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The enactment of socially embedded service systems: Fear and resourcing in the London Borough of Sutton

Keywords; Service system, structuration theory, enactment theory, value co-creation

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Abstract

Recognising the importance of value-creating systems in action is vital for understanding how value is co-created through resource integration and mutual service provision. Value-creating systems are inherently dynamic and grounded in on-going human action. This article adopts structuration and enactment theory to enhance insights into how complex systems enable value co-creation. The concept of embeddedness (structural, cultural, political and cognitive) clarifies the duality of complex service system structures, in which behaviour and structure are intertwined through a process of socialisation. Actors in a complex service system act on the surrounding context and interpret the contextual responses of their actions through a sense-making process. The sense-making process then influences an actor's mental models of the value that has been co-created, which implies a complex service system that has been socially constructed through negotiation and consensually validated through its own enactment. This study applies the framework to a case setting focused on fear of crime in the London Borough of Sutton.

Introduction

The concept of value co-creation has been revitalised recently through the introduction of various concepts of value in marketing research: value-in exchange, value-in-use, value-in-context and value-in-social-context (e.g. Prahalad and Ramaswamy, 2004; Vargo and Lusch, 2004, 2008; Grönroos, 2006, 2008; Edvardsson *et al.*, 2011). These concepts of value have been debated and included in goods and service logics, which reveal fundamentally different views of value creation. Although this debate has enhanced our understanding of value, the question of *how* value gets co-created remains somewhat uncertain. This article aims to address that very question by extending the present understanding of value-creating systems through a conceptualisation and analysis of value co-creation within the context of a socially embedded, complex service system.

Polanyi (1957) used the concept of embeddedness to describe the social structure of modern markets; it also has a robust effect on economic action, especially in inter-firm networks. Bagozzi (1974p. 78) emphasised the social context when describing marketing as an organised behavioural system of exchange, consisting of a “set of social actors, their relationships to each other, and the endogenous and exogenous variables affecting the behaviour of the social actors in those relationships”. In this sense, economic action is clearly embedded in and continuously interacts with the social system and reality (Granovetter, 1985; Schumpeter, 1950; Uzzi, 1996, 1997). According to socio-economic and institutional theory, value-creating systems constitute socially embedded arenas for the formation and institutionalisation of norms through forces of

isomorphism, which actually define the very system (DiMaggio and Powell 1983; Meyer and Rowan 1977; Polanyi 1957; Sahlin and Wedlin 2008). Thus previous descriptions of value-creating systems suffer a shortcoming, because these frameworks tend to underestimate the social aspects of reality and only implicitly acknowledge on-going structures of social relations that must be considered for a sophisticated explanation of economic action (Granovetter, 1985).

To increase comprehension of how value is co-created, it is important to extend our understanding of the complexity of value-creating systems in action by acknowledging multiple types of embeddedness. The descriptions of value-creating systems in turn should be developed with regard to their contextualisation and value-in-social-context (Edvardsson *et al.*, 2011). We therefore turn to Zukin and DiMaggio's (1990) four-sided conception of embeddedness of economic action: structural, cultural, political, and cognitive. The structural domain mainly entails how economic activity gets contextualised in patterns of ongoing interpersonal relationships, through a focus on the quality and network architecture of resource exchange relationships (Dacin *et al.*, 1999; Uzzi, 1997). The other three domains reflect social constructionist perspectives and indicate how shared schemas and individual actors' mental models develop in context: Cultural embeddedness refers to how shared collective understandings affect economic strategies and goals; political embeddedness involves the effects of struggles for power between economic actors and non-market institutions (e.g., laws, regulations) on economic institutions and decisions; and cognitive embeddedness reflects how structured regularities of mental processes limit the economic reasoning ability of both human and corporate actors, similar to Simon's (1957) concept of bounded rationality. These four types form a basis for understanding how value is co-created.

To transcend existing views of value-creating systems as merely resource integrators and acknowledge their social embeddedness explicitly, this article adopts and integrates the concepts of schemas, including norms and rules, from structuration theory (Giddens 1979, 1981, 1984; Sewell 1992), as well as mental models from enactment theory (Weick 1969, 1988, 1993, 1995). To focus explicitly on the structural, cognitive, cultural and political embeddedness of value-creating systems, we introduce a process perspective together with the duality of structures (i.e., resources and social norms and rules), which transcends extant understanding of how value is co-created within value-creating systems (i.e., service systems). Through the duality of structures (Giddens 1979, 1984), schemas create and re-create specific behaviours, and then the mental models of the involved actors. This article builds on the idea of dynamic service systems (Vargo and Lusch 2011), in which value co-creation gets enacted through the actor's activities and interactions, which are based on mental models, schemas, and accessible resources in a context or environment that the actors interpret as their social reality. Therefore, value co-creation is based on both social and economic values, as well as social and physical structures in complex service systems.

