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Embedding organizational arrangements: towards a general model

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Abstract. Notwithstanding its major contributions, the ‘Williamsonian’ branch of New Institutional Economics suffers from black holes that recent developments have pinpointed. Rather than taking stock, this paper capitalizes on some of these developments to look ahead. Section 2 provides a reminder of the hard core of transaction cost economics (TCE) with an emphasis on problems that TCE has allowed to identify, particularly the richness of organizational arrangements, an issue that needs further investigation. Section 3 discusses how to better understand the embedment of organizational arrangements in their institutional environment. The concept of ‘meso-institutions’ is introduced as a mean to capture mechanisms providing the needed interface. Section 4 considers another neglected dimension that requires renewed attention: the interactions of organizational arrangements with technologies that partially define their setting. This paper proposes a roadmap to explore this issue, based on an ongoing research developed around the key concept of ‘criticality’. Section 5 concludes.

1. Introduction

Although its intellectual sources plunge long before this moment,¹ the formal birth of New Institutional Economics (NIE) can be dated from *Markets and Hierarchies* (1975). In introducing this expression in the first chapter of his book, Oliver Williamson, who was a reader of John Commons,² wanted to point out that new developments were on their way. Forty years after, we can take stock of the contributions now identified as the Williamsonian branch of NIE, but also point out some flaws and missing pieces that open the possibility of future developments.

The perspective I am adopting in what follows is restrictive, some would say biased! As it is now well-known, there are at least two parallel branches in NIE.

I would like to thank John Groenewegen, Mary Shirley, the participants to the EAEPE Conference (Paris, November 2013) and especially Geoffrey Hodgson and three referees of this journal for their insightful comments on a first draft of this paper. The usual disclaimer fully applies.

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1 See Ménard and Shirley (2014).

2 In his Preface, Williamson (1975) refers mainly to Commons and to the Carnegie school of the early 1960s which was under the intellectual leadership of Herbert Simon.

12 One branch focuses on what has been tagged as the ‘institutional environment’
13 (Davis and North, 1971: 6 *sq.*), that is, inclusive societal institutions such as
14 the polity or the judiciary. ‘Institutional environment’ (or ‘institutions’, to make
15 it short) refers to the general rules that frame and constrain the behavior and
16 domain of action of economic entities (individuals as well as organizations).
17 The other branch explores what Davis and North identified as ‘institutional
18 arrangements’ and that I prefer to call ‘organizational arrangements’, such as
19 firms, NGOs, strategic alliances, and so forth. ‘Organizational arrangements’
20 relate to organization theory and industrial organization: they are about how
21 players structure their activities and operate transactions within rules defined at
22 the broad institutional level. My paper focuses primarily on contributions from
23 this second branch, which is very much associated to Williamson and his legacy.³

24 Four decades is a very short period from the point of view of the history
25 of economic thought, although a long one if we consider the fast turnover of
26 fashionable theories in economics. Nevertheless, a substantial capital has already
27 accumulated in the Williamsonian branch, which can be viewed as providing the
28 ‘micro-analytic’ foundations of NIE and which includes landmark contributions
29 to economic theory. This paper does not offer a review of these breakthroughs.⁴
30 It rather takes advantage of what I consider the hardcore of NIE to point out
31 and delineate new territories within what remains, following Lakatos (1976)
32 terminology, a very progressive research program.

33 In that respect, what follows is exploratory. I intend to provide insights on
34 possibilities opened by pushing further the Williamsonian approach in three
35 directions, looking at: (1) the numerous organizational arrangements that fall
36 neither under market forms nor under hierarchies and that Williamson labeled
37 as ‘hybrids’; (2) the mechanisms through which organizational arrangements are
38 embedded into the institutions within which they operate; and (3) the complex
39 ways through which these arrangements interact with technologies. These are
40 broad avenues, and I am fully aware that the directions I suggest to follow remain
41 indicative. Nevertheless I am convinced that the issues at stake are central to the
42 development of NIE and to the future of economics.

43 The arguments are organized as follows. Section 2 provides a very short
44 and simplified overview of what we have learned from NIE with respect
45 to organization theory, pointing out some important black holes that need
46 being filled. Section 3 discusses how to bridge the gap between organizational
47 arrangements and the institutions within which they are embedded, and proposes
48 the concept of ‘meso-institutions’ to identify the mechanisms linking these two
49 dimensions. Section 4 introduces technology, a key component long left on the
50 back burner by transaction cost economics (TCE), and suggests ways to explore

3 For an extensive review of North’s legacy, see Sened and Galiani (eds.; 2014). I come back later to Hodgson (2006), who challenged the conceptual distinction between the two branches.

4 Williamson (2000) provides a quite extensive assessment of some major contributions in the field.

51 the interactions between technologies, organizational arrangements, and their
52 institutional environment. I briefly illustrate the issue at stake with the example
53 of network infrastructures and the critical functions that shape them. Section 5
54 concludes.

55 **2. Foundations: new perspectives in organization theory**

56 Very few specialists would deny the significant contributions TCE has made to
57 organization theory, even when these contributions are considered controversial.
58 In what follows, I understand ‘organizational arrangements’⁵ as identifying
59 alternative (and competing) ways of combining physical assets, human capital,
60 and know-how (including technology) in order to deliver goods and services.
61 From an economic perspective, which is distinct from, say, a sociological
62 or anthropological one, these arrangements thus provide supports that make
63 transactions possible and that differ with respect to their costs and benefits.

64 *2.1. Key concepts: a reminder*

65 As developed in a companion paper (Ménard and Shirley, 2014), NIE has been
66 built on three main concepts that define its theoretical core: transaction costs,
67 property rights, and contracts. Let me contextualize briefly these concepts since
68 their significance for organization theory is often misunderstood.⁶

69 As repeatedly emphasized by Coase (e.g., Coase, 1998), transactions matter
70 so much for NIE because they play such an essential role in determining
71 the possibilities to take advantage of division of labor and specialization.
72 Indeed, what characterizes the organization of economic activity is less the
73 transfer of physical objects or services through markets or other organizational
74 arrangements than the transfer of rights to use these goods or services. There are
75 at least two major consequences to this apparently simple idea: (1) the allocation
76 of rights and the costs associated to their transfer are central to the organization
77 of economic activity; (2) there are different ways to do so that define the variety
78 of ‘organizational arrangements’ that we observe in a market economy.

