# INTANGIBLES AND VALUATION IN THE AGE OF KNOWLEDGE

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## INTRODUCTION

Here we take an deductive approach rooted in the reason the firm exists Coase's (1937) then work on Williamson (1979), Hart and Grossman (1986), Tirole (1986) and Hernnart (1989) on the basis for that existence followed by most recently the role ICT plays in the process creating corporate boundaries (Holmstrom and Roberts, 1998, Antras 2011, Cantwell 2013). In the emerging knowledge age it is highly pertinent to explore how to articulate the role of the corporation, or more generally enterprise, where knowledge is evidentially key to an enterprise's success, form, distribution of power, both within and without, and its location. Corporate ownership seems highly correlated with all these. Knowledge generation, distribution and location are not prerequisite for corporate existence but necessary artefacts of enterprise defined beyond the boundaries of ownership by any single corporation.

## THE LITERATURE

Williamson's (1979) Transactions Cost Economics (TCE), deals directly with markets v enterprises postulating a pay-off function distributing control between markets and hierarchy driven solely by transaction's cost. If it costs more to contract out it is incorporated and if less it is outsourced.
Hart and Grossman (1986) use property rights (PR) assuming a principle, the demander and an agent, the supplier, who, given uncertainty, limit expensive contracting for all pay-offs permitting residual value to fall into the hands of the principle.
Tirole's (1986) deals with a three tiered model of collusive power allowing differences in distributed capacity to manage change.
Hennart's (1989) focus is global knowledge distribution: technology, embedded in products, and marketing, embedded in perception and points to the context with which we wish to deal.
Each is comparative static with at least one issue constant with only a hint of the dynamic. Each is cited heavily later. We suggest a dynamic model where history matters and demand (ownership), supply (cost) and knowledge (institutionally formative) are endogenous.
Some address location i.e. should activity be concentrated or dispersed – The Integration-Responsiveness (IR) Model of International Business. Hennart (1989) in the same framework seeks to address outsourcing. Some seek to deal with the impact of knowledge on institutions Ouchi (1980) and use this to address issues of market access. Yet others study organisational boundaries and the institutional choice between markets and hierarchies, Williamson (1979) and Hart and Grossman (1986) additionally wish to address knowledge formation. Only Tirole (2010) explores the dynamics of interactions between the forces at work.
Each attempts to go beyond the two dimensional model they use. IR wishes to comment on organisational boundaries, the knowledge research edges into addressing location issues and the organisational boundary literature seeks to address knowledge processing.
The utility of such concatenations of views is recognised in the literature e. g. Gereffi et al's (2005) and dealt with conceptually by Devinney et al (2000) but each falls a little short. Gereffi et al (2005) leave the predictions of their model incomplete and Devinney et al complete it but use a non-operational concept, "transactional completeness" to do so.

It is over a decade since Devinney et al (2000) observed that the Integration-Responsiveness model of International Business (IB) is incomplete. It cannot truly encompass decision choices as to whether transactions should be through the market or within the enterprise. Their resolution was not truly operational: the concept of "transactional completeness". If you added this third dimension to the globalize localise dimension and the local multi-local dimension you could achieve completeness in the sense that in the third plane of reference so created one could address such issues. However this left three questions.

1. How, as stated, to incorporate multiple firms and forms?
2. How to incorporate organisational knowledge?
3. How to create a dynamic formulation of the model

## METHODOLOGY

We intend this work to demonstrate what is in effect a new approach in management research inferential extension. Very often work is partial or more interestingly by analogy with mathematics incomplete in the sense raised by Devinney et al (2000). They rightly inferred a third dimension given the things authors wished to do. This approach is taken forward here. A start is Gereffi et al's (2005). Their "grounded theory" suggests 5 types of power in value chains: Market, Modular, Relational, Captive and Hierarchy each with 3 generators:-

| Generator | Gereffi et al (2005) | Our |
|---|---|---|
| Complexity | Inter-firm transactions | Demand<br>One size fits all 0<br>Totally bespoke 1 |
| Capability | Supply | Supply Cost<br>By Scale/Source:<br>Low 0<br>High 1 |
| Codification | Complexity | Implict 0<br>Explixit 1 |

However these generate 8 not the 5 relationships – Table 1 - Gereffi et al (2005) identify. Their theory is incomplete in the sense of Devinney et al (2000). It leaves 3 empty boxes in the resulting three dimensional table. Our methodology is simple deduce missing categories.