We apply this understanding to a case that describes the effort to make the London Borough of Sutton (LBS) a safer society. We start with a theoretical review of existing conceptualizations of value-creating systems, which leads into a discussion of how value co-creation depends on the social embeddedness of complex service systems. This section relates structuration theory to different forms of embeddedness at the group or system level; the focus in the second part moves toward the individual actor's role and cognitive embeddedness in the

complex service system, through the fusion of enactment theory and structuration theory. Finally, we apply the described framework to the LBS and its challenges in a case implication.

Theoretical framework

Toward a concept of the socially embedded, complex service system

Alderson (1965) argued that a value-creating behavioural system is structured through a set of appertaining and interrelated principal concepts or functions, not just a collection of components. He thus implicitly acknowledged the concept of social embeddedness, because actors influence the system, as well as the coordination or integration of business activities and resources. Value-creating systems since then have been described in various ways; two distinct research rationales are prominent.

The first reflects the goods logic perspective, which focuses on transactions, value facilitation and the concept of value-in-exchange (Grönroos, 2008). The resulting system transforms input into products, relies on a clear hierarchy and sets organisational boundaries, often based on efficiency (e.g., Porter, 1985a; Williamson, 1981). In this rationale, value gets created *for* the customer and embedded in units of output, described by the product attributes, which are designed during product development and manufacturing to facilitate customers' value fulfilment and create a competitive advantage for the organisation (Grönroos, 2008). Examples of this rationale include the value chain (Porter, 1985) and activity systems (Porter, 1996), which developed through the application of industrial organisation economics in relation to market power and profitability. Thus this line of thinking relates the organisation to its environment but does not acknowledge its social embeddedness explicitly.

The second rationale is the service logic of marketing, featuring value-in-use (e.g., Grönroos, 2006, 2008; Vargo and Lusch, 2004, 2008; Vargo *et al.*, 2008). In this case, value gets created *with* customers through the interaction and activation of a set of resources, in which all actors participate as resource integrators to fulfil value. Early contributors (Håkansson, 1982; Håkansson & Ford, 2002; Håkansson & Snehota, 1995) argued that the organisation is embedded in a complex business network of organisations, including customers, suppliers and other business partners, in which companies access, provide and exchange resources from, to and with others in their enactment of the value creation process. This view led to the assumption that a company is part of an inter-organisational network that links companies with different assets and competencies, either in response to or in anticipation of new market opportunities (Normann and Ramírez, 1993). Such descriptions of value-creating systems focus principally on the structural embeddedness of the organisation (Uzzi, 1997; Zukin and DiMaggio, 1990), including how resource integration and the configuration of resources influence economic activity.

More recent descriptions based on the second rationale of dynamic value-creation systems within service research emphasising value-in-context (e.g., Merz *et al.*, 2009; Vargo and Lusch, 2011). This extended rationale has grown increasingly complex in relation to their contextualisation and constitutes a more promising point of departure for understanding *how* value is co-created. For example, Spohrer *et al.* (2007p. 72) extend previous views on value-creating systems by defining service systems as “value co-creation configurations of people, technology, value propositions connecting internal and external service systems, and shared

information (language, laws, measures, and methods)". The dynamic aspect of value-creating systems has been emphasised through the idea of interdependent, actor-based, complex "service ecosystems" that feature mutually created value that can only be perceived in a certain context (Merz *et al.*, 2009). The ecosystems ultimately were defined as "relatively self-contained, self-adjusting systems of resource-integrating actors connected by shared institutional logics and mutual value creation through service exchange" (Vargo and Lusch, (2011). That is, more recent definitions of value-creating systems recognise a wider conceptualization of context, but they still implicitly acknowledge that different forms of embeddedness exist, apart from the structural form. Until lately, existing descriptions of value-creating systems seemed to take the role of schemas, including norms and rules, for granted. With this study, we contend that a value-creating system is patterned after not only resource integration but also political, cultural and cognitive forces in the embedding social reality.

Structuration theory to understand the social embeddedness of complex service systems

We argue in line with Edvardsson *et al.* (2011) that value is created in a reciprocal, adaptive, social context and that it should be viewed as value-in-social-context. Consequently, by using this view and extant theory in economic sociology, we argue that value-creating systems are socially embedded (Granovetter, 1985; Uzzi, 1996, 1997) and inherently dynamic and grounded in on-going human action (Orlikowski, 2000). To increase the fundamental understanding of value co-creation and socially embedded complex service systems, we adopt structuration theory (Giddens, 1979, 1984; Sewell, 1992) .

