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An island of constancy in a sea of change: rethinking project temporalities with long-term megaprojects

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Abstract: This paper examines the organizational phenomena of long-term projects. While the research literature frames projects as “temporary organizations”, megaprojects may have very long initiation and delivery phases, which may last for many years, sometimes even decades, and they deliver capital assets that are used for decades or centuries. Instead of a short-duration activity within a fixed organizational context, these projects involve multiple temporalities, with a range of more and less temporary forms of organizing combining in the process of enactment. Drawing on an example of a long-term infrastructural megaproject, a wind-farm, to illustrate the phenomenon, we contribute by articulating different temporalities associated with the delivery project, the life-cycle; the stakeholder organizations that set up the project; and the special purpose vehicles through which it is delivered and, with reference to understandings of risk and knowledge, consider some implications for these temporalities project management research and practice. We argue that focus on the multiple temporalities associated with long-term projects opens up new ways of thinking about projects as temporary organizations for researchers and practitioners.

Keywords

Temporalities; long-term projects; stakeholders; temporary organizations, risk, knowledge.

Highlights

- Examines the organizational phenomena of long-term projects
- Articulates how these projects involve multiple temporalities
- In them; the project, stakeholders and special purpose vehicles differ temporally
- The project may outlive owner and delivery firms; end dates may be negotiated
- Focus on multiple temporalities offers new insight for researchers and practitioners

Introduction

When practitioners and scholars label an entity a ‘project’ they typically demarcate an organizational form that is less temporally durable than its surrounding organizational domain (PMBOK, 2013; Turner and Müller, 2003). Assumptions about the relative impermanence of a project vis-à-vis its organizational milieu encompass both academic treatises on projects as ‘temporary organizations’ (e.g. Bakker, 2010; Bakker et al., 2016; Bechky, 2006; Burke and Morley, 2016; Jacobsson et al., 2015; Packendorff, 1995) and definitions of projects used by professional project management associations (Caupin et al., 1999; PMBOK, 2013). The Project Management Institute’s (PMI) Project Management Body of Knowledge (PMBOK) explicitly delineates its domain of knowledge from other management activities through the relative temporariness of projects:

Operations are ongoing endeavours that produce repetitive outputs, with resources assigned to do basically the same set of tasks according to the standards institutionalized in a product life cycle. Unlike the ongoing nature of operations, projects are temporary endeavours (PMBOK, 2013: 12).

Similarly, academic research on projects as temporary organizations has consistently drawn attention to ‘Perceived time limits’ on projects as ‘as one property that differentiates temporary organizations from most of their permanent counterparts’ (Packendorff, 1995: 327). Or, as Jacobsson et al. (2015) more recently explain, the project as temporary organization is to be defined as ‘being more or less determinate in its lifespan, as opposed to permanent organizations being indeterminate’ (p15). Such views are often conflated with, and

affirm, a parallel assumption that projects are outlasted by a surrounding milieu of more enduring organizational forms. The assumption that projects are outlasted by a surrounding milieu of more enduring organizational forms is arguably *the* defining image of organization used to apprehend this organizational entity. Consequently, most scholarly deliberations on projects are predicated on a contrast between the temporalities of projects and ‘permanent contexts’ (Sydow et al., 2004: 1477) – that is, between project time as a ‘dedicated urgency and stimulating scarcity’ (Packendorff, 1995: 327) and an organizational milieu where time is ‘eternal’ (Lundin and Söderholm, 1995: 450), composed of ‘ongoing and repetitive business processes’ (Grabher, 2004: 1477) and ‘enduring interpersonal networks, epistemic communities and industries’ (Bakker, 2010: 480). Such work has focused on contexts in which a well-established project-based organization has multiple projects (e.g. in oil and gas (Prado and Sapsed, 2016); or in film (Stjerne and Svejenova, 2016)). From instrumentalist approaches to ensure project control (PMBOK, 2013), through deliberations on the challenges of project-firm learning and innovation (Brady and Davies, 2004; Grabher, 2004), to critical expositions of work intensification (Andersson and Wickelgrenn, 2009; Clegg and Courpasson, 2004), project research is persistently prefigured on a dichotomy of durability between a longer lasting organizational milieu and an ephemeral project.

Our starting point in this theoretically orientated paper is to interrogate the limits and significance of this temporal configuration, as found both within the theorization of projects as temporary organizations, and project management research. In so doing we consider a group of projects that while they adhere to many of the defining features of projects, from the presence of externally imposed goals and defined time limits (PMBOK, 2013; Lundin and Söderholm, 1995; Jacobbson et al. 2015), often, endure, and are often perceived from the outset to endure, far beyond the life of their surrounding organizations: long-term

infrastructure megaprojects. Despite their increasing prevalence, size and complexity (Davies et al., 2009; Eweje et al., 2012; Flyvbjerg, 2014; Flyvbjerg et al., 2003; Giezen, 2012; Kardes et al., 2013; Ruuska et al., 2011; van Marrewijk et al., 2008), the temporality of megaprojects has had limited attention: they have only fleetingly featured within the theorization of projects as temporary organizations. Although, as Jacobsson et al. (2015: 15) make clear, the time criterion to consider projects as temporary organizations relates not to their short duration but to their fixed longevity (cf. Grabher, 2002: 207; PMBOK, 2013), long-term projects are nevertheless routinely marginalized within the theorization of temporary organizations. Sydow et al. (2004), for instance, surmise that while projects lasting over a few years are temporary organizations, their learning processes are likely ‘not very different from those of permanent organizations’ (p. 1481). Equally, Jacobsson et al. (2015: 15) note there exist ‘exceptional examples of temporary organizations that have outlasted the permanent organization’, yet they then refrain from evidencing the empirical prevalence or theoretical significance of such a seemingly incongruous temporal configuration.

