disjointed concepts. It could be argued that if these forces are taken individually (either within management generally or specifically within PM), then they are incremental changes that organizations are required to adapt to over time in order to survive and prosper. However, by considering the collective intensity and influence of the six forces as a whole, they become more powerful, and may well change the perception of how organizations and projects will need to be managed in the future. We will also address the adjustments that organizations will need to make to respond to these forces not only to deliver future projects, but also to survive, thrive, and prosper in the new environment.

This is an area of significant interest to academics and practitioners alike (Rynes, Bartunek, & Draft, 2001). Interestingly, some of these issues have the potential to take traditional management in a direction that will dilute the accepted paradigm, and move it towards a more project-based approach. This will require significant adjustment on the part of traditional management and organizational stakeholders. PM will not be untouched, and indeed the same forces may result in a revised paradigm, in which PM becomes more open, agile, interdisciplinary, global and sustainable (Crawford, Pollack & England, 2006: Pollack, 2007).

There has been much talk of 'trends' in PM, and it is important to note that McDonald (2011) is using a terminology that is more 'forceful', in that he describes his identified areas as forces. This mirrors the work of Christensen (1997), who developed an argument that disruptive forces are powerful influences that sweep away existing ideas about how to move forward in industries, sectors, or domains. Coping with and reaction to disruptive forces has been a problematical issue for organizations and for traditional management. We would argue, however, that project-based management is in an advantageous position compared to traditional management to react to these disruptive forces, as PM has already started down a path that is preparing the project practitioner to deal with at least the early manifestations of these forces, in the form of changing requirements and stakeholder demands, and the challenges of dealing with ambiguity and uncertainty in project requirements.

Some practitioner work is already alluding to a new label for this shift, in that there are references to *Project Management 2.0* being used as an emerging term or descriptor within the marketing material for PM training and consultancy organizations. There is however no meaningful mention of the term in academic output, and there is no evidence of any rigorous academic underpinning for the new *2.0* designation, nor even of a formal definition.

This paper, therefore, is the first to attempt to offer an exposition of the foundations required of a *Project Management 2.0* label. We attempt to document this significant evolution of the accepted PM paradigm from "plan – then execute with the minimum of deviation" to a more flexible approach which may require a quantum change in the way organizations perceive project-based work. Notwithstanding this challenge, we attempt to establish a rigorous underpinning, together with appropriate academic support.

Forces for change in management and project management

In reviewing McDonald's (2011) six forces, one is immediately struck by several overarching themes: flexibility in dealing with personnel, globalization, and the rise of values. In fact, values are surprisingly present through the six forces, particularly affecting the decline of hierarchy, and the management of Gen X and Y employees.

Change is another theme woven throughout the six forces, and appears to affect all areas of business and management. Interestingly, PM is the accepted framework for managing such change (Pollack, 2007). It does therefore appear inevitable that given the significant change in the organizational domain, the framework for managing such change must adjust to accommodate and compensate for environmental turbulence. There are also significant similarities and overlaps between McDonald's forces and a number of established PM concepts.

We illustrate this in Table 1, which provides a direct comparison between McDonald's forces (identified in the table as 'Management 2.0') and current PM thinking.

Table 1. Six forces redefining the future of modern management and their relation to current PM concepts

MANAGEMENT 2.0 Force… Manifested within…		**EXISTING PM CONCEPTS Applied to PM… Manifested within…**	
Virtualization of Work	Employee Trust and Teamwork	***Virtual Teams and Virtual Projects***	Structures to manage and drive project success based on positive team behaviors
Open Source Work Practices	Interpersonal Relationships Within Fluid and Flexible Communities	***Shift from Tools and Techniques toward Managing Behaviors***	Motivation of project team members and the building of commitment and trust
Decline of Organizational Hierarchy	Cultivators and Brokers Within Network Structures	***Re-definition of the role of the Project Manager***	Cultivators and Brokers of PM expertise driving measurable project success (Project Champions, etc.)
Rise of Generation Y Values	Fun, Frivolity and Creativity with Work/Life Balance	***Focus on 'modern' and evolving Stakeholder Relationship Management***	Making the project domain an environment where all stakeholder interests can be balanced and thrive.
The Tumult of Global Markets	Workplace Diversity and Multi-Culturalism	***Global Projects***	Embracing Project Team Diversity and Multi-Culturalism. Managing multiple subject matter experts.
The Imperative of Business Sustainability	Integration of Sustainability and CSR into Management Education	***The Imperative of Project-based Business Sustainability***	Integration of Project-based Ethics and Governance, Sustainability and CSR into Project Management Education

At this point it is useful to consider each of the forces articulated in the McDonald (2011) exposition, and to relate them to current and emerging thinking about the PM domain.

