

Social systems theory and engaged scholarship: co-designing a semantic reservoir in a polycentric network

Social systems theory and engaged scholarship

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Abstract

Purpose – The purpose is to investigate a position for engaged scholarship bridging the gulf between theorizing and practice in a social system perspective using Design Thinking for assisting the emergence of a semantic reservoir in a polycentric network “in spe”.

Design/methodology/approach – The paper combines social systems theory with the concept of engaged scholarship based on Design Thinking, and illustrates how such a research position might be applied to problems of polycentric networks as a theoretical/methodological case.

Findings – The paper concludes on a possible role for an engaged scholarship as a midwife assisting the emergence of a shared semantic reservoir that is needed to make commitments and couplings possible to become a polycentric network. Design Thinking is explained as a structured way to irritate (disturb) other systems, and the role of a shared semantic reservoir for a polycentric network “in spe” is accounted for.

Originality/value – Bridging the gulf between theorizing and practice in management theory is underexplored, and social systems theory underlines the immanent rigor-relevance gap, which this paper suggests a way not to overcome, but to bridge. The discussion of the rigor-relevance gap is revisited. Also, the critical process for a shared semantic reservoir to emerge in the formation of poly-centric networks is underexplored and so are its role for coupling of networks. The conceptual understanding thereof is also contributed to.

Keywords Social systems theory, Engaged scholarship, Design thinking, Polycentric networks, Shared semantic reservoir

Paper type Conceptual paper

Introduction

Networks are becoming increasingly widespread in the society (Teubner, 2011; Neumann *et al.*, 2011, 2012), and polycentric networks are seen as an emergent way of mitigating some of the effects caused by the highly differentiated nature of the modern society (Teubner, 1993). Polycentric networks have the potential for dealing with the increasing complexity and differentiation in society.

As we will elaborate in this paper, it is not an easy nor a rational task for organizations to establish a polycentric network. It needs to be understood as a process of creating trust, (em-)power(ment), and a suitable shared semantic reservoir supportive for reflection within many separate systems simultaneously in order to couple (Neisig, 2017). A shared semantic reservoir (e.g. shared models, tools and concepts) needs to be available for communication and for selection of meaning by the many different systems within a polycentric network “in spe.” This, we will explain further. We will focus on the role that engaged scholarship may have to assist the emergence of a shared semantic reservoir by using Design Thinking and also creating science. As described by Van de Ven (2007), the engaged scholarship may take on many different formats, roles and philosophies of sciences of which we will conceptually search to possibly construct a role compatible with social systems theory. The Design Thinking approach (dschool, 2009; IDEO, 2015) is about different methods intended to open designing teams to information related to their social environment – methods to structure communication in the process of co-designing.



We have chosen a Luhmannian theoretical framework, as it makes the understanding of tensions in a polycentric network, as well as between practice and theory, very clear and inevitable because it insists on functional differentiation (Luhmann, 1982). Function systems cannot communicate directly with each other; only communication communicates. Organization systems also cannot communicate directly; however, they are programmable multifunctional decision machines (Roth, 2014; Will *et al.*, 2018; Roth *et al.*, 2018, 2020), and although they used to have preferences for a particular function system, they are in polycentric networks forced to pay attention to multiple codes and/or programs – and so are engaged scholars partaking in such networks.

The research question is: can engaged scholarship play a role in a system theoretical perspective using Design Thinking – and which role? We illustrate the research position through a theoretical/methodological case in which engaged scholarship concerns assisting the emergence of a shared semantic reservoir in a polycentric network “in spe,” and we account for the role such a shared semantic reservoir plays for the coupling of a polycentric network.

The operational closure of organization and function systems (no operations can enter the system from outside nor vice versa) provides challenges in the process of creating structural couplings that tie polycentric networks together. To this end, we will focus on and explore a way of theorizing and acting as engaged scholars in bridging what has been called an increasing gulf between management and organization research and the practice of management and organizational development “in real life” (e.g. Van de Ven, 2007). The understanding of “the gulf” takes its starting point in Luhmann’s distinction between theory and practice (Luhmann, 2018[2000]), leading to what in social system theoretical discussions have been termed: the rigor–relevance gap (Kieser and Leiner, 2009). Kieser and Leiner argue that it is impossible to assess the relevance of research within the function system of science, and therefore, the rigor-relevance gap is unbridgeable. We are challenging this position, as we argue for a “dual” constitution of engaged scholarship in polycentric networks, and although it is not possible to overcome the differentiation of function systems and therefore also not the rigor-relevance gap, it *is* possible to bridge (or narrow) this gap through the dual constituency in polycentric networks theorized by Teubner (1993).

