

Involving customers in innovation: Knowledgeability and Agency as process variables

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Document Version

Peer reviewed version

Citation for published version (Harvard):

Pressey, A, Peters, L, Johnston, W & Gilchrist, A 2016, 'Involving customers in innovation: Knowledgeability and Agency as process variables', *Journal of Business and Industrial Marketing*.
<<https://mc.manuscriptcentral.com/jbim>>

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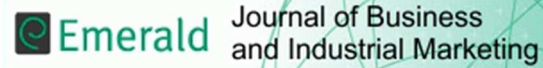
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|------------------|---|
| Journal: | <i>Journal of Business and Industrial Marketing</i> |
| Manuscript ID | JBIM-04-2016-0083 |
| Manuscript Type: | Original Article |
| Keywords: | Agency, Knowledgeability, co-creation, Innovation |
| | |

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Abstract

Purpose: Recent research places an increased emphasis on the inclusion of the customer in value creation, learning, and innovation processes yet there remains a gap in our understanding of just how such customer involvement may work. This paper seeks to address this gap by examining two aspects of customer involvement; their knowledgeability and their agency. In addition, we explore three boundaries (semantic, syntactic, and pragmatic) across which relationship development occurs and which may facilitate and/or inhibit value co-creation, collaborative learning, and innovation processes.

Design/methodology/approach: We utilised three case studies. Two were large scale construction projects in the UK, and one was a global professional accounting firm in the USA.

Findings: Customers may become frustrated if not allowed to exercise their agency. However, their involvement can create tensions for suppliers who may have to become more tolerant of divergent goals. In respect of knowledgeability, we found that constraint satisfaction is important in allowing customers to reconcile their personal knowledge schema with that of the collective schema. However, we also noted that customer knowledgeability brings with it challenges for suppliers, who must find ways to add value for such customers.

Research implications: We pose a number of further questions relating to the agency and knowledgeability of customers and their inclusion in value co-creation, collaborative learning, and innovation processes. We also highlight the need for guidance in identifying and minimising the barriers to crossing semantic, syntactic and pragmatic boundaries between customers and suppliers.

Originality/value: We make an important contribution to research in the field in that we investigate how the inclusion of the customer in business networks alters current assumptions and practices.

Introduction

Recent research on value creation has placed an increased emphasis on building relationships with customers through: (a) the inclusion of the customer as a value co-creator (Vargo and Lusch, 2016), (b) focusing on relationships that foster collective and collaborative learning processes (Peters, Johnston, Pressey and Kendrick, 2010) and recognising their role as a part of the innovation process (Von Hippel, Ogawa and de Jong, 2011). Yet there remains a gap in our understanding of just how such customer involvement may influence relationship building and collaborative learning and innovation processes. While the link between innovation and customer input has been a feature of innovation research for some time, this input is usually conceptualized as either customer need identification (to inform firm research and development activities), or customer usage and adoption (to facilitate the wider adoption process of innovations in the marketplace).

Some prior research has recognized the role of the customer in business-to-business innovation processes (Martin, Horne and Schultz, 1999) and identified customer knowledgeability as a key issue (Vidal, Fenneteau, and Paché, 2016) but does not place this within a network context. Other research has examined the customer as part of an innovation network (Johnston, Peters and Gassenheimer, 2006) and the customer as a co-producer of value (Blazevic and Lievens, 2008), but does not examine the impact this relationship has on managerial practices and firm processes. Where interfirm learning has been examined, the tension between fresh insights and an expanded knowledge base on the one hand, and the risk of unintended skills transfer and loss of competitive advantage on the other, has been recognised and governance mechanisms proposed (Mohr and Sengupta, 2002). However, these research streams have not focused on the relationship between customer characteristics and co-creation and innovation processes. Blazevic and Lievens (2008) call for further research investigating how specific company-customer collaborations change over time and the need for customer education in the co-creation of value process.

This paper seeks to address this gap and extend knowledge in the field by examining two aspects of customer involvement; their knowledgeability and their agency. In addition, we explore three boundaries (semantic, syntactic, and pragmatic) across which relationship development occurs and which may facilitate and/or inhibit value co-creation, collaborative learning, and innovation processes. This will make an important contribution to research in the field in that it will investigate how the inclusion of the customer in business networks alters current assumptions and practices. The knowledgeability of the customer may be very different to that of other network participants. They may lack formal training or specific expertise, yet their input is significant. Further, there is a limited understanding of how to innovate and learn with customers.

We therefore focus our attention in this paper on the notions of customer agency and knowledgeability as two key aspects, or variables, of customer inclusion in innovation and learning processes. We first define knowledgeability and agency, and present two propositions in relation to how these may influence customer inclusion. We then discuss three boundaries to innovation and learning that may arise when customer inclusion takes place. We finish with conclusions and managerial implications.

Knowledgeability and Agency: Customers as Persons, Agents and Actors

Knowledgeability and agency are vexing questions, for they go to the heart of being human. Ordinary life is possible because actors experience ontological security based on the routinization of actions and the actors' reflexive monitoring of those actions (Fuchs, 2003). But how might ontological uncertainty at the individual level lead to change in social practices? A deeper understanding of the concept of agency and knowledgeability is clearly needed to address such questions.

