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A longitudinal perspective on sustainability and innovation governmentality: The case of the Olympic Games as a mega-event

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Abstract:	The purpose of this research is to analyze how governance is related to sustainability and innovation in mega-events over time by looking at the Olympic Games as a case study. Three main contributions are made to management research and practice. First, Foucauldian governmentality is built upon and enriched with a longitudinal perspective by following the evolution of Visibility, Techne, Episteme and Identity analytics of governmentality. Second, an innovative methodology based on interviews, a systematic documentary review and software-assisted thematic auto-coding for a theory-led structured analysis is applied. Third, the theoretical and empirical contribution of this study on the longitudinal aspects of governmentality over different parties and outlets of information could be used to guide practical and strategic decisions for managers and policy-makers. In addition to its scholarly importance, this work is needed because mega-events can have a sustainable long-term impact, balancing legacy and innovative change.

1. Introduction

The world experiences a small number of nomadic, recurring sporting mega-events, such as the Summer and Winter Olympic Games, the Fédération Internationale de Football Association (FIFA) Football World Cup, and the Rugby Union World Cup. These events each last a few weeks, require years of planning, leave a visible legacy, and are remarkable for their scale and cost, as well as their inspirational potential. Sport represented some 3% of GDP in OECD countries at the turn of the century (Gratton & Henry, 2002). There is little doubt that such mega-events – most notably the Olympics – have great global significance and a profound impact on their host environments, both positive and negative.

Unsurprisingly, sporting mega-events have attained enormous political significance, whilst also attracting substantial scrutiny and criticism. Such scrutiny falls into two broad categories. The first is related to the governing bodies, such as the International Olympic Committee (IOC) or FIFA and covers both governance and interactions with the host. For example, on the eve of its 2015 congress in Zurich, FIFA was thrown into disarray by the arrest of several of its senior officials, on charges of corruption. "At last, a challenge to the impunity of FIFA," said The Economist (2015: 13). The IOC became embroiled in its own bribery scandal around the turn of the century (MacAloon, 2011; MacAloon, 2016; Reid & Evangeliou, 2010). Ongoing criticism of its interaction with host countries has led to attempts at governance reform and changes to the bidding process, as part of a wider package of reforms (IOC, 2013; IOC, 2014).

The second category of scrutiny relates to the scale and cost of mega-events, which are notoriously more expensive than originally planned due to a mixture of risks and optimism in planning (Jennings, 2012). All iterations of the Olympic "Games, without exception, have cost overrun;" whereas a budget is usually treated as a maximum limit to expenditure, in the case of

the Olympics, it is "more like a fictitious minimum" or even a "down payment… with further installments to be paid later" (Flyvbjerg, Stewart, & Budzier, 2016, p. 14). For example, the London 2012 Games, which at a cost of US$15Bn are the most expensive summer Games to date overran by 76%, and the Rio 2016 Games by 51% (Flyvbjerg et al., 2016: 12). The analysis of cost and risk associated with hosting Olympic Games (Jennings, 2012; Jennings, 2013) shows questionable long-term effects for cities (Toohey, 2008). This raises more questions about the IOC's governance that has caused many cities to withdraw their applications for organizing the Games, with Budapest 2024 Summer Games being the most recent one (The Economist, 2017). Yet despite the huge impact of sport mega-events across multiple industries, economies and communities, they have received little attention in the management literature (Devine & Foster, 2006).

Sustainability and innovation are two current trends where synergies among project actors (Brook & Pagnanelli, 2014) and cities (Neirotti, De Marco, Cagliano, Mangano, & Scorrano, 2014) are important for management research. Yet previous research has insufficiently captured the relationship between these trends. The complexity of mega-events, and their impact, provide fertile ground for inquiry into governing forces that can drive and institutionalize change. Therefore, this paper addresses the following research question: ***How is governance related to sustainability and innovation in mega-events over time?***

Sport management is proposed as a fruitful context for exploring unique synergies in organizational studies related to innovation for sustainable competitive advantage, stakeholder management, organizational identity or diversity (Wolfe et al., 2005). Current literature on the nature of the Olympic Games and their association with sustainability, for example, seeks to explain the power of the Games through such constructs as *legacy* (Girginov & Hills, 2008; Shipway, 2007) or *institutional stakeholder relationships* (Parent, Kristiansen, Skille, & Hanstad, 2013). Organizational synergies and the managerial nature of any sustainable

innovation being generated over time through sports or mega-events in general remains occluded in such analyses.

From a methodological perspective, we first examine the London 2012 Olympics through primary interviews and secondary reports from the Commission for a Sustainable London 2012. This leads to a larger-scale review of IOC documents for the period 2004-2024, starting with the Athens Games and including also documents related to elections and future planning of Games as included in the IOC website.

More theoretical conceptualization is needed to understand the relationships between the governance, innovation management, sustainability and ultimately the impact of mega-events on society. Our aim is to contribute in this direction by building on Mitchell Dean's (2007; 2010) analytics of governmentality. As we demonstrate in our analysis, governmentality is a flexible tool for a multi-level analysis that has been widely used in seeking to understand political and power perspectives in a wide range of organizational contexts. It therefore offers a valuable lens on how sustainable innovation emerges and shows how it can be extended to investigate strategic perspectives in complex settings. We use the work of others who have looked at governmentality to explain strategy and practice (Clegg, Pitsis, Rura-Polley, & Marosszeky, 2002; McKinlay, Carter, Pezet, & Clegg, 2010). Our work should provide a bridge between management challenges such as sustainability and innovation, and governance in a multi-actor mega-event environment.

Our qualitative approach makes a modest contribution in this direction by providing a time dimension not addressed in previous literature and a more dynamic approach to the use of its four analytics. Applications of governmentality have disentangled the already challenging and problematized contexts of relatively straightforward environments. While we recognize the importance of these works, the potential of governmentality as an analytical framework has not

yet been realized if more challenging empirical worlds such as episodic mega-events are not tackled. This study provides a concrete way forward in combining elements of governmentality with multiple data sources and levels of analysis. Our fine-grained analysis has lessons for both managers and policy-makers on the impact of mega-events on global challenges of sustainability and innovation.

2. Mega-events and innovation for sustainability

Each iteration of periodic mega-events such as the Olympic Games faces substantial managerial challenges related, among others, to sustainability and innovation. Notwithstanding this consideration, there has been little research on either sustainability or innovation in sport mega-events management or the Olympic Games. With the limited exception of mobility and translocation (Müller, 2014), research has tended to focus on tourism, geography and urban development (Collins, Jones, & Munday, 2009; Kang & Perdue, 1994; Moss, Gruben, & Moss, 2014; Pitts & Liao, 2013), with little work on sustainability and/or innovation management in this area. The 2000 Sydney Games, for example, were one of the first in which some of these forces were consciously directed towards sustainability and ethical global citizenship (Davidson, 2013). In this section, a historical perspective of the Olympic Games is followed by a literature review and analysis of such mega-events from two perspectives: the organizational level of innovation for sustainability; and the governance level of impact.

2.1.Background

The 1994 Lillehammer (Winter) Olympics were the first Games to strongly promote the environment and environmental protection (IOC, 2012). In recognition of this, the IOC created an environment committee in 1995 that has required all candidate cities since 1999 to provide information on environmental aspects of their bids, covering societal aspects by the long-standing focus on legacy (Anastasiadis, 2014). Afterwards, some cities have been more

successful than others in promoting environmental protection. The 2000 Sydney Games was widely hailed for its environmental actions, though Athens and Beijing were less lauded (Wu & Zhang, 2008). We note that the IOC's approach has largely treated sustainability and environment as synonyms. By contrast, London 2012 approached sustainability in a more holistic manner from the planning stage by setting up an independent sustainability assurance body, the Commission for a Sustainable London 2012.

