

## Review

# An overview and critical review on developments in the last thirty years within project management

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**This paper presents a critical review of the literature populating the project management body of knowledge from 1980 to 2010. The paper concluded with a presentation of the various views on the project management schools of thought as a consolidation mechanism to provide a sense of direction to the developments occurring within the discipline. The review of literature presented is gathered through an exhaustive forward chaining / backward chaining process.**

**Key words:** Project management history, project management developments

## INTRODUCTION

This review paper presents the key developments populating the project management body on knowledge in the last three decades spanning from 1980 to 2010. The paper concludes by reflecting against the various movements in the discipline, in the form of schools of project management thought, with the objective of identifying the school(s) of thought dominating project management research.

### A WALK THROUGH TIME: THE LAST THREE DECADES OF PROJECT MANAGEMENT

In an earlier article, Packendorff (1995) suggests that greater emphasis should be directed at the taxonomic classifications of projects. As we begin our presentation of the historical developments constituting the last three decades of project management literature, we are immediately faced with a choice between several taxonomies through which our objective can be achieved. Therefore, a discussion on our taxonomic choice is warranted.

Different authors have deployed different, and at times, disparate taxonomies to categorize the developments taking place in the field of project management, perhaps to avoid the fragmentation and specialization traps discussed by Söderlund (2009b, 2010) and originally proposed by Knudsen (2003). These categorizations lead to what Söderlund (2009b), Daft and Buenger (1990), Fredrickson (1990) and Nag et al. (2007) terms as

'creative tension' that translates into an improved link between project management and associated disciplines. In line with this spirit, we use our chosen taxonomic classification of projects to make apparent the influence of associated disciplines in project management and to present the major developments populating the project management literature. Some examples of work contributing a taxonomic engagement of projects include Anbari et al. (2008), Bredillet (2007), Carayannis et al. (2005), Laufer et al. (1996), Morris (1994), Pryke and Smyth (2006), Söderlund (2002, 2009b) and Turner et al. (1996).

According to Carayannis et al. (2009b), the development within the field of project management may be categorized into four periods: the craft system prior to 1958, application of management science from 1958 to 1979, projects as production centers (1980 to 1994), and creating new environments 1995 to present. Other authors such as Pryke and Smith (2005) have used an entirely different classification and categorized the developments in the field into phases such as: traditional, functional, information processing, and relational, unfortunately they do not specify precisely when each phase experienced the most growth. Morris (2006) adopts a simpler method of classifying the major developments within project management by decades and provides a more chronological treatment of the developments taking place within the discipline. He categorizes the developments as: the craft system lasting until the 1940s to around the WWII, development of systems management

during the 1950s, the decade of management systems (1960s), expansion of project management in the 1970s, the expansion of the strategic perspective of managing projects in the 1980s, and the 1990s, which Morris (1994) does not explicitly identify with a name, however, from the discussion within his book, it may not be inappropriate to name it 'customer centralism and quality focus'. The customer and quality focus of the 1990s, identified by Morris, led researchers to question the most fundamental of concepts of project management up until the early 2000 and we conclude the first decade of the 21<sup>st</sup> century with a critical examination of the discipline with a focus on project activities from a relational perspective. Perhaps, Laufer et al.'s (1996) characterization of the last four decades leading up to the millennium provides a clearer view of the evolution of the field. According to them, the 1960s was a decade of scheduling (control), the 1970s of teamwork (integration), 1980s of reducing uncertainties (integration), and the 1990s of simultaneous management (dynamism) – except the 1960s where the dominant project characteristics were simple and certain projects, the remaining decades are characterized by projects that are complex and uncertain. These taxonomies may be aligned as shown in Table 1.

A word of caution may serve well here, that being, however helpful, such classifications may be in making sense of the developments in project management in general, they often present the developments taking place within the field in a static manner, hiding the fact that most developments are of an emergent nature taking a natural course from problem to solution. Additionally, such taxonomies should not be misconstrued as creating an impression that all work on a particular aspect of project management terminates completely within an arbitrary time frame.

Following a slightly modified version of Morris (1994) and Carayannis et al.'s (2005) classifications, subsequent discuss are a walk through the major events and research within the field of project management, starting with the 1980s and culminating in 2010. The purpose of this excursion is to inform the reader of the foundations of the discipline, to orient them to the latest developments taking place within the discipline. 'The Management of Projects' by Morris (1994) and 'The origins of Project Management' by Levene (1996) gives a complete history of project management.

As a closure to the discussion of the historical developments constituting project management and its body of knowledge and to provide further context to the focus of this study, key movements within the literature are further discussed.