Agency

Archer (1995:256) stresses that agency is an under-theorized notion, and proposes a stratified model of people as persons, agents, and actors. A *person* is the human being themselves, and every person has a personal identity which allows them to be "someone who experiences". Persons are always considered as a singular entity (a person). The notion of people as *agents*, on the other hand, considers not only the person, but also their relationship to various social distributions (in a sociological context this might include family ties, access to resources, demographics, etc.). Archer defines agents in the plural, as collectivities, and thus strictly speaking agents do not have an abiding social identity in the same way as a person has a personal identity. Instead, while they are agents of the socio-cultural system into which they are born and are collectivities sharing the same life chances, they are also agents of the systemic features that change or maintain the socio-cultural system. Thus agency involves real actions by real people – agents acting – and is "...shaped by and reshapes structure whilst reshaping itself in the process" (Archer 1995:274).

It is recognised that the position of actors in the larger social group is important (Giddens, 1984), and that in the "...concrete embodied, interest-laden disposition which flows from being formed in a position, individuals become historical actors." (Parker, 2000:44). Thus, subjectivism's view that agency flows from the creative, rational, calculating, self-directing and self-interested individual is rejected, as is the objectivist view of structural mechanisms that function more or less autonomously. Instead, powers of individual agency accrue from being positioned and socialised within historical structures of competing interests, and structures are historically maintained because agents know how to act practically in ever-changing situations (Parker, 2000).

Finally, people as social *actors* are considered in relation to their particular role or position within a social context. As with persons, social actors are considered as a singular entity. As actors we are able to acquire social identity by investing ourselves in a role and personifying it in a particular way. In addition to the position of actors in a social setting, the role that an actor plays allows them to 'make a difference' (Archer, 1995). Unlike the positions agents hold in a collectivity, roles can be chosen and the way in which roles are enacted and expectations satisfied by the individual person is framed by social agency but not determined by it (Parker, 2000). Thus according to Archer (1995) knowledgeable individuals may be seen as agents acting within social systems in which they assume roles. These roles are related to the individual person through their assessment of the costs and benefits of assuming such roles, and therefore they may assume and enact a role and make it central to their social self, or not. Occupancy of a role does not necessarily imply that it is in sync with their personal identity (Parker, 2000).

Insert Figure 1

Archer's contention is that to equate agency and action does not allow for a more nuanced understanding of how individual actors may differ and/or relate to collective agents in specific situations, and leads to an over-active view of the agent. Additionally, she proposes that equating an actor with a specific person (and their psychological differences) leads to an over-social view of the person. Archer maintains that it is the person who fathers the agent who, in turn, fathers the actor, and that it is agency that accounts for who occupies which roles, and why they do what they do when the role does not require them to do it (Archer, 1995:256). As actors, customers not only assume a social role within the innovation process, but also personify it in a particular way as a unique person. Yet it is through agency that the opportunity exists for customers to have access to and take up those roles in the first place. We cannot understand the role of customer in innovation processes (the actor) without reference to the social context in which such processes take place. Neither can we understand the person a customer is (their personal reflexivity) without reference to them as a social agent.

Knowledgeability

Having explored the notion of agency, we now turn to the notion of knowledgeability. Knowledgeability refers to the knowledge individuals have of the circumstances of their actions and the rules they follow (Berends, Boersma, and Weggeman, 2003). In following such rules, and because they are deemed knowledgeable, understanding individuals and their actions does not imply that such individuals are slaves of existing structures. They do have the power to 'act otherwise' (Giddens, 1984) or the 'capacity to make a difference' (Archer, 1995) and thus the interaction of knowledgeable individuals often instigates change. In this respect human behaviour is seen as intentional and purposive. However, being knowledgeable individuals does not imply that the motives, conditions and the consequences of their actions are readily understood (Berends, Boersma, and Weggeman, 2003). There may be unacknowledged preconditions and unintended consequences of action, which form the bounds of knowledgeability (Giddens, 1984) and which play an important role in the production and reproduction of structure. Giddens refers to this type of reproduction as homeostatic loops (Fuchs, 2003) where aspects of human behaviour do not flow from conscious choice but stem from a subconscious level. In addition, feedback in what Giddens refers to as causal loops (Fuchs, 2003) may influence system reproduction through reflexive self-regulation. By differentiating between these two types of social reproduction, Giddens allows us to include both circular causality and feedback loops as important tools for describing social systems (Fuchs, 2003).

According to Giddens (1984), individuals are socially competent and have the capacity to reflect on their situation and the ability to change their situation. While some knowledge may be discursive and propositional (i.e. explicit knowledge: Nonaka and Toyama, 2003) much of it is carried in what Giddens termed 'practical consciousness', in which actors hold beliefs about their context and the conditions of their actions which they are unable to express discursively (i.e. tacit knowledge: Nonaka and Toyama, 2003). By linking practical consciousness with the creation and maintenance of routines Giddens seeks to explain how much of the activity of knowledgeable individuals is in fact the result of them being caught up in interactions rather than a deliberate and conscious flow of pre-meditated actions (Parker, 2000). This flow of regularised and routine actions to create and maintain structures is what Giddens (1984) termed instantiation. However, it is a highly compressed notion of temporality (Archer, 1995) which does not allow for reflectiveness and rational deliberation in human action (Parker, 2000).