Teubner has theorized polycentric networks in a classic article (Teubner, 1993), defining them as:

... a “dual” constitution of contract and organization in one institutional arrangement... Network operations are... emergent phenomena... If the dual attribution of action enters into the self-description of the social arrangement and is also used operationally there, then the network has constituted itself as an autonomous system of action via the constitution of new elementary acts... networks are higher-order autopoietic systems, to the extent that they set up emergent elementary acts (“network operations”) through dual attribution, and link these up in circular fashion into an operational system (Teubner, 1993, p. 49).

It is the dual pursuit of the individual (organizational) and collective (network) goals that Teubner portrays as a polycentric or multi-polarity characteristic of the unified network (Teubner, 1993, p. 51). According to Teubner (1993, p. 51), such networks have an advantage in flexibility and adaptation to disturbances as the hybridity of this dual constituency may vary over time, and the network can react as a whole, or the nodes can react autonomously. Engaged scholarship can be part of such a polycentric network, and thereby having a dual constituency, too.

Neuman *et al.* (2011) and Neuman (2012) point to the need for a collaborative system for networks to be coupled. Our argument is that for polycentric networks and their collaborative system to form, a shared semantic reservoir with a horizon spanning across the entire network also needs to emerge. The notion of polycentric network and shared semantic

reservoir are central to this paper, and so is the possible role of engaged scholarship in assisting the process of emergence.

One of the attributes of a shared semantic reservoir relates to its stiffness versus flexibility – an attribute related to the role of a polycentric network as a way of dealing with the increasing complexity. The discussion about “stiffness versus flexibility” to react on the environment, conceptualized as the complexity-sustainability trade-off, was brought forward by [Valentinov \(2014\)](#), arguing that it may be rational for social systems to withdraw (or constrain) their internal complexity to maintain their sustainability in a given environment. The growing internal complexity of systems created to mitigate the external complexity entails the increasing risk that systems develop insensitivity to those environmental conditions on which they critically depend, and because of stiffness due to the internal complexity, systems may also lack the flexibility to react. An example is when large hierarchical and functional divided companies experience disruptive innovations and cannot change fast enough to compete. Another example is profit-oriented companies that do not sense the burden caused on the environment or society until this burden hugely affects the reproduction, social acceptance or image on which the company depends. Valentinov and Pies discuss this theme further as, e.g. companies being able to take unintentional or side effects into consideration as an instrument for securing the sustainability of the firm in a precarious environment ([Valentinov and Pies, 2018](#)). This is like what [Teubner \(1993\)](#) described as driving the formation of polycentric networks ([Teubner, 1993](#), p. 50), whereby the individual actor (system) constrains itself while gaining from the operation of the network. This may, for example, be corporate-NGO partnerships in corporate social responsibility activities. At the same time, Teubner also points to the flexibility in networks, as they can act as a whole, or the individual nodes can act autonomously. The stiffness-flexibility discussion points to the very same attribute of a shared semantic reservoir. It may also bring either stiffness or flexibility for a polycentric network’s ability to react to the environment. An example is if a model, tool or concept is not adaptable to the different contexts perceived by the variety of network members. We will further elaborate on stiffness versus flexibility of the shared semantic reservoir as a potential impact on success for a polycentric network to be coupled (or remain being coupled).

Not having a shared semantic reservoir will, however, make it very difficult for systems to create a collaborative system and couple into a polycentric network, and the network may fall apart even before being coupled. We argue, that engaged scholars partaking in polycentric networks “in spe” may play a role preventing the network from falling apart before reaching a state of structurally coupling, because they may as midwives assist the emergence of a shared semantic reservoir. Engaged scholars are embedded in a dual constitution like other network partakers, as described by [Teubner \(1993\)](#). The engaged scholars need to comply in a dual fashion with both the system of science and the collective goal of the network. This situation is relevant in a broad context, as many research projects play out in, e.g. Social Foundation, Interreg and other EU projects in which consortia may be formed as polycentric networks. This paper investigates how the duality of complying with both the scientific system and a collective network goal may play out by applying Design Thinking. This is used for reflection on the literature on “bridging the gulf between theorizing and practice,” in Luhmannian literature, also termed the rigor–relevance gap (e.g. [Kieser and Leiner \(2009\)](#)). In doing so, we will draw on Design Thinking as it is described by [dschool \(2009\)](#) and [IDEO \(2015\)](#). This allows a Luhmannian conversation on engaged scholarship using Design Thinking illustrated by the case of assisting the emergence of a shared semantic reservoir needed for a polycentric network to be coupled.

