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Making Contingent Decisions in Megaprojects – Governance Lessons From an Imitation and Adaptation Perspective

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Making contingent decisions in megaprojects – Governance lessons from an imitation and adaptation perspective

Abstract

Entities which lack the capabilities to govern megaprojects are held to be a laggard in meeting the demands for economic development. One sect of the extant literature treats each megaproject to be a ‘new animal in the block’, ‘white elephant’ or a ‘different breed of project’ and consequently drives megaproject promoters to create unique governance arrangements on these projects. On the contrary, another sect of literature has been critical towards ‘uniqueness bias’ on projects and advocates the megaproject promoters to seek legitimacy from proven and institutionalized arrangements of project governance prevailing in the respective fields. In this context, the promoters are subjected to non-legitimacy risks in the former and risks related to isomorphism in the latter, thereby caught amidst a shaping dilemma between aligning with and departing from the proven and institutionalized governance arrangements of a project field. We adopt a practice-based lens in this study to examine how such challenges pertaining to decision-making between ‘imitation’ and ‘adaptation’ can be situatedly resolved. Through an embedded-vignette method, we qualitatively study the development of two Indian megaprojects - the South-East Metro and the South-West Metro. The empirical evidence captures situated actualities of how the promoters organized these megaprojects by either imitating governance arrangements prevailing in the project fields or developing adaptive and indigenous arrangements. Inferring from this empirical evidence, we synthesize three temporary organizing zones – environment-related, actor-related and task-related zones as we term – where prevailing structures of governance interact with ongoing activities of ‘governing’ to create a bricolage of imitative and adaptive governance arrangements. We draw prescriptive conditions encapsulated by these zones to guide the megaproject promoters towards situated assessment of their megaproject’s context and contingent decision-making.

Keywords: Megaprojects, project governance, contingent decision-making, imitation, adaptation, practices

1 Introduction

Several contemporary projects envisage ‘big push’ infrastructure solutions – megaprojects as they are often called – which feature highly pluralistic socio-technical interfaces and complex coordination requirements. Unlike a permanent organization which “might exercise greater

power as its size increases” and often tend to gradually grow in size with enhancements in governance capabilities, projects are held to “run a greater risk of failure if they grow in size” and subsequently come into force without a priori acquisition of governance capabilities (Söderlund & Sydow, 2019). Infrastructure promoters have been often reported to lack inherent capabilities upfront to govern such sophisticated endeavours which have been exponentially growing in average size and number (Flyvbjerg, 2014). Further, rapid globalization and embedded project fields and actor-networks establish affiliations between a megaproject and its present, past and potential future counterparts (Balasubramani et al., 2018). In consequence Yusof et al. (2014) reported that a significant number of these mega-infrastructure initiatives and their embedded structures has been borrowed from mature and previously proven contexts. For instance, the London Underground is poised to have inspired many other rapid rail transit projects in the world. Consequently, megaproject scholars invited attention on engaging templated structures which breed repeatable governance solutions in megaprojects (For e.g. Ruuska & Brady, 2011). On the other hand, scholars necessitated rational adoption of context-dependent strategies in megaprojects and subsequently extended this discourse by describing the development of adaptive governance structures which are grounded in the assessment of past or prevailing affiliations (For e.g. Shenhar & Holzmann, 2017). In the background of both these complementary views, it is argued that nascent promoters particularly lack capabilities to understand the ‘reality data’ which influence decision-making on imitation and adaptation in projects (Lindkvist, 2008). Thereby, it is unclear how nascent promoters can actually assess a megaproject’s context and make contingent decisions between imitation and adaptation. We review few of the relevant theoretical discourses of megaproject governance to understand the underlying dynamics of imitation and adaptation.

2 Theoretical background: Imitation and adaptation of governance arrangements

2.1 Contrasting discourses of megaproject governance

Governance arrangements are defined as ‘rules of the game’ which articulate decision-making in a project with regards to technical, contractual and organizational modalities (Balasubramani et al., 2018). Owing to the prominent role of megaprojects in contemporary infrastructure development, megaproject governance remains an exclusive area of interest in the extant literature. In this sub-section, we review two of the various sects of literature on megaproject governance.

One sect of the literature treats each megaproject to be unique and heterogeneous. In this vein, megaprojects are poised to hold institution-spanning ambitions, bring about change and novelty in the constituting societies, and inculcate new ways of interactions between the built and social environments (Lenfle, 2008). Scholars have argued that raptures which engineers, economists, politicians and benefactors cherish in building tallest-longest-biggest, once-in-a-lifetime megaprojects create 'sublimes' which drive these projects from concept to table (Flyvbjerg, 2014). As a result, megaprojects are noted to depart from the prevailing boundaries of physical infrastructure - in terms of inputs required, novelty embodied, and techniques employed – making these endeavours systemically complex and idiosyncratically demanding for a group of actors to manage (Davies & Mackenzie, 2014). The pluralistic, inter-institutional, inter-organizational nature of megaprojects has triggered the related scholarship to preach for project organizing approaches which depart from assumptions of isomorphism in the practices of project actors and mitigate the related costs of non-adaptivity (Levering et al., 2013). Consequently Gil et al. (2012) appraised megaprojects as highly affinitive sites for exploring and exploiting innovations in project organizing and delivery.