An alternative view is proposed by Archer (2007:36), who maintains that individual differences exercised as personal properties and powers should make a difference to their actions "...on the basis that our personal identities are defined by our 'constellation of ultimate concerns' and that our quests for social identities are deliberative attempts to secure positions (occupational, familial, institutional, voluntary) in social contexts with allow these concerns to be realised." Therefore, both notions of how the self is constructed play a role in developing and guiding individual knowledgeability and action. On the one hand, Giddens highlights the routine nature of much of human action as guided by our practical conscious, while Archer recognises that our personal identity is not simply constructed through our interactions with others but is also guided by our ultimate concerns.

Knowledgeability and Agency as process variables in Innovation

To help understand how knowledgeability and agency may act as important variables in learning and innovation processes in business networks, we draw upon cognitive theoretical approaches to understanding such processes (Monge and Contractor, 2003). Traditionally, cognitive theoretical approaches seek to understand the structures of cognitions in individuals. When applied to the social level they focus on the shared interpretations that people have for message content. In particular, Cognitive Consistency Theory seeks to explain the mechanism by which individuals' fulfil their aspirations for consistency in their cognitions (Monge and Contractor, 2003), and is seen as a prime motivation for changes in beliefs, attitudes, and/or behaviours if these are not psychologically consistent (Festinger, 1957). As an example, in personal friendship networks it would argue that individuals are more satisfied when their friends are friends with one another. This translates at the social level as the extent to which a drive for consistency is manifest in social membership, attitudes, and relations.

The drive for cognitive consistency will tend towards a state of balance, which is a homeostatic state in which further motivations to change recede (Simon, Snow and Read, 2004). To achieve this balance, Simon et al. (2004) point out that it is a bidirectional relationship of change and adjustment between evidence (the object of judgment) and conclusions (the judgment of the object). Thus, actions may reform beliefs and attitudes, which may, recursively, alter further actions. Therefore, cognitive consistency will in fact be heavily reliant upon the interactive and dynamic processes of information assessment, behavioural action, and the emergent 'reality' that is constructed from this interaction. In other words, establishing cognitive consistency is one of the primary drivers in the person > agent > actor emergent process of agency. This is a process of coherence-driven processing (Simon et al., 2004), that enables confidence in decision-making by reaching out to bring the various pieces of the cognitive field into consonance (Simon and Holyoak, 2002). We illustrate our discussion with data from two sets of field interviews, outlined below.

Methodology

We explored three case studies. Two were concerned with the delivery of large scale construction projects in the UK, and one was undertaken with senior audit managers and partners within one of the 'Big Four' global professional accounting firms in a major city located in the north-east of the US. These are illustrative cases (Siggelkow, 2007). We use these cases to illustrate the way in which building relationships and fostering learning and innovation may differ when dealing with knowledgeable customers.

Case study one, *OfficeProject*, was a UK project creating office space and conference and training facilities. The second case, *PowerProject*, related to the construction of a combined heat and power plant (CHP) for a large-scale institutional user and was also located in the UK. We chose to focus our data collection and observations on the managerial and technical specialists on the project design teams only. This provided a useful boundary in terms of learning as these are the network members who met on a regular and frequent basis, both formally and informally, and who dealt directly with the practical issues and problems that arose in relation to the project design and construction. The construction industry data collected for this study consists primarily of 45 in-depth semi-structured interviews and two focus groups conducted with these design team members over a period of twenty four months. In addition, 14 design team progress meetings were attended (eight for *OfficeProject* and six for *PowerProject*). In each meeting the researcher collected official progress documents and made field notes.

Case study three consisted of 45 in-depth semi-structured interviews which were undertaken with senior audit managers and partners within one of the 'Big Four' global professional accounting firms in a major city located in the north-east of the US. The respondents had a high level of professional services experience and engagement, across both large scale 'public' listed buyers (whose annual revenues ranged from \$1bn to \$22bn), and smaller 'private' buyers (where revenues generally were in the region of \$50m to \$750m annually), and all had experienced working with highly knowledgeable buyers within some buyer organisations. The interviews lasted on average 40 minutes, and were digitally recorded, then fully transcribed and coded.

The researchers coded the transcribed interview data using AtlasTI v6 software, following the coding procedure outlined by Strauss and Corbin (1998). Internal (or logical) validity refers to the plausibility and credibility of research results and conclusions (Yin, 1994; Cook & Campbell, 1979). Two approaches control internal validity: the collection of multiple perspectives through interviewing actors at different points in the network, and at different points in time (Yin, 1994); and a process of pattern-matching (Denzin & Lincoln, 1994; Eisenhardt, 1989) by comparing with empirical patterns established in previous studies (e.g., Dubois & Gadde, 2002) and among the interviewed participants. External validity refers to the generalizability of a study's findings (McGrath & Brinberg, 1983). Although interpretivist methodologies cannot provide statistical generalization, this property does not mean that they are "...devoid of generalization" (Gibbert *et al.*, 2008, p. 1468). Such studies can strive for analytical generalization, that is, generalization to theory using empirical evidence (Eisenhardt, 1989). Reliability refers to the extent that subsequent researchers replicating the study produce similar insights (Denzin & Lincoln, 1994). Gibbert *et al.* (2008) suggest that transparency and replication are two primary methods that aid reliability.

