Three Narratives on Industrial Markets as Networks and as Social Systems

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Abstract

I propose three explanations of industrial markets as social systems. Industrial marketing researchers have long recognised the question of bounds to markets and marketing activities, drawing on focal firms and also industrial markets as embedded social systems. This in effect highlights at least five units of analysis: individual, firm, relationship, network and (sometimes implicitly) environment. Luhmann proposes a general theory of social systems that are distinct from environments and have on-going properties in communications through autopoiesis. However, Luhmann sees markets, in general and abstract senses, as neutral boundary or horizon conditions, captured in the mass or generalised symbolic media of money.

Key words: industrial markets, social systems, Luhmann, networks, similar and dis-similar capabilities

Introduction

This paper addresses how we might identify the domains and so boundaries or horizons (and also social/business environments) of industrial markets and industrial marketing activities for the purposes of undertaking and coordinating these activities (Holmen and Pedersen 2003). I draw upon Luhmann's (1995) explanation of on-going or autopoietic social systems as a basis for identifying three narratives about industrial markets. I take advantage of the abstract nature of Luhmann's argument, and so his reticence in associating his analysis with specific forms of social organisation, to identify three feasible interpretations of industrial market domains and boundaries or horizons.

The practical consequences of these narrative identifications are in framing how industrial marketing activities and underlying capabilities are related within a company's boundaries to its other activities and capabilities. They are also in how marketing activities and capabilities are organised in relation to the marketing activities and capabilities emanating form other companies, but located and organised in on-going markets.

The paper takes as its starting point the network view of industrial markets and industrial marketing activities and addresses how researchers and those involved in industrial markets might go about thinking of the boundaries or horizons of these markets (Easton 1992; Gadde, Huemer and Håkansson 2003). By understanding industrial markets as networks, we are immediately conceptualising industrial marketing activities as strategic, so requiring selections among discrete and imperfectly understood sets of alternative scenarios in conditions of irreducible uncertainty (Abell 2003; Potts 2000). To the extent that networks pre-exist particular instances of activities, actions are also embedded (Granovetter 1985; Callon 1998; Mattsson 2003).

Any perceived freedom in interpreting Luhmann's principles in terms of specific social organisations is tempered, of course, by established explanations of social and economic organisation. In order to identify the practical consequences of explaining the nature of the boundaries or horizons of industrial markets and industrial marketing activities, I

have to engage in these issues of business organisation. Richardson's (1972) explanation of business activities requiring complementary capabilities that may be similar or dis-similar, and with different attendant organisational contingencies, has been influential in shaping industrial marketing research (Dubois 1998; Dubois and Gadde 2002).

Two inferences may be drawn from the Richardson-industrial marketing connection. First, Richardson's emphasis on intermediate, relational and durable business connections, as both spur and solution to coordinating highly complementary and dis-similar capabilities, provides a basis for understanding many relationships and exchanges within business markets. Second, a capabilities perspective is generally preferred to the Hobbesian explanations that restrict themselves to transaction costs and property rights understandings of business-to-business exchanges in the context of possibly enduring business relationships.

I would not want to go so far as implying that there is an 'industrial markets approach' and Blois (2002) provides grounds for expecting exceptions, both in theory and in his case study analysis. But the accumulation of industrial marketing research to date presents some grounds for identifying an 'ideal type' of industrial markets comprising durable business-to-business relationships. Further, industrial marketing activities contend with maintaining these ubiquitous on-gong relationships, and contending with the specific issues of trust, reputation, and the joint development of capabilities and products. In short, a pervasive view is of industrial markets as social and network organisations.

If this paper succeeds in developing three narratives about industrial markets as networks and as social systems, it will make a secondary contribution too by assessing the extent to which industrial markets form a distinct type. Paradoxically, and at the outset, this type may well be more organisational than market, at least as markets are understood among economists and also among economic sociologists.

Networks as Social Systems

Luhmann's (1995) explanation of social systems is in part a development of Parsons' structural account of social action, and in part a critique of structural functionalism. The key difference between Luhmann and Parsons is that where Parsons falls back on latency or already-shared culture as a basis for agency or action, Luhmann sees any stability as an improbable outcome of difference expressed in action or communication (Luhmann 1995, p. 335). Consequently, where Parsons deduces four subsystems as contingencies of social order, Luhmann has no restrictions on the number of subsystems that can emerge as improbable orderly outcomes of actions as communications (Chernilo 2002). Finally, while both Parsons and Luhmann present frameworks that are general and abstract, Parsons is compelled to identify his four abstract subsystems with types of social phenomena, which is onerous at the levels of subsystem and sub-subsystem. Luhmann can though present his framework as essentially general to social relations and scale-free.

