

COPING WITH COGNITIVE-CULTURAL, NORMATIVE AND REGULATIVE INSTITUTIONAL ASSYMETRY ON GLOBAL PROJECTS:

A learning perspective¹

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ABSTRACT

Global managers report that high unforeseen costs impact project outcomes and that many unforeseen costs arise from national institutional differences – differences in participants' core beliefs, values, norms and legal, political and economic regulative systems. How do institutional differences impact firm success rates? Can these costs be quantified, measured, modeled and predicted? Are these costs lessened through trial-and-error accumulation of global experience? This article posits a mathematical model of institutional learning, to show that unforeseen institutional transaction costs arise as a function of institutional asymmetry and that firms adaptively mitigate these costs by developing two knowledge competencies: global process knowledge, a general capability to successfully enter into any foreign environment; and local institutional knowledge, a specific capability to maneuver effectively and efficiently within the framework of cognitive-cultural, normative, and regulative institutions in a specific local environment. These two types of knowledge are a core competitive advantage for global AEC firms.

Keywords: Institutional asymmetry, learning, local knowledge, transaction cost

INTRODUCTION AND KEY DEFINITIONS

This article is divided into four sections. First, it provides key definitions to integrate vocabulary and concepts from sociology, cultural theory, economics and management science. Second, it summarizes insights from a series of open-ended interviews with global project managers. Third, it integrates four theories from extant literature. Last, it combines the empirical insights and theories to propose a math model to show how a firm learns to surmount institutional asymmetry in a foreign human environment.

Global projects: Are broadly defined to include industrial, commercial, residential and infrastructure projects that assemble component parts and organizational participants including financiers, vendors and contractors from around the world [Chua, Wang & Tan (2003), Chan & Tse (2003), Levitt et. al. (2004)].

Transaction Costs: The economic value of resources used in locating trading partners and executing transactions [Wang, 2003].

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Institutions: Human constructed cognitive-cultural, normative, and regulative elements that guide, constrain, and support social behavior [Scott, 2001; see Table 1 for examples].

Regulative elements: Include the formal “rules of the game” and their enforcement including legal, political & economic arrangements [North, 1990].

Normative elements: Include both values and norms. Values are conceptions of the preferred or the desirable (e.g., winning the game, making a profit) and norms specify how things should be done (e.g., informal expectations for how the game is to be played, conceptions of fair business practices) [Scott, 2001].

Cognitive-cultural elements: Include common beliefs, mutually developed mental models and shared actions of logic and “the hyphenated label ‘cognitive-cultural’ recognizes that internal interpretive processes are shaped by external cultural frameworks” [Scott, 2001].

Institutional Arrangements: The combination of institutional elements in any specific human environment.

Institutional Asymmetry: The degree of incongruence between an actor’s institutional stock of knowledge and the institutional arrangements in a foreign environment, conceptually measured as a vector distance [inspired by Hofstede (1991), Hall & Soskice (2001)].

Institutional Uncertainty: A state of being unsure -- about current and future states, preferences and appropriate actions – that stems from institutional asymmetry and impedes an actor’s ability to perform a task or execute a decision in a foreign environment [adapted from Galbraith (1973), March & Simon (1958)]

Unforeseen Institutional Transaction Costs (UITC): A sub-set of transaction costs arising from institutional uncertainty, characterized as unexpected, surprising, or inestimable.

Local Knowledge: A capability to cope with the four sources of uncertainty in any given foreign environment. These sources are:(1) the natural environment, (2) the technologies applied to contend with the natural environment, [both from Stinchcombe, 1985] (3) the set of actors, and (4) the institutional arrangements that govern the human environment.

Global Process Knowledge: A capability to enter any given foreign environment and acquire local knowledge through two distinct types of organizational learning: learning of the firm’s existing members, and bringing in local agents and partners [Simon, 1991].

Local Institutional Knowledge: A capability to maneuver efficiently and effectively within the local institutional arrangements of a specific foreign environment.

INSIGHTS FROM EXPLORATORY INTERVIEW SERIES

In an exploratory study to investigate the challenges that beset global projects, I interviewed 31 civilian and military global project managers with combined experience in more than 60 countries. Informants included managers at AirProducts, Bechtel, Cisco, Fluor, Walt Disney, Kone, Nokia, The US Navy and Veritas. The interviews were open-ended, in the tradition of Spradley [1979], with the main objective to collect detailed stories, without personal judgments or theories. Each interview was tape recorded, transcribed, and the set of interviews were analyzed for trends using analytic induction and methods for building grounded-theory [Eisenhardt, 1989; Glaser & Strauss, 1967].