Findings

From Person to Agent

Archer (2007) maintains that reflexivity, at its most basic, rests upon the fact that all normal people undertake an internal conversation in which they consider themselves in relation to their social contexts and vice versa. This internal conversation is critical in understanding how the individual person relates to social collectivities as agents. Hence, "the

subjective powers of reflexivity mediate the role that objective structural or cultural powers play in influencing social action and are thus indispensable to explaining social outcomes” (Archer, 2007:5). The reflexivity of agents hence enables them to design and determine their strategic responses to the structured circumstances in which they find themselves according to what they value the most. This deliberative process is not just a ‘cost-benefit’ analysis driven by rationality, but also an emotionally charged process in which our emotions and desires spur us into action (Archer, 2007). However, this may not be something that agents are able to express discursively, but may be carried in the practical consciousness. Thus, the interpretive schemes used may not in fact be explicitly understood or recognized by the individual even if they exert quite a powerful influence over their coherence-driven cognitive processes. We therefore propose that reflexivity is an important factor in understanding the role of the customer in innovation processes.

P1: Reflexivity plays a key role in allowing customers (as persons) to engage with innovation and learning processes as agents in business networks.

To illustrate this point, we use the following dialog from our research interviews in which the customer (as a person) is complaining that the supplier just gives them standard solutions when what they want is innovation.

Interviewer: Do you have ever have issues with mistakes that seem to be repeated quite often?

Respondent (customer, construction Industry): You do. We’ll get applications, customers who come and they continuously well seems that they continuously repeat the same problems. Some people will get into-

Interviewer: Why do you think that is?

Respondent (customer, construction industry): a method of working and they just regurgitate that method of working. Or perhaps they don’t actually understand what it is that they’re getting wrong, they don’t really understand why they have got that information wrong in the first place. Somebody’s shown them how to do it; they’ve accepted that even though it’s wrong.

In this exchange, we can see that the reflexivity of the customer will allow them to engage with innovation and learning – in fact they have a strong desire to do so - but the supplier does not recognize this and thus they do not really get the opportunity to become an agent (together with the supplier) in the innovation process. The customer is frustrated that their potential role as a partner in finding innovative and novel solutions to their needs is not recognised by the supplier. However, this does prove challenging for suppliers who may feel that their expertise is being impinged upon by customer interventions, as illustrated below:

Respondent (supplier, Big Four global accounting firm): It comes down to less about what their knowledge is but more about the organization, itself, and who the people are and their personalities. You can have a really smart person that focuses on all the wrong issues, just because they are such a brainiac. That can be a challenge because it can drive us to concentrate on areas that we may not normally concentrate on, unless we know that the person is wrapped up in a certain concept. We may not

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2
3 *feel that it is the biggest risk, but because they are our customer and we have to play*
4 *to them, we will go down the path and eventually show them that it is not a big risk. In*
5 *other circumstances, you have customers that know accounting and know what the*
6 *risks are. You line up with them and you know that it is a more efficient process than*
7 *chasing all the non-risk issues that previously you mentioned. We have the whole*
8 *thing about being reflective. We talk about reflective marketing and thinking back and*
9 *avoidance and bureaucracy and all that sort of stuff. Yes, it all kind of makes sense,*
10 *it's finding the time to do it.*
11

12
13 Here we see some tension between knowledgeability and reflexivity. The service
14 provider is being pulled in two directions, and the wishes of the customer may involve them
15 having to make trade-offs between efficiency and customer inclusion. The need to develop a
16 higher tolerance of divergence in goals and processes may be needed by suppliers.
17

18 19 20 *From Agent to Actor*

21 As coherence-driven processes unfold they may have the tendency to give precedence
22 to one set of beliefs over another (known as constraint-satisfaction) in order to resolve
23 ambiguity and achieve balance (Simon and Holyoak, 2002). Constraint-satisfaction will thus
24 tend to highlight the correlations between cognitions within a particular context. For example,
25 as a court case unfolds the evidence presented is not seen as a series of isolated facts, but as
26 part of an emergent whole which influences the perceptions of the facts themselves such that
27 a decision is reached which is consonant with this emergent whole. Constraint satisfaction
28 recognizes that individuals have personal investment in their knowledge (as persons), that it
29 is situated in practice (as agents), and that crossing what Carlile (2004) terms the pragmatic
30 boundary in knowledge sharing raises issues of power, interests, and dependency (as social
31 actors).
32

33
34 Actors form knowledge schema (the structure of their knowledge) by acting in an
35 organizational context, which itself is dynamically redefined by the schema they form
36 (Merali, 2000). Therefore the inclusion of the customer in innovation processes may well
37 influence the knowledge schema of that customer. Hence, the extent to which an individual
38 and the collective have congruent schemata will determine the extent to which the individual
39 is an effective part of the collective (Merali, 2000). Thus, the collective schema formed will
40 underpin the collective consciousness and determine how knowledge is retrieved, utilized and
41 made coherent with group actions.
42

43
44 To achieve congruence, Merali (2000) proposed relationship scripts (which filter new
45 information to determine its relevance to existing knowledge) and relationship enactment
46 (where relationship schemas are linked to action) as processes that help to link individual and
47 collective learning. Through these processes the diversity of individual perceptions can be
48 harnessed to augment the collective schema. We therefore propose that constraint satisfaction
49 is an important factor in understanding the role of the customer in innovation processes.
50
51

52
53 ***P2: Constraint Satisfaction plays a key role in allowing customers (as agents) to***
54 ***engage with innovation and learning processes as actors in business***
55 ***networks.***
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To illustrate this point, we use the following dialog from our research interviews in which the customer as an agent in the innovation process (working together with the supplier) is frustrated at the way in which the supplier fails to engage them in changes or decisions.