According to Giddens (1984, p. 131), complex service systems define the institutional reality, through "patterns of relations in groupings of all kinds, from small, intimate groups, to social networks, to large organizations", that are recreated or changed in coherent ways through actions and "enduring cycles of reproduced relations". In essence, the "reproduced relations" in complex service systems are always patterned by structure. Giddens (1984, p. 6) distinguishes systems from structures by arguing that "structures are not the patterned social practices that make up social systems, but the principles that pattern these practices." Calling social structures "empirically unobservable rules and resources", Giddens (1984p. 17) uses the term "virtual existence" to describe phenomena that directly influence social activities through norms and rules and in which resources empower action. Structure therefore refers to a virtual order of principles, organised according to procedural rules, moral rules, material resources and resources of authority that guide action (i.e., they are enacted in social practice), with no enduring material aspect. Instead, Giddens (1984) asserts that structures derive their continuity from being instantiated in action and through the operation of memory and knowledge. In turn, we contend that structure refers to the institutional realm and the historical accumulation of beliefs, norms, power and interests that, though constructed through and existing within individual actions, become dissociated from individuals over time and generate an institutionalised social order within complex service systems whose duration is longer than any individual actor or action.

Structuration theory does not reduce social life to a function of deterministic social forces though (Giddens, 1981). Actors confront diverse structures simultaneously, which may be independent of what the actors do. Yet the agency possessed by knowledgeable human agents (i.e., actors who know what they are doing and how) persists in a reciprocal relationship with the

1 complex service system structures; the repetition of acts by actors creates and re-creates structure
2 through what Giddens (1984, p. 131) refers to as the “duality of structure”. Sewell (1992) agrees
3 that structures are re-created and changed through a dual socialisation process and that rules and
4 norms, or what Sewell called schemas, are virtual. Sewell’s and Giddens’s perspectives on the
5 duality of structures do differ though, in that Sewell argues that resources are actual but Giddens
6 views them as virtual. Sewell (1992p. 13) suggests that if “structures are dual in this sense, then it
7 must be true that schemas are the effects of resources, just as resources are the effects of
8 schemas ... if resources are instantiations or embodiments of schemas, they therefore inculcate
9 and justify the schemas as well”. This view of structure suffers some criticism though, because
10 the distinction contradicts a fundamental proposition in structuration theory, namely, that
11 “phenomena become resources ... only when incorporated within processes of structuration”
12 (Giddens, 1984, p. 33). Finally, both perspectives acknowledge the interdependency of resources
13 and schemas, through the assumption that a schema is what gives a resource value-in-social-
14 context and defines how it can be understood and acted on within a complex service system.
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16 Sewell’s (1992, p. 9) distinction of resources as actual and schemas as virtual also conflicts
17 with his own definition of resources: “anything that can serve as a source of power in social
18 interactions”. This definition rules out the idea that schemas can be resources, even if formal
19 rules appear as less-formalised schemas, such as norms, and get deployed as sources of power in
20 social interactions (Feldman, 2004). This contradiction stems from Sewell’s use of the word
21 “anything” in the definition of resources, which implies that schemas used to enable, restrict or
22 delimit enacted human conduct are sources of power and therefore resources. At first glance
23 then, similar to Giddens (1984), schemas and resources seemingly belong to the same virtual
24 realm. Instead, Sewell’s distinction of virtual schemas, as shared and transposable procedures
25 dissociated from individual actors, versus the actual resources associated with individual actors,
26 may indicate that resources enable actors to enact schemas. Sewell (1992) contends that resources
27 are actual because the schema alone cannot bring them into being or determine how much of
28 them can be obtained. Therefore, we separate resources from schemas, according to their
29 association with and control by one actor within a complex service system, rather than their
30 appearance in the virtual versus actual realm.
31

32 Structuration thus refers to the enactment of structures in which actors, based on their
33 (virtual) mental model, act in an environment or context to re-create (or change) the structures
34 they confront. Duality explains how actors can re-create the structure of a complex service
35 system through practice and simultaneously confirm both the structure and the system itself. In
36 other words, the structuration of complex service systems builds on the notion that actors are
37 involved in an on-going, iterative and interactive socialisation process that makes them
38 dependent on social structures and institutional properties. Social structures within the complex
39 service system shape future human action; at the same time, social structures are being altered
40 and re-created by human action. Thus structures are “both the medium and the outcome of the
41 practices which constitute social systems” (Giddens, 1981, p. 27). Whether schemas or resources,
42 structures are the basic conditions that enable actors to interact, while also acting on other
43 resources within the social reality of a complex service system. The concepts of structuration
44 theory related to systems and structures as patterns of enacted conduct provide a means to bridge
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the structure–agency gap, as well as to compensate for existing, under-socialised perspectives on the embeddedness of value-creating systems.

Structural embeddedness of value co-creation in complex service systems

Early conceptualisations of value-creating systems adopted an atomized actor explanation of economic action (Granovetter, 1985) and illustrated the system structure on the basis of resource exchange patterns, thereby neglecting or taking the influence of the social structure for granted. These previous conceptualisations are important for understanding how the structural embeddedness of complex service systems affects the duality of structures within systems and thus how value is co-created. In turn, the structural embeddedness of complex service systems appears essential for understanding the duality of structures, that is, how actors are affected by and can affect complex service system structures by acquiring control over and making use of resources as sources of dependence and power.