### **Projects as production centers (1980 to 1989)**

The 1980s saw a push for 'generic' project management techniques and their application in a variety of projects. In

1981, a formal proposal was issued by the PMI to professionalize the discipline of project management, resulting in the Ethics, Standards, and Accreditation project (ESA). The ESA issued its report in 1983, which was later released to the public in its final form as the first edition of the Project Management Body of Knowledge (PMBOK) by the PMI in 1987 (Hodgson and Cicmil, 2007; Webster, 1994). The first Project Management Professional (PMP) certification exam was held in Philadelphia on October 6, 1984 (Webster, 1994), which is significant as it introduces an additional dimension to how project success would later be evaluated, that is, from the perspectives of the processes employed and the results achieved (Morris, 1994).

During the 1980s, a few researchers focused on the 'front end' of projects according to Barnes and Wearne (1993), emphasizing attention to project needs and risks – such as, the concern for project stakeholders (Cleland, 1986), and project risk (Boehm and DeMarco, 1989). However, according to Morris (1994), a major focus of the discipline during the 1980s continued to be on the execution of projects and on expanding its strategic perspective, resulting in a general move to look at the whole project lifecycle not just design and build.

The increasing prevalence of information technology (IT) in the 1980s meant an increase in more complex hardware and software projects being undertaken by the government and industry. Several methodologies were introduced by what is now known as the 'Office of Government Commerce' (a UK government department), as an example, PROMPT which was initially adopted in 1979, was affectively replaced by the Structured System Analysis and Design Methodology (SSADM) made mandatory for all new information systems development in 1983; only to be replaced by the Projects in Controlled Environments (PRINCE) methodology in 1989 (Hedeman et al., 2005; Morris, 1994).

The strategic perspective of project management continued through the 1980s (Morris, 1994) and major projects were examined in greater detail than before (Morris and Hough, 1987). The matrix structure of project organization remained a concern and its effects were analyzed on organizational processes, role perceptions, work attitudes, and on the relationship between the team and context (Bartlett and Ghoshal, 1990; Bresnen, 1990; Clegg, 1990; Ford and Randolph, 1992; Gobeli and Larson, 1987; Joyce, 1986).

Cleland and King (1983) published the first and perhaps most comprehensive book of the time on project management, entitled the 'project management handbook', however, its second edition (Cleland and King, 1997) gained greater popularity. Authors such as Davis (1985) opened the debate on the effectiveness of projects and towards the end of the 1980s and early 1990s giving way to researchers such as Ashley (1987), De Wit (1988), Pinto and Slevin (1988b), and Freeman (1992) who began to question how we measure project

**Table 1.** Taxonomies of the developments in project management.

Authors	Labels used for different eras of development						
Pryke and Smith (2006)	Traditional		Functional		Information processing		Relational
Carayannis et al. (2005)	Craft system leading up to 1958			Application of management science from 1958 to 1979		Projects as production centers 1980-1994	Creating new environments 1995-2005
Laufer et al. (1996)				Scheduling (control) 1960s	Team work (integration) 1970s	Reducing uncertainty (flexibility) 1980s	Simultaneous management (dynamism) 1990s
Morris (1994)	Craft era leading up to the 1940s	WII era	Systems management 1950s	Management systems 1960s	Proliferation of project management 1970s	Expansion of the strategic perspective of managing projects 1980s	'Customer centralism and quality focus' 1990s

success. Parallel to this, another debate slowly progressed that dealt with the organizational issues of projects; authors such as Hofstede (1983, 1984) examined the role of culture in projects and management; Morton (1983) worked on the concept of championing the project within an organization; Might and Fisher (1985) and Navarre and Schaan (1987) wrote about the determinants of project success; Thamhain and Wilemon (1986) explored issues pertaining to project control; Taggart and Silbey (1986) proposed a rather tongue-in-cheek alternative to the traditional 4 stage lifecycle in the form of a 6 stage model – these are: ‘wild enthusiasm, disillusionment, total confusion, search for the guilty, punishment of the innocent, and promotion of non-participants’; and Gobeli and Larson (1987) considered the effectiveness of project organizational structures, concluding that amongst sixteen hundred projects surveyed the matrix form of organization was the most prevalent and preferred most by managers and least preferred by project teams.

Tools and techniques for project management continued to play a dominant role in the writings of the period. Dane et al. (1981) debated with the issue of introducing project management techniques into the mainstream organization; Niwa and Okumu (1982) concerned themselves with the knowledge transfer techniques; Weber (1982) discussed the tools available for project managers; Dunne Jr. (1983) discussed the use of management techniques in projects; Lichtenberg (1983) looked at the possibility of using non-western management techniques in managing projects; Ashley and Avots (1984) explored the use of diagramming tools for mapping risk; Levitt and Kunz (1985) examined automatic schedule generation techniques; Cooper et al. (1985) focused on techniques of risk management in cost estimation; whereas Perry and Hayes (1985) discussed risk techniques in construction projects; Liberator and Titus (1986) looked at techniques applicable to R&D projects; Avots (1987) compared the usefulness of off-the-shelf project management systems; Arditi et al. (1989)

explored the determinants of cost overruns; and Bu-Bushait (1989) concern focus on the cross usage of project techniques in construction and R&D projects.