Set against this under-theorization, the aim of our paper is to consider how the longer time duration of some projects, such as infrastructural megaprojects, interacts with an often less obdurate, more capricious, organizational milieu. In so doing we will then consider some of the possible implications of such less discussed organizational temporalities for the development of theories of temporary organization (Jacobsson et al., 2015; Lundin and Söderholm, 2013). Although partly informed by research on the management of megaprojects (Eweje et al., 2012; Flyvbjerg, 2014), our paper departs from this body of work by considering the implications of conceptualizing such long-term projects as ‘temporary organizations’, wherein the purpose of research is to ‘understand project phenomena, rather than find prescriptions and tools’ (Jacobsson et al., 2015: 11). As such, our paper principally engages

with, and problematizes existing research conceptualizing the temporalities between temporary and permanent organizing (Bakker, 2010; Bakker et al. 2016; Bechky, 2006; Burke and Morley, 2016; Lundin and Söderholm, 1995; Packendorff, 1995; Sydow et al. 2004; Tyssen et al. 2014). Although some work has begun to acknowledge and explore the temporalities of project (Gustavsson and Hallin, 2015; Ligthart et al., 2016) and megaproject (Marrewijk et al., 2016), organizing, there is a lack of research reflecting on the temporalities of long-term project organizing. In order to flesh out the significance of our engagement with this empirical phenomenon we focus here upon its implications for how risk is understood and knowledge generated and shared across the multiple temporalities that characterise major infrastructure projects. Our decision to focus here upon risk and knowledge is intended to offer an exemplification of the extent to which recognizing the multiple temporalities of megaproject organizing, poses theoretical questions that open up new avenues for empirical research for both project management, and temporary organization, researchers.

In the next section, we examine current conceptualisations of the relative temporalities of projects and their contexts, and how a particular assumption that projects will be outlasted by their organizational milieus inflects how they are usually understood and managed. To address the more practical and tangible implications of these temporal assumptions, we then discuss how they underpin current engagements with project risk and knowledge. In the following two sections, we then characterize the multiple temporalities of long-term project organizing drawing upon empirical data generated by a pan-European study of infrastructural megaprojects. An example of a long-term infrastructural megaproject – a large off-shore wind farm in the United Kingdom – is discussed to illustrate the complex temporal configurations of megaprojects. In our discussion section, the empirical analysis is then used to discuss the relevance of long-term megaprojects to open up new questions and avenues for research in

the projects as temporary organization literature. We find the project itself may outlive the associated owner and delivery firms involved in its delivery; and has multiple temporalities associated with the delivery project; life-cycle; stakeholder organizations that set up the project; and the Special Purpose Vehicles (SPVs) through which many long-term projects are delivered. In the final section of the paper, we conclude by examining how the phenomenon of long-term projects may require us to rethink some of the founding assumptions of how we apprehend projects as both temporary organizations (Lundin and Söderholm, 1995; Jacobsson et al. 2015), with a particular reference to issues of risk and knowledge management, and how the idea of multiple temporalities may open up new ways of thinking for researchers and practitioners.

The relative temporalities of projects and their environments

Understandings of projects are highly pluralistic in terms of their epistemologies, methods and metaphors of organization (Bredillet, 2008; Söderlund, 2011; Turner et al., 2013; Winter and Szczepanek, 2009). There is general agreement that projects need to be understood in relation to their organizational context (Engwall, 2003); that megaprojects and their contexts are mutually interdependent (Millar and Lessard, 2001); and as Söderlund (2004: 185) identifies, projects are relatively ephemeral within wider organizational contexts. Nevertheless there are discernible differences of emphasis in how and why such relative impermanence is articulated, whether in terms of project duration, goal orientation and relationships with permanent organizations.

Interpretations of the duration of projects as temporary organizations vary widely. Bechky (2006), for example, characterizes temporary organizations as ‘flexible, discontinuous and, ephemeral’ (p3). For others, such as Sydow et al. (2004), absolute quantitative limits can be placed around the notion of projects as temporary organizations, such that temporary organizing explicitly corresponds with the short-term projects, with an assumption that learning processes in long-term projects, of over 5 years, are more similar to that of firms (for a similar short-term definition see Tyssen et al. 2014). Other researchers consider that organizations with a time-span of over 5-10 years should be considered as temporary organizations if their lifespan is finite:

There seems to be a debate in the literature on whether systems of relatively longer duration (although still limited by a deadline in a distant future) should be called ‘temporary’. The dominant view suggests they should (Bakker, 2010: p. 474).

In the light of the above definition, in which the notion of temporary organization is about time boundaries that are established ex-ante (see also Bakker et al. 2016) rather than their absolute short duration, it becomes meaningful to consider long-term infrastructural megaprojects as temporary organizations. Indeed, citing the case of the Hultsfred Festival (Lindgren and Packendorff, 2005), Jacobsson et al. (2015: 15) suggest there exist in the extant literature at least one exceptional example of a temporary organization that outlasts its surrounding organizational milieu (Karmowska et al., 2016). The empirical case of long-term infrastructural megaprojects suggests that such examples are increasingly far from exceptional, and indeed worthy of greater theorization.

As is evident, researchers have increasingly resisted absolutist duration-based definitions of projects as short-term temporary organization (as in Sydow et al., 2004), and instead moved towards a definition of projects as temporal organizations on the basis of their ex-ante time-defined goals (Bakker, 2010; Bakker et al., 2016; Hanisch and Wald, 2014; Jacobsson et al., 2015; Maaninen-Olsson and Müllern, 2009). Thus Burke and Morley (2016) explain: ‘Despite the subtle nuances in emphasis, all definitions do agree that temporary organizations have an *ex ante* determined termination point’ (p1237). Unlike permanent organizations, temporary organizations can thus be further characterised as being tasked to achieve a particular objective (Lundin and Söderholm, 1995), set and monitored by a long-lasting organizational milieu. Thus Kenis et al. (2009) define a temporary organization as follows:

A temporary organization forms for the purpose of accomplishing an ex-ante determined task that has a pre-determined termination point. It can be intra-organizational, occurring within an existing non-temporary organization, or inter-organizational, a joint collaboration amongst a number of organizations (Kenis et al., 2009: p. 2 [italics in original]).