Luhmann's (1995, pp. 13-17) most significant theoretical innovation is to make autopoiesis central to his social systems, where autopoiesis means self-reproduction, self-description, reflexivity or simply on-goingness. Hence, a social system has all the resources within it that are required for its successful reproduction over time. Autopoiesis implies that social systems necessarily have environments, which comprise other necessarily different systems. It also implies that systems are simultaneously closed, in the sense of comprising the required resources to ensure the sense of on-goingness, and also open for some communications that cross system boundaries.

Where Parsons' systems imply subsystems which specialise in some contingent order-giving function, Luhmann's systems imply environments. The functional role of Luhmann's systems is to be less complex than their environments (Luhmann 1995, pp. 25, 43). As environments are highly complex, they can present any number of problems requiring responses and reactions and so may be characterised as irreducibly uncertain (Pixley 2002). As part of their resources, systems provide stores of fairly general responses or more generally structures, which may be adaptable in practice, rather than a one-for-one and issue-by-issue matching with their environments. Luhmann's systems feature elements that are

described as events, which have fleeting presences. Structures provide selections in the form of connections between events, where 'events that are connected with others with equal probability' characterise entropic and so highly complex systems (Luhmann 1995, p. 49).[1] Systems are still complex, but less so than their environments.

Potts (2000) makes a significant contribution to the understanding of complexity, but perhaps not of systems, by drawing upon graph theory representations of networks. By referring to (necessarily static) graphs that comprise ventrices and edges, he makes it quite clear that systems are complex where they have multiple but still selective connections across their elements. As a fixed reference point, Potts points out that the economics model of general equilibrium can be represented in graph theory as field or a network in which all elements are connected with each other. While this can be represented neatly as a diagram, the practical implications of this complete connectivity are for Potts chaotic, or entropic, rather than complex as any changes in one area of a graph affect all other parts. There is no localisation, or containing of spillovers, through selective connections.

Returning to Luhmann, systems are less complex than their environments by storing up and drawing upon limited repertories or pre-selections of procedures (Luhmann 1995, p. 285). It is difficult though to map the complexity of Luhmann's environment concept using Potts' approach. Potts' networks, while perhaps implying a boundary and so system-environment distinction, cannot foresee an environment without (only partially and perhaps mistakenly) capturing it as a system-compatible representation. All other aspects and uncertainties are perhaps represented as data that can be interpreted from the system's implied knowledge base (Boisot and Canals 2004).

We can develop the connections between system and environment in more detail. Communication is the key to a social system's autopoietic character because, following Luhmann, communications express 'double contingencies' and create expectations of responses, and so a sense of on-goingness (Luhmann 1995, p. 389). In Parsons' earlier social systems theories, sub-systems were interdependent, so open, and involved in exchanges, for example across thin and neutral markets (which receive little critical reflection of conceptual

development on account of this presumed thinness and neutrality). Parsons' exchanges, for instance in markets, indicate interdependence and openness rather than independence and closure, and also do not have the same sense of expected response and on-goingness (Vanderstraeten 2000). Further, information – which is 'for a system' (Luhmann 1995, p. 67) – is interpreted and has meaning in the process of a communication process. Communication is an 'occurrence' or 'event' in which three elements – comprising information, utterance and *Verstehen* (ibid., p. 243) – are coordinated through selections (Vanderstraeten 2000. p. 586). The social system is such that somebody can select something to be communicated, and also adopt some means or media of communication in the expectation that an intended communicator will be able to both make sense of an utterance about something, but also be in someway changed in interpreting the selected utterances (ibid., p. 587). Means of interpretation also include pre-selected and stored-up typologies.

The key point that Luhmann adds in making communication central to the on-goingness of his systems is to reduce any emphasis on Shannon and Weaver's (1948) ideas of sending and receiving messages, and so on sender and receiver competence. Luhmann's focus is instead on the selections that are often automatic in the acts of making utterances in the expectations that these will be understood and responded too. 'Utterances' implies both selection and response. Further, Luhmann's framework is developed in contradiction to Parsons' focus on exchange. In social systems, communications are not for Luhmann analogous (as 'messages') to physical or intellectual properties with well-established property rights.