Virtualization of work
This is the management of people who are not physically present. Telecommuting and online conferences allow people to work anywhere. The benefits include flexibility, the ability to acquire otherwise unavailable staff, reduced carbon emissions, and the ability to allow organizations to internationalize efficiently.

Note the sustainability argument, to be explored later, which presages the idea that the six forces are all intricately linked. Their linkage is one reason why they are more than individual trends, and represent a coherent movement. Also, the idea that teams are likely to include Gen X and Y members introduces a more diverse view of team development, as well as illustrating again the linkages between McDonald's forces.

As organizations are involved in more virtual work, project managers will be required to embrace and manage work systems and frameworks where the employees are increasingly invisible, due to increases in technology that allow for effective telecommuting, flexible working, and geographical dispersion, often over huge distances.

Project managers, therefore, must evolve managerial frameworks based on trust, commitment, and the development of a cadre of motivated individuals and team members. Fortunately, the seeds of this framework are already familiar to project managers, at least in name and outline, in the Project Management Body of Knowledge (PMBOK) (PMI, 2005) as the 'Develop Team' process, and project managers consider that a major part of their role is involved with team and individual motivation (Schmid & Adams, 2008). In other words, traditional PM already explicitly recognizes the idea of 'developing' the team, as opposed to just inheriting or acquiring it.

The new team framework needs to be held together by a cultural glue that allows for disparate sets of employees to take more ownership of work outputs, operating within an organizational vision and values framework that facilitates interaction and knowledge sharing, and offers the flexibility to accommodate the diversity of the modern project workforce. Teams must therefore respond directly to the organizational vision, and not just to their immediate supervisor, as might have been expected in the old management model.

These ideas require an even further shift from the traditional managerial paradigm, where the assumption is that the manager will have direct control over the timeliness, quality, and efficiency of the employee and/or team. Because of the nature of projects, project managers are inherently required to rely more on organizational structures that are flexible, and that manage and drive project success based on positive team behaviors.

If the orientation of the project manager and the team is based on the culture, values, beliefs, ethics, and assumptions that are accepted within the organization, then it follows that this orientation is constantly affected by changes, both internal from the project and organization, as well as from the turbulence of external environments. In such environments, project requirements are continually shifting, and so it is not surprising that the traditional 'plan – then execute' project paradigm is being perceived as less effective in many organisational contexts.

Open source work practices
In PM, there is a shift towards managing behaviors, rather than prescriptive following of policies and procedures. Nowhere is this more evident than in the rise of a looser, and more iterative style of project-based working that has been labeled *Agile PM.* The introduction of agile practices into PM resonates with the idea of open source work practices, which are mentioned in McDonald (2011), and popularized by Tapscott and Williams (2006).

The agile approach has its roots in the *Agile Manifesto,* which consists of 12 philosophical statements that define a major shift away from 'Tools and Techniques' and towards 'Managing Behavior' (Beedle, Bennekum & Cockburn, 2001). The Agile Manifesto, suggests: "We are uncovering better ways of developing software by doing it and helping others to do it. Through this work we have come to value:

Individuals and interactions	over	processes and tools
Working software	over	comprehensive documentation
Customer collaboration	over	contract negotiation
Responding to change	over	following a plan

That is, while there is value in the items on the right, we value the items on the left more". (Beedle *et al.*, 2001).

This is in contrast to the traditional model of software development where the end-user was not considered to be a stakeholder, and very little collaboration and communication took place. Anecdotally, it appears that the result was often either an unusable system or the user was simply asked to adapt to a less than ideal system.

The Agile Manifesto further elaborates the goals and objectives of agile software development as customer satisfaction by rapid delivery and integration of useful products; welcoming changing requirements from users even if they appear late in the development process; frequently daily cooperation between business people, users and developers; projects built around motivated individuals, who should be trusted; and regular adaptation to changing circumstances (Beedle *et al.*, 2001).

As many of the precepts of the Agile Manifesto have been incorporated into agile PM, such goals and objectives reinforce and emphasize the central and crucial role that the ultimate user of the project plays in PM. This paradigm change (Kuhn, 1962) has been widely adopted across the software industry, and there is significant evidence that the tenets have percolated to other areas, including PM, where the shift to agile has also been recognized as desirable, but is only just starting to gain widespread acceptance.

