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The semiotics of tacit knowledge sharing: a study from the perspective of symbolic interactionism

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Abstract

This article proposes an integrated theoretical model, combining Polanyi and Peirce constructs – tacit knowledge and semiotics, respectively – under the symbolic interactionist perspective. It aims to understand how signs are manifested as mediators in the tacit knowledge sharing process among members of a cooperative organization. It is based on: a theoretical articulation of the principles of tacit knowledge, which defends the ineffability of this kind of knowledge; semiotic theory, in which signs are a representation of “something for someone” and imply that everything in the world is a sign; and the symbolic interactionist view. This theoretical integration presents a significant theoretical contribution because it proposes a process of semiotic perception to tacit knowledge sharing. This perspective suggests that tacit knowledge sharing occurs through symbolic interaction, mediated by semiotics; this innovative model depends both on internal and external conditions, albeit involving aspects outside organizational control.

Keywords: Tacit knowledge. Sign. Peircean semiotic. Symbolic interactionism. Polanyi.

A semiótica do compartilhamento de conhecimento tácito: um estudo sob a perspectiva do interacionismo simbólico

Resumo

Este artigo propõe um modelo teórico integrado, combinando os constructos Polanyi e Peirce - conhecimento tácito e semiótica, respectivamente, sob a perspectiva interacionista simbólica, visando compreender como os signos se manifestam como mediadores no processo de compartilhamento tácito do conhecimento entre os membros de uma organização cooperativa. Baseia-se em: uma articulação teórica dos princípios do conhecimento tácito, que defende a inefabilidade desse tipo de conhecimento; teoria semiótica, em que os signos são uma representação de “algo para alguém” e implicam que tudo no mundo é um signo; e a visão interacionista simbólica. Essa integração teórica apresenta uma contribuição teórica significativa, pois propõe um processo de percepção semiótica para o compartilhamento tácito do conhecimento. A perspectiva atual sugere que o compartilhamento tácito do conhecimento ocorre por meio de uma interação simbólica, mediada pela semiótica. Esse modelo inovador depende tanto das condições internas quanto externas, embora envolvendo aspectos fora do controle organizacional.

Palavras-chave: Conhecimento tácito. Signo. Semiótico peirceano. Interacionismo simbólico. Polanyi.

La semiótica de la compartición de conocimiento tácito: un estudio bajo la perspectiva del interaccionismo simbólico

Resumen

Este artículo propone un modelo teórico integrado, que combina los constructos de Polanyi y Peirce: conocimiento tácito y semiótica, respectivamente, bajo la perspectiva del interaccionismo simbólico, con el objetivo de comprender cómo se manifiestan los signos como mediadores en el proceso de compartición de conocimiento tácito entre los miembros de una organización cooperativa. Se basa en: una articulación teórica de los principios del conocimiento tácito, que defiende la inefabilidad de ese tipo de conocimiento; teoría semiótica, en la que los signos son una representación de “algo para alguien” e implican que todo en el mundo es un signo; y la visión simbólica interacionista. Esta integración teórica presenta una contribución teórica significativa porque propone un proceso de percepción semiótica para compartición del conocimiento tácito. La perspectiva actual sugiere que la compartición de conocimiento tácito se produce a través de una interacción simbólica, mediada por la semiótica. Este modelo innovador depende de las condiciones internas y externas, aunque involucre aspectos fuera del control de la organización.

Palabras clave: Conocimiento tácito. Signo. Semiótica peirceana. Interaccionismo simbólico. Polanyi.

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INTRODUCTION

Intrinsically, the most important component of innovation is knowledge. To innovate means to renew the organization continuously, recreating it and its market, toward evolution.

This paper addresses a social interaction strand in reality creation and treats tacit knowledge sharing as a cognitive process. Therefore, the creation of new tacit knowledge content requires signs, which are the process's most valuable means of elaboration. The sharing process is a tacit form of knowledge creation, absorbed by human perception by which we apprehend the world, and molded by sounds, shapes and colors, which direct us to an understanding of the other human's thoughts, feelings, and knowledge, which are not always possible to be express verbally.

This paper focuses on the work of Peirce (1839-1941), one of the seminal authors of semiotics. Peirce is considered by Santaella (2000) to be the founder of the modern theory of signs. Peirce's work is based on phenomenology. For him, a sign represents something to someone, within the semiosis process. The semiosis process occurs in a triadic relationship between the interpreter, the world, and the interpretant, in a broad and complex context, which, beyond a deep philosophical content, involves a taxonomy of signs and their representations.

The signs work as the mediators between man and the world, created by the human being through the interpretative process. This creation happens through knowledge generated, especially that kind of knowledge that the human mind captures and develops but is not necessarily conscious of Polanyi (1962) named this type of knowledge 'tacit knowledge', which he considered to be "ineffable" (1962, p. 92). Although tacit knowledge is generally considered to be individual, it can also be observed at the group level (CHOO, 1998).

Polanyi (1962) postulates that because it cannot be articulated, tacit knowledge is shown to others by the things we make. This knowledge is shown in our action, in the results organizations achieve, in the products that an organization sells, and in the behaviors produced by people. In this way, tacit knowledge can be shared between individuals. The sharing occurs by individual perceptions of existing signs, whose significations are also shared by the group that interacts in the same environment, and act as a conducting line between the individuals' minds and the world around them. Therefore, although tacit knowledge is not articulated, it is possible to share it through signal representations, through which meaning is given by the individuals interacting with the environment by means of semiosis.