As Kenis et al. (2009) indicate, the traditional view is that projects sit within firms, or across groups of firms, and that these firms outlive projects. This relative durability is assumed because it is this milieu of external organizations that establishes and controls goals for the project, giving rise to another recurring definitional condition of temporary organizations:

their ‘institutionalized termination’ (Lundin and Söderholm, 1995). Thus, any project goal is said to require an ex-ante termination date whether ‘fixed either by a specific date or by the attainment of a predefined state or condition’ (Bakker et al., 2009: 203). This latter caveat is important in indicating an analytical distinction between defined temporariness, where a fixed goal is completed on time, and a project is terminated as planned, and precarious temporariness, where a goal shifts and thus project termination is extended but still mandated and *always* sought after (Karmowska et al., 2016). Thinking along these lines, Gustavasson and Hallin (2015) make a similar analytical distinction in their framing of projects as temporary organizations, between ‘goal-orientated’ projects with predetermined ex-ante time boundaries and ‘goal-seeking’ projects that are working towards the definition of ex-ante time boundaries. Both project types can thus be regarded temporary organizations on the basis of an existing or aspirational ex-ante time-limited duration. Indeed, as Jacobsson et al. (2015) explain, a defining feature of the temporary organization is the ‘external organizational requirement or pressure in terms of one or more of ... goal, expectation, or control’ (p15).

We herein follow the emerging consensus in previous work that suggests it is their pre-determined duration, whether on the basis of existing, or aspired, time-based or other goals, that defines projects as temporary organizations. But, in so doing, we also want to draw attention to a less considered assumption regarding relative temporalities within work on projects as temporary organizations. That is, despite the shift away from absolutist definitions of temporary organizations as short-term towards time prescribed definitions of temporary organizing, the temporary organization literature remains predicated on a naturalized temporal distinction from permanent organization. In their seminal writing on the subject, Lundin and Söderholm (1995) describe this difference thus:

For firms whose future is perceived as eternal, the future will naturally continue to be seen as eternity: the result of subtracting any finite number from infinity always leaves infinity. For the temporary organization, on the other hand, time is always running out since it is finite from the start, limited for instance by contracts or other conditions (Lundin and Söderholm, 1995: p. 439).

The difficulty with this distinction is that it suggests that members of ‘permanent’ organizations perceive that their organization will last into infinity and on this basis it is to be regarded as permanent. It is easy to evidence that a project, whose purpose involves its extinction, will not last forever, and is thus a temporary organization (Packendorff, 1995; Lundin and Söderholm, 1995). However this rather safe assumption has seemingly been conflated with a much more difficult assumption: organizing around an ex-ante termination date means that the temporary organization is *always* relatively less durable, or lacking in ‘permanence’, relative to organizations without such a date. It is this assumption around temporary organizing, that remains mostly assumed rather than empirically tested, that forms the point of theoretical departure for this paper.

The recurrent naturalized distinction between the temporalities of ‘permanent’ and ‘temporary’ organizing in the literature (Bakker et al. 2016; Burke and Morley, 2016; Tyssen et al. 2014) evidences a pervasive lack of reflection on the assumption that impermanence *always* goes hand in hand with a pre-set organizational duration. Bakker et al. (2016), for example, develop a typological distinction as a continuum between temporary and permanent

organization, wherein ‘only the classic permanent organizational form ... is typically not related to temporary organizing efforts’ (p1706). As they then explain: ‘temporary in our view should refer to predetermined duration, i.e., whether at the outset the time boundaries of an organizational process or venture are explicitly set...’ whereas “‘permanent” in this view is understood as “indeterminate”—that is, open-ended with regard to time horizon’ (Bakker et al, 2016: 1708). This seemingly straightforward distinction glosses over the empirical complexities that long-term infrastructural megaprojects, and other organizational forms present in assuming that ‘permanence’, or a perception of increased organizational permanence, is always an outcome of a lack of organizing a defined termination date. After all, no organizations will last to eternity, and all are in any case always in a state of flux or becoming (Tsoukas and Chia, 2002). More empirically, a 2002 survey of Fortune 500 companies reveals an average lifespan of just 40 to 50 years (De Geus, 2002); while equally in the US, the average time spent in one company is just 4.6 years within an average career lifespan of just under four decades (Department of Labor, 2016).

Long-term megaprojects with fixed termination dates of one or more decades, may, in the context of employee and organizational temporalities, readily presage a relative increase in durability and permanence over and above organizations with no fixed termination date. As Gustavsson and Hallin (2015) put it: ‘In today’s “post-bureaucratic” organizations, characterized by turbulence and constant restructuring, the project in many cases stands for permanence, for example, rather than temporality’ (p371). Long-term megaprojects have, or look to have, a pre-defined duration, and, as such, can be considered temporary organizations (Bakker et al. 2016). And yet, it is considerable more difficult to empirically evidence they are *always* less enduring, or permanent, than the organizational milieu that surrounds them, or indeed initiates and controls their ‘institutional termination’. Indeed, the surrounding

organizational milieu, let alone members, that set or seek their initial goals, and end date, are highly unlikely to remain the same through to the point of that termination.