79 Coase and his followers inherited from a long tradition of legal scholars
80 the concept of property rights, defined as rights to use, abuse and benefit . . .
81 under certain conditions and restrictions. What makes the concept specific to
82 the new institutional approach is that these rights take various forms to which
83 different organizational arrangements are attached, and that their modalities
84 of transfer is really what economies are about. First, new institutionalists differ
85 from most mainstream economists who tend to identify property rights to private
86 ones, transferable through markets. As already emphasized in the pioneering

5 Davis and North (1971) refer to ‘institutional arrangements’, which creates ambiguity with respect to their other key concept (institutional environment). Williamson (1996) uses the term ‘mechanisms of governance’, which creates some confusion because of the diffuse (and often vague) idea of governance.

6 For an extensive presentation, see Furubotn and Richter (2005).

87 paper by Alchian (1965) and so well-illustrated by the contributions of Ostrom
 88 (2005) on common pool resources, there are many other types of property
 89 rights (private, public, collective, . . .) that command different modalities for
 90 monitoring, modifying, and transferring them. Organizational arrangements
 91 are already at stake here. Second, the importance of property rights, their
 92 characteristics, their allocation, and the different ways to transfer them point
 93 the conditions required to establish these rights (existence) and to secure them
 94 (stability).⁷ This means that transactions are ‘institutionally’ embedded. Take
 95 the example of contracts, a modality for establishing and transferring rights
 96 on which new institutionalists have attracted the attention of economists early
 97 on (Williamson, 1971) and which is now widespread in the economic literature.
 98 What departs NIE from what has become the conventional approach to contracts
 99 is that all of them, including self-fulfilling contracts, are embedded in their
 100 institutional environment, from norms and conventions framing trust to formal
 101 enforcing institutions (e.g., courts). This is already an indication of the need to
 102 bridge the gap between organizational arrangements, to which contracts belong,
 103 and their institutional environment.

104 The centrality of the concept of transaction, and the need to take into account
 105 the associated costs is a key feature of NIE, so much so that NIE is often
 106 understood as isomorphic to TCE. This may be a source of confusion between the
 107 distinct objects of the two branches of NIE (for a dissenting voice, see Hodgson,
 108 2006), but it has the merit of pointing out the need to examine carefully the
 109 different ways of organizing transactions and to assess costs accordingly.

110 *2.2. The fundamental tradeoff*

111 Indeed, a major breakthrough due to new institutional economists is the
 112 now famous analysis of the tradeoff between ‘make’ or ‘buy’ introduced by
 113 Williamson and mentioned as central in motivating his award of the 2009
 114 Nobel Prize. What Williamson (1975, 1985) did was to explore and develop
 115 a testable answer to the puzzling question raised by Coase (1937): if markets
 116 are efficient, as is presumed in standard neoclassical models, why do we
 117 need other organizational arrangements that extend far beyond technological
 118 constraints, e.g., large firms, to process transactions?⁸ To find an adequate
 119 answer, Williamson understood: (1) the need to identify and characterize
 120 alternative organizational arrangements; and (2) the need to explain the rationale
 121 behind the choice of decision makers to go one way or the other.

122 Retrospectively, the brilliant analytical apparatus developed by Williamson
 123 and his initial followers may look limited in that it focused attention on the two

7 In that respect I disagree with Hodgson (forthcoming) who denies that the Coasian approach makes room for property rights, although I agree with him about the importance of institutions in shaping economic activities (Hodgson, 2006: 3 sq.).

8 The symmetrical question, also in the 1937 paper, is: if firms outperform markets, why don't we organize all economic activities in one single firm (e.g., a central planning bureau)?

124 polar cases of markets and integrated organizations ('hierarchies'). In pointing
125 out the importance of the characteristics of these alternative arrangements and
126 how they differ with respect to transaction costs, Williamson opened room to
127 the analysis of the diverse mechanisms at work. Nevertheless, much remains
128 to be done in this direction. Indeed, Williamson and his disciples (and I would
129 consider myself as one of them) have initially devoted most of their attention
130 to the second aspect mentioned above, that is, explaining why integration is
131 often preferred to using the market mechanism in assembling factors needed to
132 produce and deliver a good or a service.

133 This explanation is well-known and does not deserve detailed consideration
134 here. It is rooted in the Coasian concept of transaction costs, which is extended
135 through the idea that these costs have their source in the attributes of the
136 transaction at stake (its frequency, the uncertainties surrounding it, and the
137 degree of specificity of assets it requires), thus opening room for predictions.
138 The next step was to test empirically that the resulting costs are actually crucial
139 for understanding why one organizational arrangement, say vertical integration,
140 is better adapted (or 'aligned') than another, say markets, to these attributes.
141 The success of this paradigm has transformed the 'make-or-buy' tradeoff into an
142 integral part of modern industrial organization as well as organization theory.⁹ It
143 also allowed substantiating the answer about 'the nature of the firm', in contrast
144 with markets, by assessing the positive role of hierarchy as a coordination
145 mechanism distinct from prices.

146 2.3. *Extending the 'heuristic' model*

147 However, it became rapidly apparent, thanks to numerous empirical studies,
148 particularly on franchising (see already Rubin, 1978) that the arbitration between
149 'markets' and 'hierarchies' did not fully capture the richness of organizational
150 arrangements that populate market economies. A next step in the development
151 of the 'Williamsonian' branch of NIE was the progressive acknowledgement that
152 there are many other ways to organize transactions. New institutional economists
153 were neither the first nor the only ones to pay attention to these 'non-standard'
154 arrangements. The comparative advantage of the Williamsonian approach has
155 been and remains the provision of a unified theoretical framework that could be
156 extended beyond the initial tradeoff between markets and integration to include
157 a more diversified set of arrangements.¹⁰ Williamson (1991/1996: chap. 4) gave
158 the initial impulse in that direction, positing 'hybrids' as a class of their own.