To clarify the influence of structural embeddedness on complex service systems, we turn to resource dependence theory (e.g., Pfeffer and Salancik, 1978) and the power-dependence model in social exchange theory (e.g., Emerson, 1962; Thompson, 1967), which suggest that resources flow from the external environment and that an organisation's ability to control the flow of vital resources is critical to its success. Power-dependence structures emerge because actors depend on their environment to gain resources, but the environment is constantly changing, which causes resources to become scarce (Pfeffer and Salancik, 1978). If power in a dyadic relation “resides implicitly in the other's dependency” (Emerson, 1962, p. 32), then power is a property of a relation, not of an actor. Value co-creation then demands the analysis of larger systems, beyond the dyad (Håkansson, 1982; Håkansson and Ford, 2002; Håkansson and Snehota, 1995; Merz *et al.*, 2009; Normann and Ramirez, 1993; Vargo and Lusch, 2011). Giddens (1984) emphasises how the control of resources, rather than resources per se, affects the duality of structure, and thus how resource control and resource dependence (i.e., resource integration) determine network relations in a complex service system. In a network model of exchange, such as a complex service system, power is an attribute of the position in the network structure that defines occupants' behaviours and relations (Cook and Emerson, 1978).

Giddens's (1984, p. 16) focus is on relational properties emerging from resource control when he argues that resources are virtual and that “all forms of dependence offer some resources whereby those who are subordinate can influence the activities of their superiors”. Sewell (1992) instead contends that resources are actual, because schema cannot bring them into being. Both perspectives imply that other actors in the complex service system must perceive an asset's value-in-social-context and value-in-use, in the form of the effects resulting from them, as relevant or meaningful for the resource to have value-in-exchange. The influence of schemas on structure is also supported by Cook and Emerson's (1978) study of exchange networks, in which they show that equity, justice and interpersonal commitments constrain or impede the use of power and thus how resources define enacted conduct within a complex service system. To understand how assets in these systems attain value and become actual resources, we must recognise that resources and actors' sense-making cannot be separated from schemas in the social context that determine enacted conduct. According to Johnson (1977, p. 5), this meaning, which is inherent to

1 schemas and actors' mental models, is "created" rather than "exchanged" and therefore socially
2 constructed and influenced by cultural, political and cognitive forms of embeddedness.

3 *Cultural, political and cognitive embeddedness of value co-creation in complex service* 4 *systems*

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6 Schemas are not owned or possessed by one individual but rather are shared among
7 actors in a complex service system. Sewell (1992, p. 17) not only considers schemas "not
8 physically existing" and defines them as "transposable procedures applied in the enactment of
9 social life". He continue to argue that "to say that schemas are virtual is to say that they cannot
10 be reduced to their existence in any particular practice or any particular location space and time:
11 they can be actualized in potentially broad and unpredetermined range of situations" (Sewell
12 1992, p. 8). As previously shown, schemas entail the knowledge of formal rules and less
13 formalised norms, shared among multiple actors, which exist in multiple settings outside of the
14 particular practice (i.e., outside the focal value-creating system) or the actor using them. The
15 concept of schemas thus can describe the political and cultural embeddedness of a complex
16 service system.

17
18 As we defined it previously, cultural embeddedness pertains to how shared systems of
19 meaning (e.g., norms, values) shape and define economic activity within a complex service system
20 (Dacin *et al.*, 1999). Norms are transposable, shared expectations of behaviour that apply at
21 different environmental levels and depend on both the situation and roles of participating actors
22 (Heide and John, 1992). Previous inter-organisational studies have shown that norms provide
23 effective vehicles for regulating these systems by restricting or controlling behaviour, such as
24 opportunism (Cannon *et al.*, 2000; Heide, 1994; Heide and John, 1992; Rokkan *et al.*, 2003).
25 Norms are learned in a social context; their internalisation represents a change in preferences that
26 originates from lessons and training (Gibbs, 1988; Ostrom, 2000).

27
28 Political embeddedness instead entails how "Societal struggles over the distribution of
29 limited resources affects economic activity by producing change in economic institutions,
30 authoring or sanctioning certain activities, or inviting influence in the form of non-market state
31 actors or related institutions" (Dacin *et al.*, 1999, p. 345). It draws attention to how economic
32 institutions, decisions, exchanges and outcomes are shaped and characterised by rules, such as
33 public policies, the legal system and the tax code, as well as by powerful actors (Zukin and
34 DiMaggio, 1990). Rules represent shared understandings, similar to the norms inherent in the
35 complex service system, but they do not necessarily imply internalisation. Instead, unlike norms,
36 rules are self-consciously adopted for use in particular situations, often for fear of sanctions for
37 non-compliance (Reiners, 2001).