In this paper, we seek to understand and show how the signs are expressed as mediators in the tacit knowledge sharing process among the members of an organization. The analysis is based on the principles of tacit knowledge created by Polanyi (1962, 1966, 1969) and the principles of the semiotic devised by Peirce (1931-1958) (2000), infused with Charon's (2009) integrative view of symbolic interactionism. Therefore, in this paper we argue that signs are mediators of tacit knowledge sharing, which is carried out by a theoretical articulation of both Peirce's (semiotic) and Polanyi's (tacit knowledge) ideas.

THEORETICAL APPROACH

Symbolic interactionism: a knowing perspective

Originating from the sociological strand of social psychology, symbolic interactionism is based on five main ideas which consider the human being to be: (1) a social individual, (2) a thinking being, (3) who defines the environment, (4) who interacts with the environment, and, so (5) an active being in relation to that environment (CHARON, 2009).

In Charon's words (2009, p. 35), "[...] human beings are now to be understood as social, interactional, and symbolic by their very nature. Those who see only the physical, who measure only that which is directly observable, miss the whole essence of the human being."

Charon (2009) emphasizes the importance of the environment to symbolic interactionism since the human being does not answer to the environment, but also defines it, based on his or her created perspectives. That movement creates a reality influenced by the social life, although symbolic interactionists believe in “[...] some objective realities existing out there” (CHARON, 2009, p. 43); thus, we exist in two simultaneous realities — physically objective and social. For Charon (2009), there is a third reality which we create in our minds as the result of our interpretation of what is shown by other beings. That reality is unique to each human being, although we attribute significance to the objects around us through social interaction.

Charon (2009) emphasizes symbols as the central element in the construction of human society; they involve concepts of socialization, shared culture, communication, co-operation and cumulative knowledge. With regard to Shibutani and Charon (2009, p. 153) describes his vision of social words “[...] as made up of individuals who communicate with symbols, who come to share a perspective on interaction”.

Reality construction: knowledge and knowing

If reality is created by the human mind, understanding of the reality is in the human experience. He/she who constructs the reality molds the environment and is, simultaneously, a product of it, in a social constructionist approach. Knowledge sharing mediated by signs involves not only the creation of individual reality but, also and mainly, group reality based on shared interpretation. The antecedents of this idea as presented in this theoretical integration are based on the thinking of Peirce and Polanyi, whose works have been interpreted by authorities on the subject; the best examples of such scholars are Santaella (1986) (Peirce) and Saiani (2004) (Polanyi).

Semiotics: access to sharing

For Santaella (1986, p. 7), “[...] semiotics is the formal doctrine of signs. Is the science of signs the science of all and any language?” Semiotics is composed of a set of elements: signs, visual signs (images), linguistic signs, auditory signs, textual structure, and communication codes (LAWES, 2002).

Although there are several kinds of semiotics which are differentiated from each other by concept and delimitation, Husserl (1859-1938) brought to light signs and significances through phenomenology. Peirce (1839-1914) is considered to be the founder of the modern theory of signs; his extensive and complex work is based on phenomenology (SANTAELLA, 2000; LLATAS, 2004).

In the Peircean view, there are formal and universal elements in a phenomenon that are brought to mind through human perception: *firstness*, which relates to occasion, possibility, quality, feeling, and freedom; *secondness*, which comprises dependence, determination, duality, action, reaction, here, now, conflict, surprise, and doubt; and *thirdness*, which refers to generality, continuity, growing, and intelligence (SANTAELLA, 2000).

In general, Peirce saw the sign as any aspect of any shape or species, — a sound, a work, an object, a person, a stain of ink, an image, a thought, etc. — existing in a triadic relation or, in Santaella’s words: “[...] a sign is something that represents another thing: its object. It can only work as a sign if it carries the power of representing, replacing a thing different from its self” (SANTAELLA, 2000, p. 58). A sign is something determined by an object, which determines an idea in the human mind. This determination is the sign’s interpretant. Thus, “[...] the triadic relation is established between the sign, its object and the interpretant” (SANTAELLA, 2000, p. 12). In summary, “[...] a sign is something that, in a certain aspect or mode, represents something for someone” (PEIRCE, [1931-1958] 2000, p. 46).

For the Peircean taxonomy, the sign has three relational levels, and each relational level has another three hierarchical levels: the third level represents quality; the second level represents something existent; and the first level, a law (PEIRCE, [1903] 2000; SANTAELLA, 2000). In this sense, *qualisign*, *sinsign* or *legisign* represent the first level of signs, related to the first triad, from which originate the 10 classes of signs, as shown in Box 1.

The association process produced by a sign is due to the interpretant, the third element of the Peircean relation; i.e., “[...] the interpretative effect the sign produces in a real or a simply potential mind” (LLATAS, 2004, p. 88). This author also emphasizes the importance of differentiating the interpretant from the interpreter. The first is much broader and general than the second, whose role is more restricted in the Peircean semiotic (LLATAS, 2004).

Box 1
Peirce's 10 Classes of Sign

Class	First Category (law)	Second Category (object)	Third Category (interpretant)	Specification	Example
(I)	Qualisign	Icon	Rheme	Rhematic Iconic	A feeling of "red"
(II)	Sinsign	Icon	Rheme	Rhematic Iconic	An individual diagram
(III)		Index	Rheme	Rhematic Indexical	A spontaneous cry
(IV)			Dicisign	Dicent Indexical	A weathercock or photograph
(V)	Legisign	Icon	Rheme	Rhematic Iconic	A diagram, apart from its factual individuality
(VI)		Index	Rheme	Rhematic Indexical	A demonstrative pronoun
(VII)			Dicisign	Dicent Indexical	A street cry (identifying the individual by tone, theme)
(VIII)		Symbol	Rheme	Rhematic Symbol	A common noun
(IX)			Dicisign	Dicent Symbol	A proposition (in the conventional sense)
(X)			Argument	Argument	A syllogism

Source: Adapted from Peirce ([1903], 2000).