Ansar et al. (2017) argued that megaprojects are more fragile to risks and uncertainties than other conventional projects. Most of these mega-development initiatives are executed through a Special-Purpose-Vehicle-mode of delivery, which has been reported to inhibit the transfer of decision-making capabilities even amongst megaprojects developed within the same country (Sainati et al., 2016). Also, studies have cautioned that governance arrangements drawn from best practices of other megaprojects do not work well in a megaproject as a 'cookie cutter' (Ahern et al., 2014). With very few or no precedents of similar kind, each megaproject has been poised to be a 'new animal in the block', 'white elephant' or a 'different breed of project' (Flyvbjerg et al., 2003). This unique context of megaprojects challenge megaproject personnel in shaping and governing these projects by drawing from the prevailing notions. In the light of above arguments made in this theoretical discourse, megaproject promoters have been urged to develop unique governance arrangements to make technical, contractual and organizational decisions in each megaproject.

Disapproving the notion that 'every megaproject is an island', scholars adopting an institutional-field based view of governance have observed that a megaproject operates in a broader set of contextual affiliations drawn from rules, norms, bodies of knowledge, best practices, socio-cultural values, and informal impositions that provide both resources for and constraints in decision making within the respective field. Even though each megaproject may

be unique and cannot be reduced to being routine, arguments are placed for a deeper understanding of these technical, contractual, and organizational decisions which are operationalized by (i) a megaproject's organizational, inter-organizational, historical, industry-level, country-level affiliations accruing from embeddedness in relational fields and (ii) a megaproject's embeddedness in long-term institutions of its environment (Engwall, 2003). Institutional/proto-institutional forms of governance, being long-term notions, templatize the organizing process and are held to enhance effectiveness and legitimacy of project work while stabilizing the project organizations and their ongoing patterns of project-based interactions with broader social orders to still bring out creative infrastructure solutions. More specifically, Scott (2012) illuminated how regulative, normative, and cognitive-cultural affiliations with institutional fields support formal and informal governance arrangements in a megaproject. Nevertheless, proto-institutions are also observed to co-exist with the institutions of governance in the form of pre-institutionalized arrangements which for instance could be drawn from a megaproject's counterparts. Consequently, scholars have invited attention to avoiding incongruences in decision-making between the project participants by aligning towards the institutions and proto-institutions of governance in a field (For e.g. Mahalingam and Levitt (2007)).

Flyvbjerg (2014) noted that 'uniqueness bias' impedes megaproject promoters in capitalizing on the governance arrangements prevailing in a project field, thereby leading to cost overruns and time delays over the course of creating unique governance arrangements. Barring coercive-normative-mimetic pressures (Scott, 2012) and path dependent influences of the prevailing arrangements in a field, institutional/proto-institutional imitation has been necessitated to deliberately weave congruence and consistence amidst the extremes of heterogeneity, plurality and temporality fostered by megaprojects (Aaltonen et al., 2017). Thereby, there is a thrust on megaproject promoters to seek not efficiency but legitimacy from the proven and institutionalized arrangements of project governance in the respective fields for survival.

Relating the two sects of literature, we gather that the promoters encounter institutional tensions owing to i) non-legitimacy risks when they create unique and adaptive governance arrangements and (ii) risks related to isomorphism when they adopt governance arrangements prevailing in a project field. In other words, the promoters tend to be caught amidst a shaping dilemma between aligning with and departing from the proven and institutionalized arrangements of governance in a project field. A practice-based outlook allows us to investigate

how megaproject actors situatedly resolve this dilemma and make contingent decisions on imitation and adaptation.

2.2 A practice-based discourse to imitation and adaptation

In the light of researchers exploring how social behaviour is shaped, changed and stabilized through situated patterns of action, a practice theoretical lens allows to understand the emergence of actual practices of work as a result of local reproduction and adaptation rather than impositions of prevailing structures (Feldman & Pentland, 2003). Barley (1986) observed that under certain conditions gaps emerge between the practices embodied by the prevailing structures and those enacted in reality.

Following a ‘practice turn’ in the study of projects, scholars have observed that actors exhibit loose coupling to customize their project-level decisions emergently with reference to prevailing and overarching governance arrangements in the respective fields (Dubois & Gadde, 2002). Besner and Hobbs (2008) argued that novel requirements demand such customizations and adaptations while standard requirements sustain the prevailing governance arrangements in a project field. To invoke a deeper understanding of how decisions are made through contextual governance arrangements in the lived reality of contemporary and complex projects, few scholars then leveraged a practice-based approach to draw insights on temporary organizing. For instance, Sanderson (2012) highlighted the mutually constitutive dynamics of ‘governing’ – situated activities of temporary organizing by project actors - and governance structures in megaprojects.

Building on this work, Balasubramani et al. (2018) studied the process of how embeddedness of a megaproject in institutional fields invokes path dependency and institutional rationalism through which governance arrangements are drawn initially, and then imitated or adapted through ongoing processes of governance. Though governance and shaping constitute a dynamic continuum, making most of the contingent decisions and ‘doing the project right’ in the ‘fuzzy front-end’ of a megaproject has been observed to create a long-term value (Williams & Samset, 2010). As against an instrumental rationalistic approach wherein repertoires of ex-ante designed mechanisms are conceived to address all the anticipated contingencies in megaprojects, Lindkvist (2008) rather advocated the need for drawing conditionally rational insights on rules of the game for imitation of prevailing structures which allow ‘space between the rules’ for adaptation. In line with the calls of Smets et al. (2015) for understanding the underlying *raisons d'être* which bridge ‘organization’ with ‘organizing’ and

‘being’ with ‘becoming’, we invite attention to drawing lessons on situated imitation and adaptation of the proven and institutionalized governance arrangements of a project field. In our paper, we attempt to address this research agenda through the following research questions: *How do situated activities of governing lead to the imitation and adaptation of prevailing structures of megaproject governance? How can megaproject promoters make decisions between imitation and adaptation of governance arrangements prevailing in a project field?*

3 Research setting and method

We adopted an in-depth, qualitative, embedded twin-case based method driven by a grounded theory approach to answer the research question. Through theoretical sampling, we chose to study the development of the South-East Metro by the South-East Metro Rail Limited (SEMRL) and the South-West Metro by the South-West Metro Rail Limited (SWMRL). We longitudinally studied how technical, contractual and organizational decisions were contingently made by the promoters in these public sector megaprojects through either adaptive or prevailing arrangements of governance in the project fields.

