

Project Management Bodies of Knowledge; Conjectures and Refutations

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Abstract: The traditional view of a profession is that of a discipline with a distinct set of skills and knowledge that define the area of practice and characteristics of the practitioners. This nature and area of practice of a profession is sometimes defined as its body of knowledge or 'BoK'. In the case of project management, as the discipline moves towards professional recognition, this BoK becomes a significant device that serves the needs of many stakeholders in addition to those of the practitioner or academic. The purpose of this paper is to examine the role of research in the development of project management Bodies of Knowledge. As project management emerges from the ghetto of engineering and develops its trajectory towards recognition as a profession, its knowledge area becomes even more significant because it needs to be seen to define a distinct knowledge domain that sets out the limits of the 'profession'. However, the knowledge domain can be said to have shifted so that it is still under constant review and improvement to respond to continual change. New areas of practice have emerged, such as programme management and portfolio management, that are considered to be part of the discipline hence the knowledge area requires refinement. In this paper we show that current versions of project management BoKs are poorly served by underpinning research. We contend that evidence based research should play a part in the construction of BoKs, and that other research approaches should be also seen as relevant and effective. This paper draws on experiences of updating a formal Body of Knowledge, reviews the context of a range of project management bodies of knowledge and identifies a number of issues concerning the nature of project management knowledge and how it can be represented. We conclude that BoKs serve a valid purpose but conflicting priorities affect the development process and undermine their usefulness. From the epistemological issues identified, we add our conjecture that the capacity of bodies of knowledge to represent the broader understanding of the discipline is limited.. The paper concludes with a review of some methodological implications of the interaction of stakeholder interests and BoK development practice.

Keywords: profession, body of knowledge, research design, knowledge representation, certification

1. Introduction

Many organisations now recognise project management as key to their business operations (see for example Packendorff 1995, Hodgson 2002 or Crawford 2005). As Morris et al [2000] show, a wide range of industry sectors now make use of projects and see the effective delivery of projects as a key driver in their organisational performance. In common with many new areas of knowledge and practice, project management has seen itself as an emerging profession. Partly, this has been due to the unprecedented expansion of the discipline [Morris et al 2006]. It also results from the establishment of societies that foster particular views of the discipline which have set out to demarcate areas of knowledge that they can claim as their own. As Zwerman et al [2001] pointed out; project practitioners see themselves as offering a professional service and hence see a need to have this service recognised. Thus they tend to join societies that legitimate their claims to specialist knowledge and its mastery. In their turn, these societies require documentation that can be used to provide not just recognition of a unique knowledge domain but also to form the underpinning of practitioner recognition [Shenhar 1996]. The major professional societies call these documents their Body of Knowledge (BoK).

Traditional professions, such as medicine or the law, have established the boundaries of their disciplines so that the knowledge required of their practitioners may be embodied in prescribed programmes of study at specialist schools. The nature of the knowledge component of professions and the requirements for an occupation to be classified as a profession have been the subject of extensive academic discussion (e.g. inter alia Abbott 1988, Evetts 2003, Cacciatori and Jacobides 2005, Siegrist 2002); these authors link the development of professionalism to a unique body of knowledge; either implicitly or explicitly.

In the absence of established specialist schools for project management, membership societies serving the discipline tend to use their BoKs as the basis for their certification schemes. These schemes have proved singularly popular, certainly with practitioners, as the success of Project

Management Institute (PMI) and International Project Management Association (IPMA) models show [Hodgson 2002]. In addition, access to predefined descriptions of required knowledge and the linked courses and programmes of study provided by education and training organisations are also seen as advantageous to practitioners.

In common with any knowledge based discipline, project management is not static and so the various BoKs are seen to require updating from time to time. Two of the most influential BOKs were developed in the 1980s, for instance, when most practitioners were concerned with single projects (although often very large) while more recently, interest has become focused on the management of multiple projects either as coherent programmes or as portfolios of single projects. Thus there is a periodic need to update BoKs, at least to reflect changes in practice. Such an updating process is currently underway for both PMI's version and for the Association for Project Management (APM) BoK. Interestingly, these important updates would appear to have no underpinning research basis.

Examination of the main BoKs will show that the structure varies significantly. However, there seems to be a broad agreement on the main aspects of content. This paper does not address issues of specific content, or indeed, the purposes that BoKs are put to. Rather we are concerned with the development process and the rigour necessary to produce a credible work that merits the name of Body of Knowledge.