The article is structured so that first we explain a Luhmannian way of understanding the position of science in society, and various Luhmannian positions in the discussion on the rigor-relevance gap. This is important in order to understand the potential of acting as

engaged scholars by applying Design Thinking. We also explicate the specific challenges of engaged scholarship in a polycentric network of organizations. Second, an understanding of polycentric networks and their collaborative system and a shared semantic reservoir are explained. Third, it is discussed how engaged scholarship with the purpose of assisting the emergence of a shared semantic reservoir for a polycentric network “in spe” may play out in a Luhmannian perspective with contributions from Design Thinking. The discussion confronts engaged scholarship based on Design Thinking with the literature on “the gulf” and establishes an understanding of how the duality of the engaged scholarship based in this approach may “narrow or bridge the gulf” and rigor-relevance gap. Also, the discussion will reflect upon whether the case of polycentric networks is the exception where engaged Luhmannian scholarship could work, or the research position may apply to other empirical cases with similar problems, as well as what (conceptual, as well as practical) problems we still see in the construct of an engaged Luhmannian scholarship. Finally, the research question is answered, and future research fields specified.

Revisiting the gulf between theory and practice

Engaged scholarship and a Luhmannian way of understanding science in society

According to the social systems theory, society and the description of it cannot consist of anything other than society. It means that the sociologist cannot stand on the outside of society and produce a critical conviction of its subject field (i.e. the society). Instead, social sciences produce a self-description of society *in* society (Luhmann and Fuchs, 1994). This also counts for the engaged scholar’s interaction with practitioners; one becomes part of, e.g. a polycentric network of organizations and is studying the operation and communication from the inside while fulfilling collective goals of the network. Simultaneously, as a researcher, one also needs to pay attention to the codes of science as a function system. The position, thus, becomes dual, as described by Teubner (1993). An argument that scientific research then loses objectivity is invalid as social science always is part of society and producing a self-description of society.

Having said that, according to Luhmann (2018[2000], p. 394), “*we have to be satisfied with the “loose coupling of cognition and action.”* The reason is, that “*a theory contains its own amelioration program.*” By this statement, Luhmann makes clear, the distinction between science and non-science. Science and practice operate by different codes. In other words, an engaged scholar may need to observe different codes while partaking in a network of organizations but needs to operate by the scientific code when producing science. By this, we agree with Luhmann.

Luhmann argues further that if theory asks what effects it has on practice, the distinction, theory]practice reenters itself, and he explains:

With such a reentry, the calculus goes beyond the scope of application of the classical *modus operandi* for cognition and, one could say, becomes non-computable. The question is then how continuing the operation can still be steered with regard to objectivity or intersubjective congruence. . . . no path to meaningful critique will be opened by the initial question about the practical use of theory. Whoever poses this question, therefore, espouses the interests of practice. They are free to do so. But it is not clear what this could contribute to improving what theory can be expected to provide (Luhmann, 2018[2000], p. 394).

Here, we will argue that the function of sociology to provide a self-description of society must allow communication with the communication from systems other than science – not only with communication from scholars addressing the theory from within. Otherwise, the role of social science as being a *recursive* self-description of society is not fulfilled because not even a loose coupling with other social systems takes place. The self-description needs to

irritate (disturb) other social systems for science to fulfill its role as the producer of a self-description of society. This is the position, for which we will argue and that we will elaborate in this paper. Below this position is further explained.

Various positions in the debate on “bridging the gulf”

[Kieser and Leiner \(2009\)](#) discuss the rigor–relevance gap in management research and the proposal to overcome it, seen from a social systems theory perspective. They underline that science cannot be authentically integrated into the communication of other systems, such as the system of a business organization. Their paper underlines that social systems can only irritate – provoke or disturb – each other, i.e. alter conditions in such a way that other systems are forced to respond. They highlight that it is impossible to assess the relevance of research output within the system of science. This, we will not dispute. Their position also is that neither action research nor Mode 2 research (i.e. knowledge generated in a context of application) nor recent approaches to collaborative research can succeed in producing research that is rigorous, as well as relevant. This, however, we will dispute. As seen from their position, science and practice are philosophically “unbridgeable.” Researchers and practitioners cannot collaboratively produce research; they can only irritate or disturb each other in such a way that each is altering its way of acting. However, as they argue, sometimes irritations or provocations turn out inspiring. We will argue that both researchers and practitioners may possess dual positions in polycentric networks paying attention to several codes while producing knowledge but need to communicate in clear codes for different function systems. We will unfold this position along with Design Thinking as a way of dealing with the rigor–relevance gap.

The position of [Kieser and Leiner \(2009\)](#) is also criticized in a reply from [Hodgkinson and Rousseau \(2009\)](#), showing the inconsistency with the available evidence. Drawing on a diversity of management research domains, Hodgkinson and Rousseau provide counter-illustrations of work where researchers, in a number of cases in collaboration with practitioners, have generated knowledge that is both socially useful and academically rigorous assessed by each system.