Communications also draw attention to the role of individual agents, whose systems are primarily psychic systems as distinct from social systems (Luhmann 1995, p. 242; Vanderstraeten 2000). Psychic systems are also part of a particular social system's environment, and vice versa from the perspective of a particular psychic system. The presumptions of difference and of the necessity of communication are stimuli for social system development. Communications have the roles of being events in which parties may draw upon rules in recognising their respective contingency, making selections in utterances

and expecting that others make sense of a communication and will somehow respond. Utterances are not then restricted to the verbal, and in any case verbal communication is necessarily also high in tacit content, so dependent on an immediate form of shared context if communicators are to have confidence in eliciting a meaningful response.

According to Chernilo (2002, p. 437), communications shape and are shaped by their media, ranging from: oral languages requiring face-to-face communication and so co-presence of communicators; mass or diffused media, which can store communications and facilitate these across space, and to some extent over longer time periods; and 'generalized symbolic media.' While Chernilo presents these as successive phases which help bring about functionally differentiated social systems (indeed, modern societies), it is not obvious that one phase holds some advantages in enabling communication, and enabling systems to adapt to more widespread communication. The 'codification debate' among industrial and organisational theorists contains similar claims among some participants, who claim that otherwise personal and tacit knowledge can be alienated from contexts through codification endeavours (Cowan, David and Foray 2000; Nightingale 2003).

Luhmann addresses the codification and mass communication debate implicitly in setting out conditions of autopoiesis as being characterised simultaneously by closure and openness. Whereas closure implies that a social system has means of reproducing its 'systemness' as connected events, mainly through expectations implicit in communications, openness implies that boundaries or horizons are permeable. Permeability, in turn, is characterised by some perhaps basic structures shared across different systems (such as mass and generalised symbolic media), allowing for interpenetration through communications that are then interpreted and attached with system-specific meaning (Luhmann 1995, pp. 28-29). In other words, systems (social, psychic, physical) are not strictly decomposable or strictly modular, but are differentiated through their scale, system-specific means of interpretation and their means of on-goingness.[2]

Industrial Markets as Organisations

In this section, a basis for industrial markets as an ideal type is sought, both as a staging post in which social systems and networks can be applied, and as a basis for alternative analyses of industrial markets as social systems in the remainder of the paper. Arguably, a more obvious connection between Luhmann's autopoietic explanation of social systems and of business systems is to take corporate boundaries as boundaries or horizons of social organisations (Hendry and Seidl 2003). But here, I will follow the claim that markets too are organisations.

Following Granovetter (1985) and Callon (1998, p. 8), if agents are embedded in networks, they lose a singular identity such as 'firm.' For example, not only do firms have multiple boundaries (Araujo, Dubois and Gadde 2003), but also the 'they' in the boundaries becomes difficult to discern in practice. Following on from the argument of the previous section, there are overlapping social systems such that a firm may be a social system in regard to some questions, but an industrial group of firms may be a more appropriate social system in others. Loasby (1999) argues that markets can be both complements and substitutes to planned and hierarchical organisational forms such as firms. He also argues that markets have some organisational qualities, including being designed in some circumstances. We cannot assume that markets are natural phenomena securing near-anonymous exchanges with low-cost means of closure (such as contracts, customs, reputations) and some endogenous, re-enforcing incentives to ensure the on-goingness of these qualities (Bowles and Gintis 2000).

Economic sociologists have undertaken a number of empirical studies of different financial markets, developing actor-network theory (Callon 1998). Mackenzie and Millo (2003) have undertaken a longitudinal and ethnographic study of the Chicago Board Options Exchange and have also interviewed key financial options theorists. They argue that financial markets can feasibly approach the outcomes predicted in economics models of perfect competition because the markets are social organisations in which models based on economic theories – such as option pricing – can be enacted.

Mattsson (2003) argues that actor-network theory can be applied in the context of industrial markets and industrial marketing activities. A difficulty is though in finding theories that are being, or can be, enacted. One candidate is transaction cost economics, with its dualism of markets and hierarchy in the organisation of primarily economic activities. But this assumes that a 'clever institutional solution' can be imposed exogenously on a set of primarily economic activities, ignoring the network and multi-boundaries/systems arguments that seem so appropriate in the context of industrial markets and industrial marketing. Following transaction costs arguments, markets and hierarchies are planned organisations. Intermediate forms have been recognised but not explored using the approach's main principles.