The governance structure for the London 2012 Games was complex, linking different strands of the Olympics Movement with actors in government. The highest, most abstract level included the IOC, a Home Affairs sub-committee, and the Olympic Board, the overall decision-making body for the Games programme. Mid-range actors provided support 'upwards', as well as overseeing organizations delivering specific aspects of the Games. Two such actors were the London 2012 Sustainability Group – responsible for delivering the Games' sustainability programme – and CSLondon. Organizations at the lowest level of the governance structure provided delivery, such as the Olympic Development Agency (ODA) and The London Organising Committee of the Olympic and Paralympic Games (LOCOG). Each of these in turn had extensive relationships with suppliers and providers. The range and complexity was enormous. However, actors in the formal governance structure were not the only stakeholders. The problem is that for the advances in sustainable technologies, the development model in the Olympics is predicated on satisfying transnational investment, and thus embodies a hollowed-out model of sustainability (Hayes & Horne, 2011). Their argument speaks to the relative lack of engagement by the IOC with the sustainability agenda. The IOC could have provided the political will, but the experience of the London 2012 Games showed that the IOC did not treat sustainability as a priority. None of the Olympic Games that followed London 2012 has had such a clear focus on sustainability or the respective governing structures.

2.2.Innovation management and sustainability governance

In an era of resource constraints and ecological challenges, sustainability innovation receives much attention. Indeed, it increasingly seems reasonable to view sustainability innovation as part of a new industrial revolution, as the title of a recent edited book suggests (El-Haggar, 2016). Certainly, innovation for sustainability is a well-researched area. A search on EBSCOhost at the end of February 2017 for journal articles with the keywords, "innov*" and "sust*" rendered 8,509 articles, with 232 published in the first two months of 2017 alone, and the specific issue of innovation for sustainability in the supply chain is attracting particular attention (Busse, Meinlschmidt, & Foerstl, 2016). Yet a more specific search for sustainability innovation related to mega-events (keyword: "mega*") or the Olympics (keyword: "olymp*") renders only a handful of papers. One such paper draws on notions of responsible innovation, accountability and sustainability in projects to develop a concept of responsible project management for megaprojects (Tinoco, Sato, & Hasan, 2016). Other researchers are more interested in outcomes for businesses, treating sustainability and business longevity as synonyms, and innovation as a business legacy outcome (see Kaplanidou, Al Emadi, Sagas, Diop, & Fritz, 2016 on the 2022 Qatar football World Cup). The overwhelming majority of work dealing with innovation and sustainability treats firms as unitary entities, for example, those in the construction industry (Matinaro & Liu, 2017). With respect to the Olympic Games – and indeed innovation and sustainability in mega-events more generally – we argue that the sheer scale of mega-events means that promotion of mega-event sustainability requires substantial governance and political will.

At the organizational management level, system innovation and transition to sustainability can generally be summarized as a continuous process of alignment between corporate goals and stakeholder expectations (Benn, Dunphy, & Griffiths, 2014; Elzen, Geels, & Green, 2004; Epstein & Roy, 2001). Innovation is shifting towards a more careful consideration of external

contingencies and openness (Enkel, Gassmann, & Chesbrough, 2009). Organizations can use the public nature of mega-events and the attention they attract for showcasing and collaborating on technical innovations or promoting corporate social responsibility through sustainability solutions. However, at the policy level, research suggests that an open approach for coordinating innovation diversity has not enjoyed notable success across multiple levels of governance in individual countries due to conflicting interests (Kaiser & Prange, 2004).

The Olympic Games Knowledge Management Program (which itself is an example of organizational innovation) is designed to transfer knowledge and has substantially reduced cost overruns (Flyvbjerg et al., 2016, p.1). However, a more engaged IOC could do much more from a sustainability innovation perspective. Indeed, "Taken in isolation, delivering [Olympics] is an inherently un-sustainable thing to do. We therefore cannot call the programme truly sustainable unless the inspirational power of the Games can be used to make a tangible, far reaching difference" (CSLondon 2011, p.3; CSLondon 2013, p.5). It is in the spreading of the innovation that the Olympics can make a meaningful contribution to sustainability.

One might reasonably expect such mega-events as the Olympic Games to present a hybrid between organizational and policy coordination. From an organizational perspective, although mega-events can be seen as large scale projects with unique features dictated by global image and local specificities (Davies & Mackenzie, 2014; Stewart & Rayner, 2016). Intriguingly, however, Smink and colleagues (2015, p. 86) argue that incumbent firms are both willing and able to keep "sustainable innovation on a leash" in such environments. Indeed, Chiarini (2014) shows interesting differences in strategies for supply chain sustainability between the manufacturing and service sectors. Policymaking and commissioning/procuring bodies have significant power to set the terms of service and product delivery across their entire supply chain.

To address the driving forces for sustainable innovation and to engage with multiple perspectives in this complex, under-researched and under-theorized arena, we employ the conceptual framework of governmentality.

3. Governmentality: time and innovation

Michel Foucault laid the foundation for the study of governmentality during a series of seminal lectures in the late 1970s, including one specifically on governmentality that began with an analysis and rehabilitation of Machiavelli's *The Prince* (Foucault & Gordon, 1980; Foucault, 2008; Foucault, 2009). Governmentality continues to influence scholars and offer productive approaches to research and analysis over a very wide range of topics (Bröckling, Krasmann, & Lemke, 2010). Despite Foucault himself providing little more than general statements that are "far too insubstantial to constitute a rounded theoretical position or a rigorous methodology" (McKinlay et al., 2010, p.1021), governmentality has emerged as a well-developed sub-discipline since Foucault's death (Burchell, Gordon, & Miller, 1991; Dean, 2010; Miller & Rose, 1990; Miller & Rose, 2008; Rose & Miller, 1992; Rose, 1999). In the management field it has been used to good effect in relation to business ethics (Crane, Knights, & Starkey, 2008), corporate social responsibility (Vallentin & Murillo, 2012), corporate governance (Miller & O'Leary, 1993), and sustainability accounting (Spence & Rinaldi, 2014)

In the current study, we understand governmentality as "instruments of government" (Foucault, 2000, p.211) in the general sense of mechanisms directing human behavior as described in Michel Foucault's work (2000; 1997). To be clear, governmentality is not restricted to the Government, the State or political institutions, but is applicable to all social life. For example, in a study on sexual relations at work, Clegg et al. (2015) explain that governmentality is a form of institutionalized power for social integration of actors into an organizational system in a predictable way. Notwithstanding Foucault's emphasis on historical analysis and the

importance of process perspectives, no studies were found in the extant management literature which focus on the time aspects and longitudinal application of governmentality as we attempt here. Because of the episodic nature of the Olympic Games, we find a time-aware, dynamic application of governmentality to be particularly promising.