We collected primary data from semi-structured interviews and brainstorming sessions held with the participants of the South-East Metro and South-West Metro. 40 interviews were conducted with 37 participants accounting for over 52 hours of interviews in the South-East Metro case. In the South-West Metro case, we conducted 33 interviews with 32 participants accounting for over 45 hours of interviews. We also collected secondary data from officially published reports, news sources and online forums. The triangulated data from these sources was then used to prepare detailed reports on both cases.

We used open and axial coding to analyse the detailed case reports. Through open coding, we first labelled each decision area and correspondingly identified the (i) governance arrangements prevailing in the fields and (ii) enacted governance arrangements. Following the same, we mapped common decision areas across the two cases as vignette-pairs. We then axially coded each vignette-pair to synthesize the situated actualities which led to either imitation or adaptation of the governance arrangements prevailing in the fields. Finally, we grouped these situated actualities into temporary organizing zones based on the underlying assertions. Contradictions in the situated actualities were then leveraged to generate prescriptive conditions, in the form of fits and deviations accruing from ‘reality data’ (Lindkvist, 2008), which provided conditionally rational insights for future endeavours.

4 Empirical observations

4.1 Empirical context

The Kolkata Metro was the first rapid rail transit system to be built in India. Significant delays and cost overruns were incurred for the delivery of Phase 1 of the same. Only after a gap, the Delhi Metro was sanctioned in 1998 to be developed by the Delhi Metro Rail Corporation (DMRC) through bespoke governance arrangements. Following the completion of Phase 1, the Delhi Metro broke-even in a short-span of three years and remains one of the most profitable transit systems in the world. In this milieu, the South-East Metro and South-West Metro became the fourth and fifth rapid transit systems to be built and operational in India. SEMRL and SWMRL were set up as the promoting Special Purpose Vehicles for these transit systems by the Central and the respective State Governments on a 50-50 ownership pattern.

4.2 Common institutional affiliations

Regulatorily, both SEMRL & SWMRL were affiliated to the land acquisition laws in India. In addition, the promoters were bound by tort liabilities towards the entities affected by the metro rail construction activities. With respect to other modalities of governance, there were common motivations amongst all the provincial states to mimic the Delhi Metro's arrangements in order to build a similar metro in their cities. With DMRC being the only domestic agency to possess transit development experience with a proven precedence, the provincial states availed the pioneer's services in preparing the detailed project reports of the metro transit systems. The reports prepared by DMRC for other metro transit systems, including the South-East Metro and South-West Metro, heavily drew from the Delhi Metro's reports as a cookie cutter. Consequently, the design considerations of the Delhi Metro were imitated in these reports. Furthermore, there were common externalities (resources of supply chain, consultants and central government) among the Delhi Metro and other public transit systems. Apart from the employment of the former DMRC personnel in the South-East Metro and South-West Metro, DMRC was formally appointed by the promoters as the principal consulting/assisting agency. Such associations with the DMRC personnel created common affiliations and led to the transfer of draft templates, policies, standard operating procedures and manuals from the Delhi Metro to the South-East Metro and South-West Metro. In addition, the South-East Metro and South-West Metro were affiliated to Indian Standard codes and other trade norms which governed engineering, procurement and construction. Thereby, these common regulative, normative, tort

and peer-network affiliations constituted the prevailing arrangements governance in the project fields of the South-East Metro and South-West Metro.

4.3 Governance arrangements

4.3.1 Land acquisition and coordination with stakeholders

The provincial state of the South-East Metro was built upon a welfare culture where the state government protected and promoted the interests of the people. Consequently, the prevailing arrangements where the state government acquired land on behalf of the project promoters at guideline prices (which were usually 2-3 times lower than the market prices) often led to projects being delayed by long, drawn-out lawsuits between promoters and land owners. Under the apprehensions that such delays would endanger the viability of the South-East Metro, SEMRL directly acquired land through personal negotiations with the private entities. Compensations were provided by SEMRL in consideration with the market prices, depreciated value of the constructed structures and loss of livelihood. However, SEMRL could not seamlessly acquire land in a few cases. For instance, SEMRL requested the support of ruling politicians to acquire land from politically strong entities. To enable smooth acquisition of land from religious entities, SEMRL rebuilt temples in alternative locations, refurbished churches and shifted holy idols and trees. Private lawyers were hired in the place of public prosecutors to handle the litigations more effectively. Correspondingly, only 8.47 hectares out of the 49.07 hectares (17.2%) of land required for the project development belonged to private entities. Also, the quantum of land which was envisaged for property development could only be partially acquired by SEMRL.

During the acquisition of land from public entities like the defence and railway agencies, SEMRL encountered difficulties in establishing cooperative relationships. One of the senior managers of SEMRL commented,

“The contractors sometimes ended up waiting for hours outside the railways office. They had to walk to the railways office multiple times for obtaining approval on a piece of paper.”

In a bid to boost cooperation with the railway agency, SEMRL ceded to some of the unforeseen demands of the former which were out of the conventional norms of asset transfer and construction methodology. For instance, ancillary facilities were constructed/installed by SEMRL for the railway agency as a token of cooperation at one of the common stations. On

the account of non-cooperative relationships with a defence agency, unconventional sharp curves and design compromises were incorporated to minimize the interface requirements.

