Phronesis as a Paradigm for ICT-enabled Transparency: The Case of the Nicaragua Canal Megaproject

Emergent Research Forum Paper

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Abstract

This paper proposes the use of Phronesis as an alternate research paradigm to inform the design of information systems that can enhance the transparency and accountability of megaprojects. We illustrate the proposed approach in the context of the Nicaragua Canal Project, a contemporary Mega-Project for which the research questions addressed by the three Aristotelian intellectual virtues: episteme, techne, and phronesis, are presented and examined. We differentiate between the types of questions that can arise in investigating megaprojects and show that Phronesis is more suitable than the traditional research paradigms of Epistemology (episteme) and technology (techne) for answering the type of societal-managerial “choice” questions that typically arise in the case of megaprojects. Therefore, phronesis can provide an appropriate framework for the design of ICT-enabled systems that can facilitate the advancement of different stakeholder values and perspectives that need to be considered in making value choices.

Keywords:
Megaprojects, phronesis, transparency

Introduction

The objective of this paper is to present an alternate research paradigm for addressing the issue of ICT-enabled transparency as a mechanism to enforce the accountability in megaprojects. Megaprojects ultimately involve issues about “management choice” that arise due to differing perceptions, values, and interests of various socio-political stakeholders.

The paper starts by differentiating between the types of questions that can arise in investigating megaprojects. It shows that the research paradigms of Epistemology (episteme) and technology (techne) developed in and for the natural sciences, but regularly emulated by social and managerial scientists, are particularly unsuitable for answering the type of societal-managerial “choice” questions that typically arise in the case of megaprojects.

The paper then moves on to describing the three original Aristotelian knowledge paradigms or “intellectual virtues”: Phronesis, Episteme, and Techne. We conclude by introducing a phronesis based research methodology for investigating practical questions of human “good” and choice that are relevant for informing systems than can enhance the transparency of megaprojects. The proposed research methodology is illustrated in the context of the Nicaragua Canal Project, a contemporary Mega-Project for which the research questions addressed by the three Aristotelian intellectual virtues: episteme, techne, and phronesis, are presented and examined.
Differing Research Objectives and Research Questions

Managers and policy-makers are regularly confronted with practical questions of choice and judgment. Unfortunately, the two main traditional research paradigms, and their associated research methodologies used in management research: epistemology and technology, provide limited guidance for determining the desirability of decision choices. Although they can describe the decision choices, or predict their consequences, they lack the appropriate theoretical, conceptual, and methodological resources to help answer questions of managerial choice.

Aristotle’s sixth book of Nicomachean Ethics (Aristotle, 1999) differentiates between three “intellectual virtues” that help humans address questions concerning various types of knowledge required for “good-living”: phronesis, episteme, and techne. Aristotle suggests that questions of managerial choice and judgment involving “practical reason” are only answerable by phronesis, the highest of the three intellectual virtues. He further argues that unless phronesis guides and employs episteme or techne, these two traditional intellectual virtues cannot answer questions of “desirability” and of creating “human good”.

Next we consider three different questions concerning the Nicaragua Canal megaproject that illustrate each of these three virtues and the limitations of traditional research paradigms in answering the questions of managerial choice.

Q1: Phronetic Question: “Should the Nicaragua Canal be built?”

This question tries to help the managers/policy-makers find answers to a practical but complex, risky, and expensive policy-choice in the decision for building (or not) of the Nicaragua Canal. The question is not just of description or explanation but also of value, and desirability that aims to guide the choice of the decision-maker.

The question is context-dependent and its answer is based upon the underlying subjective questions of stakeholder’s perspective given that what one stakeholder may consider “good” or “desirable”, may sometimes be in conflict with the interests or desires of another stakeholder.

Firstly, these questions involve identification and explication of competing values that are associated with and used to evaluate the pros and cons of alternate possible scenarios. Often these alternate scenarios are mutually exclusive as the realization of one scenario may preclude the other, and vice-versa.

Q2: Epistemic Question: “What are the likely environmental, social, and economic consequences of building and operating the Nicaragua Canal?”

This question is value-free, it only asks what the consequences are and it aims to merely identify and measure these consequences. The question cannot help judge if the identified and measured consequences are good (desirable) or bad (undesirable) in a particular context.

This epistemic question is both, a descriptive as well as a predictive question that assumes that regularities or patterns (theories) discovered in one context can be “generalized” to other contexts. In its descriptive incarnation, it can help measure and make explicit the environmental, social, and economic consequences of the project. In its predictive manifestation the answer is based upon the assumption of “generalizability” of data based inductive theories to predict the consequences of the project. It can do so by drawing upon data based descriptive models of other large-scale infrastructure interventions that associate the environmental, social, and economic consequences of megaprojects and extrapolating the findings of such models to the Nicaragua Canal megaproject under study.