159 However, the qualification of hybrids as neither markets nor hierarchies, was
160 not a satisfactory characterization of organizational arrangements that are more

9 Klein and Shelanski (1995), Klein (2005), and Joskow (2005) provide substantial reviews of this literature.

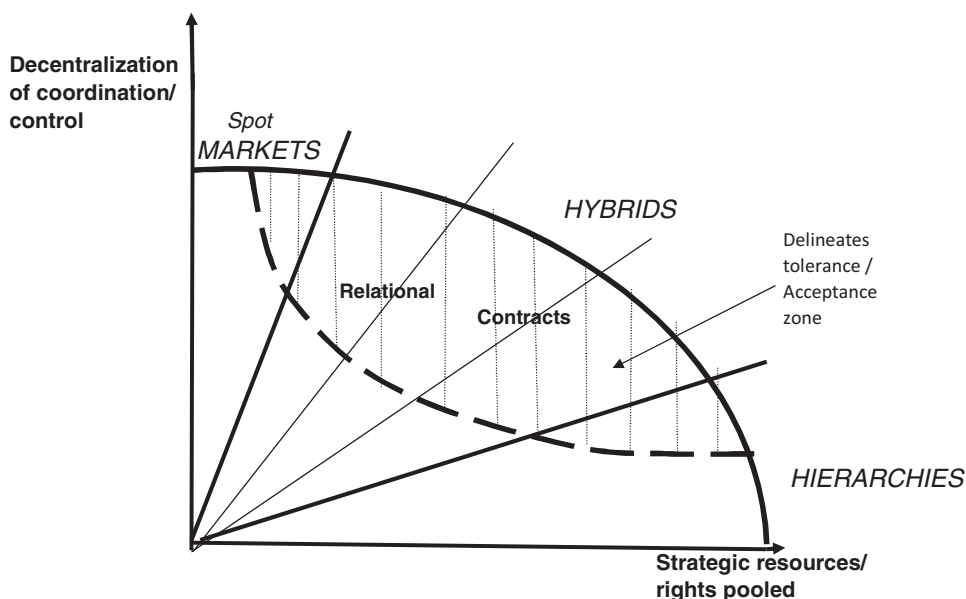
10 For an excellent survey in the case of franchising, see Lafontaine and Slade (2007). For a theoretical discussion, see Holmström and Milgrom (1998).

161 diversified than expected (e.g., franchising, strategic alliances, joint ventures,
 162 etc.) and have properties of their own. As early as 1995, Grandori and Soda
 163 challenged the capacity of TCE to take into account the variety of network
 164 arrangements prevailing in so many industries. Hodgson (2002) went a step
 165 further, with a sharp critique of the concept of ‘hybrid’. In his view, the very
 166 idea of a hybrid arrangement would dissolve the concept of the firm without
 167 any theoretical benefit. Criticizing Ménard (1995) he argued that, ‘The case
 168 when “firms are interconnected by a dense web of transactions, with strong
 169 commitments to each other” is a case of relational contracting between multiple
 170 firms. Again, the “organized” character of the relationship does not imply that
 171 they [?] everything is organized within a single firm. The fact that “property
 172 rights on these firms [are] clearly maintained as distinct” does not create any
 173 taxonomic difficulty. It simply underlines the fact that multiple firms may exist
 174 within a single organizational network’ (Hodgson, 2002: 51). However, in
 175 his conclusion Hodgson acknowledges the existence and significance of non-
 176 standard organizational arrangements, suggesting we stick to the concept of
 177 ‘network’. In a sense he makes it more a semantic issue than a substantial one.
 178 Although I agree that ‘In order to describe and understand such a tangled reality
 179 we need clear concepts and careful definitions to guide us’ (Id.: 57), I think
 180 that this should not mislead us, missing the point that there is a variety of
 181 ‘organizational arrangements’ out there, and that we must explain why firms
 182 often choose to not integrate while also avoiding to depend too much on the
 183 price mechanism. A nice illustration is provided by the development of complex
 184 ventures among subset of partners within existing global alliances in the airline
 185 industry (Ménard and Damergy, 2014), but many other examples could be
 186 provided of interrelated firms neither merging nor integrating while not relying
 187 on markets for strategic transactions.

188 One way to better capture the characteristics of ‘hybrids’ while contrasting
 189 them with alternative arrangements has been proposed by Baker *et al.* (2008).
 190 Emphasizing that ‘Even brief inspection of the existing governance structures
 191 in industries such as pharmaceuticals, biotechnology, medical devices, airlines,
 192 and telecommunications shows that firms have invented far more ways to
 193 work together than organizational economics has so far expressed (not to
 194 mention evaluated)’ (p. 146), they suggested to model alternative organizational
 195 arrangements by differentiating decision rights from property rights and looking
 196 at the allocation of those distinct rights among parties to a transaction.

197 Let us assume we have two firms, A and B with S^A and S^B as the vectors of their
 198 respective specific assets, d^A and d^B as their decision rights, and π^A and π^B as
 199 the payoffs they can expect from these rights. Now, let us also assume that some
 200 specific investments, s_b^A and s_i^B , deliver their full benefits only when used jointly,
 201 so that subsets of decision rights d_b^A and d_i^B (and possibly some associated
 202 property rights as well) gain when being shared, thus generating the joint payoff
 203 π' , while the allocation of the resulting joint benefits is not fully contractible

Figure 1. Positing hybrid arrangements. Source: Ménard (2013a) revised (with permission from Princeton University Press).



204 *ex ante*. We can then contrast the three fundamental families of organizational
 205 arrangements as follows. In pure market arrangements, firms have an incentive
 206 to keep all rights distinct, particularly if sharing rights would involve transfer of
 207 assets or knowledge detrimental to the comparative advantage of one party, so
 208 that expected costs would exceed expected benefits; at best, coordinating the use
 209 of s_b^A and s_i^B would be through spot or short term contracts. At the other end of
 210 the spectrum, if benefits expected from sharing these assets become significant,
 211 the firm that invests most in these specific assets has an incentive to integrate (this
 212 is the Grossman and Hart, 1986 explanation to integration). A third situation,
 213 which corresponds to hybrid arrangements, develops when firms can generate
 214 a benefit π' that exceeds the costs of sharing the specific assets s_b^A and s_i^B
 215 while resulting contractual hazards can be mitigated through building specific
 216 coordinating devices, e.g., a joint venture in which the otherwise competing firms
 217 put these assets and monitor the resulting payoff.¹¹

218 Ménard (2013a) pushed the reasoning further. Figure 1 provides a simplified
 219 version of the model he proposed.

220 On the horizontal axis are the strategic resources ('specific assets' in
 221 Williamson terminology) and the associated property rights that might be
 222 pooled. The vertical axis synthesizes a key governance feature for alternative