Table 1.
Different types of value chain governance and empty boxes created

| | Complexity (Demanded) | Capability (Supply) | Codification (knowledge) |
|---|---|---|---|
| 1. Market | L | H | H |
| 2. Modular | H | H | H |
| 3. Relational | H | H | L |
| 4. Captive | H | L | H |

| | | | |
|---|---|---|---|
| 5. Hierarchy | H | L | L |
| | L | L | L |
| | L | L | H |
| | L | H | L |

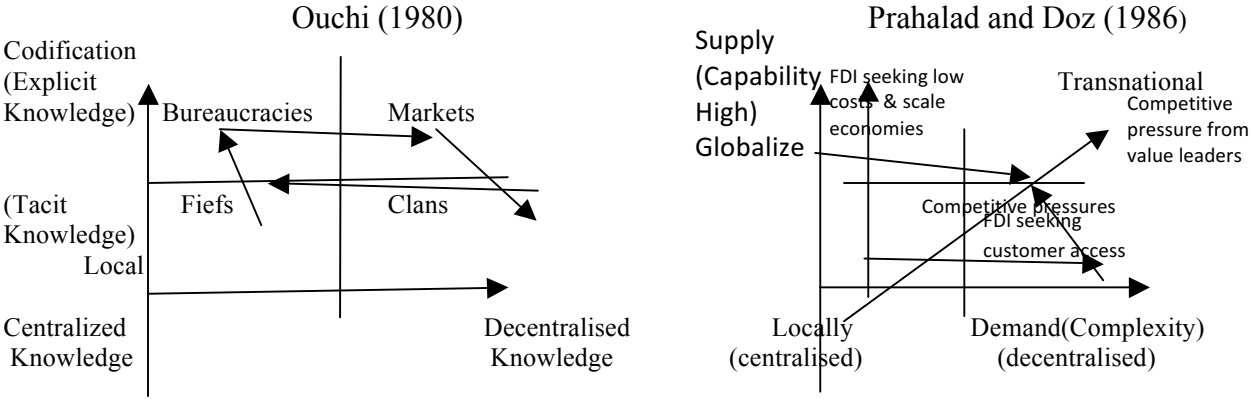
We hypothesise:-.
**H1 (a)** their exist **6**.a ***Home craft*** value chain**,** complexity (demanded) in inter-firm transactions is LOW – there are none, capability (of supply) is LOW and generally available(Freeman, 2003)and codification LOW – taught as a craft skill at home.
**H1(b)** their exists **7.** a ***Commodity*** value chain**,** complexity in inter-firm transactions LOW – contract very specific and specifiable, capability (of supply) is LOW, the ability to codify specification is very HIGH.
**H1 (c)** their exists **8.**an ***Experiential*** value chain (Dulleck and Kerschbamer, 2006; Ekelund, Mixon & Ressler, 1995)**,** Complexity (of demand) for inter-firm transactions is LOW, capability (of supply) is seen as HIGH usually in brands with high perceived capability to generate future value and codification is very LOW – see Table 2.

Table 2
Different types of value chain governance and empty boxes created

| | Complexity (Demanded) | Capability (Supply) | Codification (Technology) |
|---|---|---|---|
| 1. Market | L | H | H |
| 2. Modular | H | H | H |
| 3. Relational | H | H | L |
| 4. Captive | H | L | H |
| 5. Hierarchy | H | L | L |
| 6. Home Craft | L | L | L |
| 7. Commodity | L | L | H |
| 8. Experiential | L | H | L |