The decline of organizational hierarchy
It is evident that organizations are flattening and reducing hierarchy. This requires that work become much more self-organizing. The rise of virtual teams and autonomous working has been well documented (Lee-Kelley & Sankey, 2008; Panas, 2006). Since projects use a wide variety of subject matter experts and focus on the work, rather than the organizational structure, organizational hierarchies are not particularly relevant to PM.

This focus on delivery has resulted in the redefinition of the role of the project manager, differentiating it from the concept of a classical middle manager. Specifically, the project manager's role has never been one of micromanagement, but a situation where the principles of emotional intelligence, and the requirement to manage the behaviors of project team members are becoming pre-eminent. Even the PMBOK — which is essentially 'process' driven — has always expressed the idea that resourcing, and, specifically, the procurement and management of 'human' resources, is as important as being adept at planning and scheduling work.

Indeed, scarcity of the right resources is a constant problem within projects, especially with organizations endeavouring to manage change on many fronts simultaneously with a finite level of project resources. Resource dependency can assist in explaining how the wider environment is linked to organizational action via political processes (Hatch 1997b). Pfeffer and Salancik (1978, 229-230) suggest that: 'organizations are only loosely coupled with their environments, and… power is one important variable intervening between environments and organizations'.

As scarcity of resources (human, physical, or financial) provokes uncertainty, opportunities arise to cope with or resolve those uncertainties, and these opportunities can be translated into, or can influence, power distribution within the organisation. If project managers can resolve uncertainties through effective management of business-critical projects, then their power relative to the power of managers who may be resisting change is enhanced. Resolution of uncertainty, which may also be stated in terms of ambiguity, can also provoke opportunities to use improvisational interventions.

The rise of Generation Y values

Another key to successful delivery of project outcomes is the control and motivation of human resources. This has become more important recently, given the diversity of the generational make-up of employees deployed in the management and execution of projects. Much has been made recently of the challenges of aligning the interests and expectations of the demographically diverse employee groups; usually described as the *Baby Boomer* generation, *Generation X*, and *Generation Y*. Recent articles by Gratton (2011) and McDonald (2011) have identified the integration and management of *Gen Y* employees as a key challenge for organizations.

The different values of these groups result in a significant tension, with the Baby Boomer generation now approaching retirement, and looking to manage succession. Baby Boomers often see seniority in terms of time served, as they have negotiated their way up through command and control-based hierarchies to gain organizational power and influence. Generation X employees have a high level of technical skill, are individualistic and opportunistic, and expect individual recognition for achievement. They are also often willing to abandon organizations for financial advantage. The incoming Generation Y is often highly educated, with significant levels of expectation. They want to be involved in meaningful and interesting work from the start of their working lives, and are socially connected and group-oriented, with short attention spans (Lancaster & Stillman, 2010).

As many of these incoming employees will be engaged in project-based work, this is a particular challenge for project managers. Ensuring a working environment and culture that supports these different styles is a significant challenge for both organizations and project managers.

There are of course a number of influential theories of motivation, and all are based around some element of the underlying principle that there is some driving force within individuals by which they attempt to achieve some goal in order to fulfil some need or expectation.

It is accepted that individual performance is a function of ability and motivation, and it follows that the manager (or in our case the project manager) must address the abilities and motivations of project team members. There are strong links here with the concept of emotional intelligence (Goleman, 1995), which is discussed later in this paper, and which is seen as a supporting factor in the location of motivational triggers.

Familiar to all PMs are the concepts of Herzberg and Maslow, which are required reading in the PMBOK. Early work on motivation was concentrated around 'content' theories, with the work of Maslow, Alderfer, Hertzberg, and McClelland being particularly influential. These early contributions focused on human needs, but have tended to be eclipsed by 'process' theories, which have a greater concern with the mental processes associated with motivated behaviour. Process theories include Expectancy theories (Vroom 1964; Porter & Lawler 1968), Equity theory (Adams 1965), Goal theory (Locke 1968), and Attribution theory (Heider 1958; Kelley 1973).

Expectancy theories are based on the premise that people are influenced by the expected results of their actions, and in later work, there are strong links with job satisfaction and performance, although there are many variables that can positively and negatively affect work behaviours. Mullins (1999, 365) suggests that: 'Employees with an internal control orientation are more likely to believe that they can influence their level of performance through their own abilities, skills or efforts. Employees with an external control orientation are more likely to believe that their level of performance is determined by external factors beyond their influence.' There is a view that internally controlled employees are more effective, although this has been disputed (Durand & Nord, 1976).

From a motivational standpoint, project managers wishing to manage their teams effectively, and hand opportunities to work autonomously to project team members, would benefit from knowledge of such attributes within their project team members. These are all seen as a critical component of the emerging *Project Management 2.0* paradigm.