A smaller body of literature focused on the administrative perspectives in projects. Balachandra and Raelin (1984), Raelin and Balachandra (1985), and Shafer and Mantel (1989) examined project termination strategies; Fox (1984) looked at the evaluation of complex projects; Davis (1985) worked on questioning why projects cannot meet established goals; Morris (1986) looked at the precursors to project success and failure; Cleland (1986) wrote about the need for stakeholder management; and Stallworthy and Kharbanda (1985), Ashley (1987), and Pinto and Slevin (1988a) examined factors of project success – an idea that was extended by de Wit (1988) who looked at measuring project success. Latter work by Pinto and Covin (1989) focused on the differentiating between R&D and construction projects.

We leave the 1980s with Gareis’ (1989)

proposal for an alternative approach to the management of organizations in the form of their management by projects' approach, which advocates the use of project management methodologies to manage functional activities.

Subsequent discussion is on the 1990 to 1999 time period. The 1990s are considered as contributing to 'simultaneous management (dynamism)' by Laufer et al. (1996).

### **Dynamism: 1990 to 1999**

Various project management associations and standard making bodies exhibited significant activity during this period. Several of the BoKs underwent changes, PRINCE was released in its revised form as PRINCE2 in 1996 (Hedeman et al., 2005); the PMI went on to release subsequent versions of the PMBOK under the title of a 'Guide to the Project Management Body of Knowledge' in 1996; the APM BoK initially issued in 1992 was revised in 1995 and then again in 1996 (APM, 2009); and the IPMA's Competence Baseline (ICB) first formulated in 1967 was revised in 1999 (IPMA, 2009). In 1998, the Japan Project Management Forum (JPMF) was established; however, at the time of its inception, it did not offer any publication.

During the earlier half of the 1990s, authors such as Morris (1990) and Daft and Buenger (1990) focused on the role of strategy in project success, whereas Bresnen and Haslam (1991) examined the role of the client in project management strategy formulation; while others explored the ingredients of project performance (Sidwell, 1990; Ward et al., 1991), or focused on the 'human element' and team building (Fabi and Pettersen, 1992; Pinto, 1990; Pinto et al., 1993). Concepts such as 'uncertainty' and its implications in projects were examined by Seiler (1990), while 'context' was a concern taken up by Buchanan (1991). There was also considerable interest in the customer side of projects (Mallak et al., 1991; Ward and Chapman, 1994) and its eventual impact on project success (Thompson, 1991).

As we move closer to the middle of the 1990, we find that an introspective perspective begin to emerge within the discipline. For example, authors such as Lovell (1993) initiated a debate on the power struggles faced by project managers, whereas Dalcher (1993) called for an examination of why projects were still failing. Others urged that in order for future developments in project management to take place, it needs to abandon the limiting perspective of a mechanistic world and its associated rationalism (Balck, 1994).

A comprehensive examination of the historical developments within project management starting from the pre-1950s was authored by Morris (1994). In addition, a seminal report of the construction industry in the UK was released under the change of Sir. Michael Latham (1994) entitled 'constructing the team' (informally known

as the 'Latham report'), with the purpose of ending what the media called a 'culture of conflict and inefficiency that dogs Britain's biggest industry' (Tieman, 1994). This report is regarded as the most comprehensive attempt to grapple with the widely accepted problems of the British contracting system (Winch, 2000).

Resulting from the Latham report, a comparative study of the construction industry was conducted in the US by King (1996). Recommendations of the Latham report were put into practice in the UK through the Construction Industry Board (CIB) and later through the Construction Task Force (CTF).

The CTF published its first report entitled 'Rethinking Construction' (Egan, 1998), informally known as the 'Egan report', focusing on improving industry performance, rather than institutional reform – both the Latham and Egan reports enthusiastically endorse 'partnering'.

The works of Frame (1995), Pinto and Kharbanda (1996), and Kharbanda and Pinto (1996), in identifying the main reasons for project failure, played a significant role in fostering debates on project success and failure factor research and laying the foundation for future project management research using alternative perspectives on projects.

These debates could be seen as an extension of earlier work by Murphy et al. (1974), which investigated project success in 650 completed aeronautical projects. An underlying belief in project failure and success literature, carried over from the 1960s, is that project management is integral to the success of a firm operating in an uncertain and complex world (Kerzner, 1995).

Thus, there is a tendency to blindly accept project management as good practice. Research into project failure therefore, seeks out other issues; Drummond (1999) argues that escalation is a cause of project failure; Pinto and Kharbanda (1996) provide a checklist of all the wrong things a project manager can do to ensure a project failure; Verner et al. (1999) focused on human factors contributing to project success; and Atkinson (1999), questioning the validity of cost, time, and quality in measuring project success (Morris and Hough, 1987) opined that perhaps we need to examine whether a project achieves its end goal rather than looking at how we did while trying to achieve that goal.