One of the difficulties of understanding and explaining sustainable (or any other) innovation lies in identifying the processes, techniques and structures through which new products, services and procedures are developed. The theoretical lens of governmentality helps unpack the conditions under which sustainable innovation occurs, treating the case of a series of Olympic Games as our 'laboratory' of governmentality following Miller and Rose (2008). As Barnett, Darnall and Husted (2015) argue, sustainability strategies are not created in an institutional vacuum; and neither are individual innovations. In this study, we seek to shift from a static to a dynamic understanding of sustainable innovation over time, positioning our research in a broader context. The governmentality approach is especially valuable in this endeavor, because it is useful for highlighting policy-making processes that are revealed in the minutiae of mundane events around what might be called the 'light bulb' moment of an innovation.

To further focus our approach and make our analysis practicable, we draw in particular on the four analytics of governmentality presented by Dean (2007; 2010): *Visibility, Techne, Episteme* and *Identity*. In doing so, we build on Spence and Rinaldi's (2014) application of Dean's four analytics to the embedding of sustainability practices in supermarket food chains, which has some parallels with the focus on sustainability and innovation in this study. By looking at the detail of the processes and technologies throughout the chain, they found that what had initially been labeled as environmental, social and economic aspects of sustainability were later reconfigured to conform to the principal goal of economic security for the supermarket chain.

We build on that initial work by summarizing the four analytics in Table 1applying governmentality to the more complex context of a mega-event over time.

Table 1 about here

The **'*Visibility*' analytic** refers to the regimes of government, in the wider sense, in a given situation and the means by which some objects and aspects are highlighted and others hidden. Through this analytic we might identify that which is made visible; examples include metrics reported upon in a sustainability report, presentations on websites or marketing. This analytic also facilitates identifying that which is obscured; not mentioned or brought to the surface, or even intentionally covered-up. The **'*Techne*' analytic** refers to the technical ways through which an evolving regime (e.g. one in which sustainable innovation is promoted and celebrated) is created and enabled. The goal here is to identify interventions in the form of technologies, language, instruments and procedures through which sustainable innovation is achieved. Standards for corporate financial or sustainability reporting are one example. The **'*Episteme*' analytic** denotes the articulated values, expert vocabulary, forms of knowledge and discourses adopted in the process of governing for sustainable innovation (e.g. professional standards or training). Finally, the **'*Identity*' analytic** seeks to understand the actors, subjects, people and groups who take on (rather than being pre-ascribed) a particular role or character in the performance of governmentality relating to sustainable innovation.

Previous research (Spence & Rinaldi, 2014) has suggested that concentration on these four analytics as mutually exclusive and all-encompassing may be misleading. Relationships between analytics to each other and to the context of research where they are applied also deserve more attention. A longitudinal analysis of sustainability and innovation related to the Olympic Games as a megaevent case in this study intends to advance governmentality by adding a time dimension, and suggesting a methodology for research in the next section.

4. Methodology and data

4.1.Research approach

Our work recognizes the inherently constructed and negotiated nature of social reality. Such a stance informs our choice of analysis; we pay great attention to the "constitutive nature of language" (Cunliffe, 2003, p.988) and therefore engage in clear thematic analysis. Here, the frames of reference of participants – that is, their "generalized point of view that directs interpretation" (Brown, Stacey, & Nandhakumar, 2008, p.1038) – is of particular significance. This approach is consistent with our governmentality lens. Indeed, Foucault considers that discourse can be considered not merely linguistically but also as "strategic games of action and reaction, question and answer, domination and evasion, as well as struggle. … [in addition to being a regular set of linguistic facts, discourse is also] an ordered set of polemical and strategic facts" (Foucault, 2000. p. 2-3).

In this study, we use theoretical sampling, which is specifically intended to connect data analysis with theoretical saturation (Coyne, 1997; Glaser & Strauss, 1967). Following a representative case selection logic (Sarker & Sarker, 2009), we decided to study the Olympic Games, because of their important sporting, social, environmental, urban and economic legacies that can have an impact on the local organizing cities and on global communities (IOC, 2012). Moreover, the Olympic Games are illustrative of a mega-event, broadly speaking, that can be used as single case-study for analysis and theory-building (Eisenhardt, 1989; Eisenhardt & Graebner, 2007; Tsang, 2014). Our approach consists of a hybrid between inductive and deductive thematic analysis (Fereday & Muir-Cochrane, 2008), using theory to guide the research and taking an iterative process to the data analysis following four stages: 1. Exploratory interviews with practitioners; 2. Developing preliminary coding framework; 3. Documentary review of London 2012 Olympics; 4. Documentary review of Olympic Committee reports. These stages are explained in detail in the following section.

4.2.Data collection and preparation

Initially, exploratory interviews were arranged with respondents from three organizations involved in the London 2012 Olympics: Commission for a Sustainable London 2012 (CSL), London Organizing Committee of the Olympic and Paralympic Games (LOCOG), and RMD Kwikform, a firm specializing in temporary structures that helped build London's Aquatics Centre, one of the most sustainable innovations of the Games. We selected interviewees according to theoretical sampling (Coyne, 1997). The views of CSL were related to Visibility of innovation for sustainability and to a certain extent Techne in terms of requirements. Our respondent from LOGOC who was involved also with the development of a standard for sustainable events represented Techne and to a certain extent Episteme. Kwikform, the company that was directly involved with the development of sustainable solutions in practice represented Episteme and the knowledge embedded in such actors. Views from all three organizations were expected to feed into Identity and what the London 2012 Games represented in terms innovation and sustainability governance. Interview respondents remain anonymous but they gave permission for their organizations to be named. The purpose of the interviews was to give our theoretical categories additional face validity.

In stage two, based on the interviews with key practitioners and informed by Dean's (2007; 2010) four analytics of governmentality, we developed an automated coding framework to analyze 100% of the 31 reports published on the CSL website (i.e. 1396 pages in total). In this second stage, we used a more inductive approach to develop the coding framework set out in Table 2.

Table 2 about here

In stage three, the coding framework generated in stage two was applied to all reports published by CSL and listed in Table 4 – (Appendix A). The decision to focus specifically on

reports generated by CSL was based on its role in guiding sustainable innovation policies, procedures or control, advice and reporting among different stakeholders. These reports focused on sustainability impact reviews of specific elements such as waste, carbon emission, transport, or procurement suppliers related to the event. A longitudinal approach was applied in analyzing the reports, which were dated and published between 2007 and 2013.

In stage four, the results of the preliminary auto-coding analysis on the CSL documents in stage three were used for analyzing 270 documents from the International Olympic Committee website spanning over 13 years (2014–2016) and grouped into five categories according to their scope and content as summarized in Appendix B They were prepared by IOC teams or in partnership with local organizing committees, representing more than two- thirds of the total number of documents available in the IOC website at the time of this study. They were selected because of their relationship to governance, sustainability and innovation. Documents without some strategic focus related to the scope of this study were excluded. Examples of excluded documents included those on specific doping cases, teaching resources, or marketing materials. For the longitudinal approach, we had to take into consideration also the period of time to which the documents pertain, spanning the period 2004-2024 and accounting also for future elections and decisions about host cities. We revised our auto-coding framework for this research stage, based on the results of our analysis in stage three and critical discussion among the research team until we reached a level of saturation in terms of theory and data-analysis (Miles & Huberman, 1994). The new coding framework is presented in the following table:

Table 3 about here

4.3.The analytical approach

Our decision to engage in a structured and systematic documentary review was inspired by the Cochrane Systematic Reviews approach, relying on mixed methods for triangulation and a

replicable protocol for data management (Bunn et al., 2014). Given the volume of data, we selected software-assisted coding (Basit, 2003) to apply the key-terms framework on governmentality, sustainability and innovation introduced in Table 2. Auto-coding is proposed as a suitable method for retrieving sections related to predetermined concepts during the preparation of qualitative data for analysis (Silver & Lewins, 2014: Chapter 4). We selected *Atlas.ti*, a dedicated qualitative data management software (Friese, 2014), as it works well with PDF files and it recognizes sentences as units of analysis, allowing auto-coding on that basis. The key terms we used for auto-coding the CSL documents were guided by theory and by manual analysis of the interviews using thematic analysis (Fereday & Muir-Cochrane, 2006) to demonstrate rigor and justify the originality of our findings. The software associated each keyword with the relevant code for this study, labeling entire sentences with one of six codes, and replacing the * sign with any ending or beginning. We fully automated the task of coding the reports after reviewing and testing it manually first, to deal with the large quantity of text. To ensure better representation of the data for comparative analysis, we indexed the number of coded quotes by dividing each number of quotes for the individual years, the analytics, sustainability and innovation by the total number of coded quotes for each group. Selected diagrams generated from these tables were used for analysis, and they are discussed in the findings and analysis section. For the analysis, after applying the auto-coding framework on the data, the reports were categorized in three ways: 1. According to the year in which they were published; 2. According to the four analytics, Sustainability and Innovation; 3. According to the five document types: Strategic, Local, Activism, Summer, Winter.

To account for the different total values and make possible a comparative analysis the same indexing technique as in the case of the CSL reports was used. The results are presented in Appendices C, D, E, F, G, H and I. Selected visualized data related directly to the research question of this study are discussed in the findings and analysis section.

The longitudinal perspective we take here allows for a dynamic, temporal analysis. In doing so, we identified some changes on the balanced importance of the analytics expressed in the different document groups over time. Such meta-synthesis (Cooper, Hedges, & Valentine, 2009) of findings from interviews and the structured documentary review produced the interpretive narratives that are explained in the following section.

To assure the trustworthiness of our study we consider four validity principles for qualitative research (Guba, 1981; Shenton, 2004) as a contrast to criteria used in positivist research. First, credibility, in contrast to internal validity, represents an accurate picture of the phenomenon being studied. In our research, we achieve this by using established qualitative research methods, triangulation of interviews and documentary review, and critical peer-review among authors and respondents. Second, transferability, in contrast to external validity/generalizability, is achieved by providing sufficient background and research information on the Olympic Games, sustainability, innovation and governance, allowing the reader to make informed decisions about whether and how our findings can be applied to other similar settings. Third, dependability, in preference to reliability, is met by adapting machine auto-coding informed by governmentality as the key analytical tool. The documents we analyzed are publicly available and specified in the Appendices. If other researchers will replicate this study, they should have the same results for the analysis. Finally, confirmability rather than objectivity, is achieved by interpreting the diagrams we build using the auto-coding approach for analysis to demonstrate that findings emerge from the data. We provide our own interpretation, but at the same time, our constructivist approach (Berger & Luckmann, 1966) allows readers to build their own constructs and understanding.

5. Findings and analysis

5.1. Sustainability, innovation and governmentality through the London 2012 Olympics

In this section, we present our preliminary findings on the London 2012 Olympics based on interviews with practitioners and a review of the CSL documents for the mega-event project period of 2007-2013. The coding framework developed and tested later was the starting point for our longitudinal research on governmentality analytics from the single event perspective to the more generalizable periodic event format represented by the Olympic Games.

> The London 2012 Olympics started with a clear vision: *London 2012 delivers the most sustainable Games to date in terms of delivery, visible achievement and long term influence on the event management industry.* [Game changing? Commission for a Sustainable London 2012, Annual Review 2010, April 2011, p. 42.]

This statement of vision was a clearly-projected and visible image from CSL, which guided CSL's work from start to finish. Our keyword coding shows this quite clearly for example in the importance of keywords related to sustainability, in Figure 1:

Figure 1 about here

In 2007 there was close convergence between representation of sustainability, innovation and the four analytics, but 2008 seems to be a crucial year for planning beyond general concepts and ideas. Referring back to our framework of analysis and coding guidance, the constructs of Sustainability and Techne seems to gain more importance at this stage, probably due to the early involvement of firms and the sustainability expectations set out, as summarized by one interview respondent:

> *There were a lot of companies that wanted to work with the games. So we set our stance up quite early, saying, "Sustainability is really important to us and it's going to be one of the key criteria whereby which we determine value for money."* [LOCOG respondent]

This is the stage at which the infrastructure preparations for London 2012 gathered momentum, and is likely to be influenced by the technical innovation associated with the construction of venues. Analysis of the Identity analytic around London 2012 Olympics suggests that any association with the Games was seen as something positive and to be proud of. Nevertheless, the following statement illustrates this view:

> *Certainly within the organization the boost to the morale that it provided and the prestige of being part of building the Olympic Park was very significant. And all of our people that were involved were very proud to be part of the British Olympics in London.* [Kwikform respondent]

Our analysis around the Visibility analytic suggests that it took some time for actors to realize the significance of implementing in London, as a high-visibility location, those innovations that had been planned. There are some indications that actors saw the visibility in a positive rather than in a threatening light:

> *You know, London is a global major city, massively known as an economic powerhouse in the eyes of the world, so just because the Olympics are in London, sponsors are more likely to open their checkbooks.* [CSL respondent]

The documents produced between 2009 and 2012 – the years during which planned innovations were implemented – show an increased focus on innovation, and on themes mapping onto Visibility and Episteme. This statement from CSL at the time reveals the

relationship between the two analytics by highlighting the professional responsiveness to sustainability and consequently innovation challenges:

> *During the year, we expressed concerns about the contribution of the procurement team to the sustainability agenda, and we were impressed with the swift and professional way in which LOCOG has turned this from an area of weakness to strength.* [Raising the bar - Can London 2012 set new standards for sustainability?, p. 2]

The 2012-2013 documents indicate a clustering of the four analytics over this period, together with the sustainability and innovation concepts. This suggests an attempt to leave a consistent legacy, a view supported by our exploratory interview data:

> *There's also an official transfer of knowledge program so in November 2012 a lot of the LOCOG team went over to Rio to transfer knowledge and so Rio would have been in attendance. Those involved in the Olympic movement would have that knowledge* [LOCOG respondent]

Analysis of the interviews from the London 2012 Olympics, the review of the CSL documents over the lifetime of the mega-event helped us refine the auto-coding framework for the analysis of the International Olympic Committee (IOC) documents. We present our analysis of the IOC documents in the next section. Our analysis first examines the six elements - Sustainability, Innovation and the four analytics of governmentality- over time, then analyzes them across five document categories. This is done to analyze and cross-check governmentality analytics across two dimensions, the naturally-occurring and unconditional flow of time, and the more conscious and strategic categorization of documentary outputs into groups and themes.

5.2.Governmentality and the Olympic legacy

The range of documents published on the International Olympic Committee website varies in terms of quantity and nature over the years we consider for this study. Looking at the coded data indexed by yearly totals presented in the following diagram, a number of patterns can be observed:

Figure 2 about here

First, the data indicate an inverse relationship between sustainability and innovation. That is, when one increases, the other tends to decline. One reason for this could be that planning, implementation and reporting are counter-cyclical. On the other hand, Visibility, Techne and Episteme appear to be positively correlated. The pattern is similar with Identity, albeit with a weaker relationship. The greatest volatility can be observed in the middle of the diagram, particularly 20112012, when the greatest number of reports was released. By comparison, the period reported on before 2007 and the anticipated future after 2016 seems more stable.