Understanding the significance of relative temporalities through project risk and knowledge

Given the extent to which the concept of the temporary organization has become analytically unclear, not least because of the difficulty in empirically validating abstract temporal dichotomies between temporary and permanent organization, we propose that what is required is further empirical analysis of concepts associated with temporary organization that tests, and challenges, rather than confirms the limits of their applicability. In order to develop such an analysis we briefly review two strands of understanding related to projects as temporary organizations on risk and knowledge. These strands are mobilized because of their significance within the projects as temporary organization literature (and related project management literature), and because they are prefigured upon, and serve to reinforce, an assumption of the relative impermanence of projects vis-à-vis their surrounding organizational milieu. Our aim in engaging these concepts here is to highlight what is at stake in our understanding of projects as temporary organizations when we can no longer assume the relative permanence of a surrounding organizational milieu.

Risk has long been a central strand in the way projects are defined as relatively less durable than their organizational milieu. The *Guide to the PMBOK* (2013) repeatedly evokes the concept of risk to articulate a boundary between the ephemeral project and its external milieu

of permanent organizational stakeholders. Unexpected changes to project goals (e.g. increases in the scope of the project) and resources (e.g. increases in staff time or delays in budget approvals), mandated by permanent organizations, are herein related to positive (opportunities) and negative risks this might present to the one or more permanent organizations with a stake in the project; this diagnosis feeds into an evolving and probabilistic risk management plan which categorizes risk on the basis of their probability and impact on the same permanent organizations, taking into account prefigured risk appetites and tolerances. This risk management plan can then be used by project stakeholders to track old and new risks and define risk control strategies in advance of their emergence (PMBOK, 2013).

As Hanisch and Ward (2014) indicate, in their consideration of complexity in temporary organizations, what underpins the way risk is understood in projects, and other temporary organizations, is a contrast with permanent organizing, categorized as ‘Low degree of novelty, less uncertainty and risk, routine-based work’ (PMBOK, 2013: 199). Indeed, as the PMBOK (2013) approach illustrates, it is only from the purview of a contrasting permanent organization where uniqueness, and thus complexity and unpredictability, is relatively minimal, that risks within a project, and around a project context, can be effectively managed. To make this point clearer still, imagine a counter-example – a project where the stakeholder organizations involved were too ephemeral to purposefully identify their risk appetites or tolerances or indeed track risks across a project. Such a project is clearly difficult to view positively in terms of stability, from the point of view of how the PMBOK define risk management. The root assumption at work here in these deliberations on risk management is that a project is a relatively less durable temporary organization, with a defined termination date, that will typically, though certainly not always (Engwall, 2003; Grabher, 2004), be a conduit through which more unique and thus complex, unpredictable and risky work is undertaken (Burke and

Morley, 2016; Hobday, 2000; Packendorff, 1995). Permanent organizing is not viewed as less risky because it is geographically commonplace but rather because it is temporally consistent, and thus benefits from an accumulated knowledge base, and heightened level of trust in that knowledge, from which risk can be more effectively controlled and ‘optimum practice is possible’ (Atkinson et al. 2006: 693). The question which we will revisit in the subsequent sections of this paper is how we might rethink project risk in a temporary organization such as a long-term infrastructural megaproject where an accumulated knowledge based might accrue within, not beyond, the project. In order to further refine our exploration of this subject we will now consider another strand of understanding projects as temporary organizations which is heavily predicated on their relative impermanence – knowledge.

The relative impermanence of projects as temporary organizational forms vis-à-vis a permanent organizational milieu is also persistently identified as a key feature and challenge for knowledge management in projects. The central concern here is a ‘learning paradox’ (Bakker *et al.* 2011) which is frequently said to surround project work wherein, while projects are, as a result of their unique task focus often an excellent domain for context-specific knowledge creation (Grabher, 2004; Hobday, 2000; Lundin and Söderholm, 1995; Prencipe and Tell, 2001), their relative impermanence has a major negative impact on knowledge sharing:

... the temporary nature of projects by the same token seems to inhibit the sedimentation of knowledge, because when the project dissolves and participants move on, the created knowledge is likely to disperse (Bakker et al., 2011).

Such sentiments on the organizational amnesia of projects as temporary, time-limited, organizations, and the wider knowledge learning paradox have been repeatedly acknowledged in the literature (Brady and Davies, 2004; Burke and Morley, 2016; Grabher, 2004; Hobday, 2000; Scarborough et al. 2004; Sydow et al. 2004). And just as with risk, here the concept of knowledge helps clearly articulate the significance of a temporary boundary between the relative impermanence of a less durable, time-limited project and a surrounding indefinite, more permanent, organizational milieu of project stakeholders. Responding to this view, Bakker et al (2011), describe how the level of connectivity, or embeddedness, between the parent organization(s) around the project, enables successful knowledge management within temporary organizing. In other words, while the relatively less permanent project itself might be prone to organizational amnesia, this can be mitigated if it is sufficiently well connected to a wider set of time indefinite relationships, that take shape within (Brady and Davies, 2004) and between parent firms, epistemic communities and personal networks (Prencipe and Tell, 2001; Grabher, 2004; Scarborough et al. 2004). To this end, Bakker et al (2011) identify various factors influencing knowledge sharing between the permanent organizations involved in the project, including relational embeddedness (frequency of interactions creating trust and resource commitments), cognitive embeddedness (shared meanings leading to mutual understanding but sufficient differences to enable learning) and temporary embeddedness (longevity of relationship creating structures for knowledge sharing and a shared knowledge-base), along with their accompanying ability to absorb and recognize the value of knowledge and motivations (willingness to share knowledge). Bakker et al's (2011) empirical research suggests that: 'there is a clear and unambiguous responsibility of the project owner (the permanent parent organization) in project knowledge transfer' (Bakker et al. 2011: 502).