2. BOK development

The concept of a body of knowledge seems have different interpretations in different professions. Most of the traditional professions such as medicine and law would regard their body of knowledge to consist of the range of medical libraries, research papers and text books that exist in their world [Shepherd and Johns 2006]. Thus they are much broader conceptually, are usually segmented into subsets (e.g. osteology, oncology, hematology and the like), are significant aggregations of formally documented text with a substantial research base and are embodied in a wide range of formats. In sharp contrast, Project Management bodies of knowledge are encapsulated in short, single volumes and are undifferentiated [e.g. PMI 2004, APM 2006]. This leads to the view that they are conceptually narrow, unsegmented books in a single format and with little underlying research to provide legitimacy.

The evolution of Project Management's professional associations began in the late 1960s/early 1970s. Initial activities concentrated on information exchange but soon expanded into the area of certification. As already noted, certification requires some standard against which candidates may be assessed. In the absence of existing standards, the associations - first PMI in USA, and later APM in UK, developed their own reference documents. PMI established the first version of its (Guide to the) Project Management Body of Knowledge in 1976, although it was first published in 1983. Various other national project management associations produced their own versions, in some cases quite different from PMI's, over the next 10 to 15 years. A number of upgrades have followed [Crawford et al 2006]. Interestingly, none of these documents emerged from academic institutions or, with one exception, from explicit research. Originally PMBOK[®] was based on "what most Project Managers do most of the time" but this has now been modified to "generally recognised practice...applicable to most projects most of the time" [PMI 2004: 3]. APM's early BoKs were academically led and one later version had a research based component. IPMA's approach built initially on APM's early work but has evolved into a distinctive independent form which can be adapted by its Member Associations to form the basis for their certification activities. The later IPMA versions have been developed by small teams of practitioners.

In addition to PMI and APM BOKs, there are a number of BoKs in use through out the PM world; only one other is significant for the purposes of this paper, that of the Japanese Engineering Advancement Association who published their distinctly different version in 2001 [ENAA 2001]. All these BOKs were developed over the period 1976 – 2001 [Morris et al 2006]. Not only do these documents vary in detailed content, they are significantly different in conceptual terms and to some extent in the way they were developed. PMI and APM BOKs were developed by experienced practitioners although APM have since moved to make use of academic research [Morris et al 2000, Morris et al 2006] for their 4th edition while IPMA at first used the combined elements of the British, French and German models. Japan developed their P2M well after the other key documents from an academic committee although again there is little evidence of a research based approach.

That the various versions show significant differences is hardly surprising considering the disparate approaches and the time interval; however, these differences are outside the scope of this paper which is aimed at examining the role of research in defining BOKs. However, the fact that a lack of consistent body of knowledge may hamper the development of project management as a profession seems to be a point of consensus among some academic authors (e.g. Winch 2006, Winter et al 2006).

The limitations of existing BoKs have been addressed by many authors since PMBOK® Guide first appeared (see for example Wideman 1995, Koskella and Howell 2002, Morris et al 2006, Winter et al 2006). Such criticisms point mainly to the failure of BoKs to address the issues of project complexity and the existence of multiple life cycles. While BoKs provide a useful guide to knowledge areas, the reliance on them as certification standards indicates a narrow and shallow approach. PMBOK® Guide, especially, espouses a model of projects as having clearly defined goals, a well established life cycle and a largely linear sequence of tasks [Crawford et al 2006] – fine for straightforward projects but certainly not effective for more and more projects as complexity increases. Crawford et al [2006] also note that BoKs are important for both practitioners and for their employers since they exert a considerable influence over the training and development deemed appropriate for project managers. However, this importance masks the possibility that employers with more complex projects to manage may feel that their needs are ignored and thus they may prefer to develop their own project staff, ignoring the possibility of buying more training and certification services from the professional societies.

The traditional role of BoKs can be seen as:

- Defining the scope of the discipline,
- Defining the areas in which practitioners can be expected to show expert knowledge
- Setting certification parameters

Thus they can be seen as serving several communities of interest. These are outlined in Table 1 below, from which it can be seen that some of these interests may conflict.

Table 1: BoK Stakeholder areas of interest

	Knowledge Guide	Certification Base	Major Income	Knowledge Generation
Practitioners	x	x		
Prof Societies	x	x	x	x
Academic	x			x
Trainers		x	x	

The challenges these conflicting interests pose for the professional societies and for BoK development are addressed in section 5 below.