Authors such as Frame (1995, 1999), and Morris (1994, 1998), issued calls for a reexamination of the dominant doctrines in project management (Maylor, 2001, 2005), prompting new perspectives in project management research. Initial attempts at such a reexamination include for example, the proposal that projects should not be considered lonely phenomenon (devoid of history, context, and future) but rather they should be analyzed in the context of a 'drifting environment' (Kreiner, 1995). Whereas, Löwendahl (1995) suggests that projects should be analyzed for their linkages with the parent organizations. Around this time, the concept of projects as temporary organizations was proposed, quite possibly

originating from an earlier concept of projects as temporary systems by Bryman et al. (1987), where the focus of the project is on actions rather than decision making (Lundin and Söderholm, 1995). Packendorff's (1995) work called for the use of a diverse set of perspectives in these temporary organizations, emphasizing a need for normative theories, empirically grounded research that is descriptive in nature, and taxonomic classifications of projects. While others focused on the prevalence of project management in organizations, eventually leading to the idea of the 'projectization of society' (Lundin and Söderholm, 1998) and upon the relationships between projects and their parent organizations (Blomquist and Packendorff, 1998) – an idea that stems from the initial work on the matrix form of organization (Mee, 1964), which is in line with Castells (1996)'s concept of a 'network society'. Hints of the projectization of society area are also found in the work of Defoe (1697) who uses the term 'projection age' to refer to a similar concept.

Latter half of the 1990s gave birth to a collection of alternate perspectives on project management. Unfortunately, these are too varied to encapsulate under a single heading. Authors contributing alternative perspectives on projects during this period include: Eden et al. (1998) examination of the concept of a learning curve and the role of disruption in project delays, an amended version of which was later published by Eden et al. in (1999); Gulati and Singh (1998) focusing on strategic alliancing examined the cost of coordinating strategic initiatives, which agrees with Whittington et al. (2006) conceptualization of projects as strategic formulations; Hobday's (1998) work in the domain of project complexity suggested the use of alternative perspectives in the analysis and understanding of producing high cost, complex products, and systems.

Similarly, Williams (1999) examined the fundamental constructs of project complexity and concluded that the traditional project management techniques are not adequate for complex projects;

Lindkvist et al. (1998) proposed that project management is an effective product development organizational tool; Hughes (1998) examined the intertwined relationships within projects in the context of the military-industry-university complex focusing on the issues of *inter alia* power and bureaucracy within projects; Lundin and Söderholm (1998) extended their previous idea of a project as a 'temporary organization' to that of a 'projectification of society'; Rodrigues and Williams (1998) used a systems perspective and examined the effects of requirements variability on project performance; Artto et al. (1999) presented the concept of 'managing business by projects' which would later reappear as the concept of 'management by projects' (Project Management Institute, 2008); and Cleland (1999) opined that projects are delivery mechanisms for change – counter arguments for which are found in Cooke-Davies (2001) who argues that

Business Process Reengineering (BPR) is more effective a means of delivering change than project management. Despite the fact that the CPM was developed in the late 1950s it continued to be a topic of concern towards the end of the 1990s (O'Brien, 1999) – a text that unfortunately fails to add any new information to what is already known. Additionally, elements of planning and control continued to be a concern (Pinto, 1999; Verner et al., 1999).

Also, as the prevalence of information technology increases, elements of its utility can be seen across the discipline, for example, in working along the lines of control and human resource management, Metcalfe (1997) proposed that project management software systems can be used as control systems within projects.

We conclude our discussion of the developments in this time period with a survey paper published by Themistocleous and Wearne (2000), which analyzed the relative frequency of topics in two key project management journals from their inception to the end of the century concluding that the predominant focus is on project planning, monitoring and control, risk analysis, information management, and related classical problems of project execution.

It is worth a mention that majority of these papers focused on the construction domain.

### Creating new environments: 2000 onwards

Various project management associations and standard making bodies continued to update their publications, several of the BoKs underwent changes, PRINCE2 was updated in 2002 and 2005 (Hedeman et al., 2005) – the latest version of prince was released in mid 2009 under the name of PRINCE2: 2009 Refresh. The PMI went on to release new versions of their PMBOK in 2000, 2004, and 2008. The APM BoK which was revised in 2000 underwent another revision and is presently in its 5<sup>th</sup> edition (released January 2006) (APM, 2009). IPMA's Competence Baseline (ICB) was revised in 2001 and is presently in its 3<sup>rd</sup> version (released June 2006) (IPMA, 2009). In 2005, the JPMF was renamed the Project Management Association of Japan (PMAJ); their body of knowledge entitled 'A Guidebook for Project and Program Management for Enterprise Innovation' (P2M) first released in 2001 underwent revisions in 2002, 2004, and is presently in its 4<sup>th</sup> edition (released October 2005) (PMAJ, 2009). Associated with the rapid pace of revisions to the bodies of knowledge there has been a 'boom' in the number of project management trainings and certifications in recent years as well (Bredillet, 2005).