Analysis revealed that managers face heightened uncertainty when they enter a foreign location because both the physical world and the human world are unfamiliar. In this section, I define and give examples of this heightened uncertainty and then discuss five insights from the interviews concerning institutional uncertainty. The *physical world* includes the natural environment and the set of technologies to contend with the natural environment [Stinchcombe, 1985]. The *human*

world includes the set of local actors and the socially constructed institutions that enable, restrict and direct regularities of behavior among this set of actors. Table 1 provides examples:

Table 1. Types of heightened uncertainty in the foreign environment, with examples

Unfamiliar Human World	1. The Local Set of Actors
	<ul style="list-style-type: none"> * Skill - Who has technical, management and advisory ability * Reputation - Who is honest, who is a newcomer, who is a free rider, who is in financial trouble * Network - Who knows who, who knows who knows who, who holds various knowledge & resources
Unfamiliar Physical World	2. The Local Set of Human Devised Institutions that Enable, Guide & Govern the Actors
	<ul style="list-style-type: none"> * Regulative - Formal constitution, law, rule, property right, sanction * Normative - Informal norm, value, protocol, taboo, custom, tradition, code of conduct * Cognitive-Cultural - Tacit human-devised belief system, script, identity, schema, role
Unfamiliar Physical World	3. The Local Natural Environment
	<ul style="list-style-type: none"> * Project Site Environment - Slope stability, groundwater flow, soil strength, poisonous vegetation * Surrounding Environment - Monsoon seasons, freeze-thaw cycle, seismic activity
Unfamiliar Physical World	4. The Local Set of Human Devised Technologies to Contend with the Natural Environment
	<ul style="list-style-type: none"> * Basic Infrastructure - Roads, buildings, warehouse capacity, other built infrastructure * Tools - Sextants, GPS systems, scaffolding, pumps, trucks, heavy equipment, software, hardware * Building Systems - Retaining walls, foundation systems, building materials

The central and exclusive theme of the remainder of this article is on understanding how firms learn to cope with institutional uncertainty. This article does not provide further discussion about uncertainties arising from the unfamiliar physical world or the set of actors. To illustrate how institutional uncertainty can impact firms on global projects, consider the following sub-set of case study summaries taken from the exploratory interviews. In Cameroon, a community development project was sabotaged and delayed by several weeks until the Canadian engineers learned how to follow the proper protocol of scheduling an audience with the village chieftain to pay respects, offer gifts and gain approval. On an international airport project in Asia, a joint venture between a major Japanese contractor and a major US contractor became embarrassingly dysfunctional because the firms had conflicting culturally embedded philosophies about the ethics of pursuing profits through change orders. In Malaysia, Canadian managers faced ostracism and ridicule when they promoted Indian laborers to managerial positions, which was in violation of a long precedent-setting history of acceptable local practice. In Spain, a US real estate developer unexpectedly faced a several hundred thousand dollar cost overrun after it learned from Spanish legal counsel that an “unforeseen site conditions” clause in their contract with a Spanish sub-contractor, while perfectly enforceable at home in the US, was deemed one-sided and unenforceable in Spain. After analyzing these and many other cases from the interviews and after scrutinizing extant literature, I note seven insights about the nature and impact of institutional uncertainty on global projects:

1. Ambiguous Nature. Uncertainty in a foreign institutional environment is more properly termed ambiguity because it is next to impossible to perform a diagnostic assessment of the complex, multi-faceted and interdependent set of cognitive-cultural, normative, and regulative institutions that are present in any foreign human environment. Further, normative and regulative elements are taken for granted by local actors and cognitive-cultural elements are stored in human minds at a tacit-below-conscious level of awareness, which makes it very difficult for a foreign actor to identify and assess these elements. This is compared to uncertainty in the physical environment which can be observed and quantified as risk [Knight, 1921].

2. Institutional Asymmetry leads to Institutional Uncertainty. Institutional uncertainty is variable and depends on the degree of institutional asymmetry. The greater the institutional asymmetry the

greater the institutional uncertainty and the more institutional learning a foreign actor must undergo in order to succeed.