3. Ontological issues

Project management appear to be the key words for a profession that now extends to programme and portfolio management. For project management the defining characteristic seemed to be that each project has a definite start and finish point (various BoKs) while programme management appears to include 'business as usual' that now includes the operation of the project; there are also projects that include higher levels of complexity. As stated earlier project management in some way responds to events that change over time such as the inclusion of programme and portfolio management. Themistocleous and Wearne [2000] indicated how the relative importance of topics of PM had changed over a 10 year period by taking the titles in academic papers and conference topics and Crawford et al [2006] has undertaken a similar study over a more recent time period resulting in a different set of important factors.

Project management can be considered to be an eclectic collection of topics that, individually, can be found in other professions of science, art and craft, and as these continue to develop, project management also must adopt and adapt to these same changes, such as risk and governance. The continual change of business, commerce and industry with new laws, improved working practices all demonstrate that PM will continue to be a changing discipline and that the BoKs must either anticipate

or react to such changes. Whether PM anticipates or reacts in the development of BOKs could be seen to be a combination of the two philosophical stances of the rationalist and empiricists views [Harrison-Barbett 1990]. The rationalist view would argue that practitioners start with experience and building on that knowledge would be derived through causes which are 'logically prior to the experience'. On the other hand, empiricists believe it is through our senses that we obtain knowledge after something has happened. In the true sense much depends on whether Project Management could be considered to be a science within the ontological sense, that is to say PM is 'real'. Thus project management could be tested by cause and effect. It is more likely that Project management has developed into what it is considered to be from the acceptance of new knowledge or perceptions of knowledge from practitioners and academics and this definition and understanding can be seen to be changing over time. The development of what constitutes project management is critical to enable, for example, certification to take place. This development has in some way been formalised through the maturity levels with which organisations can determine how they compare to others and to competences against which individuals can map their PM knowledge base. Over time it is highly probable that new topics will emerge as new topics for the BoK [Morris et al 2000, Morris et al 2006].

4. Epistemological issues

Following the discussion of what knowledge is required to be placed in the PM BoK, the next question is how that can be identified with some degree validity and reliability. For example, It would be reasonable to undertake a risk analysis and develop a management plan, however, the charge can always be made that any success achieved could have resulted whether the risk analysis had been conducted or not., It seems reasonable that risk should be a part of PM but it is not possible to prove this through deductive research.

Research techniques have been documented for PM (see for example Smyth and Morris 2007 and Leybourne 2007). Smyth and Morris [2007] for example studied the research methods and the epistemological issues used in the 2005 issues of The International Journal for Project Management; these include: Positivist, Empiricist, Structural and Ontology while the methods used included: Ethnographic, Multi choice, Game theory, Survey, Case study and Action research.

Turner [2006] considered the theories from other domains in order to identify which paradigm Project Management could be classified. Turner considered:

- Systems approach,
- Process,
- Projects as information processing systems,
- Organisational and management theory.

These were viewed and discussed with the factors that could be considered inherent within the following three windows:

- Defining the project,
- Governance,
- Value of the project.

If a theory for project management could be agreed, research methods would be easier to determine. However, as mentioned earlier project management continues to evolve, Atkinson [1999] wrote, 'Project management is simply an evolving phenomena, which will remain vague enough to be non-definable, a flexible attribute which could be a strength'. There will without doubt be a need for mixed research methods, for both inductive and deductive research approaches within the philosophical theories most likely to be used in Project management research.

Project Management is a phenomenon, it is what we say it is, it does not exist in such a way that cause-effect deductive research can be used solely to define what it is. It therefore requires the use of inductive logic as a research option. However, inductive logic is open to many fallacies of reasoning , for example, those of composition, division and non-sequitur. The research strategy often associated with inductive logic would be a survey [Saunders et al 1997]. The research methods within a survey strategy could include both interviews and questionnaire. The issue then is whether the study would be either attitudinal or behavioural. One such study was conducted by Robson [1997] who compared an attitudinal survey with behavioural survey method. When respondents were asked what they

thought PM involved, the replies suggested more an art based discipline. When the same respondents were later asked to what they had done (behavioural) over a period of time, the replies changed to be much more science based. That study identified a difference in the replies from the same respondents when attitudinal type questions were asked compared with behavioural type study.

How then can project management be identified? As discussed earlier, the nature of projects is evolving including the level of complexity and as such it is clear that many different research methods would be needed to provide the overall understanding exactly which elements of project management are appropriate for each individual projects, bearing in mind that projects are considered to be a 'unique' undertaking. The response is often to study projects which fail in some way by use of case studies, these can give clear points that can be catalogued. However, the results of individual case studies, for example, are unsafe to generalise. The study of success is far more difficult to conduct as it has been discussed that it would be impossible to provide a cause-effect of success. On the other hand if these successful projects could be repeated then while significance can't be determined, reliability through repeatability could be indicated. The challenge for those developing a new BoK is to determine which research philosophy, strategy and methods can provide the list of topics needed for a BoK while accepting the limitations of both deductive and inductive approaches.