In the case of utility diversion in the South-East Metro, challenges accrued from uncertainties in utility locations and non-availability of the concerned utility agency personnel. Owing to these reasons, SEMRL assumed responsibilities for all the utility diversion works. Also, one official from road agencies, traffic police and each of the utility agencies were deputed to SEMRL and co-located with the SEMRL personnel. Here again, unforeseen and unconventional demands of these stakeholders were met by SEMRL to enable seamless coordination. Apart from financing 70% of the cost of a flyover which adjoined the metro rail viaduct and building the same, SEMRL financed and built five foot-over-bridges and one underground walkway on behalf of the road agency as a token of cooperation. However, when these agencies failed to cooperate, SEMRL had to change either the design or methodology of construction. For instance, cantilever deck sheets with pier-arm formwork support had to be used in the place of cast-in-situ methodology for constructing a station on a prime road owing to additional safety concerns raised by the traffic police. Speaking about the challenges in coordinating with the public agencies, a contract administration manager claimed,

“The deputed personnel were just the representatives of their own agencies. Further, the retired personnel are influential only to an extent. These personnel can enable access but not success.”

On the other hand, the province of the South-West Metro was marked by the presence of communist ideologies for the past 80 years. The institutionalized land acquisition arrangements worked without major adaptations in consequence. However, SWMRL engaged in personal negotiations instead of formal and mass consultations to avoid hold-ups. The land acquisition official of SWMRL informed,

“The South-West province has a very high literacy rate. The people know very well that the government has no right to negotiate prices with the people. But we empathized with the project affected people and voluntarily asked them to seek the court for a higher compensation on the account of their cooperation and swift handover of properties.”

Most of the land owners vacated the premises without any delay as a result of these negotiations and then sought the court for higher compensations. The litigations were handled

by SWMRL only through the public prosecutor. The state government did not involve the ruling politicians in the land acquisition proceedings. Land belonging to temples, churches and mosques were acquired at ease. In this regard, a senior SWMRL official commented,

“The land where temples, churches, and mosques are located rightfully belongs to the government. The religious bodies should give away the land whenever the government demands for the same.”

As a result of these prevailing conditions, 34.46 hectares out of the 40.46 hectares (85.2%) of land required for the project belonged to private entities. The acquired land included additional areas adjoining the stations for property development.

A former DMRC employee was appointed as the principal advisor to SWMRL. Incidentally, he was also the former veteran who led the construction of the railways in South-West city. As a result of his influence, SWMRL acquired land from the railway agency through conventional arrangements. Similarly, a retired air force official employed by SWMRL helped in coordinating with the Ministry of Defence and acquiring land belonging to the body as per the prevailing arrangements. The retired air force official boasted,

“SEMRL has been inviting me to join their organization for quite some time as the retired defence manufacturing official on-board with SEMRL could not effectively help them in coordinating with the defence officials for land acquisition.”

Retired personnel who held top positions with the public works department, road agencies and regional transport agencies were employed upfront by SWMRL in full-time positions. The retired public works department official helped to coordinate with the utility agencies in the South-West city to identify the location of major utility lines which were then diverted ex-ante by the concerned personnel of the utility agencies. The diversion of minor and unforeseen utilities, roads and traffic was carried out ex-post as per the procedural coordination methods. When oppositions were raised by the traffic police against cast-in-situ construction, the retired regional transport official employed by SWMRL helped in negotiating with the traffic police to retain the envisaged methodology. The retired official claimed,

“When I threatened the traffic police to seek permission for conversion of the two-way road into one-way road to pursue cast-in-situ

construction at any cost, they then allowed us to go ahead with cast-in-situ construction. Conversion of two-way roads into one-way roads increases their headache in managing the traffic.”

4.3.2 Engineering, procurement and organizational arrangements

Standardization agenda of DMRC and the higher costs of non-standard tracks led to the adoption of standard gauge tracks in both transit systems. Nevertheless, SWMRL had installed driverless operating technology in the place of manual operating technology owing to the presence of experienced personnel who were exposed to this technology when they had worked abroad. As the prevailing service regulations were not directly suitable for driverless operations, SWMRL sought the approval of Commissioner of Metro Rail Safety only for manual operations. Though SEMRL was ready to develop new norms for driverless operations and seek approval for the same, the promoters obliged to DMRC's advise of adhering to manual operations.

In view of the excessive rain that the South-East and South-West cities receive, roof structures were incorporated in the stations of both metros. Interestingly, the 500m-interval norm for conducting geotechnical investigations was retained by SWMRL but adapted to a 25m-interval norm in the South-East Metro to account for the mixed phase sub-surface conditions in the South-East city. While the station design in the South-East Metro was optimized by removing redundancies in the design considerations borrowed from the Delhi Metro, SWMRL retained these redundancies. However, SWMRL opted to implement a direct-current-based, third-rail electrification system and reduce the station length to accommodate three-car trains which could operate at a 90-seconds headway owing to the imposition of a wireless signaling system by the experienced personnel.

The contractor-set of the Delhi Metro which possessed the capabilities to mitigate the trade union-related complications in the South-West Metro's province ended up winning most of the contracts. Unlike SWMRL, SEMRL could not replicate the supply chain of the Delhi Metro. As a result, the prequalification requirements, contracting modality and milestone scheduling patterns which were borrowed from the Delhi Metro were adapted to accommodate a modified set of contractors in the South-East Metro. The design-build contracting modality also worked in the South-West Metro as the principal assisting agency replicated the Delhi Metro's flexible contractual change policies. While the principal consultants were devoid of such an influence in the South-East Metro, the personnel of SEMRL could neither enact brave

decisions in favor of contractual changes. Consequently, several contingency contractual clauses were incorporated by SEMRL to infuse flexibility. With fewer delays over utility diversion and geotechnical uncertainties, the milestone scheduling patterns drawn from the Delhi Metro worked as a cookie cutter in the South-West Metro.