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39 Using both the duality of structure and cultural and political embeddedness, we contend
40 that schemas offer sources of power by informing actors' perceptions of what a resource is and
41 how resources can or should be used to co-create value in a complex service system. Schemas
42 represent an important aspect of a complex service system that helps actors define and identify a
43 resource's value, as well as to regulate and guide the activation of resources essential to actors'
44 creation and re-creation of value within the system. Norms and rules are mechanisms that enable
45 actors to adopt a shared worldview, which in turn helps hold together and ensure the survival of
46 a loosely coupled complex service system (cf. Orton and Weick 1990; Weick *et al.* 1995). The
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process for creating schematic meaning can be understood through a model of semiotics that explains how meaning emerges in relation to an objective, real world. Specifically, Peirce ([1897] 1940) recognises that an actor's sense of an asset is embedded in the surrounding social and physical context. To capture this embeddedness, Peirce's model includes three elements: a sign, an interpretant (in this case, the actor who connects the sign to a concept in mind) and the object (Grayson and Shulman, 2000). The object connects the sign and interpretant with something that, from the viewer's perspective, has an objective existence in the real world. In this way, a resource is located or given value or meaning in relation to an objective, actual, real world that can be either social or physical, outside the mind of an actor. It thus gains a value-in-social-context as well as value-in-exchange. Therefore, a resource's value-in-social-context, which is necessary for it to have a value-in-exchange, derives from the interplay between an actor's negotiation of existing schemas and resources in relation to the surrounding environment. This conceptualisation illustrates how resources and schemas affect each other recursively through the duality of structures; it explicitly implies that both the network architecture of resource exchange and the social context in which it is structurally, politically and culturally embedded create the pattern of the value co-creation in a complex service system. Also, it acknowledges how shared schemas, cognitive frames and social cognitions (i.e., cognitive embeddedness of the system) cloud collective attempts at rationality on a group level (Dacin *et al.*, 1999) and on an individual level, as described in enactment theory (e.g., Weick, 1969, 1995).

Cognitive embeddedness of actors' value co-creation in complex service systems

The individual actor's role in the duality of structures can be understood using Weick's (1969, 1995) enactment and sense-making theory. Using previous conceptualisations of enactment (Danneels, 2003; Porac *et al.*, 1989; Weick, 1969, 1988, 1993, 1995, 2001), we assert that actors in a complex service system act on the surrounding environment and interpret environmental responses to their actions through a sense-making process that externalises the resulting interpretations through subsequent action in the system (Figure 1). By acting physically in the environment, actors invent cause maps, or mental models, that reflect their subjective interpretations of the parts of the environment to which they attend (i.e., the enacted environment, which in this case is a complex service system; Weick, 1969). They entail what individual actors experience, measure, assess, ignore and talk about to others.

--- Insert figure 1 about here ---

Unlike structuration theory's focus on the system as a whole and how structures determine the enacted human conduct that creates relations in a complex service system, enactment theory focuses on particular practices of individual actors within the system. Therefore, Sewell's (1992) schemas differ from Weick's (1969) mental models in that the former are transposable procedures *dissociated* from the individual actor, whereas the latter representations of a structure are *held* by the individual. This focus on the social context may overlook broader social, historical or institutional contexts that could explain cognition, including the lack of an explicit account of embeddedness of sense-making in social time and space, such that sense-making appears to take place in a vacuum (Weber and Glynn, 2006). Enactment

theory never explicitly acknowledges the role of what Giddens (1984) has referred to as systems in sense-making that form perceptions of the enacted environment. However, cognitive embeddedness in a complex service system demands a framework that addresses the resources and schemas that constitute the system, as well as the incorporation of principles that make up the structures in individual actors' sense-making and affect their subsequent action. The theories thus complement each other: Enactment theory illustrates how enacted human conduct affects the structures of complex service systems, and structuration theory shows how structures pattern the enactment of the complex service system. Therefore, we contend that enactment theory contributes to an understanding of how cognitive embeddedness influences an individual actor's sense-making and enactment of a complex service system, which structuration theory does not consider explicitly.

The sense-making concept in enactment theory also expands our understanding of complex service systems because it explicitly notes the individual actor's role and shows how an actor co-creates value, on the basis of his or her individually held mental model or perception of the system and its structures. The creation of mental models in enactment theory shares similarities with the concept of schemas in cognitive psychology. For example, Bern (1981, p. 355) defines a schema as "a cognitive structure, a network of associations that organises and guides an individual's perception". According to cognitive psychology (e.g., Bern, 1981; Neisser, 1976), individual perception emerges through a constructive process, wherein what is perceived is that which is created through the interaction between the information being received and a perceiver's pre-existing schema. The actor's sense-making of value co-creation in a complex service system is "highly selective and enables the individual to impose structure and meaning onto the vast array of incoming stimuli" (Bern, 1981 p. 355).