Interviewer: *And what do you think helps that communication process?*

Respondent (customer, construction industry): *I keep saying "... you know [I] give you the specifications [but] they're not cast in stone. Please come back to me if you think there's some, a better way of doing this. But don't just go and do something different to what I'm saying here without discussing because then I really will get pissed off, you know this is what I expect."*

If there's something better and you can do it, come back and argue and we'll change it. But if we haven't done that argument and I find something different completely you know I will get annoyed. Because you know we've got an expectation and we think we know some bits that will work and will work well.

And that's what they seem to do. They seem to try and you know put in, oh well you know, a standard hot water system that will cover their back and get away. No no nothat's not what we're doing. Perhaps I'm being unfair to them, but it seems that I'm dragging them reluctantly to provide [us] with a good standard and performance when they want to do standard...

While constraint satisfaction recognizes that individuals have personal investment in their knowledge (as persons), in this instance it is failing to be situated in practice (as agents). The customer is complaining that the knowledge schema of the supplier encourages them to see the customer simply as a recipient, rather than a partner and part of the collective. The supplier's lack of relationship scripts (i.e. being able to filter new information in the context of relationship building) means that it is difficult for them to challenge this assumption. In addition, a lack of relationship enactment (i.e. where schemas drive behaviours that support relationship building) is also absent. Thus the customer has to "drag them reluctantly" into developing a congruent schemata that allows constraint-satisfaction between the customer and the supplier. This has repercussions for the supplier:

Respondent (supplier, Big Four global accounting firm): *There are two ways of looking at customers. There are customers who are a bit thick and do not know what they are doing. Therefore, the audit is a real mess to get through, but you get there. There are customers who are super smart or ex [one of the Big Four global accounting firms] who think they know everything, and they are really good at closing their books; so there aren't any issues, but they are a real pain to deal with.*

Interviewer: *Which is the worst?*

Respondent (supplier, Big Four global accounting firm): *The second one, the ones where they think they know everything, because they are always out of date. They think they know everything so they are constantly challenging, causing friction and arguing with you about what you are asking for and what you are thinking. 'You do not know how to run a business, you do not work here', that type of stuff. For instance, another customer is going to say, 'That is a good idea, we had not thought of that. Let's do that.' That is the difference.*

Here, the supplier struggles with their identity as an expert. They may feel that they will find it difficult to add value with very knowledgeable customers. They question their role and how they should interact with such customers.

Boundaries to Innovation and Learning Processes

One potential barrier to learning and innovation processes is where cognitive consistency must occur across boundaries (Brown and Duguid, 2001; Carlile, 2002). Such “knowledge boundaries” exist not only between functions, but also between organizations. One of the most challenging issues of sharing knowledge at boundaries is the novelty of the situation or task (Carlile, 2004); where novelty is high “...the amount of effort required to adequately share and assess knowledge also increases” (Carlile, 2004:557). Drawing on the knowledge boundaries in new product development projects, Carlile (2004:558-559) proposed mechanisms for managing knowledge across three boundaries based on Shannon and Weaver’s (1949) levels of communication complexity: semantic, syntactic and pragmatic.

Semantic Boundaries

Recognizing that the transfer of knowledge in novel situations may not reconcile actors’ cognitions or interpretations of meanings, Semantic (interpretive) boundaries relate to actors’ capacities to *translate* information. This is one of the main concerns in the lead user literature (von Hippel, 1986) where customers lack the experience to be able to provide accurate information on their needs and requirements. This calls upon actors to create/negotiate shared meanings, particularly where novelty breeds ambiguity. We therefore propose that semantic boundaries are an important factor in understanding the role of the customer in innovation processes.

P3: Where the reflexivity of the customer as a person and their alignment with the shared meaning of the collectivity of agents enables them to cross semantic boundaries (i.e. they have the capacity to translate information) their role in relation to innovation and learning processes will be enhanced.

To illustrate this point, we use the following dialog from our research interviews in which a supplier is complaining that the customer has unreasonable expectations that create semantic boundaries and prevent the translation of real constraints on the part of the supplier to do their job into a common understanding of the problem with the customer.