The interpretant has three levels: immediate, dynamic and final. The first level, immediate, refers to the internal interpretant of the sign; i.e., its interpretative potential, still at the abstract level. The second level, the dynamic, refers to the effect that the sign produces in the interpreter, which is unique for each human being. That effect on the phenomena has, *per se*, three levels: firstness (i.e., emotional); secondness (i.e., energetic); or thirdness (i.e., logical) (PEIRCE, [1931-1958] 2000; LLATAS, 2004).

The emotional effect is simply a feeling and the emotional interpretant is present in any interpretation without the interpreter even noticing. The energetic effect refers to a mental or physical action, when the interpreter utilizes an amount of energy, either by thinking or physically moving to look at the object that calls his/her attention. The logical effect uses an interpretative rule, without which the symbols are unable to signify something once it is connected to an idea in the interpreter's mind, and without which the connection between the sign and its object cannot exist. That explains why the sign and its object complete each other in the interpretant; i.e., the triadic relation (PEIRCE, [1931-1958] 2000; SANTAELLA, 2000; LLATAS, 2004).

The law that supports the symbol has to be internalized in the interpreter's mind, giving significance to the symbol. This occurs through the use of conventions. Cultural habit changes cause the effect that Peirce called final logical interpretant, which generates a transformation, evolution, or innovation in the interpretation (PEIRCE, [1931-1958] 2000; SANTAELLA, 2000; LLATAS, 2004).

The way in which a sign represents itself even when related to its object is a further projection of the sign; it implies what it should be transformed into — its purpose or something to be achieved. This aspect of the information has to be achieved through signification, not through the interpretative aspect (PEIRCE, [1931-1958] 2000; SANTAELLA, 2000).

Tacit knowledge: the ineffable side of knowing

There are two difficult basic points related to knowledge: how it is created and which kind of knowledge dwells in the human mind. Modern economics theories tend to be rational with regard to the first aspect, accounting for the explanation of what we believe we know is the way to create knowledge (NONAKA and TAKEUCHI, 1997; TSHOUKAS, 2002). However, it is what we know and cannot express (speak) that comprises the major part of we really know.

Considering the several classifications given to knowledge by scholars, knowledge may be: (1) of an epistemological dimension: tacit, implicit, explicit (NONAKA and TAKEUCHI, 1997; LAM, 1998; TSOUKAS, 2002), or symbolic, embodied, minded, and

cultured (COLLINS, 1993), and (2) of an ontological dimension: individual, collective, conscious, and unconscious. A third dimension can be identified for knowledge; this considers the knowing act as a process and knowledge, *per se*, as the final product of that process.

The knowing act occurs continuously while the human being interacts with the object in the human effort to deal with the world (NONAKA and TAKEUCHI, 1997). However, only part of the knowledge can be transferred, codified and mechanized (COLLINS, 1993). For Collins, the part not transferred remains in the human mind without their knowledge.

As for the codification possibility, Frappaolo (2008) argues that there might be a misunderstanding in the codification of tacit knowledge. The author postulates that in fact it is implicit knowledge that is codified in organizations and transformed into explicit knowledge, since tacit knowledge is not capable of codification; this thought is corroborated by Collins (1993) and Castillo (2002). Aligned with this, Tsoukas (2002) argues that due to an interpretation mistake, tacit knowledge has become confusingly thought of as the opposite of explicit knowledge, suggesting that implicit knowledge can be explicated, since it is already conscious in the human being.

Although Lam (1998) considers that knowledge sharing can be carried out through symbols only when it relates to explicit knowledge, it is interesting to observe that what the author calls 'embedded' seems to be more related to what tacit knowledge produces in organizations; i.e., a reflection of its content rather than explicit knowledge.

In that light, the final product might be considered to be the representation and the signal interpretation of tacit knowledge existing in group members — simultaneous with the fact that some or all of the group members manifest their tacit knowledge in a signalled way, they interpret tacit knowledge manifested by the other members of the group in an unconscious process. However, as Saiani (2004) emphasizes, Polanyi's postulations do not contain any clear reference to the unconscious aspect as a characteristic of tacit knowledge. This aspect will be discussed later in this paper.

Dreyfus (1979) states that the most experienced people use their intuition instead of rules to guide their actions. The word 'intuition', in an explicit sense, means to perceive, realizing things independent of any reasoning or analysis (HOUAÏSS, VILLAR and FRANCO, 2003). The perception that extrapolates this reasoning and analysis dwells in a kind of knowledge that we do not know we have and, if asked, we do not know how to explain it; tacit knowledge, a term coined by Polanyi (1962), refers to the author's conclusion about the fact that "[...] we can know more than we can tell" (POLANYI, 1966, p. 4).

For Polanyi (1962, p. 17), "[...] the act of knowing includes an appraisal; and this personal coefficient, which shapes all factual knowledge, bridges in doing so the disjunction between subjectivity and objectivity." Tacit knowledge is an intuitive thing, not capable of being codified or verbalized. Perception and knowing are connected elements.

The whole difficulty is in overcoming the dichotomy between the practical versus theoretical knowledge; this results in what Polanyi (1966, p. 7) calls *knowing* which emerges from the integration of both, because every kind of knowledge involves human action.

Therefore, there is not an object (objective knowledge) without a person: "All knowing is personal knowing — participation through indwelling" (POLANYI and PROSCH, 1975, p. 44) — the knowledge belongs to the knower. Thus, perception is an impoverished form of tacit knowledge, a bridge between human power creation and the processes in which individuals are involved (POLANYI, 1966, p. 7). However, for Polanyi (1966) knowledge is created by human interaction with his/her environment, denoting a sharing process.