The lack of commitment by Luhmann to specific organisational forms or sets of social circumstances in which to work out the communicative action in social systems also sets us problems in explaining industrial markets as social systems. There is considerable freedom in applying social systems to industrial markets. Where Luhmann (1995, p. 239) does write of business or commercial or primarily economic activities though, he provides little scope for understanding industrial markets as (network) organisations. Rather, a case can be made for reading into Luhmann an argument that money forms a generalised symbolic communication media and boundary condition for social systems, or perhaps between subsystems within a social system. Money is either a substitute for markets or is synonymous with very a 'very' thin social conception of markets. Pixley (2002) is critical of Luhmann in this respect because if money is to fulfil this proposed role of mass and thin communication media, it should be neutral.

Leaving to one side autopoiesis, Luhmann's argument that money is the generalised symbolic communication media for primarily economic social systems, the simple structure of these relations has something in common with that set out in Parsons and Smelser (1956). Again, markets are neutral boundary conditions that sit in between social systems or subsystems and facilitate – following Parsons and Smelser – inter-system or subsystem exchanges. Further, Parsons and Smelser (ibid., 205-21) go so far as to indicate schematically

something like industrial or business-to-business markets with small numbers of participants as an 'internal market and exchange' within their societal economic subsystem. Again though, the market-type, which is potentially of the business-to-business type, is very close to the anonymous ideal type of perfect competition, despite the likelihood of its specialisation also implying small numbers of market participants.

Rather than collapsing industrial markets into the system or boundary condition of money as a mass means of communication, they can be seen as social and network forms of organisations and so also as social systems. As MacKenzie and Millo (2003) argue in the case of financial markets, industrial markets may be planned and even designed as means of creating capabilities or of combining existing capabilities. Further, our knowledge as researchers of networks can help us in explaining the undertaking of business activities even where networks are not a focus of deliberation among companies. One could feasibly anticipate, plan and undertake strategizing activities with or without some model of network organisations, where the 'without' option could, for example, be pursuing supply-chain management. It is significant that chains and networks are metaphors with very different practical implications. In either case though, the strategizing is an embedded activity. A powerful agent can structure relations with other companies to form a supply chain through issuing, say, five-year contracts and risking being single or dual-sourced at review or renewal time. But this still takes place within a network.

What are the unifying features of specifically industrial markets and specifically business-to business marketing activities? There may be none. An answer may lie in Richardson's (1972) 'intermediate forms' argument, which emerges out of his framing of business relations based on the requirement of activities requiring the coordination of dis-similar but complementary capabilities. This approach certainly draws attention to the tension in such relations where, for example, the supporting investments or joint products are specific to a relationship, sustain it, but which defy the designation of property rights (Dubois 1998). Rather, an analogy can be drawn with Chandler's (1962) organisational capabilities within firms, or with the contemporary assessments of companies' dynamic capabilities

(Teece, Pisano and Shuen 1997). Only in industrial markets (rather than companies per se), the investments are also and explicitly in co-ordinations across distinct companies. Richardson's intermediate situation, based on the similarity or dis-similarity of capabilities, may though be transient. Scale seems important too, and the similarity of capabilities in itself may be contingent upon scale. At larger scale, all parties could feasibly develop mass media means of communication, even if these are greater in dimension and uncertainty than Luhmann's explanation of money.

Industrial Markets as Social Systems

Holmen and Pedersen (2003) undertake a case study analysis of how a company can go about influencing its 'network horizon' in the context of another business activity, that of 'strategizing.' This is not quite the same as social systems as discussed in the previous sections of this paper because their perspective is of a 'focal firm,' its network, and then an environment, rather than simply social system and environment. Nevertheless, there are sufficient similarities, in their being a horizon or boundary and environment:

> … effects of the environment are mediated through the network horizon and context. … the part of the network, which a single firm is aware of, is its network horizon. … the part of the network horizon, which the firm considers relevant, is the firm's network context (Holmen and Pedersen 2003, p. 411).

Firms engage in an activity called 'strategizing,' which can also be interpreted as a communication. Further, strategizing, if understood as a combination of strategic decision-analysis, decision-making and action, can be described entirely as strategic (with varying degrees of deliberation). This designation is made following Abell's (2003) distinction between parametric activities, which would fit in with Potts' analysis of a uniformly and completely connected field, and strategic activities where agents understand their selected sets

of connections and relations as enduring. Holmen and Pedersen (2003, p. 415) argue that firms develop mediating functions that may be: joining, implying dense face-to-face communications across focal, counterpart and third-party firms; relating, implying still rich communication between focal and third-party firms, but mediated through a counterpart; and insulating, whereby focal and third party firms have no knowledge of one-another's activities so presumably rely upon the counterpart's capabilities in selection and contracting.

