



A diagnostic framework of strategic agency: Operationalising complex interrelationships of agency and institutions in the urban infrastructure sector



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ABSTRACT

In developed cities legacy infrastructures tend to lock future development pathways and investment decisions into perpetuating itself, presenting barriers for sustainability transformations. In contrast, the lack of physical infrastructures in developing cities hints at greater opportunities for fast-tracking transformations. To examine the potential capacity for overcoming barriers and exploiting opportunities for transformations, a more nuanced operationalisation of strategic agency—than is currently offered in sustainability scholarships—is needed. Mainstream perspectives provide quasi-evolutionary explanations of system transformation, which, to date, tend to emphasise agency as a capacity to navigate niche-regime interactions specifically by charting institutional works along a functional model of socio-technical innovation or transition trajectory. Against this background, this paper sets out to develop a diagnostic framework of strategic agency that contributes to the under-explored question of how agency might lead transformation in various contexts by fine-tuning their works to windows of opportunities. More specifically, the framework adopts a practice lens to reveal the (a) type of interaction dynamics that agency can give rise to in reproducing and, by extension, transforming institutions, and (b) reflexive capability as entwined with the exercise of power. In doing so, it facilitates a balanced inquiry that interrogates actions to expose their various embodied forms and patterns within a set of real-world contexts. The framework draws from new-institutionalist studies and practice theory, which lend perspectives for unpacking actions as embedded and institutions as mutable. It operationalises this duality by taking institutional reproduction processes as the core unit of the diagnostic. The framework is illustratively applied to an example case from the developing Indonesian water sector.

1. Introduction

Classical water engineering in urban contexts represents one of the most successful and tested infrastructure development approaches for improving public health outcomes and increasing productivity across developed cities. To a great degree, this legacy paradigm still shapes policy options and investment agendas in both developed (Dunn et al., 2016) and developing cities (Goldman, 2007). Despite its advantages, overreliance on technological fixes and deep-seated perceptions that such large infrastructure systems are fail-proof can increase vulnerability of existing urban water systems from future environmental shocks (e.g. extreme floods, long term droughts, etc.) and uncertain societal pressures (e.g. rapid population growth, economic downturns, etc.). The lock-in of the urban development trajectory as a consequence of past infrastructural choices (Walker, 2000) also encumber other

critical sectors, such as transport and energy. There is an increasing agreement that legacy approaches—having resisted major updates since its conception—are no longer adequate for dealing with complex and interdependent challenges (Ludwig, 2001; Pahl-Wostl et al., 2009). In water sector, scholars have suggested that ‘a major socio-technical overhaul of conventional approaches’ is required for delivering more sustainable and resilient outcomes (Wong and Brown, 2009, p. 674). However, despite many attempts to introduce alternative approaches in the past two decades and more, widespread adoption has remained elusive in practice (Medema et al., 2008).

The studies of socio-technical urban transition have demonstrated that legacy infrastructures tend to lock future development pathways and investment decisions into perpetuating itself; this diminishes opportunities for systemic overhaul. Such inertia is best observed in developed cities with a long, well-embedded technical and organisational

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tradition (e.g. Brown et al., 2006). In these studies, transformation is possible when external pressures (e.g. climate-related shocks, political upheavals) put enough pressures on the dominant regime (Geels and Schot, 2007). Along which incremental and/or radical variations through niche-experiments, social learning, pilot projects, etc., may achieve a breakthrough. Indeed, agents, working under the constraints of such a regime, are up against a sophisticated structural power that actively co-opts their knowledge and resources to maintain infrastructure and institutional variations to a minimum degree. In contrast, the lack of basic physical infrastructures in many developing cities theoretically indicates that there may be less barriers for wider adoption of more sustainable infrastructures. Without discounting cultural and economic entrenchments, this hypothesis implies a potential capacity for accelerated transformations in developing cities. However, until a more nuanced conception of agency is developed than is currently offered in transition and governance scholarships, this hypothesis cannot be tested satisfactorily.

Within existing literatures, agency remains under-operationalised (Smith and Stirling, 2010; Voß and Bornemann, 2011). Commonly, capacity to enact change is interchangeably labelled as *adaptive* or *transformative* with limited conceptual distinction (Wolfram, 2016). Capacity to adapt is frequently associated with social learning processes (Pahl-Wostl, 2009). Others used it to denote a specific capacity to innovate and experiment (Moore et al., 2014), to build network (Kramer and Pahl-Wostl, 2014), or to foster participatory processes (Muro and Jeffrey, 2008). More broadly, mainstream perspectives tend to down-play power relations, while emphasising a plethora of collaborative and cooperative mechanisms presumed to shift socio-cognitive arrangements (Coenen et al., 2012), e.g. vision, ideas, and policy options (Voß and Bornemann, 2011), into widely diffused rules and resources that facilitate transformation. This tendency is attributable to the functionalist root of the scholarships, which focuses on describing patterns of change on societal level and renders agency as hazily-operationalised system feedback. Scholars have called for more systematic clarification of the less-than-mechanistic operations conducted by agents in steering, directing, and navigating transformations (Smith and Stirling, 2010; Young, 2002).