5.3.Sustainability, innovation and governmentality for policy differentiation.

In our study, we have used the categorization of documents into groups from the IOC to look in more detail at the differences in policy-making, implementation and reporting around sustainability and innovation in the light of the governmentality analytics. Figures 3 and 4 show the coded data for sustainability, innovation and governmentality analytics in absolute values and indexed by each thematic category totals for a comparative analysis.

Figure 3 about here

Figure 4 about here

Figure 3 reveals the significance of Visibility for all thematic categories represented by groups of documents. Clearly the Olympic Legacy is about showcasing sports excellence. However, in addition, Innovation and Techne emerge as important too from this diagram – a picture of the multi-layered purposes and facets of mega-events begins to emerge.

Figure 4 shows the proportion of each aspect of our analysis, as it appears relative to each other aspect, and indexed by document category. It shows that Activism seems to be more commonly found together with innovation and the Episteme analytic. Reports and documents from events, conferences and other activities on a local and global level that represent this category could be a forum for innovation knowledge exchange, and be reflective of an environment less encumbered by formalized procedures and regulation. Reports and documents around related to governmentality elections, on the other hand seem to be related more closely to the Visibility analytic. Understandably, the attention a host city receives by organizing the Olympic Games is something local politicians might want to embrace, and does not go unnoticed by the international community. Hosting an Olympic Games shines a light very clearly on the host city, for good or ill, but the local leaders somewhat inevitably seek to capitalize on the Games and highlight the positive associate opportunities. This may look differently in the case of Games like Rio 2016 where there was considerable local opposition to the investment in the Games in the face of extreme local poverty and associated economic and social challenges. Strategic documents highlight two main areas: The Visibility analytic that might be necessary to gain legitimacy from the different stakeholders on a local and global level, and the Identity analytic that could serve to reinforce the former, and build on it. A relationship between Visibility and Identity for strategic purposes could have important implication for policy-making in mega-events. Comparing the Summer and Winter Games, more focus on the innovation side or 'the new' in the first, and more focus on the Techne analytics in the second can be observed. Indeed, Sustainability is noticeable by its relative absence in the Summer document category, particularly given the great emphasis on sustainability at London 2012. From our investigation, a possible explanation could be that only a small part of the documentation produced by CSL locally was transferred to the IOC knowledge base analyzed at this stage. The two types of games are different in both content and scope. However, the closeness of Activism, Local, Summer and Winter categories in terms of the Identity analytic reflect a degree of unity on the level of immediate responses and reporting of present events, while the Strategy category might be more detached due to its longer-term scope.

6. Discussion, conclusions and directions for future research

The research presented in this paper has drawn on the case of the Olympic Games to provide a rich analysis of processes that govern sustainability and innovation through mega-events over time. Our findings identify two temporal dimensions of governmentality that interplay with management responses. One dynamic is proactive but short-termed, pioneered by local bodies such as the Commission for a Sustainable London 2012 in the London 2012 Olympics. The other is longer-termed but less proactive in terms of implementation and practice such as the International Olympic Committee and global public opinion.

Our findings suggest that standardized policies cannot be easily implemented, even in mega-events of strong legacy and identity. This may be explained by the pervading individual character of each Games, wrapped up in the identity of the host cities. There are constant discourses of comparison between Games in the sporting and wider media. Some of this relates to technical quality of the sport and sporting facilities, but much of it is embedded in place, and tied to the cultural contexts, not least exemplified by the flavor of the opening and closing ceremonies, a source of some pride – or in equal measure discomfort – to the host culture (The Observer, 2012).

Our study, which takes a longitudinal and multi-geographic perspective, allows for the complexities of contemporary organizational forms such as mega-events to be explored in a new and innovative way. To address this more closely, we observe a level of discontinuity between the coding categories related to governmentality analytics, sustainability and innovation. Referring, for example, to sustainability across the different Olympic Games, this confirms that notions of place matter (Guthey, Whiteman, & Elmes, 2014).

Time is an equally important factor that needs to be considered jointly with the notion of space. As with all mega-events, the Olympic Games require ‘mega-planning’, execution and post-

event inheritance management. In our data, quite apart from the time-spread analyzed in terms of publications, we see frequent acknowledgement of the temporally specific changes in the points of analyses over time, encapsulated in discussions of 'early in the Olympics' 'the legacy' and 'long-term influence'. So even within the timeline of episodic Olympic mega-events, each event in its own right has a lifecycle with a strongly elongated end point – as records remain of the Olympics and comparisons are made repeatedly to previous iterations. Indeed, the starting point is not the establishment of the Local Organizing Committee, but the beginning of the bid – which in the case of London 2012 was before the start of the new millennium (Lee, 2006). It is therefore unsurprising that time has an important role to play from Games to Games, but also for any single mega-event. Our work has used the physical presence of detailed reports to inform our analysis, but future studies could usefully expand this. Whereas we have maximized the emphasis of the published written word alongside our interviews, there is a good deal of opportunity to go beyond the more formalized aspects of the Olympics. Future time-aware studies which take a governmentality approach might be more ambitious, and use our approach to incorporate the more hidden layers of power and politics which occur before and after the formal processes. This might, for example, mean following a bid from conception through the execution of the Games, and on beyond formalized legacy activities. In the case of London 2012, for example, at the time of writing in 2017, the London Legacy Development Corporation, formed in 2012 as an ongoing entity, has published plans up to and including 2023. The London 2012 Olympic Games lasted for two weeks in the summer of 2012, the Paralympic Games following shortly thereafter. Our analysis has usefully put these in a wider time frame and used governmentality to unpick issues relating to sustainability and innovation in particular.

It is both a limitation of our own work and an opportunity for future studies that a more reflective stance on mega-events could be taken to substantially extend the time-horizon, both

forwards and backwards. This would allow researchers to more fully capture three distinct aspects of a mega-event: the full process of establishing a platform for a bid, the organizational, political, economic, legal and administrative practices which make the event happen, and subsequently the formal and informal legacies – both within and beyond the sporting arena. From a management perspective, while such research would not investigate the 'why' of sustainable innovation, it can be of great help in forming an understanding of 'how' it emerges over time in mega-events.

We have argued that sustainable innovation and indeed any other type of innovation, should be understood as a process rather than a single incidence of innovation. This dynamic, rather than static, perspective on management practice with respect to sustainable innovation has been highlighted by the governmentality perspective and its focus shining a light on multiple, layered mundane processes (Miller & Rose, 2008). By offering the four analytics of governmentality we have been able to draw out the antecedents and context of innovation. We argue that this approach has considerable traction for future research by showing a way of unpicking multi-level analysis without reducing it to an improbable staged linear process of innovation lifecycles, thus moving beyond previous studies (e.g. Spence and Rinaldi, 2014). In our study, we found high-level identification with sustainability as an embedded requirement, with associated technologies and metrics, to be an effective way of enabling sustainable innovation in the Olympic Games.

Turning now to the theoretical contributions in this article, our research raises a number of further questions on the global and local longitudinal effects of mega-events in particular, and on the static model of governmentality in general. Some initial analysis indicates that the 2014 Glasgow Commonwealth Games used some of the sustainability innovations from London 2012. There appears to have been only limited take-up in the troubled Summer Olympic Games in Rio 2016, and the extent to which sustainability and innovation practices are being

adopted for the 2020 Tokyo Games is unclear at the time of writing, and exceeds the scope of our data, though there are some positive signs (Tokyo2020, 2016). Theorizing these findings, holding the Episteme legacy on specific causes such as sustainability and innovation in this case for example seem a challenging task that a static model of governmentality would only offer a limited explanation for.