Similarly, sense-making refers to how actors negotiate the nouns and verbs that should be imposed on system flow and how they might be connected in mental models (Cyert and March, 1992; Weick, 1969, 1995). Through this process, surroundings get sorted into variables and linkages; any variable can be a cause or an effect, depending on where the causal enactment loop starts and stops, so that it appears more orderly (Weick, 2001). However, sense-making in enactment differs from schematic processing, because it includes an externalisation of interpretations through action, which later provides the basis or stimuli for further sense-making and thus changes or re-creates actors' mental models (Danneels, 2003; Porac *et al.*, 1989; Weick, 1969, 1988, 1993, 1995, 2001). The enactment of complex service systems represents an on-going adjustment of an actor's actions and cognitions, which then guide further actions through interactions with the environment. The actors' mental models are however based on narrower social contexts than the schemas in the system as a whole, which get socially constructed through negotiation and consensually validated through their enactment of what they perceive to be the complex service system. Therefore, the mental model held by an actor functions as an anticipatory cognitive structure, biased with regard to shared schemas, cognitive frames and social cognitions that determine the pattern by which they co-create value in a complex service system. That is, cognitive embeddedness makes the actor bounded rational (Simon 1957).

By fusing enactment theory with structuration theory, we can address the problem of under-socialisation of enactment and previous conceptualisations of value-creating systems. Enactment theory makes it possible to develop a deeper understanding of the cognitively

embedded interdependence between structures and actors who act in complex service systems. The actor's mental models result from a combination of structural schema and a process of individual sense-making or manipulation of information in a schema. Therefore, a complex service system is not delimited to a certain type of social embeddedness per se, but cultural, political and structural mechanisms instead affect the system to different extents. Value co-creation in a complex service system provides a process of negotiation of shared meanings that constitute the actors' actions on resources to co-create value, according to their perceptions of the system's schemas and interpretations of how well their actions and the value created correspond to expectations, which are inherent in the system schemas through environmental responses (Figure 2).

---- Insert figure 2 about here ----

These arguments indicate that mental models resulting from sense-making represent an individual actor's understanding how to act in relation to existing structures in a complex service system to which it belongs, perceives and attends to (Danneels, 2003; Pondy and Mitroff, 1979; Weick, 1969, 2009). Even if the view of the social context differs, enactment theory enhances an understanding of how actions that actors perform on resources, in line with their understanding of schemas, affect the continuity of the system structures that confront them, as well as the creation and re-creation of relations that constitute the system. However, a wider view of the context in structuration theory suggests that in complex service systems, multiple actors take action on and make sense of the duality of structures. They do so by stating that there is a reality and an environment, then searching for and discovering underlying patterns in existing structures to guide further activity that affects the continuity of the structures. In essence, multiple actors within a complex service system both define and create value through interactions (Pralhalad and Ramaswamy, 2004). The collective sum of individual actors' mental models and enactment of a system become central to the co-creation of value. A complex service system requires a shared world view, based on schemas, to endure (Orton and Weick 1990; Weick et al. 1995); therefore, it depends on how well different individual actors' sense-making and activity cohere, if it is to realize its collectively intended goals and purposes. If cognitive distance arises between actors—such as if the mental models and activities of involved actors do not cohere or reflect schemas—it poses a critical challenge for a complex service system to achieve a shared institutional logic or world view that ensures its own survival, as well as the capabilities needed to co-create value that is intended, relevant and viable for all involved actors (Weick, 1995).

With this understanding of complex service systems, we apply the described framework to the case of dealing with crime in the London Borough of Sutton.

Case implication

Complex service systems are the foundation for value co-creation, as illustrated in work performed in one area, the London Borough of Sutton (LBS). The Executive Head of Community Safety and Youth Engagement for LBS stated that “Our aim is to make Sutton the safest borough in London, by providing exceptional services within the field of community safety and tackling drugs or alcohol abuse”. To achieve this aim, the Sutton Council and Metropolitan Police established a non-traditional partnership, the Safer Sutton Partnership Service (SSPS).

1 Their shared schema guides their active resource integration, to provide excellent services that
2 create and re-create a safer society. However, in this complex service system, value is also co-
3 created by other actors that affect the structural, political, cultural and cognitive embeddedness of
4 the system. All actors in LBS in principle integrate resources in the system by acting in the
5 society, following different schemas, including the Sutton society's shared intent to make it the
6 safest borough in London. These actors, including residents, shop-owners and tourists, fight
7 crime indirectly through their honest use of resources that reflects their various schemas and
8 enables them to re-create structures in everyday life. The value-in-social-context is co-created and
9 experienced through activities on and the integration of resources, and it entails a reduction in
10 crime and fear of crime among residents. This fight against crime has made LBS one of the safest
11 boroughs in London, with a relatively low crime rate compared with other boroughs. Both the
12 crime rate and fear of crime have fallen for most crime types over the past eight years. However,
13 according to a 2009 Ipsos MORI survey, crime remained the most important issue for residents.
14 Even though the borough has become safer, according to the crime rates, the LBS community
15 still suffers from a relatively high fear of crime. To recognise the complexity of the service system
16 and thereby help explain the difference between the crime rate and the fear of crime, we suggest
17 a three-fold case implication.