The tumult of global markets

Organizations are globalizing, and this means having to deal with the globalized nature of PM. Much of what intimately affects the project manager here is tied inextricably to the issues of managing virtual teams (see the section on *The virtualization of work* above), the moving offshore of manufacturing, and the reach of multinational corporations. Also of relevance are the problematic issues relating to the matching of PM maturity models in differing environments and cultures.

Rapidly emerging economies such as China, India, and Brazil are not only consuming physical resources at a prodigious rate, but they are also attempting to build the maturity of their PM capabilities. This is putting strain on the supply of skilled human resources, particularly in the area of PM infrastructure. Added to this, other rapidly emerging nations (e.g. Nigeria; Indonesia; Turkey) have a huge demand for knowledge to improve the efficiencies and delivery of project outcomes.

It seems inevitable, therefore, that PM in such areas will embrace immense cultural and team diversity. The adept project manager will be required to encourage the sharing of and engagement with new modes of achieving. This is not new. With globalization, ideas have always been shared between countries leading to evolving models and cultures. For example, although Scientific Management, or 'Taylorism' (Taylor, 1911) was developed and applied in the United States, its ideas reached Japan where, with the help of Deming's 'Quality Cycle' — documented in Deming (1993) — they refined it and utilized it, which led to the development of Total Quality Management. These strategies were than adapted and brought back the West, where they were combined with other methodologies (i.e. Motorola's development of Six Sigma).

This sharing is a required and desired attribute of the emerging PM model. The PMBOK is often criticized for imposing a US business and cultural ethic as a standard. This will have to evolve into a much more multicultural document if it is to remain a significant global standard. The PMBOK is also based on explicit knowledge, whereas tacit forms of knowledge are equally influential in moving modern projects forward.

The imperative of project-based business sustainability

Business today is beginning to appreciate the value of sustainable practices. In line with this trend, we see a significant and growing requirement for project-based sustainability, which includes the following precepts that are mainly drawn from the work of Malzman & Shirley (2011).

First, project managers will be required to view projects through an environmental lens to meet the stakeholder requirements of environmentalism and to comply with future and emerging sustainability standards. Using a set of disciplined and integrated processes, the 'accidental green project manager' can become a professional, sustainably conscious project manager who is always cognizant of the environmental impact and green aspects of the project.

Second, in the future, thinking associated with the environment will be considered to be embedded into delivery criteria in a similar way to that in which quality is viewed today. Green project management will be planned into the project or program, not simply added on as an afterthought. Just as investment in quality, investment in green project management will be more than offset by the savings and opportunities it provides.

Third, embedding an environmental strategy into the project will provide opportunities for additional success criteria to be delivered by the project as a whole, as well as motivating the environmentally conscious team, and satisfying a wide variety of diverse stakeholder demands (Matzman & Shirley, 2011).

As an example, every year construction projects cause deforestation (Matzman & Shirley, 2011). Such projects impact the environment by causing degradation and loss of biodiversity. Projects may also cause air pollution, smog, ozone depletion and water pollution. These are top-down constraints that will drive the imperative of green project based business sustainability.

A number of top-down mandates and guidelines are emerging that project managers will need to be cognizant of (Malzman & Shirley, 2011). Standards incorporated by reference are a daily part of the project manager's job, and so they should be well prepared to deal with such eventualities. The challenge is the emergence of yet another set of complex standards, wielded by highly motivated stakeholders.

First, the International Organization for Standardization, ISO 14,000, is the global green standard developed by the international organization for standardization. It is essentially a family of standards that addresses the various aspects of environmental management. The guidelines provide a framework for project managers to validate that their processes are green, and that they are making serious efforts to ensure sustainability.

Secondly, the Kyoto Protocol has been in force since December 1997, with more than 190 countries having ratified the agreement. Other organizations have also enacted significant legislation: the Environmental Protection Agency (EPA) in the US, which has a mission to protect human health and the environment; the European Environment Agency; and even states like California, which has its own legislation (AB32). California uses market and regulatory mechanisms to achieve real, quantifiable, cost-effective reductions of greenhouse gases. As these standards become more accepted, project managers will be required to comply with them.

Finally there is a growing bottom-up demand from project stakeholders, sponsors, and customers that will result in the imperative of project-based and business sustainability. A substantial number of US consumers are already paying a premium for a home with green features. According to PM Network (2009), nearly 2/3 of US consumers say they would be willing to pay a 10% premium for a home with green features. The alignment with McDonald's (2011) imperative of business sustainability is direct.