Q3: Techne Question: “How do we build and operate the Nicaragua Canal?”

This question corresponds to a “techne” or “know-how” intellectual virtue (Aristotle, 1999). The question is concerned only with how to design, not with the “desirability” or the “goodness” of the consequences of the design.

Similarly to epistemic questions, Techne questions are based upon the assumption of generalizability of knowledge and predictability of consequences of technical interventions. Technical interventions are
typically some sort of a manipulation of the independent or causal variables that have been identified in epistemological theories. The epistemological theories are used to predict the dependent variable or the consequences of intervention.

The assumption of generalizability is not always tenable in the case of megaprojects given that stakeholders, and their values and interests, are likely to be unique and the context is not likely to be repeated.

**The Nicaragua Canal as a Megaproject**

Megaprojects are defined as large-scale ventures, which may take several years to develop and cost in excess of $1 billion. They are highly complex projects as they involve multiple public and private stakeholders, and have great potential for social and economic transformation and therefore impact millions of people (Flyvbjerg, 2014). The Nicaragua Canal is a perfect example to this type of project.

The Nicaragua Canal will be the second man-made Canal to bisect the Central American isthmus and connect the Pacific to the Atlantic Ocean. The project is arguably the most ambitious infrastructure project in the Western Hemisphere with an estimated cost of $50 billion and is expected to have unprecedented impact on employment and economic development. (Tharoor, 2014).

A Chinese entrepreneur telecomm billionaire in Hong Kong has joined efforts with the Nicaraguan government and has proposed to implement the project within 5 years. Both parties have denied the involvement of the Chinese government in the project, despite other stakeholders' belief to the contrary.

Since early in the eighteenth century, at least 70 proposals to build a canal across Nicaragua have been developed by British, French, and American Engineers but so far all these plans have stayed only on the drafting board. Meanwhile, far from becoming a trade-based prosperous nation, Nicaragua has continued to languish as the second poorest nation in the Western Hemisphere.

By scanning the variety of secondary data and press-reports we have identified six such perspectives in the context of this project:

**Perspective 1.** The Sandinista government in Nicaragua. In this perspective the potential of the Nicaragua Canal for promoting trade and consequent prosperity in the region is identified. According to some estimates the proposed waterway could create 40,000 construction jobs and double the per-capita gross domestic product of Nicaragua.

**Perspective 2.** Critics of the Sandinista government who consider the Canal a plot by the country's president Daniel Ortega to enrich himself and his family, at the expense of the Nicaraguan peasant and the environment. This perspective may be further complicated by a history of hostile interactions between the Sandinistas and the US government.

**Perspective 3.** Supporters of Panama Canal who see the Nicaragua Canal as a competitive threat. Despite professions of neutrality, for a hundred years USA and its proxies still control the flow of East-West shipping and trade through the Canal.

**Perspective 4.** Environmental experts and champions of the rights of native people who express concern for the potential harm to the environment caused by the Canal and the land rights of the local people along the Canal route.

**Perspective 5.** Hong Kong Nicaragua Canal Development Group (HKND Group), which sees the Canal as a major financial investment, and a technological design and implementation challenge.
Perspective 6. The Chinese Government. China is coming out of two centuries of colonial subjugation and isolation. It has just begun to flex its economic and geo-political muscles and its future growth is highly dependent on the growth of its east-west trade; a substantial part of which passes through the Panama Canal. The Nicaragua Canal could be an important part of China’s trade strategy and its geo-political aspiration.

**Enhancing Accountability: The Case for ICT-enabled Transparency**

Despite the growing trend in the number of megaproject implementations around the world and their increasing overall cost, the performance of such ventures continues to be characterized by cost overruns and poor overall performance (Flyvbjerg, 2014). Enhancing transparency is critical for enforcing the accountability of megaprojects and for mitigating their inherent risks. In this context, transparency entails that the information and communication aspects required to ensure fair participation and involvement of all stakeholders should be taken into consideration and receive adequate funding (Flyvbjerg, Bruzelius, & Rothengatter, 2003).

Unfortunately, the typical scenario that surrounds megaprojects is lack of information and misinformaton of stakeholder groups and civil society, which greatly increases their risks. Flyvbjerg (2003) strongly argues for representative participation that is supported by the government, and for transparency that ensures that all documents and other official information is made available to the public.