There is an increasing number of contributions that attempt to close this gap by typifying strategic interactions using an institutional entrepreneurship perspective (e.g. Huitema and Meijerink, 2010; Westley et al., 2013) and power concepts (e.g. Avelino and Rotmans, 2011; Boonstra, 2016). However, there remains a disproportionate focus on elite groups, e.g. scientific/bureaucratic leaders and champions (Lawhon and Murphy, 2012), presumed as standard power holders. This is worth noting as it reveals a bias, which can obscure the influence of other institutional agents (Lawrence and Suddaby, 2006). More recently transition scholars have furthered the debate by engaging more closely with micro-level analysis through Lawrence and Suddaby (2006) institutional work typology (see Binz et al., 2016; Brown et al., 2013; Fuenfschilling and Truffer, 2016; Rogers et al., 2015). These studies demonstrate the conceptual and empirical utility of the typology for rendering agency with more nuances through a thick description of actions during specific innovation phases. The focus on the latter tends to suggest that actions of strategic nature are to be found as a direct function of innovation sequences. There is no strong reason to believe that strategic actions can be neatly parameterised only within the boundary of innovation phases—more fundamentally, this argument hinges upon the notion that the reproduction of socio-technical system through innovation related practices is but a subset of more diverse societal practices. In fact, Binz et al. (2016p. 258) affirm that phases of legitimation are not invariably ‘synchronised’ with phases of technology innovation (i.e. niche-diffusion-market formation). Notably, organisation research has indicated that transposing change-related works across contexts requires not just knowing the critical tasks (‘ingredients’) but getting ‘the recipe of the sequenced steps’ right (Brown and Eisenhardt, 1997, p. 3). The present paper argues that application

of the work typology that fixates topically at innovation-related sequence potentially overlooks other structuring sequences, which are plausibly relevant for transition in other contexts. As such, to contribute to examination of ways in which agency is enacted strategically, research needs to pay proportionate attention at institutional works as well as critical structuring sequences that constitute the reality of infrastructure development.

Against this background, this paper puts forward a diagnostic framework of strategic agency that focuses on contextualising institutional works as embedded actions within their specific environments. Through practice lens, being strategic pertains to a capacity to sustain recognition, accountability, and reciprocity in social contexts (Giddens, 1979). In agreement with new institutionalist scholarships, agency is conceived as knowledgeable and capable of acting in a skilful manner (Lawrence and Suddaby, 2006). Agents perform the so-called ‘institutional works’ to accomplish particular strategic intents, whether to create, maintain, or disrupt structure. The concept has allowed researchers to identify different types of works performed during phases of system transition, however, this earlier application does not necessarily deal with operationalising works in terms of their *embeddedness*. This means that works evidently effective in transitioning one system in a specific environment may or may not bring the same result in another, because the effectiveness of those works depends upon how well they are expressed and situated in terms of social practices within certain institutional contexts. Furthermore, the transition pathways—modelled in terms of niche-regime interactions—are by no means the only set of relevant contexts for agents to consider in enacting works. Other sets of interrelated contexts, such as cultures, organisational values, knowledge systems, governance arrangements, political systems, biophysical conditions, etc. might co-determine the degree by which agents fine-tune their works. Such dynamic interplay between structure and agency, according to Giddens, is regularly embodied through social practices. Giddens contends that ‘practices are situated within intersecting sets of rules and resources’ (1979, p. 82). The emphasis here is on examining how practices are combined during interactions, rather than on generating a typology of non-contextualised works. Examining the different ways in which practices are combined reveals the work agents enact as a particular response embedded to relevant structural opportunities in real-world context. By taking the dynamic constitution of these practices as the core unit of analysis, this paper proposes a preliminary framework that can guide an examination of how strategic agency is varying played out in different institutional contexts. The framework ultimately aims to contribute to the broader question of identifying how agency might lead system transformation in various contexts by fine-tuning their works to relevant windows of opportunities, which, to date, have been largely reduced to studying a small set of opportunities and innovation mechanisms more typically associated with developed urban contexts. The framework application is illustrated using examples from an urban water infrastructure case study in Jakarta, Indonesia. The development of this infrastructure has been marked by overt (and covert) relational dynamics amongst its stakeholders. In this paper the application reveals a number of ways in which works are embedded and practices combined by two opposing groups of actors in response to opportunities. By using case-specific examples, the illustrative application fulfils a demonstrative purpose of highlighting the potential of the novel framework for advancing a more nuanced analysis of the interrelationships of agency and structure in urban development context.

2. A diagnostic framework of strategic agency

The strategic agency perspective put forward in this paper is informed by a classical debate around the degree of agents’ capability to diverge from and alter existing institutional settings. The perspective views strategic agency as demonstrated through active and sophisticated consideration of structural opportunities. This ontology has

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