Set against the empirical context of our research, what is missing from these debates is the extent to which a project, time bounded by decades, rather than years, retains its primacy, over a time indefinite (often shorter lived) organizational milieu, as a domain for risk control (Hanisch and Ward, 2014) and knowledge exploration over exploitation (Brady and Davies, 2004). Such important questions remains unaddressed when researchers continue to naturalize the dichotomous view of project temporalities as less durable than their environment as a result of their existing, or desired, time-limited duration (Bakker et al. 2016). In what follows we will challenge this assumption, and by extension address the questions this challenge possess for our exemplary concepts of risk and knowledge, with reference to our empirical context – long-term infrastructural megaprojects.

Long-term infrastructure megaprojects as temporary organizations: characterizing the phenomenon

Large infrastructure projects are ‘megaprojects’, where these are defined loosely as those projects with budgets of over \$1 billion (Davies et al., 2009; Eweje et al., 2012; Flyvbjerg et al., 2003; Kardes et al., 2013; Merrow, 2011) with some project costs, for example in nuclear decommissioning, now reach up to and beyond \$100bn (e.g. Flyvbjerg, 2014). The characteristics of such projects are significantly different from those which take place within a single firm and are of a short duration, for example in new product development. Megaprojects are of significant scale and delivered through coalitions and collaborations across the boundaries of firms and they have extended delivery phases, which take years and sometimes decades. The phenomenon of megaprojects has been examined largely in relation to external stakeholders, front-end decisions and impacts: the poor performance of megaproject delivery

(Flyvbjerg, 2014; Flyvbjerg et al., 2003); the political nature of strategic decisions about which projects to fund, and the associated corruption (Marrewijk, 2015; Nguh, 2013), and the broader societal consequences of these projects (e.g. Müller, 2011). Relatively less attention has been paid to their potential to be understood from the analytical prism of projects as temporary organization (Bakker et al. 2016), and thus their multiple, and complex, temporalities have been overlooked. Yet as we have sought to show above there is an emerging consensus that any time-bound organizational form is a temporary organizations (Bakker et al. 2016: 1708). Long-term infrastructure megaprojects can thus be defined as temporary organizations with contractually limited lifespans and temporal phases (Lundin and Söderholm, 1995). The legal entities, the Special Purpose Vehicles (SPVs), that are set up to deliver them may similarly be regarded as temporary organizations if their existence is legally or de facto linked to the achievement of defined project goals (Brookes and Sainati, 2015). These firms are typically involved across the operational lifetime of the assets (from construction to decommissioning), which may be years, decades or, in a few cases, such as railways, centuries. And yet, the sponsoring firms that establish projects and SPEs, set and monitor goals, and resource them, might endure for far less time despite their indefinite termination dates. In short, viewed as temporary organizations, megaprojects are troublesome cases. While temporary organizations, they are far from temporary relative to most other organizations. In fact they often last longer than the supposedly stable and permanent forms of organization through which they are created and associated. They thus resist and complicate the prevailing dichotomous view of project temporalities introduced thus far within this paper, suggesting instead the need to consider a more complex set of multiple temporalities within their project ecologies.

<<Insert Table 1 here>>

Table 1 compares the characteristics of long-term projects with the way that projects are described as temporary organizations. Some of the recent work on megaprojects problematizes what is meant by a project or a temporary organization, it draws attention to the changing boundary between project delivery and operations; to the multi-organization nature of delivery and to the SPV or firm within the evolving inter-firm coalition that delivers the project.

In seeking to understand the multiple temporalities of long-term megaproject it is important to establish their typical ecologies (Grabher, 2004) and some important factors complicating a consideration of their temporalities. In the context of such projects, the term ‘ecology’ refers to the environment of the project, with its surrounding set of other involved organizations, which may be public or private (Lobo and Whyte, 2017; Winch, 2013). First, it is crucial to define when a long-term infrastructural megaproject begins and ends. This seemingly straightforward question is complicated by contractual arrangements such as Public-Private Partnerships (PPP) which may involve separate, or singular, firms across the initiation, delivery, commissioning, operation and decommissioning of infrastructure. One way to theorize this situation is to see megaprojects as time-limited delivery projects, handing over to an operation phase, with a multiplicity of temporalities and patterns of temporariness and continuity across this hand-over. In this instance, a termination phase could be defined as the formal opening, or commissioning, of the piece of infrastructure for regular use by the operations team. Another approach is to argue that projects themselves encompass an operation phase. Alderman et al. (2014), for example, highlight a service-led operational phase associated with train, sewerage and port equipment projects. They see all stages of project delivery as increasingly influenced by the client’s customers (Alderman et al., 2014) as well as by the environment, supply network and client, as a result of this greater level of integration between delivery and operation. A more radical view, as indicated in simplified form in Figure 1, would

be that in long-term projects the whole life-cycle of the infrastructure is one project (Alderman et al., 2014; Brady et al., 2005): that includes the initiation, delivery, operation and decommissioning of infrastructure.

<<Insert Figure 1 here>>

These multiple termination dates are far from unusual and are suggestive of a deeper complication to an analysis of megaproject temporalities, namely that different stakeholder organizations might view the temporalities of certain megaproject differently dependent upon their particular engagement with it. That is, there may be no universally agreed upon termination date but rather prospective multiple termination dates which correspond with distinct project phases spanning decades or even centuries.