The state governments of the South-West and South-East provinces had steered the approval of the respective transit systems and intended to drive the delivery of these landmark reforms. As a result, the railway-agency-dominated organizational structure was replaced by a hybrid structure which had representations from both parties. In the case of human resource policies SEMRL derived fresh staffing benchmarks through bottom-up efforts in consideration with the lack of trained operations and maintenance personnel. On the other hand, the Delhi metro's staffing benchmark worked owing to the availability of huge number of trained and qualified non-resident personnel hailing from the South-West Metro's province. As in Delhi, only 28% of the daily trips made in the South-West city were through public transportation modes. Apart from the robust patronage that this context yielded in the South-West Metro's, 50% of SWMRL's annual revenues accrued from property development. On the contrary, 90% of the daily trips made in the South-East city were through cheap public transportation modes. As a result, the South-East Metro received poor patronage and required extensive marketing efforts, given that only 10% of the annual revenues accrued from non-fare box sources pertaining to property development.

While the general consultants played the envisaged, boundary-spanning role between the principal assisting agency, main contractors and SWMRL in the South-West Metro, the general consultants in the South-East Metro did not have any provision to veto the decisions of SEMRL or make decisions on behalf of SEMRL. The role of the general consultants was consequently curtailed in the South-East Metro. As a result of these events, the services of the principal consultants were terminated in the South-East Metro on the grounds of poor value addition. We summarize the case discussion in Table 1, wherein we map the 26 vignette-pairs reflecting common decision areas across the two transit megaprojects.

5 Discussion

Our data shows that the South-East Metro and South-West Metro were affiliated to common institutional and proto-institutional fields of governance which would have ideally led to isomorphic governance arrangements in both megaprojects but failed to happen so in practice. At the same time, not all the arrangements enacted in both cases were adaptive and indigenous.

As revealed in Table 1, we observed four categories of vignette-pairs which provide insights on how governance was operationalized in practice - imitation in both cases, imitation in case 1 and adaptation in case 2 and vice versa, adaptation in both cases. We conducted a vignette-level analysis on the observed data and synthesized the situated actualities, as shown in Table 1, which led to imitation and adaptation. We discuss these actualities in the following couple of sections.

5.1 Reflections on land acquisition and stakeholder management arrangements

Countering the institutional incongruences between the land acquisition regulations, normative market expectations and cultural-cognitive attachments, SEMRL enacted adaptive arrangements to award enhanced compensations for land acquisition, legitimize the demolition of religious structures and optimize the design considerations for property development. On the other hand, the less incongruent environment fostered by the communist ideals led to the acquisition of land from the land owners and religious entities in the South-West city through the prevailing arrangements of governance and imitation of the Delhi Metro's considerations for property development. Unlike SEMRL, SWMRL perceived the need to be coherent with other projects in the province by preserving and exercising the bureaucracies embedded in the land acquisition proceedings. Nevertheless, adaptive arrangements involving personal negotiations were enacted in both megaprojects to avoid bureaucracy-led delays ensuing from formal and mass consultations.

We observed that the required expertise for dealing with strong stakeholders and representing SEMRL in litigations remained outside the megaproject field in the South-East Metro, thereby inducing high task specificity. Adaptive arrangements of SEMRL encompassed ruling politicians and private lawyers to mitigate the high task specificity. Notably, additional expertise was not required to handle the litigations implicating the South-West Metro as SWMRL favoured the land owners to win the litigations and obtain higher compensations. In the case of dealing with other public agencies, retired personnel who played the role of boundary spanners significantly helped to mitigate idiosyncrasies and eccentric demands in the transactions of SWMRL. Undeniably, there were similar actors involved in the South-East Metro who acted not as boundary spanners but gate keepers who represented their respective agencies. In addition, departures from the conventional assignment of utility diversion responsibilities in the South-East Metro were also fuelled by uncertainties in utility locations and inabilities in defining performance upfront.

Table 1 Governance arrangements enacted in the South-East Metro and South-West Metro

Vig. P. No.	Decision area	Governance arrangements prevailing in the field	Governance arrangements enacted in the South-East Metro	Situated actualities - The South-East Metro	Governance arrangements enacted in the South-West Metro	Situated actualities - The South-West Metro
1	Acquisition of private land	a) Guideline prices b) Permanent acquisition for working spaces	a) <i>Market prices</i> b) <i>Not acquired permanently</i>	- <i>Institutional incongruence prevailed</i>	Prevailing arrangements „	- Institutional congruence prevailed
2	Entity responsible for land acquisition	State government	<i>SEMRL</i>	- <i>Bureaucracy led to inefficiency</i>	„	- Bureaucracy led to coherence
3	Mode of engagement with the project affected people	<i>Personal negotiations</i>	<i>Personal negotiations</i>	- <i>Bureaucracy led to inefficiency</i>	„	- <i>Bureaucracy led to inefficiency</i>
4	Property development	Delhi Metro's norms	<i>Limited focus</i>	- <i>Institutional incongruence prevailed</i>	„	- Institutional congruence prevailed
5	Acquisition of land from strong stakeholders	Formal consultation	<i>SEMRL engaged ruling politicians</i>	- <i>Task specificity was high</i>	„	- Task specificity was low
6	Acquisition of land from religious entities	Religious structures are demolished	<i>SEMRL rebuilt religious structures</i>	- <i>Institutional incongruence prevailed</i>	„	- Institutional congruence prevailed
7	Representation in litigations	Public prosecutors	<i>Private lawyers</i>	- <i>Task specificity was high</i>	„	- Task specificity was low