Knowledge within humans is what gives significance to things, resulting in judgment through the sensations and cognition. Judgment cannot be prescribed by rules, but is determined by our senses. It is a high-ability performance, which involves body and mind. Our senses (eyes, ears, skin) establish a correspondence between symbols and the real experience of our senses (TSOUKAS, 2002).

Tacit knowledge has three structures: (1) functional — a from-to relationship between the subsidiary elements and the focal objective in which we understand the element by the consciousness we have of them seeking another objective; (2) phenomenological — the transformation of the subsidiary experience in new sensorial experiences; (3) semantic — the significance of the subsidiary elements, i.e., the focal objective supported by them (POLANYI, 1962, 1966).

We have two types of consciousness, which Polanyi (1962) names after terms borrowed from anatomy: proximal — related to our objective (consciousness about a face), and distal — related to an instrument oriented toward our object (consciousness about the traces of a face). Those two kinds of consciousness are mutually exclusive (POLANYI, 1962, 1966; TSOUKAS, 2002).

There is a functional relationship between both the proximal and focal in the tacit cognition process, which can be observed by attending to the objective of our knowing process. For Polanyi (1966, p. 10), “[...] we know the first term [proximal] only by relying on our awareness of it for attending to the second [distal]. [...] It is the proximal term, then, of which we have knowledge that we may not be able to tell.”

In the functional structure of tacit cognition, we have to learn to believe in our proximal consciousness elements in order to attend to our objective — our knowledge about them is tacit, indicating we know much more than our consciousness reveals to us (POLANYI, 1966), even when we verbalize our knowledge, since the meaning might be hidden in the word we choose, even when we do not realize it. Thus, we denote something, but we might connote a different thing.

The phenomenological structure of tacit knowledge is formed by a triangle, whose vertices are: subsidiary element (proximal), focal objective (distal) and the knower, which connects the first two vertices. The integration between the subsidiary and the focal is not automatic — it is the result of the knowing act (POLANYI, 1962, 1966; TSOUKAS, 2002; SAIANI, 2004).

Therefore, all knowledge is personal and every knowing is an action. Such integration is essentially tacit (since ineffable) and irreversible (since it cannot be unlearned). A proximal/distal conversion is not possible — every time the focus changes, tacit knowledge changes too and the previous knowledge does not work with the same purpose (POLANYI, 1962, 1966; TSOUKAS, 2002).

The semantic structure of tacit cognition accounts for the significances the subsidiary elements bring when we seek to attend to our focal objective. In the example of recognizing a face, the significances given to the apprehension of its traces (proximal — subsidiary elements), allow us to apprehend the face and recognize it. As Polanyi explains, (1966, p. 12) “it is regarding their meaning that they enter into the appearance of that to which we are attending from them.”

Based upon those three structures, Polanyi (1962, 1966) establishes a fourth: the ontological aspect of tacit knowledge; i.e., “[...] understanding of the comprehensive entity which these two terms jointly constitute” (1966, p. 13), in which the focal element (distal) represents the particular characteristics of the entity, which we apprehend, trusting our consciousness about those particular characteristics while attending to the significance given to them as a whole.

From an epistemological point of view, the subsidiary elements can be tangible or not — all of these are only instruments that we assimilate and which indwell. However, the process must be like an instrument that is not focused, but rather a means to achieve our objective. To internalize that instrument, we should accept it and commit to it, unconsciously (POLANYI, 1962, 1966; TSOUKAS, 2002).

The internalization of an instrument leads us to the development of new knowledge and ability, improving our performance. Expanding our unconsciousness in some aspects, while we expand our consciousness in others, and doing so in a contextual and recurring way, involving assimilation, internalization, and exploitation (of some things) to focus (on others), is a continuous and endless process (POLANYI, 1962, 1966; TSOUKAS, 2002).

The social, specialized, abstract, and theoretical have to be transferred to day-to-day activities, in which people organize their experience, knowledge, and transactions with words. Tacit knowledge cannot be captured, translated, converted. It can only be shown and manifested in everything we make. Tacit knowledge is “ineffable”; we do not know how to express what we tacitly know (POLANYI, 1962, p. 87, 95).

New knowledge arises not when it becomes explicit, but when our performance manifests in new forms, through social interaction and in the attention we give to its subsidiary elements: “The knowledge of such particulars is, therefore, ineffable, and the pondering of a judgment in terms of such particulars is an ineffable process of thought” (POLANYI, 1962, p. 88).

Opposite to what one might think, tacit knowledge is not in the human's mind, but in the system in which they act. The knowledge depends on the human action and is an outcome of that interaction and the systematic environment where the human being acts, be it social or organizational (CONNELL, KLEIN and POWELL, 2003).

As Saiani (2004) explains, we can infer that "[...] the physical environment sources subsidiary indications that, tacitly integrated, contribute to an attitude [...]" (2004, p. 93). However, we do not realize "[...] the tacit integration of the indications that we dwell" (2004, p. 101) since what we see is metaphorically the tip of an iceberg; this explains what Polanyi (1962, 1966) means by saying that we might know more than what we are able to say.

Although not always unconscious to the mind, Scharmer (2000) understands that tacit knowledge has two different forms: embodied — day-to-day knowledge, reflected in our actions; and auto-transcendent — not internalized by the human and which accounts for human desires. The author argues that only the first one can effectively contribute to the competitive advantage of an organization, which suggests that there might be a distance between the organizational objectives and the individuals that work in the organization.

All the views briefly shown herein suggest that understandings of what Polanyi meant by tacit knowledge are differentiated, perhaps due to studies taking place in several areas such as knowledge management, artificial intelligence, sociological aspects, and the practice communities (GOURLAY, 2002).