[Barge and Shockley-Zalabak \(2008\)](#) describe engaged scholarship as originating from the perceived disconnect between academic research and practical research and knowledge that can be used meaningfully to solve problems in communities. As [Van de Ven \(2007\)](#) describes, an engaged scholarship may take on many different formats and be based on many different theoretical frameworks and philosophies of sciences. As to not paint the discussion black and white, it may be useful to recall [Van de Ven’s \(2007\)](#) four different ways of doing engaged research. Two types with a detached outside, which may fall perfectly within the notion of science irritating practice and vice versa ([Kieser and Leiner, 2009](#)):

- (1) Basic science with stakeholder advice
- (2) Policy/design science and evaluation research for professional practice

On the other side, the two types attaching non-scholars inside the research process are, what [Kieser and Leiner \(2009\)](#) reject as possible ways to produce simultaneously rigorous and relevant results:

- (3) Co-production of knowledge with collaborators
- (4) Action/intervention research (for a client)

We will primarily unfold our discussion in relation to Design Thinking as a way of dealing with “the gulf.” This is to be considered as type two ([Van de Ven, 2007](#)).

Also, Van de Ven distinguishes between knowledge production and different channels of communication (Van de Ven, 2007, pp. 232–259). This distinction allows for knowledge production ending up being framed (or coded) by different systems in the process of communication. This also counts for engaged scholarship, partaking in a search for solutions to practical problems, while simultaneously communicating in scientific codes for the scientific system. This double constituency is congruent with Teubner’s definition of partaking in polycentric networks.

Rasche and Behnam (2009) argue that practice has to make scientific knowledge relevant by incorporating it into the specific logic of its system. They argue that such an integration of knowledge is only possible by first acting as, if the offered knowledge were relevant and to then modify and extend it according to the idiosyncrasies of the system. They characterize these as-if assumptions as fiction and show their significance for rethinking the concept of relevance. Below, we will show how this fits well with Design Thinking as an approach.

Design Thinking – what is it? May it help build a bridge over the gulf?

Design Thinking, as it is described by dschool (2009) and IDEO (2015), is about different methods intended to open designing teams to information related to their social environment – people in real-life situations who are possible recipients of design solutions.

The classic flow of Design Thinking is (1) Empathize (search for rich stories); (2) Define (user needs and insights); (3) Ideate (create ideas); (4) Prototype (build to learn); and (5) Test (show, don’t tell) followed by repeated iterations of the flow.

For an illustration of the flow see Figure 1.

The data for an engaged scholar, thus, is based on participatory observation in numerous meetings, preliminary suggestions for design solutions (in case of a shared semantic reservoir this may be shared models, tools and concepts) built on international research, getting feedbacks, reiterating and getting new feedback. Data also is based on working with network members to evaluate the design solutions and procedures to build several user-scenarios for the design solutions and thus visualizing how the design solutions support the purpose defined by the network members and play fictive role-plays with multiple member organizations on their use of the design solutions. Records will be available in numerous documents, e.g. from meetings. In addition, data contains whether to get the design solutions accepted (getting commitment), as well as reiterations of the design solution while in use. The design solutions must be found relevant by all systems to select the meaning in their own operative contribution to the network and to build trust in the social arrangement.

In Luhmannian terms, this is to increase the sensitivity and openness for structural coupling by which systems shape each other’s environment (Luhmann, 1995). Therefore, it seems a useful way of going about kick-starting the emergence of an embryo of a shared semantic reservoir (as a design solution), which allows for selection of meaning by the broad array of organizations involved in a polycentric network of organizations (in spe). This is

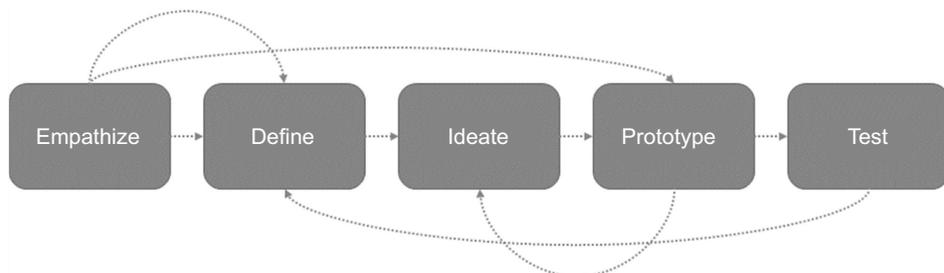


Figure 1. Model of five stages in the design thinking process from Hasso-Plattner institute of design at Stanford (d.school)

Source(s): Introduction to RoadEthos

said, knowing that participating organizations have different idiosyncrasies and preferences for different function system's codes, and knowing that an engaged scholarship cannot in a rational way predetermine a semantic, or operationalize a shared semantic reservoir *on behalf of* the network. However, the process may "kick-start" the emergence of a shared semantic reservoir, which will be shaped and reshaped in a never-ending process. The codes from the scientific system: true]untrue (Roth and Schütz, 2015) do not apply directly for a shared semantic reservoir, whether it is a model, or other shared tools, concepts or words; but in accordance with Teubner's understanding of polycentric networks, the selection of meaning has a dual constituency belonging to both individual members (organizations, which are multifunctional and programmable decision machines by nature (Roth, 2014; Will *et al.*, 2018; Roth *et al.*, 2020)) and the network, which is in the process of forming as a higher-order autopoietic system. In this dual constitution, scholars also need to ask scientific questions and communicate in scientific codes with the scientific system – the engaged scholar thus also pays attention to multiple codes (while communicates in clear codes for different function systems).