Another complicating ingredient in the temporalities of such megaprojects is that there is a widespread use of a form of project organization that was founded on employing an equity-based SPV. This organization has a specific purpose to design, deliver and sometimes to operate large scale infrastructure megaprojects. Special purpose vehicles are legal entities (usually a limited company of some type or, sometimes, a limited partnership) created to fulfil specific objectives (Sainati et al., forthcoming). Once these objectives are fulfilled the SPV will usually be dissolved as its existence is either legally or de facto linked to pre-defined project goals which are themselves time-limited (Brookes and Sainati, 2015). In this sense, this kind of firm, while often lacking an explicit, legal, termination date, and thus failing to adhere directly to some definitions of a temporary organization (Bakker et al. 2016), might be regarded

as a temporary organization *by proxy* as its existence is inextricably linked to the *ex-ante*, temporal goals of the project. While the use of SPVs has received attention in the project literature (Daube et al., 2008; Grimsey and Lewis, 2002) the implications of these forms has not been considered beyond their ability to mitigate and share risks, with limited exceptions (e.g. Smyth and Edkins, 2007). To fully consider long-term megaprojects as temporary organizations, we must examine the full range of uses of SPVs from purely financial instruments to organizational structures, governance mechanisms and temporary contexts in which complex behaviours are enacted.

Set against these temporarily bounded, but somewhat long lasting, temporary organizations, the organizational and commercial context within which such long-term projects are developed is increasingly dynamic and unpredictable (Flvbjerg, 2014; Pitsis et al. 2003; Williams et al. 2015), challenging assumptions of unchanging firms in stable industries. To this end scholars have examined how project cultures, and differences between the project culture of the megaproject and associated organizations can affect performance in the face of pervasive uncertainty, complexity and ambiguity in project environments (van Marrewijk et al., 2008) and how strategic decisions within megaprojects are negotiated with external stakeholders (Lundrigan et al., 2014). While some, such as Sanderson (2012), have argued the organizational milieu that constitutes megaprojects is so dynamic, it demands new epistemological and methodological approaches wherein knowledge is derived from practices of spontaneous governing in and around projects not simply from the *ex-ante* governance calculations and decisions of ‘permanent’ sponsoring organizations.

The megaproject ecology encompasses a complex mix of multiple temporalities spanning a multiplicity of time-limited goals within a project plan, a goal-limited SPV, and a capacious mix of time-indefinite project sponsors, contractors, supply chains, and other stakeholders. Notwithstanding this temporal complexity, all long-term infrastructure megaprojects can readily be said to adhere to all the characteristics frequently ascribed to the three conditions that Jacobsson et al. (2015) proposes define temporary organization: (i) external pressure (for goal, expectation, control); (ii) internal management (of team, task, time); and a (iii) choice process and an ‘end state’ that is to be or has to be reached. In affirming this categorisation we intend to unpack the creatively troublesome implications for how we might understand megaprojects, and other long-term projects, as temporary organizations. To illustrate more precisely what is at stake here we now turn towards the case of the Greater Gabbard Offshore Windfarm (Brookes, 2015). A more detailed focus on this windfarm allows us to start to consider the implications of these temporalities for how we understand projects as temporary organizations with reference to our exemplary concepts of risk and knowledge.

Greater Gabbard Offshore Windfarm

In 2002 in the UK, the Crown Estates, as part of the UK Government’s commitment to achieving carbon emission reductions, auctioned a series of licences to establish large off-shore wind farms to generate electricity. One of these licences was provided to establish an off-shore wind farm off the coast of South East England at a site called Greater Gabbard. This licence was purchased by an organization set up specifically to deliver a wind farm called Greater Gabbard Off-Shore Wind Ltd (GGOWL). The case of GGOWL provides exemplar features of a long-term project organization (an SPV) established to support a specific project;

the relative longevity of the project; and significant perturbations in its ‘permanent’ organizational milieu. Figure 2 shows the development of these.

<<Insert Figure 2 here>>

GGOWL was initially set-up as an SPV, which was organized as a joint venture between Airtricity (an entrepreneurial young organization based in the Republic of Ireland) and Fluor (a well-established contractor with a long record of large infrastructure project delivery). In the period 2003 – 2007, GGOWL successfully applied for all of the permits associated with the provision of an extremely large off-shore wind farm (The wind farm comprising ~150 turbines has a capacity of 500MW, enough to power 530,000 homes in the UK).

The first perturbation in the ‘permanent organizations’ with which GGOWL was associated was the demise of Airtricity through its takeover by Scottish and Southern Electricity (SSE) in 2007. At this point the original owner of Airtricity left this megaproject completely to form another completely separate renewable energy company. SSE were then faced with developing an ongoing relationship with the other owner of GGOWL, Fluor. SSE resolved this issue by purchasing Fluor’s share of the GGOWL from Fluor for £40M. GGOWL, at the instigation of SSE, then contracted with Fluor to act as the EPC (engineer-procure-construct) contractor for the offshore wind farm (excluding turbine provision which was delivered by Siemens). The contract comprised a fixed sum agreement of \$1.8bn.

GGOWL underwent another change in ownership later in 2008 when SSE decided to sell 50% of its shares in GGOWL to the German power utility company RWE for £308M. At this stage,

therefore, GGOWL had experienced four owners in five years. Meanwhile, GGOWL had continued in its activity of delivering the offshore wind farm and in late 2008 entered its construction phase. Once it entered its construction phase GGOWL began to experience substantive difficulties in its construction activity leading to a number of delays. Tier 1 subcontractors went bankrupt leaving large proportions of undersea cable to be laid. The foundations on which the turbines were located were provided by inexperienced subcontractors. Significant numbers of these were not to specification and had to be re-welded. These factors led to a delay in construction of the project of over eighteen months. As a result of these delays, in the last quarter of 2010, Fluor made provision in its accounts for losses of £340 million. The relationship between GGOWL and Fluor deteriorated even further and in 2011, Fluor sued GGOWL for £300m; a lawsuit which in 2013 Fluor were ultimately to settle outside court.