Respondent (construction industry): *At the start of the job he may have some wild expectation and at that time you get an opportunity to say ‘If you’re going to measure us on that, unfortunately you’re going to be disappointed.’ It’s just impossible or we had customer expectations, again at a school. We had a lot of demolition to do in the school. ‘I want you to do it silently. I don’t want no disruption to my children.’ With the greatest respect if you can come up with a way to knock down those solid concrete walls quietly, tell me, because I’d love to know. Unfortunately we’re going to have to make some noise, and some dust, and some disruption.*

Interviewer: *Yes, or we can do it during the holidays.*

Respondent (construction industry): *We could do it, but you want to pay us to do it during normal working hours. You know we can do it at night time if you like, but you wouldn't want to pay us to do it at night time, it's twice as much money. So you get the opportunity to manage his expectations and try to....*

In this discourse we see that the customer fails to translate the information he is given about the nature of the job into potential outcomes (i.e. noise or additional cost), and thus the semantic boundaries between the customer and the supplier are high. The customer therefore finds it difficult to meaningfully engage in more innovative approaches to solving the problem and their agency and knowledgeability are constrained. Even where the background of the customer and the supplier should allow for the minimisation of barriers to semantic boundaries, complexities may make this difficult:

Respondent (supplier, Big Four global accounting firm): *I have got one right now, in New York. The top three people at the customer were all the same level as me when they left the firm. So, it is like me dealing with myself. They know all the tricks, all the approaches that we take, but they are dated. So they think what they did when they left, is what should be being done now. Since they left, things have changed, regulatory.*

Syntactic Boundaries

Syntactic boundaries refer to information-processing boundaries where the challenge is to *transfer* knowledge across boundaries. In particular, the transfer of knowledge may be problematic when novelty is inherent in a task, and thus rests on the development of a common language or lexicon between actors. To facilitate such commonality between customers and suppliers, a new innovation paradigm is proposed by von Hippel, Ogawa and de Jong (2011). They propose that users develop new products themselves, which are then evaluated, rejected, copied or indeed improved by other users, before producers enter the frame and consider adopting and producing the innovation when market potential is then clear. We therefore propose that syntactic boundaries are an important factor in understanding the role of the customer in innovation processes.

P4: *Where syntactic boundaries are minimized in the collectivity of agents, the agency and knowledgeability of the customer as part of the collectivity (i.e. as an agent) in relation to innovation and learning processes will be enhanced.*

To illustrate this point, we use the following dialog from our research interviews in which the customer and the supplier took a trip together to see another example of what they were trying to build, and ended up re-designing the job based on what they learned.

Interviewer: *Was it useful having some of the design team members with you when you went to [see the other project] because I think some of them did come along, didn't they?*

Respondent (construction industry): *Yes, that was a slightly later stage when we were really considering right, okay, we've got the go ahead for this, how are going to build this building, how are we going to deliver it? And it was quite useful because*

literally we came out and we went to a café down to the sea front and we literally ... it was [on] napkins and going 'But yes, but they've got it that way round.' You know, and I think it was the architect, I can't remember, but anyway we came up with the 'Well they've got it wrong, haven't they?' You know, we should do the two [machines]...you know, why can't we put them in line with an aisle down the middle to get access because obviously if you've got a problem with the second [machine] it's very difficult to get at it."

So, yes, that was useful because then, you know, they could see it, we obviously at that stage were a fair bit more informed, understanding of, you know, the concept of the kit inside but it was useful taking more people of the design team to really see it to help them, you know, and have discussions with them, not just, you know, formally but, you know, "Yes, remember we saw that," and "Right how about this?" And, you know, as per the normal the chats in the coffee shops and the aeroplane lounges are just as valuable

Using common experience to help address syntactic boundaries was very successful for this customer/supplier in terms of enhancing innovation. Seeing an example of a similar build allowed them to cross syntactic boundaries more easily and understand together how to do it better. Another advantage of minimising the barriers to syntactic boundaries is that it makes transparent goals and processes to both customer and supplier:

Respondent (supplier, Big Four global accounting firm): So sophisticated knowledgeable customers, the one thing, in my experience, that they hate most of all, is surprises. Sophisticated and knowledgeable business people in general, hate surprises, more than anything else. They understand that others hate surprises too. What that means is that if, for example, they are contemplating a large acquisition of a company, in a geography that is logistically hard to do business in, like France, for example, they would acknowledge and realize that that would be a challenge for them and for us to review and monitor and audit that transaction. They know that, so get us involved quickly and early; that enables us to ride along with them as they go through the journey and it helps us.

Pragmatic Boundaries

The final knowledge barrier, termed Pragmatic or Political boundaries, refers to the ability to leverage knowledge between actors with different interests and dependencies; thus, the capacity of actors' to transform knowledge through the development of common interests. This is not just about the attitudes of customers to companies and their innovation processes. More recent research in understanding customers as innovation generators questions the traditional view of firms towards customers, who are often seen as passive "markets" towards which company innovation efforts are directed (von Hippel et al., 2011). Thus, pragmatic boundaries may throw up barriers and may arise from both the customer and supplier parts of the network. However, as noted above, just as the "schemata" that customers bring to their new position as part of an innovation network that includes the suppliers as well themselves may not be congruent, nevertheless, cognitive consistency and collective learning can occur where actors are able to negotiate knowledge boundaries through the development of a common lexicon, shared meanings, and common interests. We therefore propose that pragmatic boundaries are an important factor in understanding the role of the customer in innovation processes.

P5: Where pragmatic boundaries are minimized in the collectivity of agents, the agency and knowledgeability of the customer as an actor in relation to innovation and learning processes will be enhanced.