The direct application of the forces for change

As an example of the relevance of these forces to PM, in Table 2 below we illustrate their application in the case of Apple Inc. in its development of several iconic products, including the iPod and iPad. The rationale for choosing this organization is built around the remarkable renaissance of Apple over the past thirteen years, from its early and relatively unsuccessful times as a 'minor' — at least in terms of market share — designer and manufacturer of desktop computers, through the 2001 introduction of the iPod, and from that 'disruption' of the mobile music sector to the equally disruptive entries into the smartphone and tablet sectors. In these activities over the past decade or more, Apple has transformed itself into a valuable and iconic brand with an evangelistic following among its consumer base.

Table 2. Apple's PM responses to the six forces

Management 2.0 Forces	PM Concepts	Apple Responses
Virtualization of Work	***Virtual Teams and Virtual Projects***	Apple manufactures its iPods, iPhone and iPad in China and Taiwan. The design work occurs in California, requiring a detailed interaction between the teams. Apple has invested heavily in virtual teaming education and tools.
Open Source Work Practices	***Shift from Tools and Techniques toward Managing Behaviors***	Apple has produced outstanding products such as the iPod and iPhone in record time largely due to adoption of bold agile project management processes. Apple believes strongly in 'forever tinkering with products and processes, always on the lookout for better' (Apple, 2011). Evidence of this agility is that Apple can deliver in considerably less time whenever a major upgrade or fix is needed (Sadington, 2011). Agile project management is vital in a field where innovation is a major success factor. This resonates directly with McDonald's characterization of *open source work practices* as 'In keeping with open source principles anything not directly relevant to creating an immediate customer response has been done away with.'
Decline of Organizational Hierarchy	***Re-definition of the role of the Project Manager***	A shift from the status quo takes courage, whether it is for product development or for project management. Greg Joswiak, an Apple Vice President, mentions courage as one of four Apple defining traits. He adds that a key differentiator in the success of Apple is bold business decisions, and the implementation of projects in a bold manner by adopting new, unproven technologies and abandoning older ones ahead of its competitors (Ong, 2011). 'Courage drives a lot of decisions in business,' Joswiak says, 'Don't hang on to ideas from the past even if they have been successful for you. You don't build a product just because everyone else has one.'
Rise of Generation Y Values	***Focus on 'modern' and evolving Stakeholder Relationship Management***	Apple is known for its innovative staff, acquired from all over the world. Apple seeks the best people, and this is documented in their corporate site, 'We're perfectionists. Idealists. Inventors. A job at Apple is one that requires a lot of you, but it's also one that rewards bright, original thinking and hard work.' (Apple, 2011) After initially experiencing a period of "culture shock" in which they must adapt to the work ethic and absorb the values, they become committed, and stay forever. Apple invests significantly in its staff, who are among the most highly motivated employees globally.

Table 2. Apple's PM responses to the six forces (Contd.)

Management 2.0 Forces	PM Concepts	Apple Responses
The Tumult of Global Markets	***Global Projects***	The iPad and iPod are global products, internally and externally: microprocessors from the US, disks from Japan; accessories from Thailand; manufacturing in China. Apple's finished gadgets are assembled at industrial compounds in Longhua, China. The products are sold internationally, requiring multilingual marketing, and deals with organizations as diverse as local phone companies and global record companies.
The Imperative of Business Sustainability	***The Imperative of Project-based Business Sustainability***	The iPad was designed by Apple to be a sleek user-friendly device. By making it thinner and smaller, it is also a green product. How green is the iPad? According to Steve Jobs, Apple designed the casings using recyclable aluminum. The screens use LED-backlit displays, which are more energy efficient than LCDs and the glass is free of mercury and arsenic. Furthermore, the iPad contains no brominated flame retardants and is completely PVC-free. The body of the iPad is manufactured with recycled aluminum and glass. The Apple iPad illustrates how sustainability cannot be an afterthought in project management (Schwartz, 2010).

Our approach and terminology in applying the McDonald 'forces' should be familiar to PM academics, and demonstrates how a successful organization has responded to the above forces while still dominating specific markets by the provision of innovative, desirable products.

PM trends

There are a number of trends that have been manifesting themselves within the PM arena over that past five years, and the effect of these trends has been to engender the beginning of a shift in understanding the way in which PM is administered and managed. However, at this point, practitioners have only scratched the surface of the shift in thinking that needs to take place.

The first of these trends is that 'process' is being superseded by the need for astute and effective project managers to have an innate ability to manage behaviors. This is not to say that process is redundant, but that it is no longer 'enough'. Essentially, for many project managers, process is embedded in the Bodies of Knowledge (BoKs) published by the various major professional PM associations (i.e. PMI, APM, AIPM, P2M, etc.). The traditional prescriptive mode of PM has been documented in academic and practitioner texts, and in the BoKs, and requires that the project manager follows the historically accepted PM paradigm of plan – then execute the plan with the minimum of deviation.