Unfolding a Luhmannian understanding of polycentric networks of organizations and the role of a shared semantic reservoir

Polycentric networks of organizations

In the introduction Teubner's (1993) definition of polycentric networks is stated as a "dual" constitution of contract and organization in one social arrangement. Neumann *et al.* (2011) introduce the notion of collaborative systems. "A collaborative system is a (self-referential, operationally closed and autopoietic) social system composed of commitments" (Neumann *et al.*, 2011, p. 310). The collaborative system is quite similar to the contractual element in what Teubner calls the autopoietic higher-order system, but Neumann *et al.* point to "commitments" rather than "contracts":

Commitments are the medium of communication by which collaborative systems couple organizations in a specific way: they become decision premises for the organizations involved. Thereby, collaborative systems are necessary and sufficient for collaborative relationships to fulfill their function. Furthermore, operational closure grants collaborative systems the possibility of constructing their own reality and identity, which can be interpreted as the semantic differentiation of "us" and "our relationship" from "you" and "me." It also explains how and why different semantics and identities emerge among different collaborative relationships, even when the organizations involved are the same. (Neumann *et al.*, 2011, p. 310)

In a presentation, Neumann *et al.*, have illustrated the collaborative system (Figure 2).

In a follow-up paper, Neumann (2012) underlines the low success rates often observed in the practice of purposeful collaboration, and he suggests that collaborative systems stabilize (i.e. succeed) if and only if they contribute to absorb uncertainty and reduce complexity for all members of the collaborative system. Although a collaborative system structurally couples, the boundaries of partners and the boundaries of the collaborative system remain clear, and the collaborative system remains autonomous.

In this suggestion, Neumann (2012) agrees with both Teubner (1993), as previously stated, and with Salonen (2010). Salonen explains organizational networks as a way to increase the complexity reduction capacity beyond the organizational boundaries while still enabling enough integration of all system elements. Interorganizational networks are a more flexible but less controllable alternative to hierarchical subsystems. The networks offer its members more opportunities to act on and influence its environment, but this will only be possible if the networked organizations stay largely autonomous and keep their self-controlling capacity.

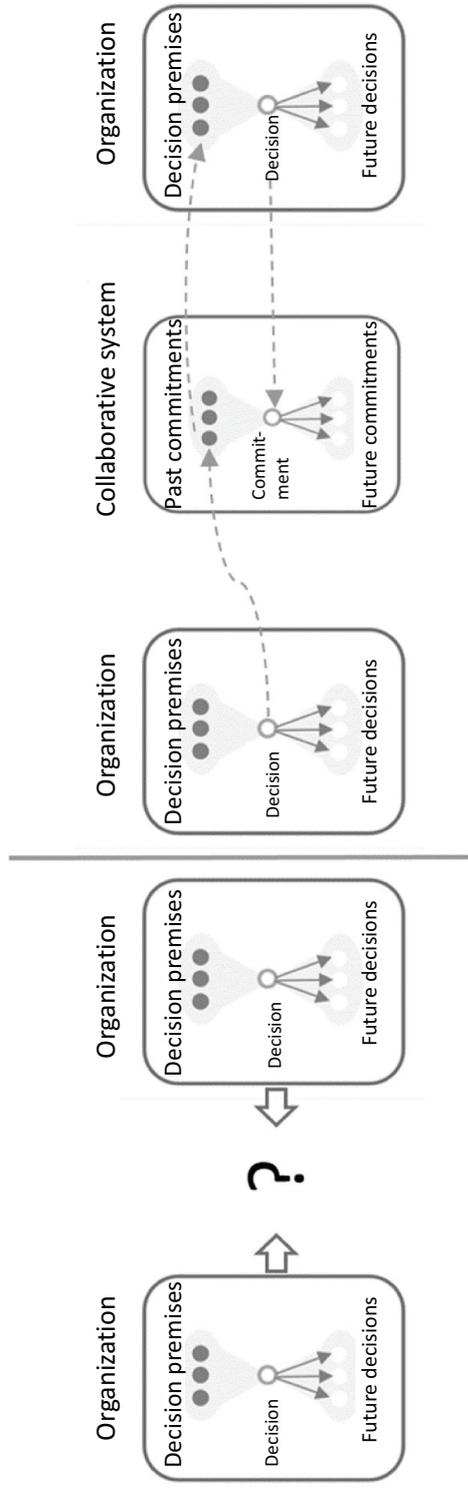


Figure 2.
Collaborative system
based on commitment
(figure inspired by
[Neumann \(2011\)](#))

Neumann admits that we still do not know enough about collaborative systems (or with Neumann's words: polycentric networks). Especially Neumann points to the need for further investigations of the role of power, contracts, trust, and reputation in collaborative systems.