Project success and failure factors continue to be a concern within the literature, where project success or failure is analyzed from various perspectives such as, project manager competence (Crawford, 2000); project planning (Dvir et al., 2003); project personnel (Belout and

Gauvreau, 2004); and standardization (Milosevic and Patanakul, 2005). Mills and Mercken (2002) worked on categorizing project success factors, while Williams (2003b) proposes that learning from a project's failure or success necessitates an inquiry into 'what went wrong (or right) and why'. Other articles contributing to the concepts of learning and knowledge transfer within projects include Bresnen et al. (2004), Eden et al. (2005), Kasavi et al. (2003), Principe and Tell (2001) and Williams (2004, 2007, 2008). However, Newell et al. (2006) point out that often, knowledge captured from one project is not utilized in another as the project team does not consider it useful and/or lacks awareness of how this knowledge could be useful in improving their processes. Certainly, there is a degree of ambiguity associated with qualifying a project as a success or failure (Boddy and Paton, 2004), however, we are consoled by the fact that these should not be viewed as polarized end states nor purely social constructions that leave practitioners with no power to act (Cicmil, 2006).

More recent research takes a skeptical view of any attempt to categorize a project as a 'success' or 'failure' (Cicmil et al., 2009b). Echoing earlier cautions by Fincham (2002), who argued that such categorizations are highly subjective, and as such, are nothing more than social labels, which when applied give rise to either stigma or status. Interestingly, Lindahl and Rehn (2007) found that more articles are focused on project success, as focusing on project failure is against the norms of a field focused on success. Elsewhere, it is argued that measures of project success or failure are merely measures of the success or failure of a tool and not of the project, consequently resulting in a failure to consider the broader consequences of project failures especially that of the social complexity of project environments (Cicmil et al., 2009b). Authors such as Kloppenborg and Offer (2002) in examining past articles conclude that the industry dominating this discourse is construction, a fact attested to earlier by Betts and Lansley (1995), specifically in relation to human resource issues. A later study reports that interest in human resource management and interpersonal communication within projects is on the decline (Crawford et al., 2006). Kwak and Anbari (2008) clarify that the interest in project related human resource issues peaked during the 1990s, however, while maintaining a considerable share of the research, its prominence has waned considerably since the 2000s.

Work arising from the earlier criticism offered by Frame (1995), Morris (1994), and Maylor (2001, 2005) concerned itself with a reexamination of the foundations of project management. Researchers began to question the taken-for-granted, prescriptive methods within the discipline, and the normative aspirations and functionalist agenda of the standard making bodies (Alvesson and Deetz, 2000; Alvesson and Willmott, 1996; Cicmil, 2006; Clegg and Ross-Smith, 2003; Flyvbjerg, 2001; Johnson and Duberley, 2006; Reed, 1992); while others called for

an examination of the social perspectives within projects (Cicmil et al., 2006; Packendorff, 1995; Pryke and Smyth, 2006; Söderlund, 2004a, b, 2009b). This approach involves a shift in focus from the prescriptive methods to a more systemic understanding of projects, which requires an alternative genesis of projects as complex social settings characterized by tensions between unpredictability, control, and collaborative interactions amongst a diverse collection of participants (Cicmil et al., 2006). Certainly, this does not mean that traditional project management methods should be completely discarded (Hodgson, 2002), rather, the proposal is to move forward with the knowledge we have gained to a debate on the soft issues of project management (Pinto, 1999; Williams, 2005). Although, any new perspective on projects is based on certain philosophical (or more specifically ontological) choices made by the research community, we are cautioned however that such choices are not without consequence (Cicmil, 2006). As an example, the recent reexamination of projects has consequently rendered the static and non-reactionary project environments of the BoKs less useful and immediately replaced it with a world that is both complex and dynamic. However, some researchers would perhaps disagree that there ever was an assumption of a project environment that was static and non-reactionary, as they consider the prescriptive and control centric stance of the mainstream literature as an attempt to control complex worlds (Stacey, 2001; Wood, 2002).

Similar concerns are reflected in the ideology of the Scandinavian School of thought in project management (Cicmil and Hodgson, 2006b), which includes broadening the scope of project management, while being concerned with the broader context within which projects operate, and produce work that is empirically grounded (Sahlin-Andersson and Söderholm, 2002). Building on this agenda, Söderlund (2004a) argues in favor of a universal theory of project management and calls for research that entails in-depth case studies that are process focused and conducted in real-time projects. Another interest of the Scandinavian School of thought is in the alternative conceptualization of projects, one such conceptualization is the focus on the temporary nature of projects organization or the 'temporary organization', which according to Turner and Müller (2003) extends the presently incomplete definitions of a project. Other works that are pertinent to this thought are by Sahlin-Andersson and Söderholm (2002), which offer a general discussion on temporary project organizations and is elaborated upon further by Kenis et al. (2009).