This is in contrast to the explicit inclusion in the BoKs of the recognition that *projects change*! Since projects are unique, and at least theoretically have not been done before, a one-size-fits-all approach cannot possibly work. Lately, this paradox has been explicitly explored, and more

recent thinking suggests that effective project management requires a more flexible model geared to dealing with varying levels of uncertainty, where softer skills are emphasized, and the ability to manage behaviors is both prized and demonstrably effective.

This shift suggests that the role of project management in particular, and that of management in general, is no longer to impose 'command and control' based imperatives, and then to micromanage actions within that structure. Rather, it is to create a climate within the organization where individuals and teams can exercise their own control over both work design and the creation of deliverables, without micromanagement. What we are talking about here is the linking of human systems and social organization as a foundation stone of team-based project work.

A second trend is a softening of the rigor surrounding the management of risk. Notwithstanding the various frameworks for managing risk (including ISO31000), there is a shift away from an absolute adherence to the avoidance of risk, toward an appreciation of planning safely. Modern thinking suggests that risk management incorporates an element of controlled risk taking, but with a firm grasp on recovery. In adopting this viewpoint, the critical rhetorical question becomes "Can I recover if the emerging requirements of a project take it in a direction where risk is higher?" It could also be argued that given the more recent focus on 'value', the biggest risk of all is in delivering a project that does not meet user needs.

It is also arguably naive to think that a project can be specified comprehensively and completely. If we accept that the broad definition of a project is something that is unique and has never been done before, then the concept of total risk avoidance is one that is essentially unrealistic. Defining the risks and having a plan to ensure that they do not arise will become sufficiently constricting that project progress and execution becomes an untenable outcome. There is also a tendency for project managers to develop a risk plan, and then to assume that because they have that plan, they do not need to monitor ongoing and developing risks. Additionally, if something is not on the risk plan, then sometimes it is not considered to be a risk at all!

The current shift in thinking about these issues is towards scanning the environment for emerging risks, and developing a contingency for recovery, which has parallels with contingency planning and scenario planning. Rather than trying to imagine the ways in which a deliverable may fail, which includes estimating probabilities and impacts, the modern approach is simply to ask, "If the deliverable fails, what can we do about it?"

A third trend is related to generational tensions in managing employees and project team members. Much has been made recently of the challenges of aligning the interests and expectations of the various demographically diverse employee groups described earlier. Recent articles by Gratton (2011) and McDonald (2011) have identified the integration and management of 'Gen Y' employees as a key challenge for organizations. As many of these incoming employees will be engaged in project-based work, this is a particular challenge for project managers.

There is also a trend among Gen X & Y who as employees are arguably becoming more like entrepreneurs, or maybe *intrapreneurs*, in that they are often expected to innovate in *real time* within their organizations to resolve issues as they arise. This is the essence of improvisation, which is an increasingly important managerial skill, and it is also linked to an emerging area known as effectuation (Sarasvathy, 2008), which involves problem solving through human actions in environments that are essentially unpredictable.

A fourth trend, which is gaining in influence, includes an understanding of the influence of complexity and ambiguity on project-based work. Historically, it was accepted that although complexity is an inherent property of projects, and perhaps even more so of programs and portfolios, ambiguity was fundamentally a problem linked to poorly specifying the project, and the difficulties in articulating, specifying, and documenting user requirements and deliverables. This has been addressed by the trend towards agile PM, a part of which involves user requirements being iteratively developed through prototyping and multiple versions, with the specification emerging naturally over time.

Complexity and ambiguity are often spoken of as a single phenomenon in projects, but are in fact independent of each other. Ambiguity is related to meaning and understanding, and is an antonym of clarity and clearness. A requirement or expected outcome is ambiguous if it is articulated in terms that can be interpreted in more than one way, and agreed terminology, standardized and agreed vocabulary, and good and consistent communication can contribute significantly to the resolution of issues and problems in this area. It has already been mentioned that the concept of bounded rationality (Simon 1957; March & Simon 1958) informs the ambiguity issue, and is relevant here.

Complexity is however different, and is inherent and increasing in our modern interpretation of project-based management. Complexity also has a different dimension to ‘complicated’. Something is complicated if it has a large number of interdependent and interconnected component parts, but complexity has an additional element. Cooke-Davies (2011:2) suggests that: ‘a project can be said to be complex if it consists of many interdependent parts, each of which can change in ways that are not totally predictable, and which can then have unpredictable impacts on other elements that are themselves capable of change’. This tendency toward unpredictable change is the key challenge in managing project complexity.