My concern is, rather like Simon's assertion of 'near-decomposability,' that Luhmann is overly-interpreting the outcome of the processes of communication in contexts, such that media emerge (implicitly in the context of informationally 'very thin' markets) to isolate clusters of more 'dense' or 'thick' communications within subsystems.[3] Or that markets are distinct from rather than embedded in social networks. Pixley (2002) raises similar concerns of Luhmann (and Parsons), but from the point of view of trust being implicated in otherwise merely communication media, such as money and power.

The ambiguities I highlight are partly a consequence of adapting abstract and general theories of complexity and on-going social systems to empirically related explanations of types of business relations (here, in industrial or business-to-business markets). While these two domains of theory are connected, they are not determining of one another. On the one hand, I have a degree of freedom in proposing these connections between levels of abstraction and types of analysis. On the other hand, the attempt at making connections can hold out the prospect of some clarification in aspects such as differentiation or near-decomposition, of boundaries and strategic activities.

It is with these intentions that I propose three narratives on industrial markets as networks and as social systems: first, industrial markets are part of firms' environments; second, industrial markets are social systems, with firms being in the environments of these social systems; and third, industrial markets and firms are bound together in social systems. Note that these three narratives are not necessarily mutually exclusive. Further, markets are interpreted from the outset as socially (and technically) embedded organisations, rather than as informationally 'very thin' generalised media of communication.

Industrial Markets as Environments

My first narrative places markets in the environment, beyond the social system (considered here to be a firm). The nature of the horizon is then explicitly contiguous with the boundaries of the firm. This is consistent with Simon's (1962) analysis, in which the system is nearly decomposable and coincides with corporate boundaries and with Cyert and March (1963). Re-interpreting Richardson (1972) from within this first narrative, we should conceive of business marketing as an on-going activity within the firm, and in a different sense, a capability, which is highly complementary to the firm's other capabilities. Another proportion of it can be in the environment, including (by inference) in the systems that capture other firms, but these undertake what are from the perspective of the focal system (in narrative one, a firm) only simple communications.

If communications involving other systems in the environment do not fit with established practices within the firm, it is the conduct of market communications from within the firm (system) which either has to adapt (cognitively) or impose existing conventions on these 'awkward' or even incomprehensible communications (Luhmann 1995, p. 172). The key constituent marketing activities (which, following Luhmann are communications) are then expected to be: developing sense interpretively of informationally thin communications with other systems (including firms) in the environment; attempting reciprocal communications that are of a similarly thin nature; and contributing to the on-going identity of the system (firm) through maintaining consistency in these interpretive activities or communications.

First impressions may be that this first narrative is counter to an embedded networks view. This is not necessarily the case. Rather, the interpretive work and perhaps modelling is being undertaken within the firm (as a social system) with, say, a procurement function or sales function being part of a firm-wide and well-functioning and complex communication system. And a cluster of business marketing activities plays a full role in maintaining system-

coherence by maintaining system-wide communication. The firm, as an on-going social system, is successful in maintaining its boundaries by carrying our market activities from within its own communications system. Market activities, or communications, that are rich when engaging with others within the system, and informationally thin and simple when engaging with others in an environment, are critical factors in the firm's autopoiesis. Further, the view supports Luhmann's analysis of mass media (and possibly a generalised media) of communication, at least in between firms involved in a network.

Any changes in market activities, including marketing activities, have to be initiated from within the social system (firm) as part of its self-description, reflexivity and autopoiesis. These may then be planned as a type of transient event called an experiment, with other parts of the social system having the ability to assess these by establishing some kinds of parameters of data amongst which to monitor performance. Hendry and Seidl (2002) develop an organisational analysis following Luhmann of 'episodes,' which are strategic reviews. Experiments differ a little in that they are set up consciously with controls in order to appraise options for strategic review and change. Changes made internally will alter the nature of environmental data that can pass through the focal social system's (firm's) boundaries in order for sense-making activities inside the system to get to work.