Relational issues such as those found in situations of partnerships and alliances are a concern taken up by Bresnen and Marshall (2000a, b), such interrelationships have also been termed as a 'nexus of contracts' (Jensen, 2000). Studies along this line include affective stakeholder management (Jergeas et al., 2000) and the exploration of the link of project management with the

principal (Söderlund, 2000). One proposal is to increase stakeholder involvement, such as that of the end-user, in project development (Jiang et al., 2002). This would certainly require involving stakeholder's identification and their management – issues pertaining to which are discussed by Karlsen (2002). In a later article, Karlsen et al. (2008) discuss various mechanisms through which stakeholder trust can be improved. A recent survey of literature covering 40 years of development by Kloppenborg and Opfer (2002) indicates that stakeholder management has received considerable interest between 1960 and 1999. In a later work, Kloppenborg et al. (2007) explore the mismatch between the project manager and perceptions of sponsor behavior. Whereas, Crawford et al. (2008) argue that project sponsors do not understand their role in a project and that extant literature on the topic is weak.

Additionally, concerns arising from the Latham and Egan reports continued to be a source of discussion. As an example, prospects of success of the British construction industry in an environment of PFI and PPP were discussed by Winch (2000), which concludes that the benefit derived from both the Latham and Egan reports is reduced litigation. In 2002, Sir Egan produced a new report entitled 'Accelerating Change' (Egan, 2002), which extends earlier recommendations. Hobbs and Andersen (2001) focusing on the front-end of projects discuss the concepts of partnering and alliancing in some detail, they conclude that optimum alliances / partnerships are contingent on projects and their contexts and that there is no one best solution. Alternatively, Bresnen and Marshall's (2002) study takes an alternative look at the case for partnering and alliances from the perspective of the complex and dynamic interplay of formal integration mechanisms and informal social processes, concluding that partnering is a varied and complex activity and does not necessarily solve all problems at the point of origin. Later, Bresnen (2007) taking a deconstructionist look at partnership presents seven paradoxes and deadly sins. Contracting from an organizational perspective is discussed in more detail by Mayer and Argyres (2004). Interestingly, Fellows (2006) observes that although a contract is an accentuation of legally encapsulated rights, duties, and remedies, it achieves this at the expense of relational duties and reciprocation. Perhaps this is why Van den Berg and Kamminga (2006) argue for a different type of a contract, one that takes cooperation and interaction into consideration, in situations of partnering and alliancing as traditional contracts are competitive in nature. A comprehensive discussion of trust and contracts in alliances is provided by Vlaar (2008).

There is also a considerable focus on governance issues in projects, for example, Winch (2001) provides a conceptual framework for governance of construction projects processes, taking influence from earlier work by Williamson on transaction cost economics. Extending the debate on governance in partnerships, Clegg et al.

(2002) concludes that good governance in projects is key in establishing better quality; bringing into perspective the relationship of projects with elements in their broader environment (Engwall, 2000). Further debate looks into the role of a project sponsor in project success and suggests that the sponsor's role should not be one of providing governance but rather support (Crawford et al., 2008). However, caution is necessary in the application of traditional project management control mechanisms to projects, as they do not work in complex environments (Bourne and Walker, 2005; Remington and Crawford, 2004), which agrees with earlier arguments presented by Williams (1999). Cicmil and Marshall (2005) concur and recommend that further inquiry into collaborative mechanisms that take into consideration the complex processes of communication and power amongst project actors, ambiguity and equivocality over project performance criteria, and the consequences of time flux (arising due to changes, unpredictability of work, and the paradox between control and collaboration) is needed. One such perspective argues that in conditions of dislocation, where the project is out of control and rational decisions are not working, what matters most are the quality of interaction with others and the nurturing of relationships (Cicmil, 2006).