11 More details are provided in Ménard (2010, 2013).

223 organizational arrangements: the degree of decentralization in the coordination
 224 and control over assets in relation to the allocation of decision rights. Four points
 225 deserve particular attention in this representation and the underlying model:

- 226 (1) Hybrids are posited in a way that does not dilute the important role of
 227 markets or integrated organizations. It is the allocation of both property rights
 228 (horizontal axis) and decision rights (vertical axis) and their core characteristics
 229 (how strategic it is for the former, how decentralized it is for the latter) that
 230 determines the various organizational arrangements;
- 231 (2) The model allows differentiating types of hybrids (illustrated through the light
 232 rays from the origin) according to the intensity in sharing both types of rights,
 233 which helps capturing the variety of hybrid arrangements;
- 234 (3) The model does not assume that the different arrangements are on the
 235 optimizing frontier (upper boundary in [Figure 1](#)). It rather suggests that the
 236 strategy of parties to a transaction is to stay within a ‘lens’, leaving room for
 237 adaptation and evolution. This strategy is facilitated by the relational contracts,
 238 which are central to coordinate shared rights in hybrid arrangements. Parties
 239 may remain in that region either because they do not have all information
 240 required to fully optimize or because their bounded rationality prevents them
 241 from processing efficiently all information available;
- 242 (4) At the same time, parties are constrained by their competitive environment.
 243 Evolving beyond the lower boundary of the lens (dotted line) means that the
 244 misalignment between the combination of rights and the transaction at stake
 245 becomes such a source of inefficiencies that the arrangement cannot survive
 246 anymore (except if artificially maintained, e.g., through public subsidies!).

247 Beside hybrids, another puzzle has emerged in the recent literature, although
 248 already suggested incidentally by Monteverde and Teece (1982) and explicitly
 249 pointed out by Bradach and Eccles (1989), which is the coexistence of different
 250 arrangements monitored through a single organization. These so-called ‘plural
 251 forms’ designate situations in which a firm, for example, has integrated part
 252 of the transactions needed for its activity, but complements integration with
 253 different organizational arrangements (e.g., a network of suppliers connected
 254 through short-term or long-term contracts; using markets for providing some of
 255 the inputs needed; etc.).¹²

256 To sum up, the initial insights provided by Williamson and his followers
 257 about the characteristics of transactions that could explain the existence of
 258 alternative organizational arrangements and the tradeoff among them have been
 259 considerably enriched. On the one hand we now have a much more complex
 260 representation of the organization of transactions in a market economy. On the
 261 other hand there still is a lot to do to better understand the internal characteristics
 262 of the various arrangements and the forces that push parties in one direction or

12 For recent explanations to these plural forms, see Bradach (1997), Lafontaine and Slade (2007), and Ménard (2013b).

263 the other. And we still have to explain the coexistence of different arrangements
264 for operating similar transactions. All these issues clearly defined part of the
265 future research agenda for NIE and beyond. In that respect one can expect
266 increasing and beneficial interactions with other paradigms.

267 **3. Embedding organizational arrangements into their institutional environment**

268 The extended representation of the variety of organizational arrangements
269 operating in a market economy and the rationale introduced to explain the
270 tradeoffs among these arrangements cannot ignore how much this variety as
271 well as these tradeoffs depends on the institutional environment. For example,
272 contract laws affect differently alternative arrangements and the behavior of
273 parties involved; regulation and competition authorities have a direct impact
274 on market structures and the tradeoff among arrangements; fiscal regimes may
275 affect the decision to go hybrid, etc. New Institutional Economics played and
276 continues to play a major role in putting these issues high on the research
277 agenda of economists and social scientists. However, NIE in general and
278 the Williamsonian branch in particular remain poor when it comes to the
279 analysis of the specific mechanisms through which institutions and organizational
280 arrangements interact. In what follows, I come back to contributions that began
281 exploring the modalities of these interactions.

282 **3.1. *Institutions as a background***

283 Deeply rooted in the Coasian tradition, the Williamsonian approach is aware that
284 organizational arrangements are embedded in their institutional environment.
285 The profound impact that Williamson's experience of dealing with regulation at
286 the US Department of Justice has had on shaping his research agenda should
287 be reminded here. However, the picture remains quite poor when it comes
288 to understanding the mechanisms through which institutions shape and alter
289 organizational arrangements as well as the retroactions of these arrangements
290 on institutions.

291 One could legitimately oppose this statement by pointing out the now
292 abundant literature on institutions, largely inspired (although this is often not
293 acknowledged) by the powerful impulse from Coase (1960) regarding the role
294 of legal regimes, and from North (1981, 1990) with respect to the role of the
295 polity.¹³ However, the bulk of this literature focuses on a very general and
296 aggregated approach, looking at the global impact of institutions on growth and
297 development as captured essentially through cross-country comparisons (for a
298 discussion see Shirley, 2008). There is very little about how institutions interact

13 For stimulating insights in this literature, see Shirley (2008), Cooter and Schäfer (2012), and Acemoglu and Robinson (2012).

299 with the internal characteristics of alternative organizational arrangements or
300 how they interfere and with what impact on the choice of governance that parties
301 to a transaction make. Although the concepts of ‘transaction costs’, ‘property
302 rights’, ‘contracts’, now permeate the economic literature, the nature and impact
303 of their institutional dimension often remain, at best, allusive. Illustrative is the
304 ‘incomplete contract theory’ à la Hart, which rightly makes the allocation of
305 property rights a central issue for understanding organizational arrangements,
306 and particularly the decision to integrate or not, but without consideration for
307 the institutional constraints or impulse that may shape these rights and their
308 transferability. Even worse in that respect are comparative analysis of legal
309 regimes that propose definitive statements on the impact of laws on growth (e.g.,
310 Shleifer *et al.*, 2003) without taking into account the transmission mechanisms
311 through which, say the German regime of property rights compared to the
312 American or Japanese ones may affect the choices made by players operating
313 within these rules of the game.

314 New Institutional Economics cannot parade as exemplar in that respect.
315 Notwithstanding the fact that both branches refer to the same key concepts,
316 there are still few analyses about how to precisely articulate the Williamsonian
317 contributions to our understanding of what organizational arrangements are and
318 how one arrangement can prevail over others on the one hand; and the Northian
319 perspective on the different dimensions characterizing institutions and on the
320 forces driving institutional changes on the other hand. However, I would like
321 to point out some significant efforts in this direction. Without overstating the
322 distinction, let me indicate two different ways that have been explored and that
323 partially correspond to the two ‘sensibilities’ within NIE.