Besides, it seems that there is not a consensus on the ontological and epistemological dimensions of tacit knowledge. Thus, we think it is important that this paper positions tacit knowledge as an individual or collective result of tacit knowing, not necessarily unconscious to the human mind and, since it is ineffable, depending on other elements that can contribute to its sharing, which is also tacit, and generate new individual contents, not totally common to group members' minds, which occur through human perception.

Knowledge and Signs

The relation between tacit knowledge and sign is not new. Gourlay (2002, 2004) developed a proposal, basing his argument on the spectrum developed by Dewey and Bentley (1949), called the *sign-process* which involved *the bodied end to the symbolic* (RATNER and ALTMAN, 1964, p. 142). Dewey and Bentley (1949) identified three types of signs: signal (perceptions), designation (name, where the language is applied) and symbol (mathematics). Within designation, they identified clues, characterization, and specification, which refer to language sophistication.

Since it is intrinsic to human behavior, the sign process is also intrinsic to the organization members' behavior. Both the organizational and the social environments compose a system from where people create their knowledge, using semiotical elements — especially non-verbal ones — where tacit knowledge is focused (GOURLAY, 2002, 2004).

However, Gourlay's (2002-2004) proposal relates to tacit knowledge as a process, based on his comprehension of Polanyi, not considering tacit knowledge as a final product. For this reason, his proposal treats the tacit knowledge process as the semiosis process, *per se*.

The argument we seek to present in this paper considers tacit knowing as a knowledge creation process, and includes sharing and tacit knowledge as the final products of that process. We base our proposal on Polanyi and Prosch (1975, p. 37-38), who postulate that "[the elements'] subsidiaries exist as such by bearing on the focus to which we are attending from them", when they refer to the semantic element in the tacit knowing structure, which we consider to be the final objective of what Polanyi (1969, p. 182) called *vectorial character*, referring to the human consciousness. From our point of view, the object of that movement is in tacit knowledge.

Furthermore, in this work we consider semiosis to be a perception process *per se*, and we also assign to it the function of a bridge between the power of human creation and the processes in which individuals are involved, as postulated by Polanyi (1966); i.e., a way toward the object, not the object, whose significance is located in the human mind, assigned to the sign by the mind in its representation. Those thoughts are detailed later in this paper when we explain the discussion between Peirce and Polanyi.

Charles Peirce and Michael Polanyi: seeking an integration

Charles Sanders Peirce (1839-1914) has influenced several scholars such as Dewey, Royce and James, making an important contribution to symbolic logic, scientific methodology and semiotics. According to Santaella (1986), Peirce is considered to be the creator of pragmatism, which is defined as a way by which the significance of something is given by the set of dispositions to acting that something produces. That significance originates from the man's experience related to the world of human action.

Michael Polanyi (1891-1976) was a medicine and physical chemistry graduate. He based his studies in the Gestalt, which postulates that human perception fails to perceive an object because it infers what is already known from it, executing a tacit integration in which the object is perceived, assigning significance to the object that it has not had before, by a perceptive mechanism, although not aware of it because it is tacit; i.e., impossible to be controlled or felt (SAIANI, 2003).

Peirce and Polanyi belonged to different lines of thought as to the possibilities of knowledge; Polanyi fought against the pragmatic view, which was supposedly defended by Peirce. However, Peirce, a logician and philosopher, seems to defend methodological pragmatism without abandoning metaphysics; i.e., he looked to extend it and highlight it. His science-inspired philosophy widened the intellectual scope. This can be observed in the interpretation made by Kinouchi (2007, p. 217), for whom "Peirce's pragmatism [pragmatism] is of an intellectualist nature; if there is any reference to the practice, it is related to a rational practice — i.e., related to the optimization of the economy of reasoning brought by the logics".

Thus, it seems both Peirce and Polanyi's views are complementary, because Polanyi sees in tacit knowledge something that might be used in an unconscious and individual way, although occurring in the individual's relationship to the external world, while Peirce postulated that the significance of signs has a distinct aspect from individual to individual, due to the degree of consciousness of each one, although the concept of sign is social.

Although it is not possible to say how much Peirce and Polanyi influenced each other, the dimensions of thought they defend allows one to infer that they have more in common than in contrast. Both were professional scientists before becoming philosophers, both defended widening thought, both saw knowledge as something originated in perception. When one considers several strands related to perception, Peircean theory is, from our point of view, the perfect connection between Polanyi's thoughts about tacit knowledge and the way it is shared.

To understand that connection in a linear way, it is necessary to first consider the sharing process as a cognition process, which occurs through the interaction of man with his social environment, using signs as mediators.

Santaella (1998) discussing Gibson (1974) argues that "[...] there is a difference, there is a mismatch, or rather, something is lost, and something is added. It adds that, in particular, and that occurs in the passage of the sense organs to the brain is, as yet, not yet observable, not measurable. Moreover, when he finds exactly the problem of perception" (SANTAELLA, 1998, p. 22).

Santaella (1998) emphasizes the importance of the object within Peircean semiotic theory because it is the 'cause' of signal action, which explains that it is important not to confuse it with something. However, the author believes a sign can denote any object, which can simply be one thing; however, this is not the case in most instances, since few signs denote a single object, as it refers to "[...] almost always complex objects" (1998, p. 41). Summarizing Peircean thought and Santaella's (1998) work, we wonder about the complexity of the issue of representation signal so down.

Santaella (1998) explains that the relationship triad — sign-object-interpretant — in its most genuine form is found in symbols; i.e., thirdness, because they imply a representation of a convention. The flag of a country is a symbol because it contains a social convention for that community — the values of its citizens about their country, among others. Within the Peircean semiotic, taxonomy is a legisign; i.e., a law.