Growing critiques of project management theory gave rise to the Engineering and Physical Sciences Research Council (EPSRC)'s 'rethinking project management' research network and its agenda, the focus of which is on research pertaining to complexity, social process, value creation, broader conceptualizations of projects, and reflective practice (Winter et al., 2006). An active focus of research from this network is to examine projects and their management from a critical (realist) perspective, for contributions to this stream of thought see (Cicmil, 2006; Cicmil et al., 2006, 2009a; Cicmil and Hodgson, 2006a, b; Hodgson and Cicmil, 2006, 2007). A sub-stream of this focus has been on project complexity, which is further discussed in more detail, contributions include: a discussion of various ideas from complexity theory in the context of complex projects (Cooke-Davies et al., 2007); measurement of project complexity (Geraldi and Adlbrecht, 2007; Maylor et al., 2008; Shenhar and Dvir, 2007; Williams, 2002); forecasting of cost, performance, and duration risk in complex projects (Palomo et al., 2007); tools and techniques for the management of complex projects (Remington and Pollack, 2008) - while Thomas and Mengel (2008) argue that understanding complex environments is more valuable than using tools and techniques of project management; skills for complex project management (from a governmental project perspective) (Morse, 2009), and differentiation between structural and dynamic complexity (Whitty and Maylor, 2009). Similarly, a push to rethink information technology projects has also arisen (Sauer and Reich, 2009), however, research on this agenda is not yet forthcoming. Another stream of literature has focused on relational

issues pertaining to complex projects, a collection of works pertaining to this ideology can be found in Pryke and Smyth (2006).

The issue of culture in projects features prominently within the literature as well. One such example is Fellows (2006) who offers a concise treatment of the major developments pertaining to culture. A more pragmatic discussion on culture is found in Bredillet et al. (2010), which discusses the impact of Hofstede's national cultural dimensions on the project management deployment levels in various countries. They report that project management deployment is negatively correlated with the power distance and uncertainty avoidance; there is no correlation with individuality or with masculinity; and a positive correlation with GDP/Capita. In examining the role of gender in project based work, Lindgren and Packendorff (2006) argue that the episodic nature of project work mandates an entirely different set of norms than 'outside' the project activities, as the project has a tendency to reproduce traditional masculinities even stronger. It is worth noting that culture can be studied from various vantages such as national, group, or individual; Draguns (2007) points out that focusing on only one perspective will cause us to overlook essential information available from another vantage.

Work on various general and topical themes also continues to come forward, such as: traditional project management techniques (Dinsmore and Cabanis-Brewin, 2006; Lowe and Leiringer, 2006); competition in construction projects (Smyth, 2006); theory of project management (Turner, 2006); schools of thought in project management (Alojairi and Safayeni, 2009; Anbari et al., 2008; Bredillet, 2007; Söderlund, 2002, 2009b); classification of projects into soft and hard paradigms (Pollack, 2007); uncertainty in hard and soft projects (Atkinson et al., 2008); a discussion on politics and conflicts within projects grounded in the PMBOK tradition (Irwin, 2008); and systems approaches to projects (Kerzner, 2009).

#### **KEY MOVEMENTS IN THE LITERATURE: CONSOLIDATING THE HISTORICAL DEVELOPMENTS IN PROJECT MANAGEMENT**

The key movements found within the project management literature in the form of project management schools of thought is discussed here. The various schools of project management thought may be used to form further categorizations of the literature reviewed as a part of this study.

Inspired by the work of Mintzberg (1990) and Mintzberg et al. (1998), which identifies ten schools of thought in management, other more informative project centric taxonomies have also been proposed. Rather than focusing on arbitrary time frames, these concentrate instead on categorizing the developments in project management

research by subject areas, our literature survey reveals that three such categorizations exist. The first was proposed by Söderlund (2004b) in which he identifies seven schools of thought in project management, these are: the optimization school, critical success factor school, contingency school, behavior school, transaction cost school, decision school, and marketing school. Some of these were later renamed, however, their substance remained primarily the same; the new names are: the optimization school, factor school, contingency school, process school, governance school, decision school, and relationship school. Although, Söderlund (2009b) claims that the schools of thought is an area receiving a lot of interest from the academic community, however, our literature survey reveals a handful of contributors, these include: two papers in learned journals (Söderlund, 2002, 2009b); one editorial (Bredillet, 2007) that was later presented as a short paper by Anbari et al. (2008) and eventually expanded into a book by Turner et al. (2010); and a conference paper by Alojairi and Safayeni (2009).

The taxonomy by Anbari et al. (2008) is more verbose in its categorization and identifies nine schools of thought within project management, these are: the optimization school, success school, contingency school, behavior school, governance school, decision school, marketing school, process school, and modeling school. Although, the intent of both the authors is to provide labels for classifying the developments in the field, however, Anbari et al. (2008) two additional schools of thought (that is, the process school and modeling school) are a 'misunderstanding' and add an 'additional dimension of analysis' to the field of project management (Söderlund, 2009a), the implications of which are in need of further discourse. Additionally, the complexity school of thought is completely ignored by both authors and its inclusion may extend the proposed schools rendering them more holistic and representative of the developments within the field. Although, Söderlund (2002) hints at the optimization school's efforts as a means to overcome complexity by breaking down tasks into smaller activities, however the operations research and management science approach they propose is focused only on linearly determined order and does not work well with projects that are complex or chaotic. The parallels between the three proposed schools of thought may be more explicit as shown in Table 2. Similarly, a collection of five management focuses within projects have been identified by Alojairi and Safayeni (2009). However, their schools of thought, other than using a new set of terms for some of the schools, do not contribute anything new to our discussion thus we will not discuss their work any further.