3. *Institutional Uncertainty leads to UITC.* Institutional uncertainty leads to unforeseen institutional transaction costs that impact project budgets and schedules. These costs are seldom an issue on local domestic projects because mono-cultural actors share a common understanding about the mono-institutional environment – however, on global projects, institutional uncertainty quickly leads to miscommunication, misunderstanding and, at worst, escalates to conflict when foreign actors unknowingly deviate from the stable set of local governing institutions, partly because they are unfamiliar with these local rules of the game, and partly because they are guided by foreign mental models that were validated, calibrated, and shaped by experiences in their home institutional environment. Institutional uncertainty impacts a foreign actor's ability to make decisions, communicate, and prioritize tasks. Thus, global projects incur a set of UITC not present on similar domestic projects, which arise when differences in institutional systems create uncertainty about appropriate communication, behavior, decision making, and strategic action in the foreign human environment.

4. *Embeddedness in the Local Environment.* The greater the dependence and interaction that a firm has with unfamiliar actors and institutions in the local environment, the greater the likelihood of friction and UITC. For example, a firm that exports elevators to international markets has little interaction with the locals or exposure to unfamiliar norms and rules. In contrast, an international contractor often hires local labor, applies for permits, imports materials through customs, follows local work practices, interfaces with local building authorities and complies with local protocols of signing contracts and dispute resolution. Even more complex than general contracting may be real estate development, because a foreign entrant must purchase land, understand property rights and navigate the often political process of gaining entitlements and building permits.

5. *Firms Achieve Differential Outcomes.* Firms that do international work achieve differential rates of success. Some firms operate globally with relative ease and success, others report catastrophic failures in particular countries, and yet others report a confusing track-record of mixed success and failure, seemingly independent of the degree of institutional asymmetry or embeddedness. I hypothesize that this mixed bag of outcomes can be explained if we account for the fact that firms learn to overcome institutional uncertainty. By learning, they are able to close the institutional asymmetry gap and move from ignorance, towards sensemaking, understanding, and even manipulation of foreign institutional arrangements. The interviews show that firms do this by developing two knowledge competencies: global process knowledge and local institutional knowledge.

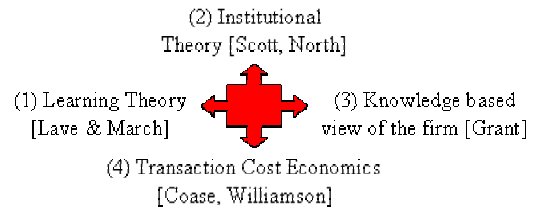
6. *Global Process Knowledge (GPK).* GPK is stored in the heads of managers in corporate headquarters. It is primarily tacit, and includes the know-how and capability to enter any given foreign environment and acquire local knowledge through two distinct types of organizational learning: the learning of the firm's members, and the ingesting of new members [Simon, 1991]. The learning of local knowledge by its members is a tacit capability marked by cultural empathy, curiosity to learn, active listening, risk acceptance, humility, self-awareness, and emotional resilience, which are seven of the top ten traits embodied by successful global managers [Wills & Barham, 1994]. The interviews reveal that expatriate managers often accelerate this process by hiring local consultants to provide local knowledge. They also reveal that the learning by ingesting local members involves a capability to identify, hire, train, empower, trust and manage actors from the local population such as personnel, managers, partners or acquired firms. As a firm learns to succeed internationally, it may make parts of this process explicit by formalizing rules, procedures, training programs, strategies and policies to guide efforts abroad.

7. *Local institutional knowledge (LIK)*. LIK is stored in the heads of managers of the foreign entity, is primarily tacit and includes the know-how and skills for effective and efficient operation within the set of local institutional arrangements that envelop the project. This knowledge marks an ability to successfully maneuver within the local institutional arrangements. Global process knowledge and local institutional knowledge are linked in the sense that a firm's global process knowledge determines its *absorptive capacity* [Cohen & Levinthal, 1990], or the rate at which it can acquire additional local institutional knowledge.

THEORETICAL BACKGROUND

The theoretical framework for the research is at the intersection of four foundational theories (Figure 1) including models of learning [Lave & March, 1975], organization learning theory [Levitt & March, 1988] and institutional theory [Scott, 1995; North 1990] to show how firms gradually learn, usually by trial-and-error, to maneuver effectively and efficiently within the constraints of foreign institutional arrangements. Efficiency is considered from a transaction cost economics perspective [Williamson, 1979]. This extends the knowledge based view of the firm [Kogut & Zander, 1993; Grant, 1996] to show how accumulated learning about foreign institutions becomes a key stock of tacit knowledge, core to competitiveness, for large global firms.