324 The first approach is close to the Williamsonian contribution to organization
325 theory. It is well-illustrated by a pioneering paper from Oxley (1999), built
326 explicitly on Williamson’s model from 1991/1996. In that paper, Oxley explores
327 the impact of different regimes of property rights, their implementation, and
328 their enforcement, on the selection of a specific organizational arrangement by
329 a business intending to transfer a new technology abroad. Similarly, Mark Roe
330 (2000, 2005) showed in numerous comparative analyses of different legal regimes
331 how they shape the internal structure of large corporations, the role of the
332 Board and of management, etc., with a strong effect on performance. More
333 recently, Libecap (2009, 2014) has developed fascinating analyses on the impact
334 of different regulatory mechanisms on the allocation of property rights, on the
335 resulting arrangements and performance in the management of natural resources,
336 and on their consequences when it comes to monitoring externalities.

337 A second approach is closer to the Northian branch of NIE, with a particular
338 emphasis on the role of the polity and the judiciary. In a pioneering book (Shirley,
339 1995), Shirley substantiated with abundant empirical evidence the impact of
340 political interferences on the performance (and counter-performance) of state-

341 owned business. A few years later, the same author edited a collection of essays
 342 showing how successes and failures in the reform of public utilities (namely
 343 urban water systems) in several developing countries depended on institutions
 344 in which they are embedded (Shirley *et al.*, 2002). These analyses comforted
 345 a previous paper by Levy and Spiller (1994) on the reform of the telecom
 346 industry showing that similar reforms may have opposite effects depending on
 347 the institutional environment in which they are implemented. More controversial
 348 contributions, often hiding under the bushel their debt to institutionalists (see La
 349 Porta *et al.*, 1998), focused on the impact of legal regimes in the development
 350 of specific sectors, particularly finance. The *Doing Business* reports, issued by
 351 the World Bank and the International Finance Corporation, are illustrative of
 352 these efforts to better capture the impact of legal and political systems in easing
 353 or restraining business activities, notwithstanding the disputable methodology
 354 and conceptual background of the reports.¹⁴ More modestly, and likely more to
 355 the point, Benham (2005) focused on the micro-analytics of institutions shaping
 356 transaction costs in specific industries, e.g., the costs resulting from duties and
 357 delays at custom offices and their consequences on the performance in the textile
 358 industry.

359 3.2. *Intermediation: the key role of meso-institutions*¹⁵

360 One weak or even missing aspect in the studies referenced above, as in so many
 361 others not mentioned here, is a more precise analysis of the mechanisms through
 362 which institutions permeate organizational arrangements and through which
 363 feedbacks are transmitted. A useful tool in that respect might be provided by the
 364 concept of meso-institution.¹⁶

365 In our *Handbook of New Institutional Economics* (Ménard and Shirley, eds.,
 366 2005/2008), two sections contain extensive reviews and original insights by well-
 367 established contributors on the nature and role of political and legal institutions
 368 and their impact on development and growth. In the same book, Greif (2005;
 369 see also 2006) provides stimulating views fed by rich historical analyses on
 370 the dynamics of these institutions. However, what is still poorly understood (if
 371 at all taken into consideration) is the transmission mechanisms through which
 372 organizational arrangements and institutions interact, which is an essential link
 373 to capture not only what is actually going on in each dimension but also how

14 For early contributions to the controversy, see Ménard and DuMarais (2006) and Arrunada (2007).

15 This subsection and the next one draw from an ongoing research with Rolf Kunneke and John Groenewegen. A preliminary and partial overview is provided in Kunneke *et al.* (2010).

16 In previous publications I used the term 'micro-institutions'. Several discussants, including one referee from this journal, pointed out that this expression might be ambiguous because 'micro' could orient the reader towards organizational arrangements. The re-labeling of 'micro-institutions' as 'meso-institutions' intends to avoid this potential confusion. I am indebted to John Groenewegen for this suggestion.


374 this interaction translates into micro-performance that provides the foundations
375 to development and growth.

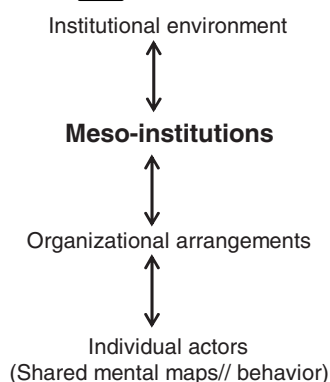
376 There are important intuitions on this issue spread in different publications
377 from North; for example, when he discusses the role of ideologies and beliefs
378 (North, 1990; North *et al.*, 2009). Levy and Spiller (1994) also came close
379 to explicitly analyzing these transmission mechanisms in their review of the
380 role of courts and civil servants in the reform of the telecommunication
381 sector. Spiller and Tommasi (2007) went a step further in their scrutiny of
382 the impact of inadequate institutions (particularly the judiciary) on the counter
383 performance of the Argentinian economy through its century-long decline. At
384 a more abstract level, these two authors (Spiller, 2009; Spiller and Tommasi,
385 2005) as well as Estache and Martimort (1999) and Laffont (2005) examined
386 carefully some fundamental characteristics of the institutional embedment of
387 regulatory regimes, while Kunneke (2008) and Glachant *et al.* (2009) explored
388 the institutional conditions under which regulatory rules are defined and
389 implemented in the electricity sector. Differently, while exploring what he
390 identified as ‘organic institutions’, Greif (2005) expressed concerns about how
391 institutions develop and interact with agents behavior and the way they organized
392 transactions.

393 Notwithstanding these contributions and so many others, a gap remains in
394 our theoretical framework that points the need for a general concept explicitly
395 targeting the mechanisms at work in the interaction between the macro-
396 institutions established at the societal level and the organizational arrangements
397 operating within these institutions.¹⁷ I suggest that the concept of ‘meso-
398 institution’ can help filling this gap. By meso-institutions, I refer to these devices
399 embedded in and legitimized by the inclusive societal institutions defined above,
400 devices that are in charge of actually implementing the general rules of the game
401 through their translation into rules specific to sectors and/or geographic areas,
402 thus framing and delineating the domain of activities of actors (individuals as well
403 as organizational arrangements) operating within these rules. Public bureaus,
404 regulatory agencies, specialized arbitration devices provide illustrations. Figure 2
405 below posits this concept of ‘meso-institutions’ in relation to other levels of
406 analysis developed in different contributions of NIE.