In a dual relationship — object-sign — the sign is an index; i.e., secondness. In fact, something existing in the singular is a sinsign; in the example provided by Santaella (1998), a black cloud is a sign of rain.

In this classification, firstness is the least important; i.e., the sign itself is only a reduced quality of the object that it represents — for example, an icon of the object, a quality sign (e.g., the figure of a printer in a computer program represents the object itself or the printer itself).

Why repetitively stress these ideas? Because in these ideas the issue focuses on the type of effect that elevates a sign to the mind, in the process of semiosis, which, in our view, is the very process of perception, because, as explained by Santaella (1998), the individual perceives the phenomenon (object) by the sign, whose existence is totally dependent on the object; i.e., “[...] logic is the primacy of the sign, but the primacy of the object is real” (SANTAELLA, 1998, p. 44).

The difference between object and sign is relative. The nature of the object implies a kind of sign. An index (the black cloud, for example) contains a part of the object, which is why the sign can display it. For an icon (a picture of a printer in a computer program), however, the difference does not matter because the representation is a fruit of similarity between both (SANTAELLA, 1998).

Whatever the nature of the sign, Peirce identified two types of objects related to it: immediate — internal to the sign itself and dependant on our interpretation; and dynamic — external to the sign, which may be represented by some signs. Thus, the immediate object turns out to be the mediator in the relationship between the sign and its dynamic object (SANTAELLA, 1998); i.e., “[...] the sign can only represent its object in the sign because there is something that makes you be able to be applied, denote this object” (SANTAELLA, 1998, p. 49-50).

The symbol, according to Santaella (1998, p. 50), would have the dynamic object “[...] object relations as unlimited and the final study would show”. Because this is impossible, the symbol is only known by its immediate object, which is what the symbol denotes as its dynamic object at a certain point of semiosis. As Santaella (1998) explains, objects can also be accessed by what Peirce called “collateral experience” (SANTAELLA, 1998, p. 47), consisting of signs and an additional type of cognitive experience, reducing the disparity between the object and the sign.

In this respect, we think this establishes a new complementarity between the thought and cognitive experiences of Peirce and Polanyi (1966) because, according to Polanyi, focal awareness relates to our goal — take his example of a nail into a wall — because our subsidiary awareness is more related to the instrument used for this purpose — the sensation of the hammer in our hand.

Thus, the signs that access the experience of perception of the same ‘fact’ are distinct, as is the emphasis on one or another dimension of it; one is mental, while the other is physical. However, the focus of the first is awareness; the second is captured by the mind without it being aware of it — by means of other signs, in a supposedly collateral experiment. This would explain the totality of the perceptual experience, through various moments of semiosis in separate bodies, approaching the sign from its object — a growing movement.

According to Santaella (1998), for Peirce, the existence of thought depends on perception and lives in constant change because of it. His theory of perception is triadic or breaks the dyadic of subject and object, replaced with three elements: the *percept*, the *percipuum*, and *perceptual judgment*.

The first, *percept*, refers to the individual’s reaction to the imposition of the perceived object on the mind. The second, *percipuum*, is the device that translates the perceptual motor or perceptual experience. The third, *perceptual judgment*, is the interpretation of the *percept* (SANTAELLA, 1998). The *percept*, for Peirce, is not created by the human mind; it is necessary to change it. Thus, he claims that it is the result of perceptual-cognitive development (SANTAELLA, 1998).

Santaella (1998, p. 62) cites a quotation of Peirce’s which I consider vital to the connection made in this work with the thought of Polanyi about tacit knowledge: “[...] every *percepto* is the product of mental processes, or, in any case, the mental process that is to all intents and purposes all, although we are not directly aware of them.”

It is then possible to infer that this understanding resembles what Polanyi (1962) posits; i.e., the individual as an action on the act of perception, because perception is individual and unique, depending on the experience of each subject. The individual obtains information about the environment through perception, based on judgments made by sensory contact with the environment, which is fundamental for the theory to explain this phenomenon of perception.

For Polanyi (1962), there is no change when it comes to knowledge. It is just a tacit dimension of our thinking, as explained when one *stumbles* upon events (POLANYI, 1962, p. 35); i.e., our understanding of the randomness of natural events: “The aim of a skillful performance is achieved by the observance of a set of rules which are not known as such to the person following them” (1962, p. 51).

This gives us the condition of performing a task without understanding the purpose of the rules that organize the natural events, random or not, in which the author treats knowledge as more important than the rules, because it cannot be replaced.

Santaella's interpretation (1998) of Peirce's thought demonstrates that the individual perceives only what we can interpret (trial), although the percept is present to consciousness before the trial, and can only be understood after this.

The inference here that there is another similarity between the thoughts of Peirce and Polanyi can be made, since Polanyi posits that tacit knowledge is something that is not conscious of what you have. It is possible, then, that this tacit knowledge is not yet interpreted by the percept.

Semiotically, as stated by Santaella (1998), the *percepto* acts as dynamic object perception (semiosis), and perceptual judgment is the sign that connects to its immediate object, the *percipuum*.

Santaella (1998, p. 65) explains that Peirce sees the judgments of perception as logical inferences from thirdness parties; i.e., having "[...] mental and interpretative schemes [which are] more or less normal", to which the *percipuum* conforms, forcing it on our mind "[...] through mental processes of which we have no conscious awareness"; he describes one of the many mental processes as "[...] like diving into processes that are not explicitly available to consciousness."