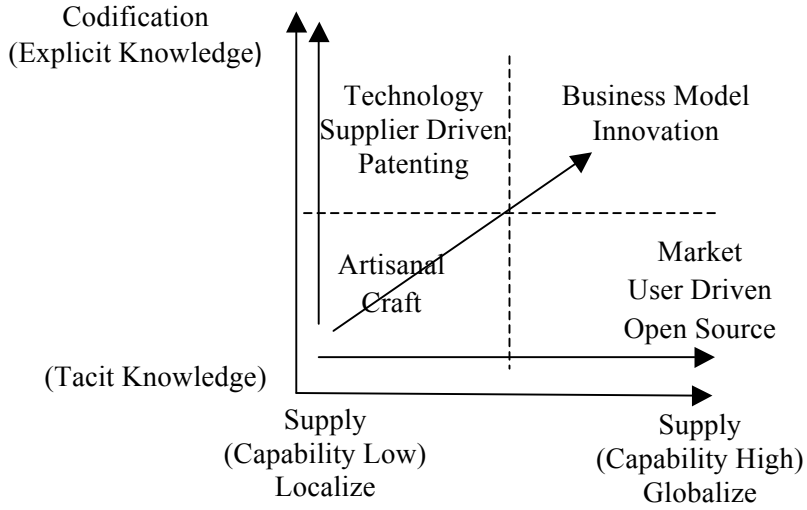
6 and 7 are self evident. “Experiential” is not quite so clear. Here intermediating buyers cannot access explicit knowledge of value prior to purchase but inter-enterprise transactions are cheap and easy. Demand is simple and the capability of supply high but ultimate value is problematic, dependent as it is on distributor’s prior experience trying to resell similar products after purchase. This is historically dynamic. The dynamic is that they cannot know if customers will receive value in purchased goods or not. They rely on a supplier’s brand “credence” to dissipate uncertainty and or low prices to cover losses on unsold stock.
This ignorance of intermediating buyers cannot be dispelled before purchase yet for scale they must buy in volume without knowing what will sell. They know on average what a batch will be worth but not which items will sell. “Fashion” is ordered in batches a year in advance.
We now have grounded theory for Devinney et al’s (2000) first two points. We address the third using Ouchi’s (1980) seminal work on institutional dynamics integrated with the IR model of Prahalad and Dos (1986) Bartlett and Ghoshal (1987). This creates a three dimensional dynamical system from Gereffi et al’s (2005) three grounded components.
Like the Gereffi et al (2000) model this is still incomplete. In two of the two dimensional planes so defined we have Ouchi and the IR model.

**Figures 1 & 2**




But what is the significance of the third unidentified plane?
The literature on knowledge creation von Hippel (2005, 2006, and 2009) and Chesborough (2010) both suggest the significance for invention and more particularly innovation of user driven, open source, un-patentable activity. One cannot patent tacit knowledge. One needs to be explicit and precise to specify a patent. Thus invention and innovation can and do occur without intellectual property protection. A patent in effect turns a public into a private monopolised good. Some argue that this is necessary to provide a production incentive to produce/create new knowledge. However the evidence increasingly suggests that innovation can and does occur, "free" at the point of use, and so arguably in the public not private domain. Interpreting the third plane we get thus Figure 3.

**Figure 3**




Technological patenting, open source and their integration into the business model are all evident indicative of Teece (2010). Following through using the logical sequencing of Table3. A pattern is evident applicable to the co-evolution of institutions and the MNE they embed. A study by the author of 250 years of the textile and garment industry verifies this pattern. The cycle Fief → Bureaucracy → Clan → Market repeats twice. Locational dynamics is different. It changes at half this rate from Export → (Multi) Local → Global → Transnational. What explains this?
First, pre-industrially the mechanism for the localisation, concentration or geographic dispersion, of the value chain was defended land allowing secure local investment with some

trade. The capitalist era was different. Spatial political economy is then driven by the location of the resources needed for capitalism. These are distributed randomly, fossil fuels. Access to these depends on free trade. Industrial location is determined by trade not manufacturing cost.