In this respect, our preliminary research has found that the Nicaragua Canal megaproject is not the exception to this typical lack of information that characterizes such ventures. Different stakeholder groups have pointed out lack of government transparency and potential environmental problems the canal would create (Erlich, 2015).

In the next section we propose phronesis as a paradigm that can inform the design of information systems that can increase the transparency of the Nicaraguan Canal megaproject and hence its accountability towards stakeholders. Our starting point is the identification of the phronetic questions, which can only be answered by ensuring adequate participation of different stakeholders.

**C: Aristotelian Phronesis for Megaproject Transparency**

There is greater realization among social scientists that aspiring to the principles and methodologies of Natural Science may be not only be misguided, but even futile (Flyvbjerg, 2001; Flyvbjerg, Landman, & Schram, 2012). In building an alternate science of society, Flyvberg (2001) suggests that modern social and management scientists should rely primarily on the concept of “practical reason” or phronēsis, defined by Aristotle in his teachings on Nicomachean Ethics (Aristotle, 1999) as the most important of three intellectual virtues – Phronesis, Episteme, and Technē.

Making value choices is the routine purview of the policy-makers (politicians or managers) and therefore should be a concern for social scientists. Humans first need to know what is desirable or good, before they can take actions to improve their current situation towards the “desirable” ends. Humans need knowledge to act in the context of their current circumstances to maintain and advance their particular values and interests.

Phronesis as a research paradigm can support decision makers in making value choices by identifying various courses of action and relevant stakeholders for a given situation, as well as explicitly examining the desirability of these courses of action and assessing the values attached to these actions; it can ultimately help the decision-maker in choosing between actions that may have different benefits or harm to each stakeholder group. This characterization of phronesis provides an appropriate framework for informing the design of ICT-enabled systems that can facilitate the advancement of the different stakeholder values and perspectives.
Applying the Principles of Phronesis to Q1: “Should Nicaragua Canal be built?”

Flyvberg (2001) revives the Aristotelian concept of *phronesis* as a management research paradigm better equipped to produce situated knowledge about how to understand and act in contextualized settings. Furthermore, as there could be competing interests and values of what is desirable in a particular context, he considers issues of power and politics as moderating the debate between competing, but equally legitimate values.

In the case of the Nicaragua Canal Project, the poverty amelioration interests of the populace of Nicaragua may be compatible with the Sandinista interests of wealth accumulation; but may compete directly with the interests of the supporters of Panama Canal, and those of environmentalists and champions of human rights. The decision of whether building the canal or not, will be decided, based upon which of these perspectives resonate more with the decision-maker. However, obtaining such perspectives can benefit from the existence of two-way communication channels that are ICT enabled and open to different stakeholder groups.

For example, the interest of poverty reduction in Nicaragua may be directly opposite the interest of environmental sustainability of Lake Nicaragua. When two interests collide, we either need to find a higher solution that can accommodate both the competing interests, or the decision-maker needs to choose between satisfying one or the other interest.

The *phrnesian* investigation requires the following context-specific information to support and guide the choices of decision-makers:

- Who are the key stakeholder groups?
- What is the importance of each stakeholder group to the decision maker? How can the stakeholder benefit or harm the decision-maker?
- What are the interests or values for each stakeholder group?
- How does each decision-scenario (To build or not to build) impact these interests and values?

This is where Flyvberg (2001) augments the Aristotelean concept of *phronesis* with issues of power and politics. He argues that in the inevitable case of competing values, it is the exercise of power, and politics that determines the choice from among competing interests and values.

To summarize, our practical question, Q1 “To Build or Not to Build” the Nicaragua Canal cannot be solved by help from either *epistemology* or *technology*. It requires help from *phronesis*. This understanding, and recommendations for action are based upon deliberations about values and interests, values and interests that are central to social, political, and economic development in any society. ICT infrastructure that can support such deliberation to take place can therefore greatly enhance and facilitate the process of finding the answer to this phronetic question.

F: Conclusion

This paper shows how the traditional research principles of *epistemology* and *technology* are not adequate to helping answer the management choice questions. Such questions involve a context-specific identification of values and stakeholder interests. To help answer these questions, the paper presents a *phronesis*-based research methodology that makes explicit, the context-specific process of identifying stakeholders and their values and interests in the context of the Nicaragua Canal Project. Moreover, by making this process explicit, it adds substantial transparency to the process of identifying and selecting between competing stakeholder values and interests encountered in the Nicaragua Canal Project.

As a megaproject, the Nicaragua Canal Project is subject to the substantial risks of failure that can be mitigated by adding transparency and accountability. We have suggested that phronesis can inform the design of information systems intended to enhance project transparency by enabling stakeholder participation.
REFERENCES