Industrial Markets as Social Systems

My second narrative takes the market to be the social system and places firms, minus their market (including marketing) activities, in the environment. This is something of a leap beyond Luhmann's understanding of markets (or at least money, as a generalised media of communication).[4] But with Luhmann's simple system-environment distinction, and accompanying lack of commitment to appending these descriptors to particular societal phenomena, additional insights may be inferred from thinking of industrial markets as social systems with internal differentiation and complexity, and with environments.

In this second narrative, the industrial or business marketing activities (or communications) of different companies are highly complementary and similar with each other, and dis-similar with other activities (communications) undertaken in other systems (including firms, now minus their business marketing activities). 'Complementarity' now groups together as constituent elements the business marketing activities of different firms, including, for example, consultants as well as those directly connected with (non-consultant) products and services. These activities regularise and deepen communications within the system, simplifying and so making sense of environmental communications, and engaging in communications with other systems in the environment, and so preserving the identity of industrial marketing as an on-going social system of activities (communication).

The narrative is of an 'inside-out' Penrosian analysis, with the social system as market network comprising resources that Penrose (1959) sees from her 'focal firm' as outside it but 'close-at-hand.' The market is a social system of marketing activities or communications due to the stable and on-going reproduction of marketing resources or capabilities (Loasby 1999). Though some of these 'belong' in some property rights sense to firms, conceived of in this second narrative as being in the environment and comprising other dis-similar activities and communications, the marketing activities or communications occur through the connections between marketing resources or capabilities. The interesting issue is in connecting the view of a market as a social system with Luhmann's invocation of self-description, reflexivity and autopoiesis. The market conceived of as a social system is closed in the sense of being in control of the resources required for its own self-reproduction over time and space. So the required resources (or capabilities) are inalienable from the market system. Yet in another sense (possibly as an overlapping legal system), the required resources belong to organisations that are in the environment. Inside the market as social system, we would expect to observe a process of differentiation, with sub-markets or specialist marketing organisations, and also complexity in patterns of connections at emergent levels. Again, the basis of generalised media of communication is called upon in facilitating complex patterns of connections, and resulting from differentiation.

Industrial market networks comprise firms and markets as subsystems

While Narratives One and Two are alternative interpretations or framings of industrial markets, market activities and marketing activities as social systems, a synthesis is also feasible. This is a framing of markets and firms as either elements or differentiated subsystems of some overall network social system, perhaps described by the term 'industry-market complex.'

One practical consequence of this third narrative is to expect general system-wide characteristics to be reproduced in an adapted form within the system's subsystems. Without these commonalities, in system and sub-systems, we have instead two separate systems, each being in the other's environment. The perspective, be it researcher or corporate, is though from the overall company-market-industry complex, and not from within either of the types of sub-system. This again emphasises the interpretive implications of the systems narratives, or at least their particular intelligibility at a 'grain-size' of abstract framing. A synthesis arguably requires that we adopt a broader perspective, to the extent that the perspective itself is motivated by different questions tot hose implied in adopting either of Narratives One or Two. In other words, we become concerned about the autopoiesis of the industry-market-firm complex.

The third narrative makes additional demands of researchers in order to understand any within-system processes of differentiation leading to subsystems, and also in plotting patterns of complexity – at different emergent levels – that are demonstrably less complex than an environment. One way to examine my third narrative is to approach it via Richardson's (1972) distinction of capabilities that are highly complementary but either similar or dis-similar. While many researchers have focussed on the organisational consequences of Richardson's distinction, less attention has been paid to the underlying processes that permit the identification of the dualism of similar and dis-similar. Given this lack of understanding about the bases for categorising capabilities, the question of how this

might change over time remains open. The intermediate patterns of organisation that Richardson suggests can be plotted or graphed as networks, and these capture patterns of complexity. But at the same time, I propose that there are other often-ignored capabilities that contribute towards establishing a unity across a network connection between elements (or subsystems). Following Luhmann, these other capabilities are involved in establishing media of communication, if not generalised or mass media of communication.

My point is that, within an overall social system, we can argue that the similar-dis-similar dual regarding capabilities is relative, and supported by a web of other highly complementary capabilities that might be similar in some dimensions and dis-similar in others. Over time, it captures both complexity in connections, and differentiation. Indeed, Richardson (1953) alludes to complexity, connections and communication in discussing objective and subjective (or personal) means of decision-analysis, while Richardson (1975) addresses differentiation. An expectation that distinctions can change over time, possibly through expansions of scale, or the emergence of other economies, supports a relativist and contingent, and multi-dimensional interpretation of capabilities rather than an essentialist one.