407 Meso-institutions differ from organizational arrangements with respect to the
408 type of rules they implement. The former get their legitimacy from the institutions
409 that delineate their role through general rules, as when a law is introduced to
410 deregulate the telecom industry or to create energy markets: meso-institutions
411 operate as intermediaries, in charge of implementing general rules through their
412 translation into specific guidelines and providing feedback from operators having

17 Solving this problem could help overcoming the critiques formulated by Hodgson (2006) about some confusions inherited from North’s distinction between institutions and organizations.

Figure  The key role of meso-institutions.¹⁸



413 to deal with these rules.¹⁹ By contrast, organizational arrangements may develop
 414 internal rules, codes, conventions that define the content of their governance
 415 (e.g., the internal structure of the firm); but they remain submitted to the
 416 specific rules generated by meso-institutions and grounded in the general rules
 417 defining their existence and responsibilities (e.g., public bureaus delineating
 418 the fiscal regime under which different firms fall, according to their size or
 419 other criteria). As intermediaries, the capacity of meso-institutions to produce
 420 efficient guidelines depends on the acceptance of the rules of the game by the
 421 actors, which is rooted in the mental maps that frame their behavior (whether
 422 strategic or adaptive); and on their capacity to monitor the diverse organizational
 423 arrangements (e.g., markets, inter-firm relations, etc.), which requires specific
 424 rules flexible enough to adapt to changing conditions refracted by the actors
 425 engaged in these arrangements.

426 Meso-institutions can be formal, as with the much explored example
 427 of regulatory agencies; or informal, as when European regulators of
 428 telecommunications or electricity meet on a regular basis to exchange
 429 information and coordinate decisions even if there is no legal basis or
 430 general rules providing legitimacy to this coordination. There are numerous
 431 examples of meso-institutions beside regulatory agencies: specialized courts
 432 in charge of implementing labor contracts; public departments in charge of
 433 monitoring specific infrastructures without being their operator (e.g., department
 434 of transportation); competition authorities in charge of supervising markets and
 435 interfering with their structure; private international arbitration. Through their
 436 diversity, they all share a common characteristic which is that they operate
 437 as subsidiaries of the macro-institutions, translating general rules into specific
 438 ones, and as go-between dealing with requests and complaints emanating from

18 In this paper I do not discuss the level of 'individual actors'. For some contributions from founders of NIE on this issue, see Denzau and North (1994), Williamson (1996: chap. 10) and Ostrom (2005).

19 Failures along one or the other dimension generate discrepancies that can empty well-intentioned reforms, as illustrated by reforms of public procurement in sub-Saharan Africa (de Mariz *et al.*, 2014, Part III).

439 organizational arrangements and actors. This may help understanding why for
 440 similar general rules, devices in charge of their implementation (e.g., regulatory
 441 agencies, competition authorities) differ so much from one country to another
 442 or even among states in a federal regime.

443 To sum up, a new theoretical domain, which is about the mechanisms
 444 necessary to understand the embedment of organizational arrangements into
 445 their institutional environment, is beginning to be explored more systematically.
 446 My suggestion is to delineate this domain through the concept of ‘meso-
 447 institutions’. These intermediate mechanisms likely play a crucial role in
 448 allocating rights and in determining transaction costs. However, there is still
 449 a need to refine the concept and ground it better in the more general NIE theory,
 450 and to produce adequate datasets to substantiate the role and economic impact
 451 of these meso-institutions, for example, different regulatory regimes or different
 452 bureaucratic settings, on the performance of organizational arrangements.

453 **4. Embedding organizational arrangements in technology**

454 Another dimension that has been down-played so far by NIE and that
 455 requires much more attention concerns the complex interaction of institutions
 456 and organizational arrangements with technology. Not long after Williamson
 457 published *The Economic Institutions of Capitalism* (1985), Englander (1988)
 458 pointed out that TCE basically ignored technology and provocatively suggested
 459 that transactions might be summarized in the technologies needed to organize
 460 them. Although he opposed this last statement, rooted in the technological
 461 representation of the firm as a production function, Williamson (1988)
 462 acknowledged that in giving priority to building an alternative representation
 463 of the firm, he has put technological concerns on the backburner.

464 **4.1. Technology: a non-benign neglect in NIE**

465 In a review of what we have learned from NIE, he went a step further and made
 466 the following assessment:

467 Finally, I should call attention to technology. As compared with technological
 468 innovation, the study of organizational innovation has been comparatively
 469 neglected. The NIE has attempted to rectify that [. . .]. Inasmuch as these two
 470 work in tandem, we need to find ways to treat technical and organizational
 471 innovation in a combined manner. (Williamson, 2000: 600).

472 Hence, the absence of concern for technology in TCE and, more generally, in
 473 NIE should not be attributed to benign neglect but rather to a research strategy.
 474 True, a major contribution of NIE has been to get away from the prevalence
 475 of the production function approach to the firm that dominates mainstream
 476 economics, with technology determining how to combine inputs so as to reach
 477 the optimal frontier, thus determining the nature and size of the firm. This
 478 technological representation is not only restrictive in that it identifies all modes
 479 of organization to the firm as the only arrangement beside markets; it also falls

480 short of what is required to understand the nature and variety of organizational
 481 arrangements as substantiated by so many recent contributions (see surveys in
 482 Ménard, 2006, 2013a).

483 However, we must admit that if TCE succeeded in switching the attention to a
 484 non-technologically determined representation of the firm and, more generally,
 485 of all organizational arrangements, it also introduced a strong bias towards
 486 neglecting the role of technology. The difficult relationship between NIE and
 487 parallel research programs focusing on the role of technology (e.g., co-evolution
 488 and the evolutionary approach that originated in Nelson and Winter, 1982)
 489 is an indicator of this non-benign neglect. Introducing technological issues
 490 in a transaction cost framework should be reinstated as a priority in our
 491 agenda. Building an integrated model of the interactions between institutions and
 492 organizational arrangements that would make room for technology is indeed a
 493 key issue for NIE, and a very challenging one.²⁰

494 *4.2. A case in point: network infrastructures*

495 In an ongoing project, we²¹ are working on a framework to provide milestones
 496 in this direction. Our research program takes network infrastructures (water,
 497 electricity, railroad, air transportation, telecommunications, etc.) as a point of
 498 departure and the domain in which to check our hypotheses and control our
 499 propositions.