Table 3

| **GHS Updated by New Categories** | **Devinney, Midgley and Venaik (2000) Gereffi, Humphrey & Sturgeon (2005)** | | | **Theoretical Conjectures from Literature** | | **Moving Evident** |
|---|---|---|---|---|---|---|
| | **IR (1987, 1989)** | | | | | |
| | | **Ouchi (1980)** | | | | |
| | Globalized Supply Capability | Localized Complexity Demanded | Codification | Governance Institution Type Ouchi | Location & Cost Pressure on MNE IR | |
| 6. Home Craft | L | L | L | Fief | Export | Trade |
| 7. Commodity | L | L | H | Bureaucracy | Export | |
| 5. Hierarchy | L | H | L | Clan | Local | FDI |
| 2. Captive | L | H | H | Market | Local | |
| 8.Experiential | H | L | L | Fief | Globalize | Know How |
| 4.Market | H | L | H | Bureaucracy | Globalize | |
| 3. Relational | H | H | L | Clan | Transnational | Govern. |
| 5. Modular | H | H | H | Market | Transnational | |

In the early knowledge economy location arguments shifted to the need to co-locate diversity "know how" to create the knowledge in design, "industrial/technology clusters" Porter (1990). Finally there is the location of governance. This is not of land, trade routes, or "know how", but of returns to knowledge of customer's perception of value. Crucial is not control of land, trade, or "know how" but of desire and where equity in it can be realised (North, 2003) – Table 4. This determines an already evident way forward for International Business and Management Studies more generally. Knowledge is a big topic but so is institutional change through institutional entrepreneurship. A way ahead is manifest in the above theoretically deduced results based on concepts developed in the literature not casual observation of trends.

Table 4

| **Theoretical Mileu** | **Conceptual Time** | **Movement** |
|---|---|---|
| **International Trade Theory** (Smith, 1776) (capital and technology fixed ) | the short run | goods |
| **Classical International Business Theory** (Dunning, 1980) capital mobile and FDI possible (technology exogenous) | the long run | capital |
| **Neo-Classical IB Theory** (Bresman Birkenshaw and Nobel, 2010) knowledge transfer ( institutions exogenous ) | the very long run | knowledge |

| | | |
|---|---|---|
| **Post Modern Theory** (Buckley, 2011)<br>MNE seeks control where value realisable<br>(all endogenous) | the very very long run | governance |

## THEORETICAL IMPLICATIONS

These are self-evident but then one might ask why logical inference of the type shown is not more commonly used in managerial research. We add little only inferred more than others did from their own material. This is nevertheless important. As we have illustrated. We have added three concepts to an existing typology. Each of these is not of itself new but derived as we have done the process is new.

We have then by adding a third plane to two pre-existing two dimensional models and again provide a new means to articulate developing ideas about innovation not merely being about patenting but equally about user driven open source activity increasingly evident in the modern world, Wikipedia, Android etc. but does not see this as instead of but in addition too. Open source is not new but it is increasingly evident in the modern world thanks to the "generative systems" we increasingly create. We follow through on this by looking at the logical development of the three planes and Reveal a not otherwise evident pattern that requires explanation. Finally this new vision generates a simple framework for the way forward for IB which is that it should be focused on knowledge creation and transfer not just trade or Foreign Direct Investment.

This is already the case but has as yet not been articulated in the manner suggested here. This suggests a fuzzing of boundaries between IB and other aspects of Management. The bottom line is that knowledge moves invisibly around the planet. Where value is brought to account is problematic. This undermines the power of states. Even corporations may be in the dark about the value of the ideas they transfer within their boundaries.

Finally institutional entrepreneurship is raised as a key issue. Where can and should governance lie. This we suggest could be seen as a key locational issue.

## PRACTICAL IMPLICATIONS

These are two fold and multi levelled. First as knowledge is clearly a key resource its management and movement are key issues not just for corporations but for states. Where and how are new ideas being created? How does one ensure a "fair" share in ideas when their \ value can be entirely subjective and problematic?

This leads on to governance as the key issue in the modern world for corporations and states. Can on exercise proprietorial rights over value when it is driven by subjectivity in a post modern world. This is where better illustrated than the current political and social conundrums over the value, location and propriety of "bitcoins"
and other virtual currency.

## CONCLUSIONS

This is the beginning of a new era and a key issue for all now is how to make visible the invisible intangible knowledge and its political economy and social consequences. Value is increasingly subjective and the physical situation and control over this is very hard to define. The way forward for individuals, corporations, societies and states to exercise propriety, governance of the value they feel they command is increasingly problematic though disorder does not seem to be the order of the day.

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