It is likely that tacit knowledge, then, can be considered one of those mental processes; i.e., the possibility of the unconscious mind. For Polanyi (1966), perception and knowledge elements are connected. Perception as a process to know the object through the impression that the object produces for the human senses is the basis for tacit knowledge.

For Polanyi (1966), perception is an instance of the process of implied cognition. When we consider the functional, phenomenological and semantical structures of this process, and our body as an instrument, we rely on our awareness through contacts established with external things. Our treatment of these things — according to the author — is a clever use of our bodies not experienced as an object; rather, we know that this experience is our body and not the external thing.

According to this view, by doing something to work with as the focal element of tacit knowledge, we have incorporated it within us; thus, we bring that element to reside within us, internalizing it (POLANYI, 1966). The countryside is, according to the author, an identification process between us and what we learn.

According to Polanyi (1966), what lurks in the form of tacit knowledge imposes itself on our consciousness — prescience about a truth that creeps up on our minds, causing us to commit ourselves to something not revealed, perhaps unthinkable. In his words: "[...] we are looking at it not only in itself but, more significantly, as a clue to a reality of which it is a manifestation" (POLANYI, 1966, p. 24).

Here, then, is not just another point of convergence between the thoughts of Peirce and Polanyi, but one important element: what Polanyi calls a clue — a hint of a reality not yet manifest — can be understood in view of the trial of Peircean perception as abductive inferences, "[...] a quasi-reasoning, instinctive, a kind of divination, highly fallible, but the only kind of mental operation responsible for all of our insights and discoveries" (SANTAELLA, 1998, p. 66), without which one would be unable to connect with the vision of Polanyi (1962, 1966) of tacit knowledge being an intuitive element in which lies the greatest source of creation of the human mind.

Reinforcing this connection is: (1) the explanation of Santaella (1998) about the differences between perceptual judgments and any other trials. Peirce deemed the perceptual result of "[...] mental mechanisms that completely escape our control and dominion as simply happening" (SANTAELLA, 1998, p. 67), observed by a kind of *sensory equipment* with which we are naturally endowed, which we use without it realizing, while other trials may even be the object of training to be developed properly; and (2) Polanyi's (1966) statement that the process involves a recognized tacit cognition research track that supposedly gives support to the existence of something apparently indicated, making meaning more important than its tangibility.

Along these lines, we think it can be inferred that the trial's *trainability* relates to explicit content, while perceptual judgments relate to the content of tacit human cognition, because, as explained by Santaella (1998), in Rosenthal's interpretation of

percipuum, Peirce realizes that “[...] he is a recognizable content, but ineffable sense” (SANTAELLA, 1998, p. 76). The exact term Polanyi (1962) used to define tacit knowledge is as follows:

The knowledge of such particulars is, therefore, ineffable, and the pondering of a judgment regarding such particulars is an ineffable process of thought. This applies equally to connoisseurship as the art of knowing and to skills as the art of doing, wherefore both can be taught only by the aid of a practical example and never solely by precept (POLANYI, 1962, p. 92).

To complete this bridge that we seek to build, we add a quote from Peirce presented by Santaella (1998, p. 83) “[...] the perceptual judgment can only refer to a simple perceptual that will never exist again, and I know I think he is red, when in fact, he did not seem red, must be at least acknowledged that he seemed to appear red.” Emphasizing the similarity of thought between Peirce and Polanyi, red is recognized as ineffable.

The way these tacit contents are then shared is a new process of cognition, whose outcome remains tacit and is based on signs of thirdness (symbols), fitted with conventional meaning, resulting in a new *percipuum* which is ineffable, inexpressible, and inexplicable as concluded by Polanyi (1962, p. 92): “But the relationship of the particulars jointly forming a whole may be ineffable, even though all the particulars are explicitly specifiable.”

The inability to share the results of this explanation results in an inability to explain our knowing, or as Polanyi explains, we are able to describe a face, but really only recognize it when we see it face-to-face, because we recognize the expressions; however, we cannot say, “[...] except quite vaguely, by what signs we know it” (POLANYI, 1966, p. 5).

This sharing occurs through interactions among individuals with their environments and each other. According to Polanyi (1966), we demonstrate our knowledge relying on the cooperation of the other’s mind to capture the meaning of what our actions show. In philosophical terms, according to the author, this is an *ostensive definition* (our translation); i.e., the definition of an object occurs in the action of pointing to the object itself.

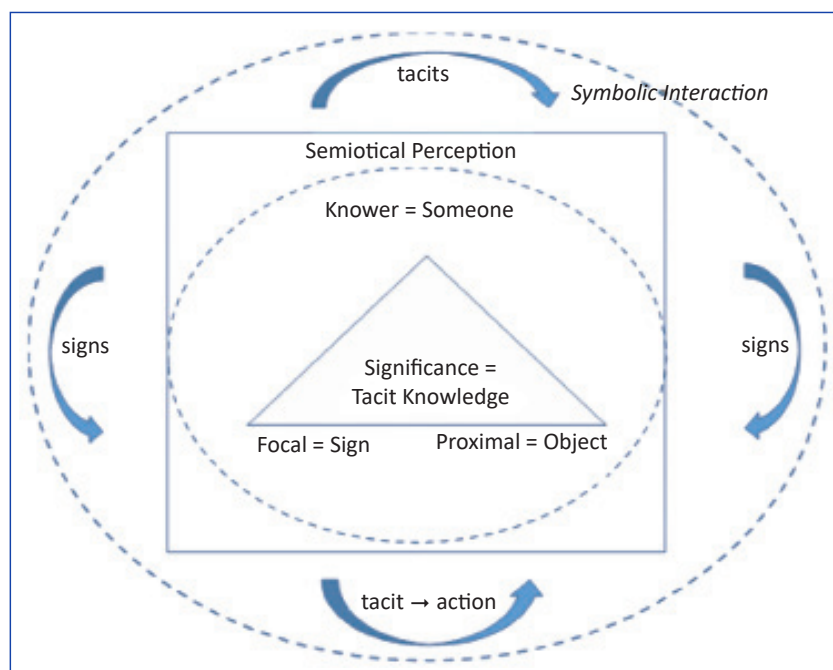
This implies, according to Polanyi (1966), that individuals involved in this process share common meanings, because in pointing to the object, we trust that the message is understood by my partner, although particles of it are not fully passed in the act. For the author, the jump is explained by the Gestalt consideration that our consciousness can integrate these particles without even knowing them in detail. In other words, the whole is greater than the sum of its parts, which is a synergistic effect.