Discussion: Systemic Implications for Industrial Markets and Industrial Marketing Activities

By identifying interpreting industrial markets and industrial marketing activities from a social systems perspective I have argued for establishing the equivalence of firms and industrial markets as styles of organisation. In outlining three narratives about industrial markets as on-going social systems, I have outlined a mode of theorising between the general or abstract, and business practice. In bringing the two perspectives – social systems and industrial marketing – together, I will address two questions this final section with a view to outlining the paper's implications: Why systems? And do the different narratives imply that researchers and businesses face choices in framing and configuring industrial markets? In

this section, I explain how a social systems perspective on industrial markets makes a difference to industrial marketing research and practice.

In short, the answer to 'why systems' is on-goingness. The persistence and robustness of business-to-business relationships is a major and empirically-motivated point of departure in industrial marketing research. 'Why systems' can be addressed in the first instance by referring to Holmen and Pedersen (2003). Their identification of three media of communication in extending the influence of a focal firm (and focal relationship) beyond a 'focal direct counterpart' firm to third party firms has influenced this paper. The first two functions (joining, relating) imply a network horizon that requires thicker and system-affirming communications. Their third (insulating) function though implies that the third party firm is in the focal firm's (or social system's) environment, 'without them having any knowledge of each other' (ibid., p. 415). In terms of Luhmann's social systems, 'insulating' may be re-described as 'without their communications requiring any system-specific know-how,' where the system envelops only the focal relationship. This taxonomy does not address on-goingness directly.

Richardson's (1972) distinction between highly complementary but similar and dis-similar capabilities is influential among industrial marketing researchers. Neither activities nor capabilities are systemic *per se*, but capabilities – as shared know-how and shared means of drawing upon and deploying know-that – have structural and so autonomous and automated qualities, which in turn take us a little closer to on-goingness. Capabilities have the quality of established sets of connections in activities, performance or communication. Richardson seems to have in mind direct production or service provision activities. His assignation of highly-complementary but dis-similar capabilities to 'other organisational means' also implies additional organisational capabilities such as ones yielding industrial marketing activities. These also require the selection, development and maintenance of connections between firms, and imply the establishing of joint resources or capabilities.[5]

Luhmann's (1995) analysis focuses explicitly on the on-going or autopoietic quality of social relationships and structures. In other words, Luhmann addresses the question of how

particular sets of connections are selected, so forming a network rather than a field, and then re-selected repeatedly, so avoiding entropy. His general answer is also, at a high level of abstraction, functionalist. Systems attain autopoiesis or on-goingness through establishing a set of selections that are less complex and less irreducibly uncertain than those implied sets of connections beyond the system. Otherwise, there is no system and so no environment.[6]

The addition of system qualities to network organisation highlights re-uses or re-selections of network connections, and the development of a system-specific means or media of communication. Dis-similar but highly complementary capabilities are worthy of particular attention as they imply system expansion or reconfiguration. The point of this paper's argument is that these special efforts may be located in the organisation of firm, in the organisation of an industrial market (network), or in a system configured so that firms and industrial markets are sub-systems of a wider system.

In short, the answer to whether researchers and those involved in industrial markets have freedom to choose a particular framing from the three narratives is, for those involved, in developing scenarios, and for researchers, in developing research questions. The three narratives of this paper have the quality of scenarios when understood as inferences from Luhmann's abstract social systems, in which his basic functionalism does not extend very far in the direction of social systems that we would identify as specific social institutions. Crucial to my argument is the equivalent identification of firms and industrial markets as organisations. While the researcher has the advantage of being able to conceive of realised patterns of organisation as networks and systems, and use networks to help construct other feasible but unrealised patterns, selections of connections by businesses have real and irreversible consequences (Holmen and Pedersen 2003, p. 411). Hence, the use of this paper's narratives to form scenarios, which are closer to industrial marketing practice than the basic ideas outlined here.[7]

Just as Luhmann makes few commitments to specific social forms and organisations, so the three narratives are orientations for assessing industrial marketing activities and situations. Blois' (2002) analysis of the 'supplier of last resort' is an appropriate reference

point with which to illustrate my argument. The normal development and exchange of semi-conductors seems to fit in well received industrial marketing research, where producers and users establish on-going business relations, and these in turn are helpful in encouraging rich exchanges of information about product use and development, and also provide some degree of predictability in orders. But there are also some structural inconsistencies in the means of semi-conductor production, and in their use as components in the production of industrial and consumer products. The supplier of last resort works through a brokerage company establishing relationships of anonymity between producers and users, by buying and selling semi-conductors under radically different circumstances (notably pricing) to the normal exchanges.