500 ‘Criticality’ is a key concept in our framework, providing a way to capture the
 501 interactions between institutions, organizational arrangements, and technology
 502 in this context. Criticality refers to the fact that in order for network
 503 infrastructures to deliver the expected services with the highest possible quality
 504 at the lowest possible costs, transactions must be organized in a way that meets
 505 inescapable technical requirements. In network infrastructures, these technical
 506 requirements are: (1) the need to interconnect components and/or segments
 507 of a system, which involves determining conditions of technical compatibility
 508 (e.g., the size of pipes in urban water systems); (2) the necessity to assure
 509 interoperability, which means that the different parts of the technical system
 510 must be designed and/or equipped to fit specific standards (e.g., signaling systems
 511 in the railroad sector); (3) the need to allocate capacities of the system in such
 512 a way that production meets the actual demand (e.g., load balancing in the
 513 electricity system); (4) the necessity to implement control devices that guarantee
 514 continuity in the technical operation of the system (e.g., control over voltage and
 515 frequency in the electricity system).

516 The existence of such critical technical requirements and the conditions they
 517 impose on the technological architecture that go with them have a direct impact

20 Note that this is quite a challenge for mainstream economics as well. As far as NIE is concerned, a more intense dialogue with alternative contributors to the analysis of technologies (e.g., Nelson-Winter disciples, co-evolutionists, Dosi, Langlois, and Robertson, and many others) should become a significant part of our research strategy.

21 Rolf Kunneke, John Groenewegen, and myself.

518 on how transactions must be organized along different nodes of the system, and
 519 on the resulting costs. In that respect, there are transactions that are critical for
 520 providing adequate support to the chosen technology (ies): they require forms
 521 of coordination that are essential to guarantee that the requirements imposed by
 522 the technical functions on the one hand fit with the rights and rules embedded in
 523 the different institutional levels on the other hand. We refer to this coordination
 524 issue as the ‘alignment’ between institutions and technology.

525 This ‘alignment’ issue concerns three interdependent levels (see [Figure 3](#)
 526 below):

- 527 (1) The technological architecture must be embedded in adequate institutional
 528 rules and appropriate allocation of rights. For example, when imposing the
 529 unbundling of the electricity or railroad systems, lawmakers must take into
 530 account the nature of the network at stake in order to meet its technological
 531 requirements when allocating rights (e.g., rights of access) and when designing
 532 mechanisms of coordination. For example, introducing private actors in the
 533 water sector implies conditions that differ from those in the telecoms. Defining
 534 such rules of the game involves not only economic transaction costs but also
 535 political ones;
- 536 (2) Rules specific to a sector and mechanisms of enforcement must be designed
 537 that are aligned with the specific technical characteristics of the sector:
 538 urban water systems cannot be organized along the same rules as urban
 539 transportation systems. This dimension refers to governance issues, with
 540 governance understood as the monitoring of different sectors of activities.
 541 Rules and rights must be defined, allocated, and implemented through meso-
 542 institutions that translate general rules into specific ones. Allocating slots to
 543 airlines does not respond to the same requirements than allocating rights to
 544 provide drinkable water to a city;
- 545 (3) In that respect, the choice of organizational arrangements will differ depending
 546 on the requirements of the technical operation of the system since these
 547 arrangements must be aligned with specific constraints.²² For example,
 548 decentralized coordination through contracts among autonomous firms may
 549 not be an adequate solution to make the running of the technology efficient.
 550 The allocation and monitoring of slots in the railroad industry imposes a
 551 relatively centralized coordination while water provision is usually monitored
 552 at a much more decentralized level. This aspect of the alignment problem
 553 is the one that has attracted most of the attention of transaction costs *à la*
 554 *Williamson*.

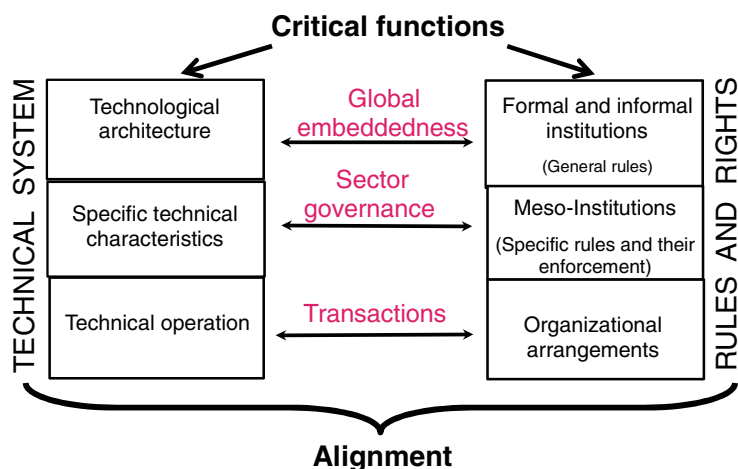
555 [Figure 3](#) provides a broad overview of the dimensions involved and of their
 556 interactions.²³

22 A similar analysis of this level has been provided in several contributions by Langlois (2010) and Langlois and Robertson (1994, 1995). Of particular interest with respect to the interaction between technical systems and the choice of organizational arrangements is their analysis of modularity.

23 Several papers have already been published in relation to this project (Finger *et al.*, 2011; Kunneke, 2008; Kunneke *et al.*, 2010 among others). More details will be provided in a forthcoming book.

Figure 3 (Colour online) The interactions between technology and institutions.²⁴

Figure 3.- Colour online, B/W in print



557 On the right hand side, we have the different levels at which property
 558 rights as well as decision rights are allocated, namely: (1) the institutions
 559 in which are determined and/or embedded the general rules of the game
 560 that determine the broad allocation of rights (e.g., public? Fully privatized?
 561 Public-private partnership? ...) and that frame the behavior of all economic
 562 entities (individuals as well as organizational arrangements) operating within
 563 the jurisdiction of these institutions; (2) the meso-institutions which get their
 564 legitimacy from a subsidiarity principle which allows them to transform the
 565 general rules into specific ones adapted to the specific technical characteristics
 566 of the system they frame and monitor, thus providing guidelines to actors
 567 and making rules enforceable; and (3) the various organizational arrangements
 568 that actually operate within these rules, organizing actual transactions under
 569 constraints and possibilities opened by the technical system. Through these three
 570 levels, what is critical is the way rules are defined, implemented, and activated
 571 through the allocation and usage of rights among parties involved in specific
 572 network infrastructures.