What this study does, is show relationships between the governmentality analytics themselves and other external units of analysis such as sustainability and innovation in this case. The model we develop here is dynamic and it extends over time. Building on extant approaches to governmentality (Burchell, Gordon and Miller, 1991), our application suggests that the four governmentality analytics provide a flexible framework for understanding governing management forces, and the weighting and relationships between the analytics can change in accordance with other external factors. Hence, we support the earlier worker of scholars who suggest that the analytics are a productive approach to understanding organizational and public life (Dean, 2010; Spence and Rinaldi, 2014; Valentin and Murillo, 2012).

The relevance of our findings for practitioners is related to the local and global longitudinal dimension and forces in mega-projects and their management as inter-organizational collaborative projects (Clegg et al., 2002). For management practitioners and policy-makers, the obvious questions emerging from this study is therefore: What is the role of managers in aligning Visibility, Techne, Episteme and Identity with other elements over time? For mega-event managers and policy-makers in general, and for those involved with the Olympic Games in particular the questions they need to ask are: What is the role of the IOC – and by extension, other international governing bodies – in generating, promoting and promulgating sustainable innovations? How active can and should the IOC be, given that its explicit organizational goal is to use sport as a vehicle for societal betterment? The indications for us are that commitment to establishing governing practices is a challenging task that lacks consistency over time. This

is based on our quest on sustainability and innovation by looking at an extraordinarily mega-event project, but it can be expanded further to build on the value of a Foucauldian approach for strategic decision-making suggested by McKinlay, Carter, Pezet, & Clegg (2010).

However, beyond those already mentioned, there are some limitations to our work which future studies might seek to address. We have taken governmentality and used it in an innovative way to understand sustainability innovation. We appreciate that our approach steps outside of the normal use of governmentality which is generally conceptually orientated, to apply an alternative empirical analysis and approach. We would welcome studies which seek to extend this perspective and be more ambitious still. Governmentality is a thought-provoking and enlightening perspective. We believe that it can be used to good effect in a much wider range of contexts and research approaches than it has been to date. Our study is an instance of this.

Our research largely used secondary data supplemented by some important but limited in scope interviews. Although the quality of the reports was high (having been carefully constructed and reviewed before publication), the problems of relying on secondary data are widely known (Wolfe, 1994). We note in this regard that the process by which the reports were prepared was not open to us to investigate. Further interviews would have been desirable but proved impossible in part due to the plethora of legal restrictions around the Olympics. Nonetheless, we were able to triangulate different types of reports including less highly-produced and polished (though publicly available) meeting minutes, blogs and online discussions (Jonsen & Jehn, 2009). Accessing more detailed data may well require the buy-in of the IOC, or whichever organization had ultimate control of the mega-event in question, for which there is a high level of political difficulty.

To summarize, the analysis makes two main contributions to the literature, advancing the work of Dean (2007; 2010) on governmentality. First it illuminates the governing structures,

processes and mechanisms that motivated sustainable innovation during London 2012 with a focus on a dynamic rather than static perspective. Second, the paper generates practical suggestions for business and government that engage in partnerships for managing mega-events with a substantial impact on societies over time.

In this paper, we have sought to go beyond traditional management scholarship by showing how governmentality theory can be applied and enhanced in relation to the understanding the process of sustainable innovation. We have drawn together different levels of analysis especially at the macro and meso perspective, to show how sustainable innovation occurred in the context of one specific iteration of a global mega-event. We have found that a sustainability agenda, under certain conditions, can be translated into responsible and innovative business practices, though such achievements and our understanding of governmentality over time are neither linear nor one-dimensional.

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Appendix A

Table 4: Primary documents from CSL for the period 2007-2013

Number of reports	Primary documents	Year
2	CSL Assurance Framework; Governance Review.	2007
1	Reporting Review.	2008
5	Annual Review; Carbon Review; Design Review; Employment and Skills Review; Thematic Procurement Review.	2009
7	CSL Annual Review 2010; CSL Biodiversity-Review; CSL Transport Review; Raising the bar; Food Review; LOCOG Procurement Review; Waste Review.	2010
3	CSL_Annual_Review_20111; Fit-for-purpose-2011; Sustainably-Sourced-2011.	2011
3	CSL Legacy Review; CSL Post Games Report Final; In sight of the finishing line.	2012
4	Games-Travel-Offset-Assurance-Summary-Report; CSL-Beyond-2012-Outcomes; CSL-Evaluation-Final-Report; CSL-Making-a-Difference-2013.	2013

Appendix B

Table 5: Range of IOC documents used

Document Category	Description	Period for available documents	Number of documents
Strategic	International Olympic Committee documents such as: Olympic Charter, Agenda 2020, legacy documents, Annual Report, Code of Ethics, Interim and Final Reports.	2004-2015	20
Local	Local election documents related to evaluation, host city candidatures, commission bibliographies, contracts operational requirements, acceptance procedures etc.	2008-2024	72
Activism	Evidence on the impact of the Olympic legacy in activities such as conferences, forums and events, documented in reports, recommendations, communications etc.	2004-2014	100
Summer	Final reports and other documents related to the organization of the Summer Olympic games in Athens 2004, Beijing 2008, London 2012, Rio de Janeiro 2016.	2004; 2008; 2012; 2016 (grouped by Summer Games)	48
Winter	Final reports and other documents related to the organization of the Winter Olympic games in Torino 2006, Vancouver 2010, Sochi 2014.	2006; 2010; 2014 (grouped by Winter Games)	30

Appendix C

Table 6: Number of coded quotes in CSL reports for each year

	2007	2008	2009	2010	2011	2012	2013	Totals
SUSTAINABILITY	190	62	896	1655	560	836	929	5128
INNOVATION	41	6	182	376	118	232	172	1127
VISIBILITY	29	4	133	215	90	187	147	805
TECHNE	50	19	227	374	144	202	267	1283
EPISTEME	31	1	68	120	71	89	126	506
IDENTITY	51	11	49	124	50	61	79	425
Totals	433	103	1830	3235	1167	1744	1984	10496

Appendix D

Table 7: Coded quotes in CSL reports indexed by yearly totals

	2007	2008	2009	2010	2011	2012	2013
SUSTAINABILITY	0.4388	0.6019	0.4896	0.5116	0.4799	0.4794	0.4682
INNOVATION	0.0947	0.0583	0.0995	0.1162	0.1011	0.1330	0.0867
VISIBILITY	0.0670	0.0388	0.0727	0.0665	0.0771	0.1072	0.0741
TECHNE	0.1155	0.1845	0.1240	0.1156	0.1234	0.1158	0.1346
EPISTEME	0.0716	0.0097	0.0372	0.0371	0.0608	0.0510	0.0635
IDENTITY	0.1178	0.1068	0.0268	0.0383	0.0428	0.0350	0.0398