18 The first implication builds on the argument that schemas resulting from the structural,
19 political and cultural embeddedness of a complex service system determine the sense-making and
20 subsequent activities of all actors in LBS in different ways, depending on their roles in the system.
21 The strong political and cultural focus on crime by various actors, such as the enactment of the
22 SSPS, maintains and re-enforces a cognitive, schematic fear of crime on a collective level,
23 particularly among residents of LBS. The complex service system also is embedded in the wider
24 social system and British society as a whole. The central British government's attention to crime
25 and related terror situations undeniably have had major impacts on the local government,
26 including the Sutton Council and Metropolitan Police, and their schemas. Although crime and
27 terror have some of the same effects (i.e., create fear), terror aims to influence society at large,
28 whereas crime is directed toward individual residents. These distinctions and the uncertainty
29 created by crime and terror may be difficult for residents to separate in their everyday lives.

30 Cognitive understandings are continuously influenced by cultural and political
31 mechanisms, as well as actual events experienced in the community and in British society.
32 Constant attention and daily reminders about crime and terror in national newspapers and media
33 cultivate and feed the mental model of fear on a normative cultural level. Crime and terror has
34 also attracted a great deal of attention from central and local governmental institutions on a
35 political level. Therefore, the high awareness and subsequent fear of crime also may be confirmed
36 by the resources that the government devotes to countering crime and terror on a structural level.
37 The resources enforce the schemas on which the residents act and interpret their contextual
38 situation. By observing the vast amount of resources devoted to the fight against crime, residents
39 come to perceive a high alert and change their mental models and behaviour; that is, they create
40 and re-create social schemas based on their schema that society is unsafe. This scenario illustrates
41 the interdependency among the systems and how challenges in society are reflected in the
42 complex service systems of LBS.

1 The second implication reflects the argument that the collective cognitive embeddedness
2 of a complex service system affects actors' understanding and development of schemas that
3 guide their activities in the system. For LBS, the well-established Sutton Council and
4 Metropolitan Police, through SSPS, reinforced their own service structures, which have
5 influenced the structural embeddedness of the system as a resource integrator. Activation on a
6 community level has centred on fighting crime and terror, rather than decreasing political and
7 cultural stimuli that enhance the fear of crime. This focus is based on cultural norms and political
8 debates that suggest LBS needs to become safer. Accordingly, the systems' cognitive
9 embeddedness appears affected by the tight coupling of the structures of the Council and
10 Metropolitan Police, inter-twined with the structures of the LBS society, on several levels.

11 Since their start in the 1920s, the two public institutions forming the SSPS have been
12 closely integrated into the LBS community. These relatively old, powerful organisations likely
13 produce a social construction of environmental reality in the complex service system of LBS that
14 may have become routinised through continued interactions in the duality of structures.
15 Salancik's (1977, p. 70) self-sustaining argument illustrates how the commitment to routines
16 comes about:

17 Individuals adjust their attitudes to fit the situations to which they are committed.... You
18 act. You believe your action was valuable, worthwhile, and desirable. You act again,
19 renewing the belief. In time, without realizing it, you have made a myth; your sense of
20 veracity and value has been merged into the pattern of action. The myths sustain the
21 action, and the action sustains the myth.

22 As a consequence of a commitment to routines, it is likely that some powerful actors in the
23 complex service system exhibit less managerial activity devoted to environmental construction
24 and objectification, because of their relatively overdeveloped schemas (Nelson and Winter, 1982).
25 The institutional age of the Sutton Council and Metropolitan Police thus exert considerable
26 effects on the SSPS's ability to socially construct the LBS society in which the complex service
27 system is embedded. The schemas that the complex service system relies on may become better
28 established, and resources more efficiently deployed through SSPS, as the organisation ages,
29 though they also will become more difficult to change. It takes more time to change collective
30 memories, shared schemas, cognitive frames and social cognitions disassociated from individual
31 actors than to make changes to resource integrations that actors can control; thus it is harder to
32 reduce the fear of crime than to fight crime. A more rational assessment would consider the risk
33 of victimhood low, but pre-existing schemas cloud collective attempts at rational sense-making,
34 as illustrated by the lag between an actual decline in crime rates and persistently high fear among
35 residents.

36 Finally, the third implication builds on actors' enactment of the system, which can result
37 in cognitive distance (Figure 2). The sense-making process describes an individual actor's mental
38 model and how he or she interprets schemas and evaluates value creation by individual and
39 collective actions in LBS. In turn, the mental models guide actors' subsequent deployment of
40 resources and enactment of the system's collective schemas, affecting system continuity
41 structures. Enactment theory explains how residents of Sutton create their own social reality,
42 confront their own re-creation by enacting part of the social environment they experience (i.e.,
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what they perceive to be a high crime rate) and then receive confirmation of their mental representation of the structures of the borough.