Without claiming this as the only missing puzzle in understanding collaborative systems in polycentric networks, we will add to the theorizing by investigating the role and emergence of a shared semantic reservoir.

Shared semantic reservoir

For a network not to disintegrate, organizations need to be structurally coupled. Systems, being operational closures, interact with each other's communication.

A semantic reservoir acts as a prerequisite for communication. Andersen and Born have defined the concept of semantic in this way:

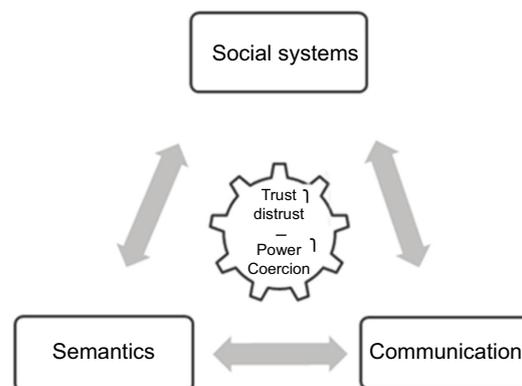
...the condensed and repeatable forms of meaning available for communication. These generalized forms are relatively independent of situations and gain their concrete content in the communication selecting them (Andersen and Born, 2000).

While meaning as a form is actuality]potentiality, which can never be fixed and represents a continual rearrangement of the distinction between actuality and possibility (Luhmann, 1995; Andersen, 2011), the semantic is to be perceived as condensed meaning. Condensation means that a multiplicity of meanings is captured in a single form, becoming available to an unspecified communication (Andersen, 2011). The semantic reservoir of generalized meaning is the reservoir available for the communication to select the actual from the possible (Luhmann, 1993, pp. 9–72). However, as described by Sakai (2020), one of the significant elements that creates the distinction between system and environment is semantics.

A shared semantic reservoir, in the case of polycentric networks or collaborative systems, is the reservoir needed for communication concerning commitments tying the network together, as illustrated in Figure 2, and to shape what Teubner (1993) calls the self-description of the social arrangement.

The shared semantic reservoir is formed and constantly reformed, through the process of communication, and creates the temporary terms and conditions of communicative dialogue. Thus, it is changeable and emerges through an ongoing process.

For a polycentric, structural coupled network (and its collaborative system) to form, the systems need a shared semantic reservoir so rich that each system can communicate, select meaning and make decisions on commitments. This is a precondition for forming a collaborative system and a structural coupling. A complicated co-evolution of systems, communication, and semantics takes place (Andersen, 2011).



Source(s): Neisig, 2017

Figure 3.
The complicated co-evolution of systems, communication, and semantics with both trust and distrust, as well as power and coercion at play

In the process of a shared semantic reservoir to emerge, both trust and distrust, as well as power and coercion, are at play (Neisig, 2017). This is the reason why it is often so difficult, and at the same time, so very needed to get a shared semantic reservoir.

If a shared semantic reservoir does not evolve fast enough for organizations trying to form a polycentric network, the process of structural coupling is in danger of not occurring at all, and the network will disintegrate. Then, the operational closure of the individual organization systems makes them continue to reduce the external complexity by the confidence built on their already existing inner representation of their external environment, and trust issues may arise. The question is, if (and how) engaged scholarship may play a role in co-designing a semantic reservoir *in* a polycentric network “in spe.”

Discussion: the role of engaged scholarship in a Luhmannian perspective – the contribution of Design Thinking as a midwife for a shared semantic reservoir

As a semantic reservoir is not something that can be rationally constructed nor steered, and as it is formed and reformed in an ongoing process, it is an open question, which role engaged scholarship may play in this ongoing process of a shared semantic reservoir to emerge. Simultaneously, the possible role of engaged scholarship forms an interesting research question, in regard to the discussion on the rigor–relevance gap. In this paper, we argue that Design Thinking is a possible way to go. Before we discuss the potential of Design Thinking as a midwife for a shared semantic reservoir, we will argue for that choice in regard to preserving a Luhmannian understanding.

As stated, we agree that engaged scholars are not in a position to operationalize a shared semantic reservoir *on behalf of* a polycentric system, not even by the use of Design thinking. We also agree that social systems can only irritate (disturb) each other, and hereby alter conditions in such a way that other systems are forced to respond. (Kieser and Leiner, 2009). However, by doing so, engaged scholars may initiate needed dialogues, because theorizing tells that the lack of such dialogues may lead the network to fall apart. Engaged scholars can bring in scientific knowledge to irritate other systems, and engaged scholars may apply Design Thinking methods. By applying Design Thinking, engaged scholars may initiate a process of communication, which may lead to an “embryo” of a shared semantic reservoir.