To illustrate this point, we use the following dialog from our research interviews in which the customer talks about how they gained approval for the project and overcame pragmatic boundaries with their financial and senior management team (referred to as the customer).

Respondent (construction industry): Well if you're perhaps trying to push things along further than, you know, the current climate warrants or the customer wants at the moment You know, it's only by the fact that we've done all this work for the last 10 years, 15 years, putting in CHPs [combined heat and power plants] and all the rest of it, that you can now start to have the ambition and direction. So, yes, sometimes it can be - not educating - but going in both directions. You're trying to bring [your aspirations to the customer] and bring the aspirations from the customer to the project...

Interviewer: And how do you that?

Respondent (construction industry): Yes, it can be slightly awkward. And you've got to try and make sure that you're on firm ground and that it isn't really trying to take ... the business, far out of reality or what costs - you know, you have to say "Well, you know, that is going to be expensive. It would be the right thing to do but at this stage no, you know, there's no way we can really, in doing a good job for the business as a whole, push for that now. I know it's going to be the right thing we should be doing in the future but there's no way that that's got the right drivers to do that. You know, let's go for the - ... not as good as I'd like, but that's the most sensible one to fight for at the moment."

In this case, the customer sat between his senior management team and the project team. In taking a pragmatic stance, and recognising the limitations in terms of a wider business case for the innovation he wished to pursue, the customer was able to enhance his agency and knowledgeability in relation to the project by strengthening his role as a champion of innovation on the one hand, but a pragmatic realist on the other hand. This enhanced his standing both with his senior management team and with the project team. Pragmatic boundaries also highlight power issues, and the legitimization of roles on the part of both customer and supplier. On the one hand, power may be ascribed to the role of the supplier::

Respondent (supplier, Big Four global accounting firm): Yes. I think when we go to these places they look at us like, "Here are the auditors". I mean sometimes people might think of us like police, "Here come the audit police".

However, the customer too has power and legitimate authority:

Respondent (supplier, Big Four global accounting firm): *The power, I would say, is definitely within the customer's hands. They pay a pretty high rate for us to work with them. Obviously, the larger the customer, the more power that they have. Our business is not one of business days or work days. We work on a weekend, are ready to work all night, or have to hop on a plane tomorrow anywhere in the world. It comes down to what the customer wants. I think that comes back to the rate that we charge for our services. It is pretty high, so they come in with an expectation that we are going to do whatever it takes to get it done.*

Balancing this struggle for legitimization shows how important the capacity of actors' to use pragmatic boundaries to transform knowledge through the development of common interests is.

Respondent (supplier, Big Four global accounting firm): *Yes, at [name of firm] we talk about these certain behaviours and one of them is, well put yourself in someone else's shoes. I started here from college so I haven't worked full time in another organization, but again, try and put yourself in their shoes. What is their perception about the value or the benefit they are going to be getting from you, as a professional service organization and try and think about, "If I were there, what would I want? How would I want it to be delivered? How would I want to collaborate and get that technical knowledge?" Or whatever it is. So I think it makes a lot of sense. Sometimes it's hard to put yourself in your customer's shoes, but you try.*

Conclusions

This paper examined two aspects of customer involvement in business-to-business networks that may impact innovation processes; their knowledgeability and their agency. In doing so, we have highlighted a number of important factors influencing this involvement, and explored how the inclusion of the customer in business networks alters current assumptions and practices.

Firstly, in respect of agency, we have explored how social practices (both the routine, the extraordinary and the unexpected) help to establish meaning both for individuals and for agent collectivities. It is through reflexivity – the establishing of personal meaning – that individuals are able to engage in innovation and learning processes as agents in a collective action and through social practices. We saw how customers may become frustrated if not allowed to participate as reflexive partners in the innovation process. However, this involvement can create tensions for suppliers who may have to become more tolerant of divergent goals.

Second, in respect of knowledgeability, we have examined how constraint satisfaction is important in allowing customers to reconcile their personal knowledge schema with that of the collective schema. By becoming knowledgeable of the circumstances of their actions and the rules that govern them, individuals must bring into some kind of acceptable co-existence their own subjective understandings with the context in which they operate. However, we also noted that customer knowledgeability brings with it challenges for suppliers, who must find ways to add value for such customers.

In turn we examined three boundaries to innovation and learning processes. Semantic boundaries inhibit the capacity to translate information and thus may inhibit the ability of the customer to engage in innovation process through a lack of shared meaning with others. Syntactic boundaries make it difficult to transfer knowledge and thus may inhibit the ability of the customer to engage as part of a collective in innovation processes. Pragmatic boundaries make it difficult for actors to develop the necessary common interests that facilitate innovation processes.

Managerial Implications

Agency allows individuals to assume a social role within the innovation process in a unique way that is personal to them. Thus it is not simply the intention of the individual to act, but the flow of their actions and interactions that characterises agency. Understanding how these flows both influence, and are influenced by contingent and emergent circumstances then becomes important in informing managerial practice. Sense-making is not simply an individual action, but is a shared activity between the individual, their reflexivity, and their embeddedness in a social system. Thus, in relation to the agency of knowledgeable customers we may ask: How do we define such embeddedness? What aspects of embeddedness are significant and useful at any moment in time or stage of development in a business relationship? and What contingent factors influence this embeddedness? These are questions that need further investigation.