Vig. P. No.	Decision area	Governance arrangements prevailing in the field	Governance arrangements enacted in the South-East Metro	Situated actualities - The South-East Metro	Governance arrangements enacted in the South-West Metro	Situated actualities - The South-West Metro
8	Acquisition of land from the railway agency	Asset transfer norms	<i>In addition, SEMRL financed and built ancillary facilities at a common station</i>	<i>- Boundary spanners were absent</i>	Prevailing arrangements	- Boundary spanners were present
9	Constructing metro over the tracks of the railway agency	Concrete rail-over-bridge	<i>Steel rail-over-bridge</i>	<i>- Boundary spanners were absent</i>	„	- Boundary spanners were present
10	Acquisition of land from the defence agencies	Asset transfer norms	<i>Unconventional sharp curves and design compromises were incorporated</i>	<i>- Boundary spanners were absent</i>	„	- Boundary spanners were present
11	Entity responsible for utility diversion and road diversion	Respective agency or nominated sub-contractors	<i>Prime contractors</i>	<i>- Performance was not definable</i> <i>- Boundary spanners were absent</i>	„	- Performance was definable - Boundary spanners were present
12	Diversion of telecom cables	Standard book of rates	<i>In addition, a modern cabling system was financed and built by SEMRL</i>	<i>- Boundary spanners were absent</i>	„	- Boundary spanners were present
13	Additional/adjoining road works	Road agency finances and executes	<i>SEMRL financed and executed</i>	<i>- Boundary spanners were absent</i>	„	- Boundary spanners were present
14	Construction over busy roads	Conventional design and methodology	<i>Modified design and methodology</i>	<i>- Boundary spanners were absent</i>	„	- Boundary spanners were present

Vig. P. No.	Decision area	Governance arrangements prevailing in the field	Governance arrangements enacted in the South-East Metro	Situated actualities - The South-East Metro	Governance arrangements enacted in the South-West Metro	Situated actualities - The South-West Metro
15	Track gauge	Standard gauge	Prevailing arrangements	- Task specificity was low	Prevailing arrangements	- Task specificity was low
16	Operating technology of rolling stock	Manual operating technology	„	- Support from affiliated agencies was paramount	<i>Driverless operating technology</i>	- <i>There was a need for interventions to improve the transaction cost, functional & aesthetic efficiency</i> - <i>A diverse actor-set was mobilized</i>
17	a) Service norms b) Mode of operation	a) Delhi Metro's service regulations b) Manual operations	„	- Task specificity was low	Prevailing arrangements	- Support from affiliated agencies was paramount
18	Design of the stations	Open-roof stations	<i>Closed-roof stations</i>	- <i>Task specificity was high</i>	<i>Closed-roof stations</i>	- <i>Task specificity was high</i>
19	Geotechnical investigation intervals	500m intervals	<i>25m intervals</i>	- <i>Task specificity was high</i>	Prevailing arrangements	- Task specificity was low
20	Space for passenger amenities & service rooms	Delhi Metro's norms	<i>Optimized arrangements</i>	- <i>There was a need for interventions to improve the transaction cost, functional & aesthetic efficiency</i>	„	- There was no realization of interventions to improve the transaction cost, functional & aesthetic efficiency
21	Selection of train assembly modality, headway and signaling & electrical system	a) Six-car trains b) 180-seconds headway c) Wired signaling system d) Overhead electrification	Prevailing arrangements	- There was no realization of interventions to improve the transaction cost, functional & aesthetic efficiency	a) <i>Three-car trains</i> b) <i>90-seconds headway</i> c) <i>Wireless signaling system</i> d) <i>Third Rail electrification</i>	- <i>There was a need for interventions to improve the transaction cost, functional & aesthetic efficiency</i> - <i>A diverse actor-set was mobilized</i>

Vig. P. No.¹	Decision area	Governance arrangements prevailing in the field	Governance arrangements enacted in the South-East Metro	Situated actualities - The South-East Metro	Governance arrangements enacted in the South-West Metro	Situated actualities - The South-West Metro
22	Prequalification requirements, contracting modality, milestone scheduling patterns, model contracts	Delhi Metro's norms	<i>Modified</i>	- A diverse actor-set was mobilized - Performance was not definable	Prevailing arrangements	- Actor-set implicated in the prevailing arrangements was replicated - Performance was definable
23	Role of consultants/assisting agency	General consultants and principal consultants are appointed in full-fledged roles	<i>Curtailed/terminated</i>	- A diverse actor-set was mobilized - There was a need to decouple from affiliated agencies	„	- Actor-set implicated in the prevailing arrangements was replicated - Support from affiliated agencies was paramount
24	Organizational hierarchy	The railway agency personnel hold the leadership and managerial positions	<i>A hybrid model of state and railway agency administration</i>	- There was a need to decouple from affiliated agencies	<i>A hybrid model of state and railway agency administration</i>	- There was a need to decouple from affiliated agencies
25	Formulation of functional responsibilities and human resource benchmarks	Distinctive functional teams - 45 personnel per route per kilometer	<i>Integrated functional teams - 23 personnel per route per kilometer</i>	- Task specificity was high	Prevailing arrangements	- Task specificity was low
26	Formulation of public relations policies	Minimal marketing	<i>Extensive marketing</i>	- Task specificity was high	„	- Task specificity was low

¹ Footnote: (i) In the columns 4 & 5, italic texts denote adaptation while normal texts signify imitation (ii) "Vig. P." signifies vignette pair.