The fear of crime is thus an enactment of on-going psychological and social processes that derive meaning from the residents' sense-making of past experiences, both directly and indirectly, with crime (Weick, 1995, 2001). Meaning is both derived and socially constructed from the political, cultural and structural focus on crime rates, which influence residents' future fear of crime. The enactment of complex service systems is a closed-loop process, comprised of sense-making and the selection of activities. The fear of crime among residents becomes a question of how political, cultural and structural domains influence schemas and individual actors' cognitive understanding of the crime rate (Weick, 1969). From their previous crime experiences, residents of Sutton select a contextual explanation of the safety of the borough. Sense-making here refers to an interpretation process, by which residents assign the broader apparent focus on crime and crime rates to an understanding of their surroundings, by constructing believable stories that explain their expressed fear of crime. Through this process, prior direct experiences and more indirect experiences of political, cultural and structural cues constrain and influence residents' capability to form a rational, current understanding of crime.

This reasoning suggests that the sense-making process explains the extent to which the residents' perceived, enacted environment matches an objective crime rate or reality, which is critical for forming an accurate judgement. Residents' sense-making is based on retrospection and interpretations of salient cues, such as the high historical crime rate (Weick, 1995, 2001). As characteristics of sense-making, retrospection and salient cues illustrate how actors are cognitively embedded in the complex service system. The LBS residents derive their fear of crime from the high focus on crime in society and previously high crime rates. They then use this crime rate to explain what is taking place, and thus, they sustain and create perceptions of fear. In sense-making, residents introduce individual crime-extracted cues into what Weick (1995, p. 450) describes as "full-blown stories, typically in ways that selectively shore up an initial hunch". Consequently, the cues become "stories through the telling until collective imagery appears and has staying power" (Weick, 2001, p. 462). Stories of crime become knowledge that residents have acquired, reflected in their fear of crime, integrated into social schemas and expressed through the integration of resources and activities. The collective group of actors thus provides a frame (Goffman, 1974) or structural context (Weick, 1995) for understanding the fear of crime among residents.

Retrospection, cues and crime stories produce cognitive cause maps within the minds of individual residents. These cause maps integrate past wisdom, or "knowledge of what one thinks" (Weick, 2001p. 189) about crime and the fear of crime; criteria that influence the fear of crime, not how an individual resident will act (Weick, 1969); and the enacted LBS community (Weick, 2001). Through close-looped process feedback, as illustrated in Figure 2, the fear of crime restricts future actions and influences how those future actions are interpreted (Weick, 2001). Thus the enactment process in the service system aggregates fear of crime through cognitive mechanisms, such as group mind and collective cause maps, leading to cognitive interdependence among residents who maintain relationships in LBS. These relationships allow individual residents to "enact a single transactive memory system, complete with differentiated for remembering different portions of common experience" (Weick, 2001p. 260). Then the

enactment explains the information processing sequence by which residents attend to cues, such as the crime rate and the resources governmental institutions devote to countering crime. Residents interpret the meaning of such cues and externalise their interpretations in a high fear of crime.

The LBS also features diverse actors though, whose mental models of structures likely differ within the system, such that there might be cognitive differences. There is an apparent dissonance in the activation of resources in the value co-creation process within the system regarding the results of value-in-social-context. How do individual actors interpret the rate of crime or the fear of crime? The crime rate is relatively easy to assess, and thus easy for SSPS to devote resources to fighting, but it is much harder for them to construct society and determine how residents will define safety or how value-in-social-context gets co-created. The cognitive distances from safety stems from decreasing crime through greater resources, such as social services by SSPS. The social construction of society is apparent in cultural and political debates about which resources have a potential value-in-use and how they should be deployed to co-create value-in-social-context.

Final remarks

Multiple social factors influence the value co-creation process and its outcomes, namely, value-in-social-context. To understand complex service systems, it is necessary to take a wider social approach. That is, to comprehend “the how” of value co-creation, we have adopted the concept of embeddedness and thereby illustrated the importance of actors’ enactment processes in creating mental models and their influence on schemas. Schemas guide actors’ behaviours and determine how they act on accessible resources, contained in the duality of structures.

Several topics hold interest for further research in relation to complex service systems and the co-creation of value. First, we have argued for a transcendent understanding of the concept of value and how resources are integrated into the value co-creation process, as manifested in different concepts, such as value-in-exchange, value-in-use or value-in-social-context. These views offer a broader scope and a wider social context. However, we need a better understanding of the different concepts and their inter-relations. Second, actors co-create value on the basis of the enactment of their mental models within the service system, which is embedded in a social system and wider society. We need to know more about how these different layers of systems and contexts influence one another, as well as each individual actor’s value co-creation processes. There are interdependencies; they might influence mental models and the co-creation of value differently. It would offer a better understanding of value co-creation if we could understand social influences on how these processes are co-created. Third, it is important to realise how the enactment of social reality influences involved actors’ mental models, and how they in turn influence the behaviour of actors. By studying LBS, we show how the perceived social reality (fear of crime) differs from the true social reality (observed crime rate), due to the time lag for schemas in the complex service system. How might organisations such as SSPS efficiently change the schemas of a complex service system? That is, how can actors change other actors’ mental models to convince them that, say, the real crime rate does not match their high fears of crime?

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Figure 1: Model of complex service system enactment

Figure 2: Model of value co-creation in complex service systems

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