According to Van de Ven (2007), as previously cited, Design Thinking is a type two engaged scholarship: policy/design science and evaluation research for professional practice. Although Design Thinking involves users in producing and evaluating the relevance of practical solutions, users are not involved in creating science. In that respect, Design Thinking respects the codes of different systems, while structuring a dialogue.

The suggestion (Rasche and Behnam, 2009) that practice has to make scientific knowledge relevant by incorporating it into the specific logic of its system, by first acting as if the offered knowledge was relevant and to then modify and extend it according to the idiosyncrasies of the system. This also fits very well into the Design Thinking approach, as this “as-if” process begins already in the design process but continues in the use-process while the role of scholars’ changes. In the use-process, scholars observe and assist in qualitative evaluations on how the semantics are modified and extended “in-real-life” situations, and scholars assist in bringing this knowledge up to a communication irritating a renewed (ongoing) commitment on adaptations if other systems find it relevant. The role of engaged scholarship, thus, adapts along with the process of emergence of a shared semantic reservoir, but the boundaries of different systems need to be respected.

To cope with the double constituency of all organization systems within a polycentric network (Teubner, 1993), and with the dynamic requirements for constraint versus flexibility, Design Thinking is useful as an ongoing approach allowing avoidance of reification of a shared semantic reservoir, as static, objective models, tools, concepts, procedures, etc. Design

Thinking keeps an open, ongoing communication on all types of commitments, their impacts, relevance and on the self-description of the social arrangement. The reason for this very important issue is the requirements of the polycentric, hierarchical decision-making to remain. Therefore, the semantic reservoir must not become a stiff but flexible “shared language,” which is to be interpreted by each organization and its members, making it relevant by using the language *of each organization*. If a collaborative system becomes too “stiff,” it may fail. However, if the shared semantic reservoir becomes too “loose,” the collaborative system may also fail, as the collaborative system stabilizes (i.e. succeed) if and only if it contributes to absorb uncertainty and reduce complexity for all members. In other terms, the shared semantic reservoir becomes part of how polycentric networks, as emergent phenomena, search for a way to overcome the complexity-sustainability trade-off as described by [Valentinov \(2014\)](#). How “stiff” or “loose” the semantic reservoir is, influences the complexity-sustainability trade-off, as “stiffness” may prevent flexibility to react on the environment while “looseness” may prevent a reduction of complexity. The trade-off, as described by Valentinov is dynamic, and therefore, the shared semantic reservoir also can never be “operationalized” and stable, as little as the polycentric networks and collaborative systems will remain unchanged.

In the same way, the dual role of engaged scholarship implies not only to assist the collective goal of the network but also to produce scientific knowledge. The dual position of the scholars demands that they also ask what interesting research questions would motivate engaging in such a co-design process (i.e. what do we hope to learn and discover?). In this paper, we have a double discovering intention – we hope to learn about the process of establishing a collaborative system of a polycentric network, and in this regard, in particular, to learn about the importance and process of a shared semantic reservoir to emerge. (Scientific knowledge on these research questions are still limited). Simultaneously, we learn more on how to narrow or bridge the rigor–relevance gap (the scientific literature still has divergent lenses on this issue).

A relevant question is if the case of polycentric networks is the exception where engaged Luhmannian scholarship could work – and is assisting the emergence of a shared semantic reservoir something unique? One might assume that the reflections in this paper may apply to innovative or design-like situations in many other cases in which multiple systems or subsystems are in play concerning co-creation of new semantics, products, processes, business models or service development. However, the difference of engaging as a consultant or as an engaged scholar is that the latter, not only steps in to “irritate” other systems in a structured scientifically based way as a midwife for new ideas and shared constructs to emerge, but simultaneously ask scientific questions and produces science while paying attention to the codes of science as function system. This type of double constituency is needed to be an engaged scholar, also in other contexts.

One could further ask, what (conceptual, as well as practical) problems do we still see in the construct of an engaged Luhmannian scholarship? As stated earlier, this article only deals with one out of four types of engaged scholarships described by [Van de Ven \(2007\)](#). Especially the two types attaching non-scholars inside the research process seem more problematic and need more investigation. As also mentioned, this paper does not investigate the micro-sociology at play.

Conclusion

In response to the research question, this paper shows it is conceptually possible to construct a role for engaged scholarship compatible with social systems theory. The position is illustrated through a theoretical/methodological case in which engaged scholarship concerns assisting the emergence of a shared semantic reservoir in a polycentric network “in spe.”

The role that a shared semantic reservoir plays for the coupling of a polycentric network is also accounted for. Thus, three key concepts and their relationship are at play: engaged scholarship based on Design Thinking, polycentric networks and shared semantic reservoir.