Appendix E

Table 8: Number of coded quotes in IOC reports for each year

	SUSTAINABILITY	INNOVATION	VISIBILITY	TECHNE	EPISTEME	IDENTITY	Totals
2004	57	597	609	640	439	287	4633
2005	171	72	44	43	44	32	2411
2006	87	315	592	441	337	199	3977
2007	224	149	142	144	108	70	2844
2008	70	880	793	578	563	200	5092
2009	621	1258	1206	1042	1237	471	7844
2010	732	635	605	696	524	240	5442
2011	347	306	171	250	275	141	3501
2012	202	988	862	628	551	251	5494
2013	234	226	158	147	130	61	2969
2014	291	439	513	414	301	152	4124
2015	256	173	356	166	87	478	3531
2016	58	251	409	384	187	70	3375
2018	79	172	407	196	158	46	3076
2020	78	178	365	249	191	62	3143
2022	169	186	433	215	219	81	3325
2024	129	116	532	293	201	162	3457
Totals	3805	6941	8197	6526	5552	3003	

Appendix F

Table 9: Coded quotes in IOC reports indexed by yearly totals

	SUSTAINABILITY	INNOVATION	VISIBILITY	TECHNE	EPISTEME	IDENTITY
2004	0.0123	0.1289	0.1314	0.1381	0.0948	0.0619
2005	0.0709	0.0299	0.0182	0.0178	0.0182	0.0133
2006	0.0219	0.0792	0.1489	0.1109	0.0847	0.0500
2007	0.0788	0.0524	0.0499	0.0506	0.0380	0.0246
2008	0.0137	0.1728	0.1557	0.1135	0.1106	0.0393
2009	0.0792	0.1604	0.1537	0.1328	0.1577	0.0600
2010	0.1345	0.1167	0.1112	0.1279	0.0963	0.0441
2011	0.0991	0.0874	0.0488	0.0714	0.0785	0.0403
2012	0.0368	0.1798	0.1569	0.1143	0.1003	0.0457
2013	0.0788	0.0761	0.0532	0.0495	0.0438	0.0205
2014	0.0706	0.1065	0.1244	0.1004	0.0730	0.0369
2015	0.0725	0.0490	0.1008	0.0470	0.0246	0.1354
2016	0.0172	0.0744	0.1212	0.1138	0.0554	0.0207
2018	0.0257	0.0559	0.1323	0.0637	0.0514	0.0150
2020	0.0248	0.0566	0.1161	0.0792	0.0608	0.0197
2022	0.0508	0.0559	0.1302	0.0647	0.0659	0.0244
2024	0.0373	0.0336	0.1539	0.0848	0.0581	0.0469

Appendix G

Table 10: Number of coded quotes in IOC reports for each document category

	SUSTAINABILITY	INNOVATION	VISIBILITY	TECHNE	EPISTEME	IDENTITY	Totals
ACTIVISM	1811	2553	2277	1975	2447	1051	12114
LOCAL	602	1519	3040	1953	1502	577	9193
STRATEGIC	441	470	637	427	311	583	2869
SUMMER	195	1696	1453	1332	894	475	6045
WINTER	756	703	790	839	398	317	3803
Totals	3805	6941	8197	6526	5552	3003	

Appendix H

Table 11: Coded quotes in IOC reports indexed by analytics totals

	SUSTAINABILITY	INNOVATION	VISIBILITY	TECHNE	EPISTEME	IDENTITY
ACTIVISM	0.4760	0.3678	0.2778	0.3026	0.4407	0.3500
LOCAL	0.1582	0.2188	0.3709	0.2993	0.2705	0.1921
STRATEGIC	0.1159	0.0677	0.0777	0.0654	0.0560	0.1941
SUMMER	0.0512	0.2443	0.1773	0.2041	0.1610	0.1582
WINTER	0.1987	0.1013	0.0964	0.1286	0.0717	0.1056

Appendix I:

Table 12: Coded quotes in IOC reports indexed by document categories totals

	SUSTAINABILITY	INNOVATION	VISIBILITY	TECHNE	EPISTEME	IDENTITY
ACTIVISM	0.1495	0.2107	0.1880	0.1630	0.2020	0.0868
LOCAL	0.0655	0.1652	0.3307	0.2124	0.1634	0.0628
STRATEGIC	0.1537	0.1638	0.2220	0.1488	0.1084	0.2032
SUMMER	0.0323	0.2806	0.2404	0.2203	0.1479	0.0786
WINTER	0.1988	0.1849	0.2077	0.2206	0.1047	0.0834

Table 1: Dean's four analytics of governmentality

Analytic	Description
Visibility	Regimes of government (in the sense of directing human behavior) that influence what is visible and obscured (e.g. reporting metrics)
Techne	Technical ways in which a particular regime is created and enabled (e.g., procedures, instruments)
Episteme	Knowledge, expertise and discourses that generates those 'in the know' (e.g., expert vocabulary, specialist training)
Identity	Understand individuals and groups adopting a particular stance in performing governmentality (e.g., teachers as expert educationalists)

Table 2: Initial coding framework developed after exploratory interviews

Code	Keyword search terms
SUSTAINABILITY	Sustainability
INNOVATION	Innovation
VISIBILITY	visible, visibility, representation, image, logo, branding, notice
TECHNE	Technology, standard, rule, regulation, norm, pattern, system
EPISTEME	Profession*, expert*, knowledge, know-how
IDENTITY	identity, self, portray, reflection, perception, identification

Table 3: Revised coding framework for IOC documents

Code	Revised keyword search terms
SUSTAINABILITY	sustain*
INNOVATION	innovat*; *new*
VISIBILITY	look*; brand*; logo; image; see; notice; media
TECHNE	standard*; rule; regulation; norm*; pattern; system*
EPISTEME	profession*; expert*; knowledge; know-how; experience*
IDENTITY	Identity; self*; identif*; author; recognition; validation

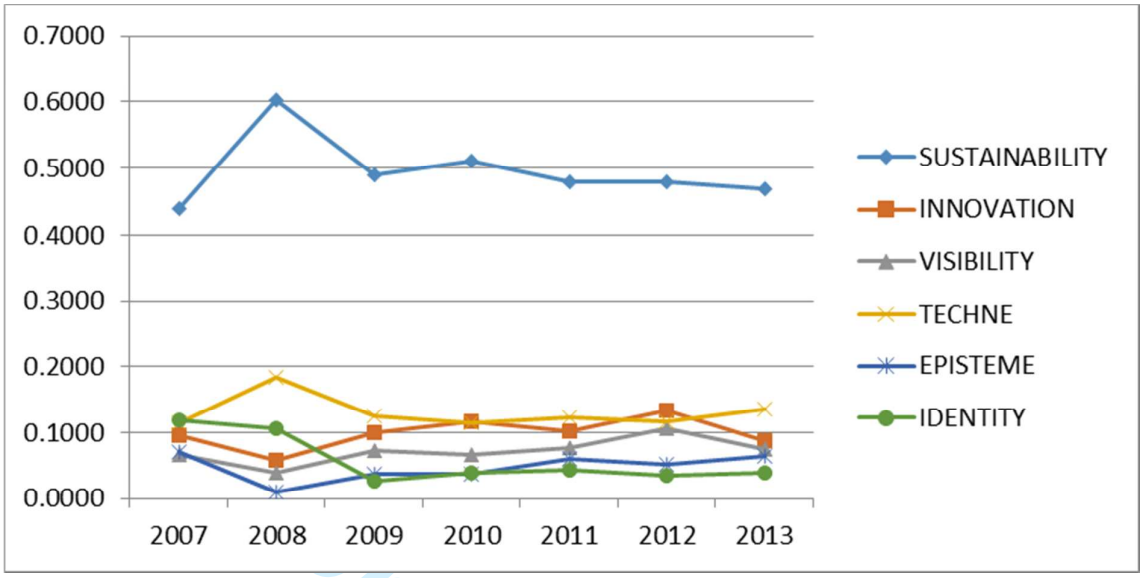

Figure 1: Coded quotes in CSL reports by yearly totals (Appendix D data)