Despite these difficulties the Greater Gabbard wind farm was opened in July 2013 by the UK's Energy Minister. This means that the GGOWL SPV has had an existence as a temporary organization for 11 years during which time it was responsible for the design and delivery of the wind farm. Over this time-period, GGOWL experienced the demise of one of its original 'permanent' organization owners (Airtricity) and has experienced substantive changes in the nature of its subsequent owners during this period; a Tier 1 subcontractor went bankrupt, and the relationship with Fluor changed from part ownership to EPC contractor to legal challenger, with GGOWL receiving a £300m claim and making counter claims¹. The 2007 document setting out the plan for the eventual decommissioning of the wind farm states that:

¹ See <http://www.nabarro.com/clients/greater-gabbard-offshore-wind-ltd/case-study/> accessed 06/01/2017

Whilst the design life for the project is 25 years, the lease term for is 50 years. As such, GGOWL's expectation is that the project will be 're-powered' midway through the lease term. In comparison to full decommissioning as described above, this is only likely to involve removing and replacing the turbine topsides and possibly some additional equipment, such as that on the transformer platforms.

Nonetheless, GGOWL acknowledges the UK's international obligations that require that installations are decommissioned as soon as is reasonably practicable. As such, adequate provisions must be in place to ensure that the project can be fully decommissioned at year 25 in order that Government is not exposed to unacceptable risk. This programme therefore sets out the measures for decommissioning the project at year 25 (GGOWL, 2007: p. 52).

The legal organization established as a long-term project organization to deliver the wind farm is now having a continued existence in operating the wind farm, and it is clear from associated documentation that the 'project' is understood by practitioners to be the full life-cycle of the wind farm, rather than the delivery phase. The operational phase is due to last for the next 50 years during which GGOWL will continue to operate the wind farm and, ultimately, to be responsible for its safe decommissioning. This full 'life for the project' is planned at the outset, but although there is an intention for the project to end, the end-date continues to be negotiated within a shifting political environment.

Discussion and conclusions

While extant research literature frames projects as “temporary organizations”, we argue that megaprojects may have very long initiation and delivery phases, which may last for many years, sometimes even decades, and they deliver capital assets that are used for decades or centuries. Thus the paper contributes by showing how, instead of a short-duration activity within a fixed organizational context, these projects involve multiple temporalities, with a range of more and less temporary forms of organizing combining in the process of enactment.

Our case highlights how there are multiple temporalities associated with the project for Greater Gabbard Offshore Windfarm; particularly in relation to 1) the initiation and delivery project; 2) the life cycle; 3) the stakeholder organizations that set up the project; and 4) the SPV through which it is delivered. First, the project itself might be considered in relation to the initiation and delivery project, the 11 years of the design and delivery of the Greater Gabbard wind farm.

Second – as in the work of Alderman et al. (2014) and Brady et al. (2005) and the discourse of practitioners in our case – the project can also be considered as incorporating the full life-cycle through use to decommissioning. The existence of the wind farm is time-limited: with a usage period of 25 or potentially 50 years, as implied in the quoted document (GGOWL, 2007: p. 52), which indicates the expectation that “the project will be ‘repowered’” half way through the lease. Thus, from this second perspective, while there will be an end date for the overall scheme (and the GGOWL SPV), when this will be is left equivocal, with conflicting legislative and commercial reasons for a 25 or 50 year end-date. There is an expectation that this decision will be revisited and renegotiated when the project is in operation. Such use of the term

‘project’ for this wider life-cycle challenges existing understandings of a project as the delivery project. Yet, it fits the broader understandings of projects as temporary organizations due to their ex ante time duration and institutional termination (Bakker et al. 2016; Jacobbson et al. 2015)

Third, the organizational milieu of the project consists of organizations that, in this case, proved not to be permanent or enduring, either in their relationship with the project or as organizations. Fluor started as owner, acted as contractor and ultimately sued GGOWL. Airtricity was taken over by SSE. Thus in this case, we might contrast the longevity of the long-term delivery project with the more transient nature of the ‘permanent’ organization that commissioned it. The firms associated with the project (SPV, owners, clients, supply-chain) exhibit different longevity of association with the project through the life-cycle; and different degrees of longevity or transience as firms. Changes in ownership represent a significant risk for the long-term project and need to be addressed as such by project managers.

Fourth, the special purpose vehicle GGOWL is set up as a firm specifically for the project of Greater Gabbard Offshore Windfarm: both in delivery and in operations. It delivers the facility, and although given a 50 year lease, it is initially allowed a usage period of 25 years. Hence, while this, like the project, is a temporary organization, this SPV is relatively long-lasting (36 years or more); and because of uncertainty regarding the end date of the project there is similar uncertainty relating to the longevity of the SPV as a firm.

These temporal complexities pose important questions for how we might understand this project as a temporary organization, not least in terms of our exemplary concepts of risk and knowledge. For example, as introduced earlier in this paper, project risk is frequently understood as being generated by the unique task and time duration of a project as a temporary organization vis-à-vis its surrounding organizational milieu (Burke and Morley, 2016; Hobday, 2000; Packendorff, 1995). The corresponding lack of an accumulated knowledge base and heightened level of distrust in projects has thus been suggested as reasons for increases in uncertainty, and the importance of risk management, in project-based organizing (Atkinson et al. 2006). Viewed as such, the mitigation of risk is said to require a stable project environment where known and emerging project risks can be identified, calculated and controlled (PMBOK, 2013). The case of Greater Gabbard, and similar long-term infrastructural megaprojects, spanning several decades, suggests that such a stable environment may be considerably more likely to reside within rather than outside the boundaries of the project. This project, and its SPV, while possessing a defined, or sought termination date, has already moved beyond its surrounding organizational milieu, and might readily be expected, according to the literature on knowledge in temporary organizations, to develop an accumulated knowledge base, and level of trust in that knowledge, by virtue of its slow, almost routine, development. Future research, especially perhaps practice-based research (Sanderson, 2012), could reveal whether this ‘flipping’ in the relative temporalities of project-environment organizing affords its members an increased level of control over not just endogenous project risks (as related to costs, time, scope etc.) but perhaps even exogenous risks that emerge within its surrounding organizational milieu. For example, research on such megaprojects might question to what extent, if at all, project members calculated, and sought to mitigate, the risk of changes in external ownership? The case of Greater Gabbard, where one of the original project sponsors left the project and then sued the project delivery firm, offers a salient reminder of the