It could however be argued that historically we have considered project scope in terms of both complexity and ambiguity. A project might be simple (i.e. non-complex) but may have significant elements where the requirements are ambiguous because the scope of the project has been poorly defined. Alternatively, a project may be complex (i.e. with many interconnected and interrelated components), but with no ambiguity because the scope is well and comprehensively defined.

The fifth trend is towards an understanding that PM is more about managing behaviors than managing process. This is not a new assertion, and much has been written in the past decade or so about this shift. However, the assertions in this area are maturing, based on emerging theoretical lenses, including Goleman’s (1995) work on emotional intelligence. There are criticisms of the scope and rigor of Goleman’s work (Ashkanasy & Daus, 2005; Locke, 2005),

but the basic principles of understanding your own emotional profile and engaging emotionally with people in order to understand how to manage, motivate, and lead them is undeniably a powerful tool in the management of people within the project domain.

This shift toward a reliance on the management of behaviors rather than process is motivated by our understanding that project deliverables, especially in changing and culturally diverse projects, are socially constructed by individuals and small groups of human actors, and being able to effectively influence their performance is a key element in the successful delivery of projects within the proposed Project Management 2.0 paradigm.

Extending this shift towards managing people effectively takes us into another area where projects are moving towards more adaptive processes rather than rigid and highly prescriptive processes, and in favor of leveraging the personal knowledge base and tacit skills of project managers and project team members. Improvisation is 'action as it unfolds' (Moorman & Miner, 1998a) or, if you prefer to articulate this in more project-based terms, planning simultaneous with execution.

Improvisation as a contribution to the lexicon of management styles has an excellent pedigree, emerging from Karl Weick's (1979) work on organizational sense-making, with the literature growing in maturity and empirical support through the past dozen years in many areas, including organizing (Cunha and Cunha, 2001; 2008; Hatch, 1998; 1999; Zack, 2000), organizational change (Cunha and Cunha, 2003; Orlikowski, 1996; Weick, 1993), organizational learning (Barrett, 1998; Crossan and Sorrenti, 1997; Miner et al., 2001; Vendelø, 2009), and organizational memory (Moorman and Miner, 1998b).

Improvisation is also starting to permeate the project management domain (Leybourne, 2009; Leybourne and Sadler-Smith, 2006) and we are getting closer to a more nuanced understanding of the nature of organizational improvisation (Ciborra, 1999; Cunha et al., 1999; 2002; Crossan et al., 2005; Hatch, 1997; Kamoche et al., 2003).

The essence of organizational improvisation is that it is usually delivered quickly; the assumption being that improvised interventions are required to resolve unforeseen issues and emerging requirements. There is therefore a need to mobilize quickly and rely on readily available resources, together with the tacit knowledge of the project team, with successful improvisational interventions generating a form of emerging *best practice*. However, this also requires a shift away from thinking incrementally (i.e., plan-execute) towards a more creative and innovative mindset. This also requires an organizational climate that allows project team members the space and encouragement to try new ways of circumventing process. Organizations therefore need to shift to a culture that is accepting of new ideas, and supportive of attempts to execute them.

For some organizations this is a problematical concept. Notably, public sector organizations, with their reluctance to dismantle hierarchies and formalized management structures, have difficulty in adopting and/or supporting such *unstructured* activity, as historic modes of achieving are embedded, and adaptation to new models is challenging.

Some of this resistance within certain organizational sectors revolves around a reluctance to rely on tacit rather than explicit knowledge. Traditional PM models rely on explicit and documented knowledge (i.e. PMBOK), whereas evidence suggests that the evolution of PM will increasingly rely on a more 'tacit' knowledge base (Sense, 2007). Additionally, the concept of emerging best practice relies to a significant extent on the harvesting and codifying of tacitly generated improvisational interventions, in order that they can be shared for wider organizational and project benefit. Notably, the creativity, intuition, and bricolage constructs of improvisation theory, are essentially tacit, which causes significant tension with the explicit nature of process-based and highly documented frameworks such as PRINCE2 and the various Bodies of Knowledge.

The inference here is that knowledge does not need to be written down to be effective. Indeed, the effectiveness of tacitly based knowledge is a major tenet of the theoretical underpinning for knowledge management and the concept of the learning organization (Polanyi, 1958; 1966; Senge, 1990). Nonaka and Takeuchi's (1995) work in this area argues that competitive advantage is founded in the organisation's ability to create new forms of knowledge and translate it into innovative action.