Other nomenclatures have also been proposed, which are much broader in their treatment of the developments in project management. Although, such nomenclatures are helpful in making some sense of the developments taking place within the discipline, the higher order abstraction followed by such approaches renders them



**Table 2.** Parallels between the schools of thought.

<b>Söderlund (2002) taxonomy</b>	<b>Factors constituting each school of thought</b>	<b>Söderlund (2009b) taxonomy</b>	<b>Factors constituting each school of thought</b>	<b>Anbari et al. (2008) and Turner et al. (2010) taxonomy</b>	<b>Factors constituting each school of thought</b>
Optimization school	Planning and breakdown techniques of complex tasks. Focus on how projects are planned and managed. Strives to optimize project implementation through planning	Optimization school	Logic-based, prescriptive research drawing on management science, optimization techniques, and system analysis, published in the traditions of management science and operations research	Optimization school	Focus is on optimizing outcome of projects using mathematical tools. Takes influence from the operations research domain
				Modeling school	Use of hard and soft systems theory to model the project
Critical success factor school	Success factors and project outcomes. Investigates what determines project success. Strives to target project organization by factors	(Critical success) factor school	Empirical research relying on descriptive statistics on the criteria and factors of project success and failure with a prescriptive orientation. Primarily published in literature on product development and innovation	Success school	Examines the project as a business objective. Analyzes success & failures and identifies causes. Focus is on factors internal to the project
Contingency school	Analyzes project organization design. Examines how project organizations differ. Recommendations focus on adapting project organization to contingencies	Contingency school	Empirical research, case-study and survey-based research on the difference between projects and their contextual dimensions. Primarily published in the tradition of organization theory and product development, with an ambition to draw prescriptive conclusions about organizational structures	Contingency school	Examines the project from the perspective of adaptability. Categorizes the project type to select appropriate systems. Influenced by contingency theory, leadership theory
Behavior school	Analyzes project organization processes. Examines how project organizations behave. Focus is on altering shaping processes of project organization	Process school	Interpretative and descriptive research on organizational processes, behavior and learning in projects. Mainly published in the traditions of organization theory, management studies and organizational behavior	Behavior school	Examines the project as a social system. Analyzes the management of relationships between people on the project. Influenced by OB/HRM
Transaction cost school	Analyzes governance of project organizations/transactions. Investigates how project (transactions) organizations are governed. Focus is on governance issues related to projects	Governance school	Prescriptive research on governance and contract problems in project settings. Primarily published in the tradition of organization and management theory	Governance school	Examines the project as a legal entity. Analyzes the governance of the relationships between project participants. Influence. Focus is on contracts & law, governance, transaction costs, and agency theory
Decision school	Analyzes the interplay between actors in the early stages of projects. Examines how multi-organizational projects behave in the early phases. Focuses on politicking and positioning in the project network	Decision school	Descriptive and interpretative case-study based research on politics and decision-making in projects. Primarily published in the tradition of decision making and organization theory	Decision school	Examines the information processing through the project life cycle. Influenced by decision sciences and transaction costs

Table 2. Cont'd

Marketing school	Analyzes management of the formation phase of projects. Examines how the early stages of projects are managed. Focuses on issues related to forming and championing projects	Relationship school	Descriptive case-study based research on relationships between actors in projects. Above all, published in the tradition of (industrial) marketing	Marketing school	Examines the project as a 'billboard' which is used to communicate with all stakeholders to obtain their support. Influenced by stakeholder management and governance strategy
				Process school	Examines the project as a means to an end. Explores the appropriate path to the desired outcome. Influenced by information systems and strategy

Adapted from Söderlund (2002, 2009b), Anbari et al. (2008), and Turner et al. (2010).

infeasible for cultivating a detailed understanding of the major developments driving the subject area. One such example is the work of Cicmil and Hodgson (2006a) in which they have dichotomized the developments in project management as falling either into the mainstream literature or the critical success factors literature - where, the former is characterized by a language of design, regularity, and prescriptions for humans to control complexity (Stacey, 2001; Wood, 2002) and the latter examines these as to why projects still fail despite the developments taking place in the mainstream literature (Frame, 1994, 1995, 1999; Maylor, 2001, 2005; Morris, 1994).

## CONCLUSION

Earlier we examined the foundations of project management and concluded with a discussion of several taxonomies that are useful in identifying key themes and lines of inquiry within the discipline. We provided a discussion on the various view on the project management schools of thought. This paper opens the door for further work in the context of recasting the literature examined and presenting it from the lens of these

schools. Additionally, it brings to the fore a comprehensive comparison of the various schools of thoughts and opens the debate for further additions to the schools in the form of other schools or sub-schools of thought.

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