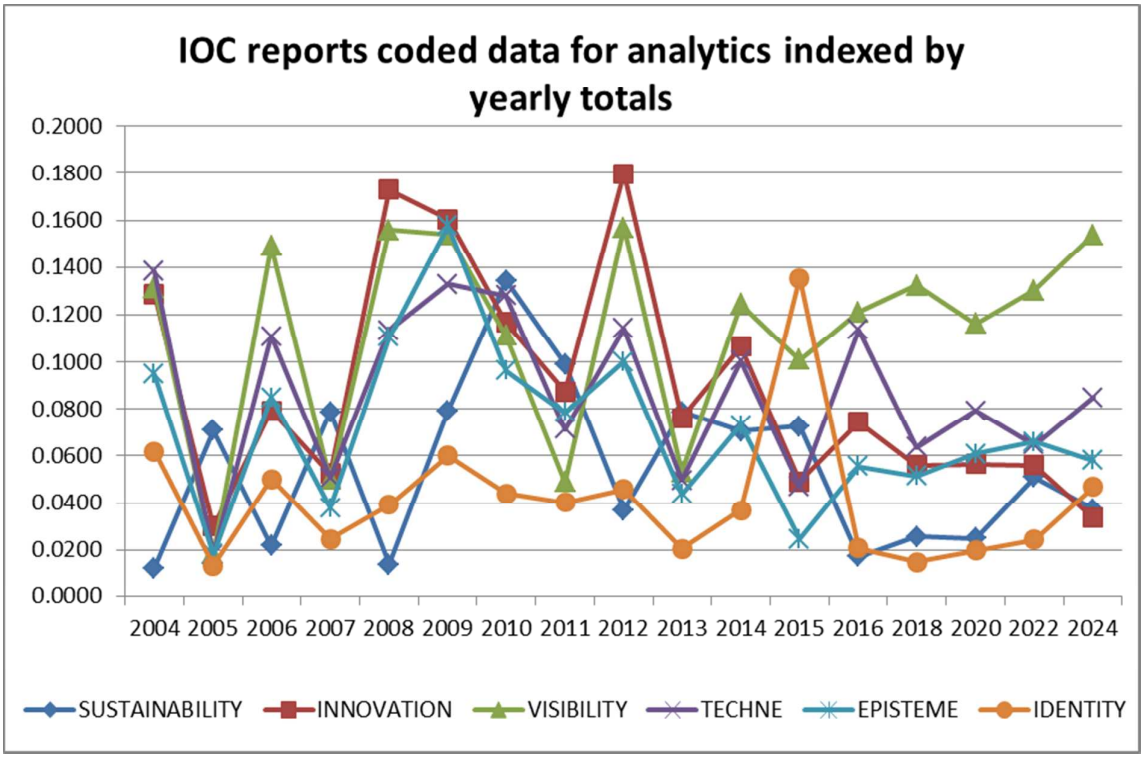

Figure 1: IOC reports coded data indexed by yearly totals (Appendix E data)

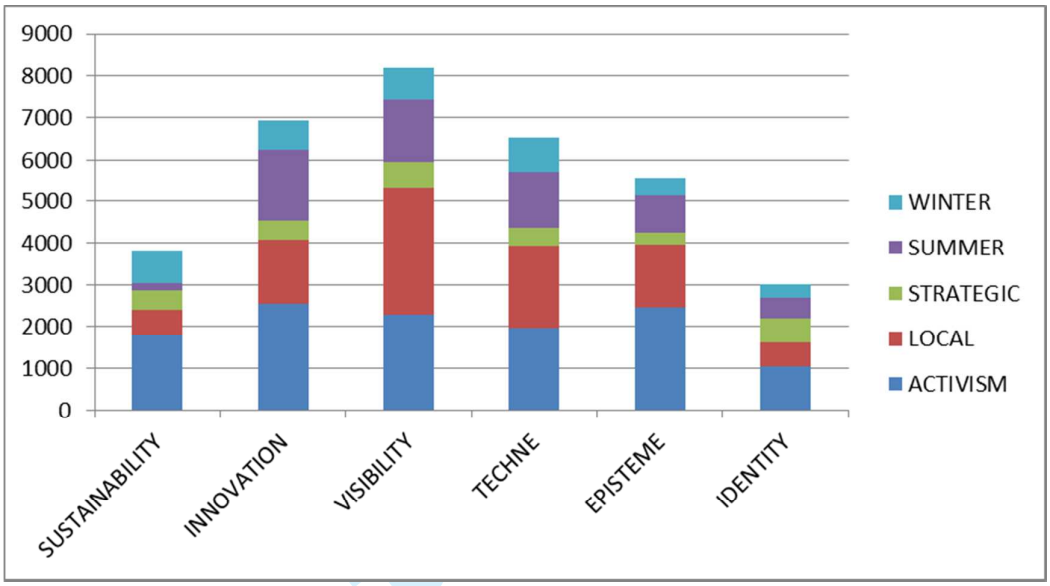

Figure 1: Number of coded quotes in IOC reports for each document category 2004-2024 (Appendix G)

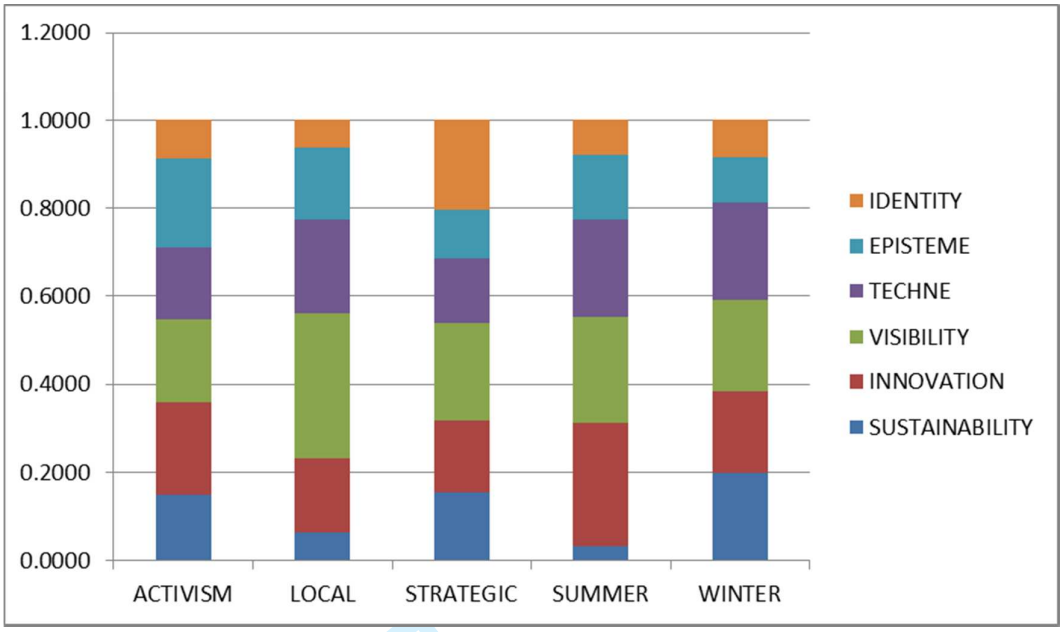

Figure 1: Coded quotes in IOC reports indexed by document category totals 2004-2024 (Appendix I)