Figure 1. Theoretical framework



MATHEMATICAL MODEL AND HYPOTHESES

In this section, I knit together insights from the exploratory study and the four theories to deduce a model that shows how a firm learns to cope with institutional asymmetry. First, I define a variation of the Lave & March (L&M) mathematical learning model and describe how the three input variables have been adapted. Second, I give an example to clarify the application of this model. Third, I use the model to draw hypotheses.

Mathematical Model and Input Variables

The L&M learning model is represented mathematically as: $P_{n+1} = P_n + \alpha * (1 - P_n)$. My variation customizes the naming of each variable and is re-written as: $LIK_n = LIK_{n-1} + GPK * (1 - LIK_{n-1})$. The variables are defined below and summarized in Table 2.

1. *Initial Local Institutional Knowledge, LIK_o* . This is the extreme low-value of LIK that occurs when a foreign firm first enters an unfamiliar environment, before accumulating any organizational learning. Conceptually, it represents the intersection between the collective stock of institutional knowledge within the boundary of the firm and the new institutional arrangements encountered in a foreign environment. In the model, LIK_o marks the point of origin of the learning curve. Empirically, I plan to approximate this from existing data that quantifies cognitive-cultural, normative and regulative institutional difference across nations [Hofstede (1991), House et. al. (2004), Hall & Soskice (2001)].

2. *Global Process Knowledge, GPK*. A capability to enter any given foreign environment and acquire local knowledge through two distinct types of organizational learning: learning of the firm's existing members, and bringing in local agents and partners [Simon, 1991]. In the model,

GPK sets the slope of the learning curve, or rate of organizational learning. This is to be estimated empirically as diversity and duration of a firm's prior global experience, both as countries and regions entered and duration of global activity.

3. *Number of Local "Trials", n.* In the original L&M model formulation, 'n' is defined as the number of trials of a mouse in a T-maze, and, distance along the x-axis. Analogously, 'n' is defined here as the number of learning episodes in a local environment; empirically measured as both number of projects and duration of local activity.

4. *Effective Local Institutional Knowledge, LIK_n.* This is the output of the model, a function of GPK, LIK₀, and n. Conceptually, this represents the initial stock of institutional knowledge plus the stock of institutional knowledge accumulated through the process of organizational learning. When LIK_n is calculated for several values of n (with GPK and LIK₀ constant), the series of data points can be joined to form a learning curve.

Table 2. Descriptions of model variables

Variable	Type	Name	Description	Function of:
LIK ₀	Input	Initial Local Institutional Knowledge	Sets the starting point for the organizational learning curve, hence, it determines the amount of learning that is necessary.	LIK ₀ = F (Hofstede, House et. al., Hall & Soskice)
GPK	Input	Global Process Knowledge	Sets the rate of learning (i.e. absorptive capacity), hence, it determines the slope of the curve that a firm follows in the process of organizational learning.	GPK = F (diversity & duration of prior global experience)
n	Input	Number of Local "Trials"	Expresses the number of learning episodes that the firm has accumulated in the local environment.	n = F(accumulation of local experience)
LIK _n	Output	Effective Local Institutional Knowledge, at trial n	Expresses the actual amount of local institutional knowledge that a firm possesses, which includes knowledge gained through the process of organization learning.	LIK _n = F(GPK, LIK ₀ , n)

The model is shown graphically (Figure 2) below. Notice that a foreign firm closes the institutional asymmetry (ID) gap through the process of organizational learning. Note that the effective institutional asymmetry (ID_n) at the end of any learning episode depends both on the starting LIK₀ when the firm first entered the foreign environment, plus the learning that has been accumulated. Also notice that the value of ID and the value of LIK will always sum to unity.