Project managers often have to devise new ways of achieving required outcomes. We are not suggesting here that process, and its attendant policies and procedures, are obsolete, but rather that tacit knowledge can be powerful in the right circumstances, and that the emerging PM model should recognize that. An interesting question is the extent to which tacit knowledge depends on the successful accumulation of explicit knowledge. For example, is the PMBOK a sufficient base for a project manager to begin to employ tacit knowledge?

This style of working, and the 'minimal structure' (Cunha *et al*, 1999: 318) that comes with it does of course require some modification to the way in which project team members are managed. Project managers will need to allow people on the project to *grow* their capabilities and skills in this area over time, and earn trust in their abilities. Commitment theory (Etzioni, 1975) comes into play here, in that the organization and the project manager need to build a culture where employees and project team members are committed to the outcomes of the project. The development of teams that can generate emerging best practice takes time, and an acceptance of the need to create temporal and managerial space for experimentation and learning. Indeed, it would be sensible to limit improvisational activity to areas that are less critical to project success until an element of expertise is gained.

Many of these themes and trends are creating a *contested space*, where there is a tension between the traditional and understood model of PM, represented by frameworks and tools that are explicit and documented (i.e. PMBOK) and which are driven by process, and the more behavioral and emergent model, which is significantly more improvisational and ambiguous. This tension needs to be resolved by defining, among other things, where the transition occurs from explicit knowledge to tacit knowledge, and whose tacit knowledge is effective, and why. As we formalize and organize these issues into a coherent set of empirically supported outcomes, a new paradigm, tentatively labeled Project Management 2.0, will emerge.

The rational model of decision making is driven by the assumption that decision makers have full knowledge of all alternatives, and the consequences of implementing them. It also assumes consistency of goals. Simon (1956) suggested five limitations to rational decision making: imperfect and incomplete information, complexity, human cognitive processing limitations, time pressure, and conflicting views of organisational goals. In essence, these limitations hamper our ability (and indeed, the ability of project managers) to arrive at optimum decisions and, essentially, the result is that decisions can only be 'satisficing' (Simon 1956) rather than perfect.

Experienced project managers should be quite accustomed to this, since all five of these limitations are familiar in the project domain, and are particularly linked to another important PM topic: the resolution of issues of complexity and ambiguity. Essentially, the project manager is often working with incomplete information, with significant time pressures, and differing stakeholder expectations, all of which link directly to Simon's (1956) limitations.

Another element of decision making involves making the right decisions contingent on prevailing circumstances. Early contingency theorists such as Burns and Stalker (1961) suggested that different environmental conditions called for different styles of organizing. This was the source of a concept that is taken for granted today, but which originated the premise that the most effective way to organize in a given situation is 'contingent' on conditions of complexity and change in the environment (Hatch, 1997b). These principles of contingency theory can also be applied to leadership effectiveness (Fiedler 1967; Vroom & Yetton 1973). These are constant and familiar challenges for project managers, and are particularly relevant as we move toward a new model of PM.

Conclusions

McDonald identified six forces that he claims are making traditional management obsolete and which, in his view, will 'redefine the future of modern management'. An analysis of McDonald's forces reveals that they have strong parallels with existing PM concepts. While the six forces may well be familiar to PM practitioners, they will tend to manifest themselves differently in project domains. It is also evident that McDonald's characterization of the six forces is more extreme than the way that they are linked to the PM domain in this paper.

This suggests that PM is in the infancy of a transition to a new model, which we have characterized as Project Management 2.0. This term has been cited recently without any formal justification or academic foundation. In this paper, we have attempted to begin to provide such a foundation by linking McDonald's six forces to existing PM concepts. For each of the forces, we then provided a formal connection to PM, and an academic basis for the trend. This also suggests that PM is at least starting to evolve in the direction that modern management needs to evolve. In fact, one might claim that PM is evolving in response to these modern forces and that traditional management is ignoring, or is perhaps unable to deal with them. While PM is certainly not a cure-all with which to address these turbulent forces, it may be in a better position to respond to them, since it is familiar with many of the concepts, if not quite the power of them.

McDonald seems to lead the path away from the industrial age paradigm of traditional management, and to begin to define the skills required for a new PM. By listing the forces in one place, it becomes clear that they are all interrelated and reflect on each other. As a result, they

become a much more coherent whole, worthy of consideration as a new way of doing business. Fortunately, the path from PM to the new model seems evolutionary, notwithstanding some significant embedded 'obstacles', while the path from traditional management to Management 2.0 seems daunting and revolutionary.

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