5.2 Reflections on engineering, procurement and organizational arrangements

Low task specificity, as seen in the case of selection of the track gauge, was shaped by standardisation pressures. As instances of how geographic, economic and social conditions played out during the project development, we observed that uniform sub-surface conditions, isomorphic meteorological conditions, abundance of specialized personnel and instant demand-based attraction of the transit systems were envisaged in the South-East Metro and South-West Metro based on the experiences from the Delhi Metro. Similarities and variance in these conditions resulted in low task specificity in the South-West Metro and high task specificity in the South-East Metro respectively. In consequence, the prevailing arrangements were imitated in the South-West Metro but adapted in the South-East Metro. Similarly, imitation of the Delhi Metro's service regulations can also be explained by low task specificity.

The innate need for interventions to improve the transaction cost, functional and aesthetic efficiencies, pushed by a diverse actor-set of experienced personnel, urged SWMRL to depart from the prevailing arrangements related to the operating technology of rolling stocks, train assembly modality, headway and signaling & electrical systems in the South-West Metro. Few other factors played a role in the realization of these interventions. For instance, a visionary state administrative official who succeeded as the third managing director of the South-East Metro probingly questioned all the governance arrangements and ended up optimizing the space for passenger amenities and service rooms in the stations. However, we noted from our observations on rolling stock operations that these interventions may be disowned if the affiliated agencies do not approve of them. On the contrary, hierarchical arrangements were adapted in both metros to decouple the project leadership from DMRC. Replication of actor-set consisting of contractors, general consultants and project personnel who were employed in the Delhi Metro paved way for the imitation of the prevailing arrangements of prequalification, contracting modality, milestone scheduling, contractual risk mitigation and consultancy services in the South-West Metro. The Delhi Metro's model contracts were adapted in the South-East Metro as the performance requirements of the contractors could not be adequately defined on the account of sub-surface uncertainties.

5.3 Contingent decision-making in megaprojects

The inherent complexities in megaprojects, as our evidence iterates, require a plethora of governance choices which include 'something old' by virtue of institutional rationalism and

path dependency, and ‘something new’ by virtue of path creation (Aaltonen et al., 2017). The situated actualities identified herein bridge the exploitative and explorative views presented on imitation and adaptation. The discussions show that the contexts of the two megaprojects were situatedly assessed to not choose ex-ante designed governance frameworks appropriately but exercise ‘economies of repetition’ for catering to institutional requirements (Davies & Brady, 2000) and ‘economies of adaptation’ for addressing idiosyncratic demands based on the prevailing structures. We consequently develop an understanding of a megaproject as a loosely coupled field which shares institutional elements but may also contain divergent niches of emergent elements. As observed in Table 1, prevailing governance arrangements of the field are imitated or adapted by *working the prevailing and emergent institutional environment, engaging/disengaging bureaucracies, spanning/reinforcing boundaries, coupling/decoupling with affiliated agencies, retaining/changing actor-sets, being proactive to task specificities, definability of performance and requirements in task efficiencies*. A practice-based lens illuminates how prevailing structures of governance interact with ongoing activities of ‘governing’ in three temporary organizing zones – environment-related, actor-related and task-related zones as we term – to create a bricolage of imitative and adaptive governance arrangements in the South-East Metro & South-West Metro. Figure 1 below presents the prescriptive conditions encapsulated by the environment-related, actor-related and task-related zones on the grounds of a conditional rationalistic approach.

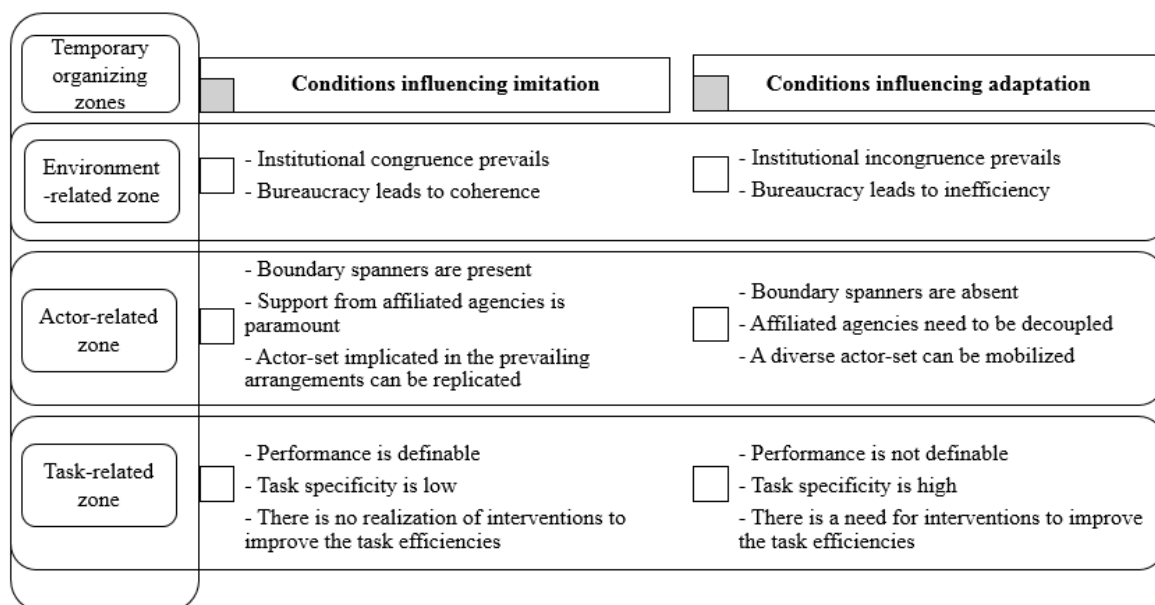


Figure 1 Conditions influencing contingent governance arrangements in megaprojects