For the normal activities, and from the semi-conductor producer and user perspectives, industrial marketing activities seem to occur to a significant extent in an industrial market that has many organisational features specific to it (my second narrative), rather than to the participating companies. In Holmen and Pedersen's terms, the relationship is probably closest to their 'relating function' of mediation, whereby final product requirements are communicated through product manufacturers to semi-conductor manufacturers and vice versa. But if industrial marketing activities were focused instead on my first narrative in this situation of normal exchange, the emphasis would be on protecting the on-going nature of the different companies from novel and poorly-understood requirements emanating from beyond their own systems (from each other and from final users of products). Tripsas and Gavetti (2000) present an analysis of Polaroid's development of digital imaging technology and products in which such a framing seems to have been dominant.

Blois' (2002) supplier of the last resort is though an example in which the industrial marketing activities, and so on-going system integrity, is achieved through a company organising its industrial marketing activities along the lines of my first narrative. Blois' case study company has 'knowledge of where it can obtain chips surplus to others' requirements and being known by firms that may face unforeseen shortages … [and] … knowledge of its

customers' and its suppliers' business circumstances' (Blois 2002, p. 535). Drawing on Menger (1976), Blois argues that the supplier of the last resort is supplying objectively identical products to OEM semiconductor suppliers, but under radically different conditions, allowing each party to perceive and value the exchange differently and subjectively. The company also by undertakes what are in the first-order discrete and not relational exchanges. Admittedly, this only makes sense in the context of on-going normal exchanges. Series of discrete and anonymous exchanges are mediated through the supplier of last resort, but semi-conductor manufacturers and users adapt to the expected on-going presence of the supplier of last resort by abandoning previous contingencies, such as: holding stocks, having occasional discounted sales, making more pessimistic production plans and capacity investment plans, and scrapping surpluses. In Holmen and Pedersen's terms, the supplier of last resort functions mainly because a mediation of insulation is established by the supplier (as the 'focal direct counterpart') between semi-conductor producers and uses (each of which become the third party to the other's focal firm role).

Conclusion

The example discussed in the previous section implies strong adaptation or endogeneity where particular organisational forms are adopted. The narratives are not 'clever institutional solutions' selected by companies from some given menu and adopted in the expectation of improving efficiency of a given set of industrial marketing activities. The idea of researchers undertaking statistical or causal tests to see which arrangement is more appropriate in given situations, or making inferences from any perceived absence of a narrative, is misguided. The approach is intended help in scenario development, including of feasible but unrealised sets of connections. The narratives are means of framing observations and developing scenarios.

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[1] Entropy is an extreme case in which systems tend towards failure as autopoiesis is not achieved.
[2] Unless we are examining society per se as a system in itself, in which case global society is a closed system (Luhmann 1995, p. 409).
[3] To reiterate, 'information' is from the perspective of system in which interpretation takes place as part of communication, so implies selectivity.
[4] It is also a leap from Parsons and Smelser (1956) who conceive of markets as black boxes (Carruthers and Uzzi 2000), or as symbolic media of exchange (Chernilo 2002), rather than social systems.
[5] The connecting and organisational capabilities have a quality of architecture (Simon 1962; Langlois 2002). We presume that selected connections are on-going, allowing for conditions of near-decomposability to emerge, even though these threaten to pull part Richardson's careful designation of other coordinating means over time.
[6] We can argue that Luhmann's social system closure is at least consistent with the critical realist ontological argument of open systems if social systems are interpreted, similar to scientific activity, as

a necessary and synthetic closure on an otherwise open world (Easton 2002). Although from Luhmann's point of view, open systems pure and simple are difficult to comprehend.

[7] The possibility should be pursued that the social system is an artefact of researcher activities, which can then affect practice (Callon 1998; MacKenzie and Millo 2003). An example would be companies in the upstream oil and gas industry hiring transaction cost theorists to advise in establishing supply chain systems. In which case, empirically, researchers have little to go on apart from a (non-system and non-environment) mish-mash of marketing and other market activities undertaken in various ways, possibly following individual company conventions, and occasional visions of, say, procurement personnel or marketing personnel.