importance of such questions in managing risk and knowledge within such projects. This line of thinking is not without precedent; indeed to some extent it dovetails with Lundin and Soderholm's (1995) notably seldom discussed recommendation that all projects, as temporary organizations, should develop strategies of 'planned isolation' to guard themselves from a shifting organizational context and enable project control. Or conversely, perhaps in such troublesome cases, other less temporal features of megaproject organizing, such as unique task orientation and complex multi-disciplinary actors (Sanderson, 2012) continued to imbue project uncertainty and risk, and undermined any potential to manage external risks. Such important avenues for empirical research disappear from view when, as is customary across project management scholarship and practice, the external environment is assumed to be the stable platform for managing project risk and knowledge.

In a similar vein the shifting temporalities of Greater Gabbard, and similar long-term megaprojects, also throw into relief challenges and opportunities to the projects as temporary organizations literature related to knowledge. To recall the arguments set out earlier in this paper, there is a pervasive view within this literature that projects exhibit a 'learning paradox' (Bakker et al. 2011): while the time-limit temporary organizing of projects is an important conduit for knowledge generation it can substantially impede knowledge sharing. A defining feature of recent research on this topic is the central importance given towards a 'permanent' organizational milieu in overcoming the 'learning paradox' of projects is similarly given in other research (e.g. Brady and Davies, 2004; Grabher, 2004; Maaninen-Olsson and Müllern, 2009). As Scarborough et al (2004) explain, 'while projects are potentially important sites for the generation of learning, the nature, scope and applicability of such learning is ultimately shaped to a large extent by the ongoing learning activities of the wider organization' (p1597). The case of Greater Gabbard introduces a productive problematization of the root assumption

at work here. That is, there exists, an ever-increasing number of megaprojects (Brookes and Sainati, 2015), that, while time bound projects, might endure, and be perceived to endure, far beyond their time-indefinite organizational milieu. This introduces important questions around how knowledge is generated and then shared in such long-term temporary organizations. Might, for example, a long-term infrastructural megaproject project with a termination point several decades away become a focus for knowledge sharing across a more dynamic organizational milieu? Or instead, does such a project remain a focus for knowledge exploration not exploitation (Davies and Brady, 2004)? And indeed, what role do the relative temporalities, and perceptions of the relative temporalities, between the lifespans of, for example – project infrastructure (in our case turbine blades, generators, foundations) – SPVs (GGOWL) – sponsoring organizations (SSE, Fluor) – sub-contractors and organizational members careers – play in the extent to which a megaproject enables knowledge generation or sharing? Such questions remain hidden from view by an assumed dichotomy, including that given in the notion of the ‘learning paradox’ itself, where knowledge generation occurs in temporary organizations and knowledge sharing in wider, permanent, organizational context (Brady and Davies, 2004; Burke and Morley, 2016; Grabher, 2004; Hobday, 2000; Scarborough et al. 2004; Sydow et al. 2004). While seemingly intuitive, such dichotomous thinking seems to simply stem from the discursive connotation that permanence is defined as relatively long-term organizing (instead of time-indefinite – Bakker et al. 2016; Jacobsson et al. 2015). By considering megaprojects that outlive their organizational milieu we can start to challenge such assumptions, and by extension pursue a fuller consideration of the implications of what it means to consider projects as temporary organizations because they are time-bound not relatively short-term (Bakker et al. 2016).

In developing new theoretical understanding of the multiple, relative, temporalities of long-term infrastructural megaprojects, and perhaps other long-term projects, we find the notion of ‘permanent organizations’ against which ‘temporary organizations’ are often juxtaposed in the existing literature, to be inherently problematic. As the example of knowledge and risk above indicates, far too frequently the notion of ‘permanent organization’, remains, despite caveats to the contrary (Bakker et al. 2016), associated with notions of relative longevity rather than time-boundedness. As we have been at pains to argue here, these discursively constructed temporal connotations continue to have a lasting and troubling legacy in veiling from view important avenues for contributions that temporary organizing researchers might make towards understandings of the temporalities of megaprojects. Our view is that any understanding of permanence is itself, somewhat paradoxically perhaps, temporary as (like any temporality) it is contingent: enacted in particular places and times. We contend that it is thus necessary to problematize and unpack the notion of permanence to avoid simplistic temporal dichotomies and to better theorise and understand temporal phenomena across different, interacting, timescales. ‘Permanence’, the perception of a time-indefinite, consistent, organizational form, might be thus considered as a distinct temporality that is itself performed, whether in scholarly work or in practice, through an opposition with a time-limited organization. But, empirically, this time-limit does not necessarily imply a relatively shorter perceived duration. Indeed while an organizational form might be perceived as time indefinite, it is still perceived against a life expectancy range within which its termination is likely (De Geus, 2002). The knowledge that the foundations at Greater Gabbard will *have* to be decommissioned at a fixed point in several decades does not negate the plausibility that ‘parent’ organizations are likely to have, by then, been merged or dissolved, careers completed and lives lived. When viewed against such temporal complexities the most crucial point to conjoin our argument to the projects as temporary organization research, and indeed the wider temporary organization literature, is a

renewed need for greater consideration of the *relative, multiple* temporalities of organizing. It is the ecology of relative temporalities between organizational forms and actors (human and potentially nonhuman), which defines the troublesome case of megaprojects. And, indeed, relative to other temporary organization research it is this contribution that appears most fruitful in the development of further theories of *temporary* organizing (Bakker et al. 2016).

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