5. Practicalities

Morris et al [2006] have shown that practitioners and their employers regard formal Project Management BoKs as very important. These provide guidance on boundaries of the discipline, set out certification criteria and have a significant influence on the training and education for practitioners. While there may be significant differences between the various 'brands' of BoK, there is general agreement on content [Shepherd and Johns 2006]. However, there are other interests to be taken into account as Morris et al [2006] show..

Morris and his team at University College London had been commissioned to undertake formal research to validate potential changes from the 4th edition of APM's BoK. A research plan was developed: preliminary pilot interviews held to validate a broader and wide ranging survey, focus groups to review findings and broadly constituted industry committees to review detailed content. When the results of the research were passed to APM, it was found that two problems occurred. First, the content of the new BoK was thought some stakeholders to be too complex. The needs of certification drove the draft 5th edition towards 'a more comprehensive and discursive document' in order to capture the richness and complexity of the emerging discipline. Yet the needs of certification programme were at odds with the revised draft. Secondly, Morris et al [2006] noted that structure was easier to develop than detailed content and criticism of the previous structure (as not having a narrative thread running through it) reinforced the need for a lengthier document. The structure is what people see first and from this, much of the institutional work which flows from a body of knowledge – curricula, special interest groups, library and filing systems, and so on. In the event, the structure set constraints on the institutional ability to respond to the proposed changes in topics and the perceived 'thread' running between them'. Morris et al [2006] found that there were a larger number of stakeholders than just the practitioners and the professional society. These stakeholder interests lead to significant constraints in the content and layout of the BoK, and it was clear that these constraints were not driven by the needs of practice.

Furthermore, there were also commercial interests to consider as professional societies make extensive use of their BoKs to regulate their certification processes. Changes to the underlying 'standard' impacts on existing training courses both within the industry and in company schemes so there resistance to change.

At the institutional level, any significant shift in the content is also likely to engender resistance since the different sections of the practice community need to be reassured that their existing knowledge remains valid. This is perhaps the reason that there has been little change in the general shape of PMBOK and restricted changes to APM BOK.

6. Conclusions

We have discussed that the discipline of project management continues to evolve, often in unexpected ways but understandably as the nature of projects change. Thus any document that purports to delineate the content of the discipline will also be required to evolve. We contend that there are ontological issues that have not been adequately addressed in the development of existing

BoKs and these issues pose epistemic problems when determining approaches to the structure of the documents, their detailed contents and the manner in which they have been compiled. We have thus far argued that deductive logic alone is unlikely to provide the necessary level of quality within most PM studies, in particular when attempting to identify 'what is PM', but could add to a mixed methods study to provide a richer picture. Inductive logic is prone to errors of logic through fallacious reasoning and attitudinal and behavioural studies have provided markedly different conclusions from the same respondent data source. This should not however prevent the search for what is PM from continuing and continual development of the project management Body of Knowledge, it is simply to indicate the potential weakness and limitations of some conclusions that different research designs will generate. In this preliminary study, we make only tentative recommendations, these are:

- To Seek consensus on the ontological nature of PM. This will encourage a range of useful and agreed research methods to be devised in order to bring methodological discipline to the field.
- The research community will need to engage with the 'membership associations' to identify the contribution academic research might make to BOK development.
- Alternative methods will need to evolve to overcome the current lack of theoretical base for the discipline. We propose evidence based research approaches to help overcome this problem.
- Closely linked with Recommendation 2 above, we believe that it will be important to encourage action research in an effort to engage with practitioners in research.
- Propose alternatives to research approaches based on observation or case studies – or at least to set up programmes of related case studies to assist with theory building

The purpose of this paper was to examine the role of research in the development of project management Bodies of Knowledge. In conclusion, the paper identifies that there is no single theory of project management emerging (this is not seen as a weakness since other major professions operate under the same development). But this clearly places project management in the phenomenological paradigm, that cannot be tested as would be possible if it were positivistic. However, using mixed methods is still possible and advisable in the constant development of the Body of Knowledge that can be seen as a catalogue of reflective practice that can be considered a 'network of knowledge' (Moon 2005) which, at any one point in time can be considered 'best known practice' but naturally requires constant attention since the business, commerce and industry are constantly changes around project management and as such, project management has to reflect those changes in it's ontological position and how to cope with the epistemological of knowing that knowledge is correct.

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