From a system theoretical perspective, Design Thinking is conceptually a possible way for engaged scholars to play a role as midwives for the emergence of a shared semantic reservoir. Engaged scholars may “irritate” (disturb) other systems in a structured way, which Design Thinking provides the practices for. Engaged scholars performing the role as midwives may be what makes the difference between success or the polycentric network “in spe” falling apart, because the temporal dimension is crucial for the selection of trust versus mistrust, and thus, for the network not to dissolve. All member-organizations or their representatives must play a role in the emergence of the shared semantic reservoir and *simultaneously* find a way of trusting and establish social commitment in the network.

Design Thinking is a practical way to structure the communication in such a way that it involves users in producing and evaluating the relevance of practical solutions, but users are not involved in creating science. In that respect, Design Thinking respects the codes and idiosyncrasies of different systems, while structuring a dialogue. This research position allows bridging of what has been termed the rigor-relevance gap in management research (Kieser and Leiner, 2009) in a way that respects the boundaries of the systems. Because all partakers, including the engaged scholars, have a double constituency, what Kieser and Leiner (2009) termed unbridgeable now becomes bridgeable, although the boundaries of the systems remain. For the engaged scholars, it implies not only to assist the collective goal of the network but also to produce scientific knowledge. The relevance of the research is decided by the other systems, but they are also “irritating” and “disturbing” the scientific production – it is a mutual process.

Conceptually, the role of a shared semantic reservoir in the process of coupling a polycentric network “in spe” is also accounted for. A shared semantic reservoir, in the case of a polycentric network (Teubner, 1993) and its collaborative system (Neumann, 2011, 2012), is the reservoir needed for communication concerning the commitments tying the network together and setting premises for the member-organizations decisions as illustrated in Figure 2, and to shape, what Teubner (1993) calls the self-description of the social arrangement. By social arrangement, Teubner (1993) means polycentric or multi-polarity characteristics of a unified network (Teubner, 1993, p. 51). Thus, for a polycentric, structural coupled network and its collaborative system (Neumann *et al.*, 2011; 2012) to form, the system needs a shared semantic reservoir so rich that each partaking actor can communicate, select meaning and make decisions on commitments.

The unified network becomes a higher-ordered autopoietic system of action when it starts operating with the dual pursuit of the individual (organizational) and collective (network) goals.

A complicated co-evolution of systems, communication, and semantics takes place, in the process of emergence of a shared semantic reservoir. Both trust and distrust, as well as power and coercion, are at play (Neisig, 2017). It is not easy for a shared semantic reservoir to emerge due to the different idiosyncrasies of the partaking organization systems, and if a shared semantic reservoir does not evolve fast enough for organizations trying to form a polycentric network, the process of structural coupling is in danger of not occurring at all, and the network will not be able to operate with success, and may disintegrate. For the network to succeed, its operation needs to absorb uncertainty and reduce complexity for all members of the collaborative system, as stated by Neumann (2012). Polycentric networks may be able to do exactly this, as they can react as a whole, or the nodes can react autonomously, and the hybridity of the dual constituency may vary over time (Teubner, 1993, p. 51). Networks, therefore, offer its members more opportunities to act on and influence its environment, because networks increase the complexity reduction capacity beyond the organizational

boundaries, while still enabling enough integration of all system elements (Salonen, 2010). Being part of a polycentric network, however, also constrains the member-organizations. This is what the commitments and the network's self-description provide *based on the shared semantic reservoir*. Thus, networks provide a dynamic complexity-sustainability trade-off (Valentinov, 2014), if the commitments constituting the collaborative system are neither too loose nor too stiff, *and the shared semantic reservoir allows for this balance*. It is important for engaged scholars to be aware of that.

In the discussion, we have clarified the boundaries of the theoretical/conceptual case by which we have constructed a possible position for engaged scholarship in a social system theoretical perspective. It seems likely that the research position may apply to other design-like situations in which multiple systems or subsystems are in play co-constructing, for example, products, processes, business models or service development. This conceptual paper, however, does only consider one out of four types of engaged scholarships described by Van de Ven (2007). Especially the two types attaching non-scholars inside the research process seem more problematic and need more investigation. Still, further research is also needed at a micro-sociological level. More detailed micro-studies of "the on-going" process of creating and recreating a shared semantic reservoir may improve the understanding of the dynamic role of a shared semantic reservoir in relation to the complexity-sustainability trade-off. Exactly how does the stiffness or flexibility of a shared semantic reservoir evolve and play a role in balancing this trade-off? How does the hybridity of a polycentric network play out at a micro-sociological level, when polycentric networks select to react as a whole, or the nodes react autonomously, or both? Finally, a study of the shifting roles of engaged scholarship using Design Thinking in the use-phase may also reveal different positions for an engaged scholarship, as seen from a social system theoretical perspective.

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Further reading

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