5.3.1 Environment-related conditions

Our environment-related prescriptions on megaprojects are centred on how institutional plurality and bureaucracy play out in practice. The literature on institutions has extensively articulated that incongruences in the environment lead to detrimental effects or institutional change. However, institutions are long-term notions and may not often change swiftly for the purpose of a prominent megaproject though changes may be imminent in the course of time. Consequently, Mahalingam & Levitt (2007) advised that institutional incongruences could be avoided in projects by gaining knowledge on the institutional environment and aligning with the prevailing arrangements in a field. In contrast, practice-based perspectives which we embraced helped in understanding the situated actualities of changes effected within the megaprojects in response to the prevailing institutional incongruences. Our empirical evidence on the resolution of institutional incongruences in the South-East Metro correspondingly reinforces that it may not possible always to meet and defend the strategic objectives of a megaproject through the prevailing notions of governance. We consequently argue that megaproject promoters need to work the prevailing incongruences to meet the consequent ‘institutional demands’, thereby ‘socially reconstructing and legitimizing’ their megaproject (van den Ende & van Marrewijk, 2019) using adaptive and innovative arrangements. As a corollary, institutional congruence paves way to stability of the governance arrangements prevailing in the field. In line with the theorization of Lindkvist (2004), we call for the imitation of prevailing governance arrangements when embedded bureaucracies lead to coherence with the peer projects. While overly exercised bureaucracy has been criticized for causing delays and inefficiencies on projects, our observations necessitate adaptive arrangements to facilitate autonomous approaches.

5.3.2 Actor-related conditions

Our work helps to extend the arguments made in the literature on assembling key actor-networks during the front-end (Aaltonen et al., 2017) and illustrates the influence of actor-related resources on imitation and adaptation of institutionalized and proven arrangements of the field. In the extant literature, the presence of boundary spanners is often articulated as a necessary condition for adaptation and path creation (For e.g. Mahalingam et al. (2011)). In contrast, the observations help to understand the political capabilities of boundary spanners (Perkmann & Spicer, 2007) in sustaining the prevailing governance arrangements in a field. However, our observations show that not all intermediaries can become boundary spanners. The boundary spanners can mitigate idiosyncrasies and eccentric demands of the stakeholders

to sustain the prevailing arrangements more effectively when (i) their hierarchical position is appropriate (ii) they are appointed upfront during the project development (iii) they hold a strong affiliation with stakeholders (iv) they exclusively represent the promoters. When there are skewed power relations with the affiliated agencies whose support is paramount for a megaproject, the promoters are put in a position to comply with the prevailing governance arrangements in the field. As shown by van Marrewijk et al. (2016), transactions with the affiliated agencies can also trigger power contests. Such power contests can be mitigated through adaptive arrangements which either decouple the promoting organization from the affiliated agencies or empower the former over the latter. Most important of all, replication of the actor-sets implicated in the prevailing governance arrangements helps in the imitation of these arrangements in a new project setting. Alternatively, adaptive governance arrangements are required to mitigate the absence of the actor-sets implicated in the prevailing arrangements.

5.3.3 Task-related conditions

The task-related prescriptions identified herewith are grounded on task specificity, definability of performance and efficiency-based interventions. Our evidence connects the level of task specificity with the instantiation and change of governance arrangements. The level of task specificity can be determined by the presence or absence of endogenous expertise, regulative impositions, normative pressures, envisaged environmental conditions, novel requirements and cascading effects. High task-specificity requires fresh arrangements to be built from scratch whereas low task specificity invokes the prevailing arrangements of governance in a field. ‘Wicked problems’ manifest in practice as the inability to define performance (Ahern et al., 2014). Consequently, dynamic capabilities are instilled to mitigate the same through adaptive governance arrangements. We also highlight that interventions enacted to improve the transaction cost, functional and aesthetic efficiencies instigate adaptations to the prevailing governance arrangements in a field.

6 Conclusion

In this paper, we attempted to understand how the promoters of the South-East Metro and South-West Metro made technical, contractual and organizational decisions in their megaprojects. The practice-based lens which we employed was instrumental in synthesizing the situated actualities which resolved this shaping dilemma by either instantiating or changing the prevailing notions of governance in each vignette pair and ambidextrously yielding a bricolage of imitative and adaptative governance arrangements. We consequently developed

an understanding of contingent localization of governance arrangements drawn from the institutional fields traversed by the megaprojects to delineate conditionally rational insights on imitation and adaptation, thereby thrusting a balance between institutional pressures and organization autonomies. Correspondingly, governance arrangements prevailing in the fields are imitated or adapted by *creating a supportive project environment, accommodating the desired project actors and building competencies to handle project tasks*. These situated actualities of ‘governing’, which play out in the environment-related, actor-related, and task-related zones, can help promoters to assess their megaproject’s context and make decisions on imitation and adaptation. Thereby, we show how a practice-based lens can be leveraged for strategic, project-based learning on making contingent decisions. The insights presented in this work help to not only make informed decisions in the front-end of a megaproject but also enact ex-post interventions.

In addition, the paper embeds the potential to offer interesting insights through further research efforts. First, the conditionally rationalistic approach which we adopt does not account for path dependence and institutional/practice work. Second, the situated actualities identified herein are not isolated and rather influence each other in many ways. Third, megaproject promoters may be affiliated to multiple inter-institutional and inter-organizational fields (Mahalingam et al., 2011) which lead to contests. Fourth, the twin case-study approach that we adopt, as known well, also suffers from limitations in quantitative generalisation. Future research endeavours can look towards addressing these gaps and adoption of mixed-method approaches across multiple megaproject settings to yield generalizable findings.

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