Figure 2. Model of an organization acquiring local institutional knowledge

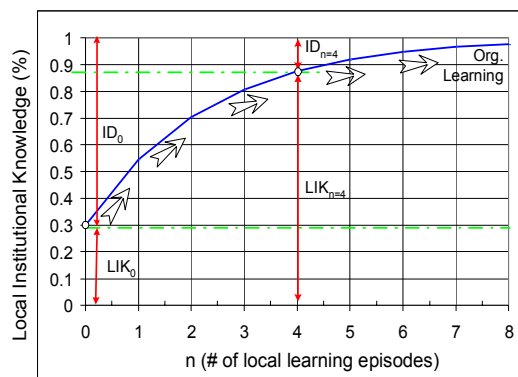


Table 3. Initial institutional asymmetry, ID₀

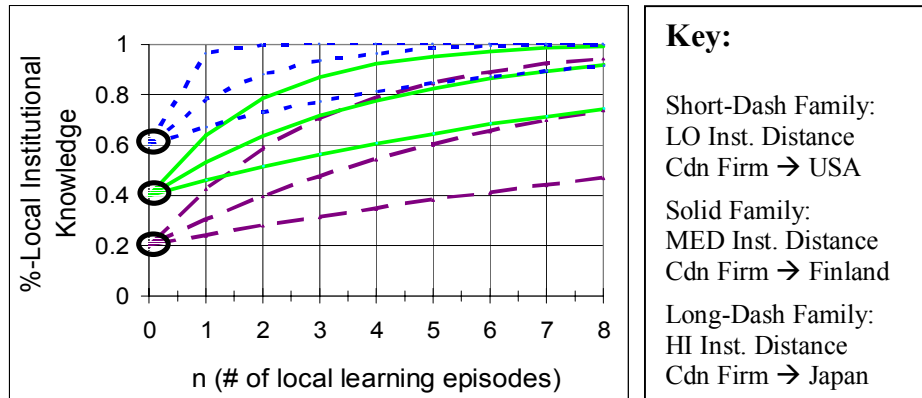
	USA	Canada	Finland	Japan
USA	-	0.2	0.5	0.8
Canada	0.2	-	0.4	0.7
Finland	0.5	0.4	-	0.7
Japan	0.8	0.7	0.7	-

Example

The sample initial institutional asymmetry (ID₀) table (Table 3) has been constructed from the cultural value dimensions listed by project GLOBE (House et. al., 2004) and arbitrarily assumes that high, med and low asymmetry corresponds to ID₀ scores of 0.8, 0.6 and 0.4. Below, the local institutional learning model (Figure 3) shows two things. *First*, the initial level of local

institutional knowledge, LIK_0 (circled), is approximated from the institutional asymmetry table ($1 - ID_0$). The long-dash family of curves, which represent a Canadian firm going to Japan, show a greater institutional asymmetry ($ID_0 = 0.8, LIK_0 = 0.2$) than the short-dash family of curves, which represent a Canadian firm going to the USA ($ID_0 = 0.4, LIK_0 = 0.6$). *Second*, the rate of organization learning is a function of GPK. The flat, middle, and steep rates of learning depicted in each curve family (e.g. the short-dash family) corresponds to low, med, and high values of GPK.

Figure 3. Three families of learning curves



Hypotheses

I use the model to draw two hypotheses to guide field data collection and testing:

- 1] $\frac{\partial LIK_n}{\partial GPK, n, LIK_0} > 0$ The greater the GPK, n , and LIK_0 , the greater the LIK_n , for firms on global projects.
- 2] $\frac{\partial UITC}{\partial LIK_n} < 0$ The greater the LIK_n , the less the UITC for firms on global projects.

The first hypothesis is an ecological argument and implies that surviving firms in the global arena have developed a head office capability to maximize local institutional knowledge in their field management team. The second hypothesis acknowledges that the penalty to a firm that fails to maximize local institutional knowledge is an increase in UITC. Note that in the first hypothesis, LIK_n is the dependent variable and in the second hypothesis, the independent variable. Thus, when the two hypotheses are linked, they form a two-step causal chain, implying that UITC depends on LIK_n , and in turn LIK_n depends on GPK, n and LIK_0 . In brief, UITC result when managers running the site office lack local institutional knowledge, and the capability to assemble this local team can be traced back to the global process knowledge shared by the home office managers.

CONCLUSION

My research agenda over the next year aims to prove and calibrate, or refute and modify, this learning model through the collection of empirical data gathered via structured interviews on 10 active global projects in 5 countries. Part of my purpose in attending this conference is to locate suitable data collection sites. Data collection will measure unforeseen transaction costs, foreseen transaction costs and global and local experience for the firm and for key field managers. I plan to

collect this data from project managers and engineers in the site office via 15 minute structured interviews. This research makes novel contributions both to science and practice: to science, by providing an empirical contribution of interest to scholars of organizational learning, institutional theory, transaction cost economics, and the knowledge based view of the firm; and to practice, by recognizing the importance of organizational learning to overcome institutional asymmetry in the reduction of unforeseen transaction costs on global projects.

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