It also implies, according to the author, that we can assume that individuals exercise their skills through their bodies, creating an entity that can be understood by others who understand the same structure of the object grasped by these individuals. Thus, we can infer that to share is synonymous with to comprehend, or rather, to make sense, assimilate, understand. But while the structure of the seizure is the same as the object seized, its contents are not equal. By grasping the entity, the process of cognition implicitly restarts, causing me to trust that reality that creeps into my mind, and I commit to it and internalize it. The Gestalt is new, with the content learned becoming bigger and different from the content of that entity.

However, as already mentioned, because of the sharing of common meanings perceived by individuals involved in the interaction with signs as mediators, this interaction occurs in symbolic form; i.e., a social process of tacit cognition — symbolic interactionism.

Whereas (a) tacit knowledge is significantly borne of perception, in which the knower focuses on the distal element (focal), which gives meaning to the proximal element (subsidiary) in a ratio to, and (b) a sign is a something that represents something to someone, in the process of semiosis, we likely infer that: (1) perception and semiosis are integrated processes, in which, according to Santaella, perception is semiotical, (2) the ‘knower’ of Polanyi is ‘someone’ called Peirce, (3) the representative function of the sign is the assignment of significance of the focal element of Polanyi, and (4) the subsidiary element is the object that represents the sign. This inference is represented in the diagram shown in Figure 1.

Figure 1
Evolution based on human creation



Source: Elaborated by the authors.

CONCLUSION

Semiotics in tacit knowledge sharing — a theoretical articulation

The crux of this work is to merge the thoughts of Polanyi and Peirce, permeated by the sociology of knowledge and symbolic interactionism, and the environment and context of signs and semiosis as a process of perception. The signs, in order to be perceived by individuals tacitly, come to be reflected in their actions and the process of identifying, creating new tacit contexts as a result of the sharing of individual tacit knowledge.

Peirce is easily connected to symbolic interactionism as one of its exponents. Polanyi is not; however, we believe that, like Peirce, he perceived that the individual's interaction with the world is something fundamental in the process of cognition.

The process of sharing tacit knowledge (POLANYI, 1962) occurs through actions which have an exponential, but implied, form: the individual, to observe the actions of other individuals through the process of perception, identifies with them, passing them to reflect, in part or *in toto* on their own actions, without being aware of it. This is a function of meanings given by semiosis — objects created by social conventions (symbols) (PEIRCE, [1931-1958] 2000). Sharing occurs in the drifting of individual consciousnesses, through social interaction and signification; i.e., symbolic interactionism (CHARON, 2009).

Shared knowledge remains tacit — tacitly, in the mind of each individual — because as Charon (2009) claims about symbolic interactionism, there are three realities that we live in: the external objective reality, social reality and individual reality, which is one piece of a non-shared social reality; i.e., tacit knowledge.

Although Charon (2009) does not use the term 'tacit knowledge', we can consider that this shared piece remains tacit because it is not clear that the individual exists. There is a little confusion, a kind of cognitive dissonance in the individual about two other realities.

We can then say that the signic representation, being contextual, serves as a symbolic means for individuals of a particular group to share their tacit knowledge, using a social semiotic process (Figure 1).

As to the practical implications, we can assure that, in fact, the proposed combined model has been subject of empirical researches, through a case study, contributing to the management area by showing the final model proposed explained how the tacit knowledge can be shared upon the Symbolic Interactionism. This observation is now being included at the end of the present article.

The contribution sought here aims to understand how we create what we create from our apprehension of the world, based on the reality created on the day of seizure, particularly integrating tangible and intangible elements internal to the humanity of the individual in their social interactions.

The integration of related ideas with (a) aspects of tacit knowledge — phenomenological (experiencing the transformation of sensory experiences in a new subsidiary) and semantic (the meaning of the subsidiary, which is focused on the goal they support) (POLANYI, 1962); (b) subsidiary awareness in which we must trust to attend focus (our knowledge about them is tacit) (POLANYI, 1966); (c) the relationship of the sign to the interpretant (i.e., the result of semiosis) (PEIRCE, [1931-1958] 2000); and finally, (d) the contextual aspect of the signic representation — the interpretation of the group, confined to their environment, within their daily practices, and (e) the effect of actions or symbols, within tacit knowledge (COLLINS, 2001a), we can say that tacit knowledge is shared by the group by means of signs.

With the intention of broadening understanding about how tacit knowledge is shared and the signs that share a common thread in all its diverse forms of manifestation of this research study, we sought to answer the following question: How are signs manifested in sharing tacit knowledge in a group of individuals of a particular organization?

The answer to the overall objective was constructed by evolving the understanding of some aspects, which are the goals of this study; namely: (1) Articulate the assumptions about the semiotics of Peirce and tacit knowledge, including Polanyi's process of creating a perception as semiosis; and (2) Identify key aspects related to interactions between individuals in the organization; i.e., the signs of this interaction.

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