573 On the left hand side is the technological dimension, with all levels
 574 submitted (but differently) to the critical technical functions that characterize
 575 and differentiate technological systems providing support to different network
 576 infrastructures. (1) At the most inclusive level is the architecture that defines a
 577 technology and differentiates it from alternative solutions, e.g., the architecture
 578 commanded by nuclear power contrasted with the usage of hydro-power. (2)
 579 A second level corresponds to the specific technical characteristics resulting
 580 from the adaptation of the technological architecture to specific physical
 581 circumstances, e.g., the adaptation of hydro-turbines to the flow of a river,

24 I am indebted to suggestions from one referee for making this figure easier to read and understand.

582 or of water extraction to the underground properties specific to different areas.
 583 (3) Last, these technical characteristics translate into technical rules making
 584 the system operational, e.g., the selection of a specific voltage in the electricity
 585 system or in an electrified railroad system, or the technical coordination of
 586 different signaling mechanisms in the railroad industry.²⁵ The unifying forces
 587 on the technological side come out of the constraints imposed by the four
 588 critical functions mentioned above. The literature from system engineers²⁶ shows
 589 how essential it is for these functions to be performed; otherwise the technical
 590 system might break down, making related economic transactions impossible. For
 591 example, a disruption in the railway signaling system makes the possibility of
 592 new transactions conditional to the restoration of the system.

593 This example suggests what might be crucial for understanding the role
 594 of technology in an institutionalists perspective, which is the alignment, or
 595 misalignment, between the two ‘columns’, taking into account the interactions
 596 among the different levels in each of them. In a sense, this can be understood
 597 as the extension to our three levels of the alignment principle defined by
 598 Williamson (1996: 311–12) who focused on the third level, in which to be
 599 efficient organizational arrangements must be aligned with transactions at stake.
 600 But the framework summarized above complements Williamson’s analysis by
 601 making these transactions themselves conditional to their alignment with the
 602 technical characteristics of the activity they organize. And it extends his analysis
 603 to the two other levels, the alignment between the meso-institutions and the
 604 specific technical characteristics and the appropriate embedment of the rules
 605 defined through macro-institutions with the technological architecture chosen.
 606 All levels play their role in determining the coherence of the system and its
 607 capacity to meet objectives and expectations assigned to that system, as with the
 608 network infrastructures in the examples mentioned above.

609 The theoretical setting thus summarized does not come from Sirius. It
 610 is supported by an already abundant literature on the nature and role of
 611 institutions in delineating the domain and the rules within which organizational
 612 arrangements can operate. It is also supported by the rich contributions of
 613 what can already be considered the Williamsonian approach to organizational
 614 arrangements. And it finds numerous indications, although more dispersed,
 615 in the literature on regulatory devices, public bureaus, arbitration devices, all
 616 arrangements that I have subsumed under the concept of meso-institutions. In
 617 identifying more explicitly the different levels involved and in extending the
 618 alignment principle to the analysis of the interactions between institutions and
 619 technology, our framework provides a unified analysis subsumed under the key

25 For an analysis of the impact of such characteristics on the organization of a sector, see Ménard and Yvrande (2005).

26 See, for instance, Dutton *et al.* (1997). Details about our interpretation of this literature can be found in Kunneke *et al.* (2010). See also Finger *et al.* (2005).

620 concepts of NIE complemented by new insights (e.g., the concepts of ‘criticality’
621 or ‘meso-institutions’).

622 I am far from suggesting that this framework provides fully adequate answers
623 to the complex set of questions regarding the relations between institutions and
624 organizational arrangements on the one hand, and technological systems on the
625 other hand, not to mention the even more complex issue of the relationship
626 between technological innovation and institutional changes. All I suggest is that
627 this framework provides elements of a unified conceptual model to explore
628 different avenues for better understanding these issues.

629 5. Conclusion

630 The question I had to deal with in this contribution is a challenging one: what
631 is the future of NIE? My answers were essentially oriented towards identifying
632 problems and puzzles to be solved and referring to a set of concepts produced
633 from a new institutional perspective and that can help making important steps
634 forward. In doing so, I have mostly built on the heritage of TCE.²⁷ I have
635 emphasized what I see as some promising directions that the extension of this
636 paradigm opens.

637 I did not intend to deliver a survey or to be exhaustive. I deliberately
638 focused on relatively specific and underexplored issues that require an analytical
639 approach, looking ahead rather than taking stock. Summarizing where we are has
640 masterfully been exposed by Coase (1998), who pinpointed what NIE is about,
641 and by Williamson (2000) and North (2004) who both captured the essence of
642 what we have learned so far, doing so in their own way and with their own
643 emphasis, on TCE and on the relation between institutions and development,
644 respectively.

645 Trying to outline what could come next is a risky position. We all know
646 that knowledge does not develop linearly. The specific content of the research
647 agenda and the few concepts that I tried to push further in this paper might
648 not correspond to the breakthrough that will happen in the years ahead of us.
649 However, I am convinced that the three axes I have emphasized will remain part
650 of the future development of an adequate institutional theory, in the vein of NIE.


651 Digging deeper into the internal properties of markets and integrated
652 organizations (hierarchies) in order to better understand their differences,
653 and extending the analysis to non-standard arrangements such as networks,
654 alliances, joint ventures, etc., so as to benefit from an integrated model, will
655 remain high among our priorities. Exploring more intensely the relatively
656 neglected question of the mechanisms through which institutions interact
657 with organizational arrangements, making the later deeply embedded in
658 their institutional environment, shall attract increasing attention. Integrating

27 For a broader perspective, see my companion paper co-written with Mary Shirley.



659 technology and its dynamics into a more general model, so as to better grasp the
 660 complex interactions between technological innovation and institutional change,
 661 will remain a long-term goal for all those concerned by the co-evolution of
 662 institutions and technology.

663 This is quite a demanding research program. It is also quite an exciting one,
 664 which should attract the attention and energy of newcomers to the field of
 665 institutional analysis.

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