Through both homeostatic and causal loops individuals are able to engage in constraint satisfaction and facilitate the cognitive consistency that drives their actions. Actions that may be more or less intentional and planned (discursive vs. practical consciousness) and which reflect not only our interactions as part of the collective, but also reflect our ultimate concerns as individuals. Thus, in relation to knowledgeableability we may ask: What is the boundary between practical and discursive consciousness? How does emotion and prior experience inform knowledgeableability and action? How are routines of action (i.e. practice) formed, maintained, and changed by knowledgeable individuals? These too are questions that need further investigation.

In relation to understanding how semantic, syntactic, and pragmatic boundaries operate, we need guidance in identifying and minimising the barriers to crossing such boundaries between customers and suppliers. Such guidance would offer managers the opportunity to help establish and enhance the role of the customer in innovation and learning processes.

The knowledgeableability of the customer and their actions as agents may be very different to that of other network participants. They may lack formal training or specific expertise, yet their input is significant. By understanding the role of the customer in a more nuanced way (i.e. as an individual with personal concerns, as part of a collective in the innovation and learning process, and as fulfilling a unique role in relation to others in such processes) we offer the opportunity to gain new insights into how their involvement in innovation may be enhanced.

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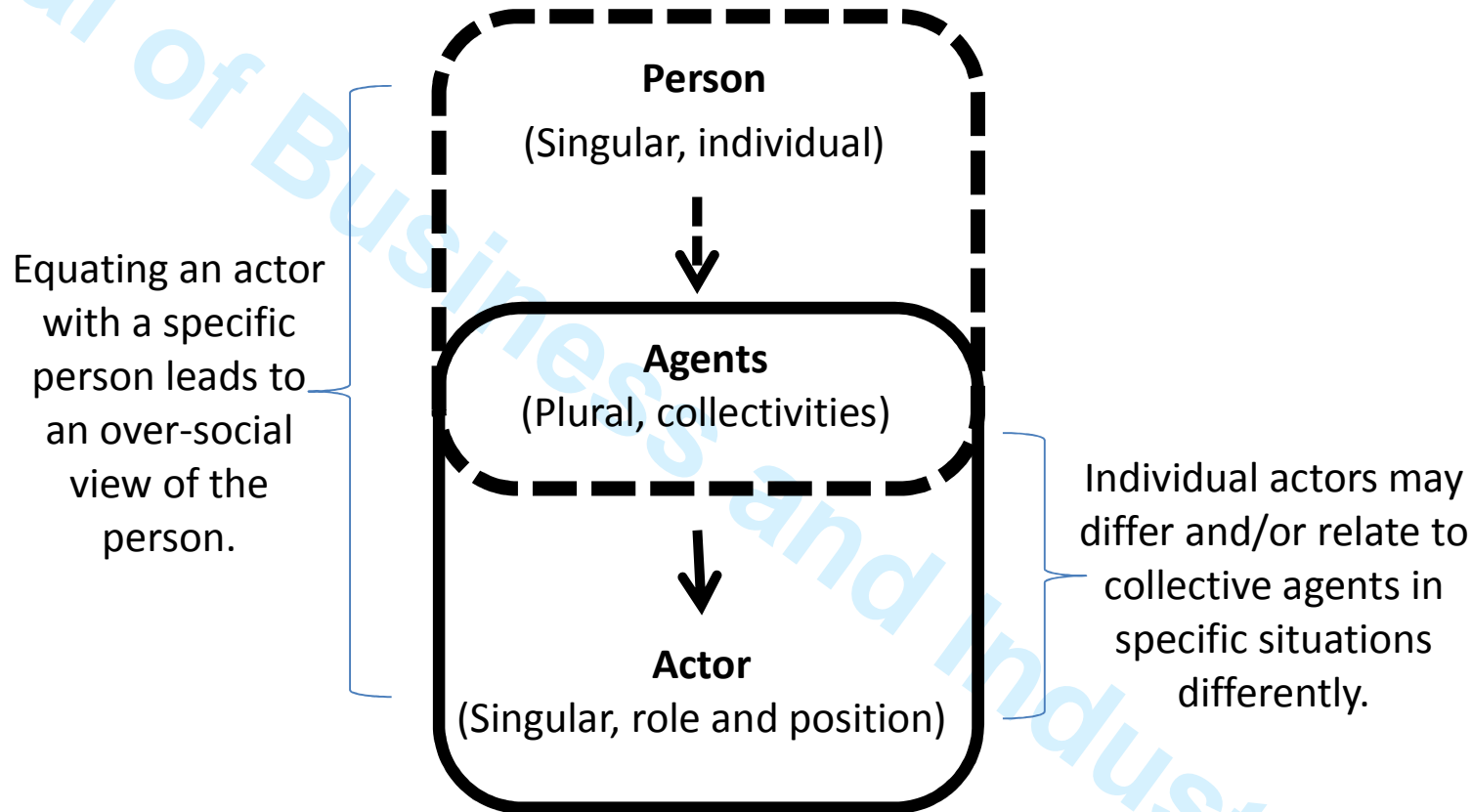


Figure 1
The Stratified Individual
(based on Archer, 1995)