CHAPTER 10

Transformative Learning and Sociomateriality

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Introduction

This article aims to probe the theoretical and development potential of Transformative Learning Theory (Mezirow, 1991) and the Actor Network Theory (Fenwick, 2000), ANT, exploring possible intersections between two souls that appear contrasting, the transformative one with the primacy of meanings and the sociomaterial one with the primacy of the relationship between human life and artifacts, technologies, and objects.

The article mainly tries to show some perspective similarities between transformative learning theory and ANT, without any presumption to discuss a new great ontology, nor to replace either of them. Comparing theoretical or philosophical perspectives can be dangerous, especially

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when we try to enclose the ideas or encapsulate them under a transcendent term, under a common umbrella category that we consider valid, to synthesize two theories that instead arise as peculiar expressions on a specific problem. As evidenced by the volume edited by Kokkos (2019) titled *Expanding Transformation Theory* you can open interesting and profitable ways to refresh and reinvigorate a theory as widespread as the transformative one.

We are convinced that seeking new connections, from the theoretical point of view, can provide us with new ideas to implement more effective educational practices and develop new research plans. While empirical studies allow us to describe, interpret, and transform a phenomenon through experience, theory

> is indispensable for the *conceptualisation of the phenomenon* one wishes to investigate. While researchers may wish to study learning, it is only after they have engaged with the question how one wishes to conceptualise learning—for example, as information processing, as behavioural change, as acquisition, as participation, as social practice—that they can make decisions about what the phenomena are they should focus on and how one might go about in doing so (the question of design, methodology and methods). (Biesta et al., 2014, p. 6)

In the analysis of the sources, some exclusions are therefore necessary, given the limited scope of the work. It could be interesting to incorporate references to the evolution of feminist debate and gender studies (Bray, 2007), the work of Knorr-Cetina (1997) on object relations in professional knowledge, and the studies on power (Hearn & Michelson, 2006).

In the next paragraphs, we will explore the two theories, and after, we will analyze some key points of both theories, trying to evidence some impact for empirical research, educational practices, and theory of education.

Transformative Learning

Mezirow (1991) is clear about the evolution of theories of adult learning, often bent by behaviorist approaches and unwilling to value the way people categorize the world. From this premise his theory is thus explicitly placed within the framework of constructivist studies and defines, as

early as in the introduction of his first volume, learning as a transformation of meaning making. This is an important position because it clarifies that from the point of view of transformative learning theory there is no contrast between what subjects think and what they do, between the meanings they attribute to things and their behavior. However, there is a priority. In order to change the way, we live in the world we must first transform the way we interpret it. It is an important connection between Mezirow (1996) and the axis of the idea of consciousness of Freire. At the same time, Mezirow develops a theoretical system that draws on Habermas and in particular on the theory of communicative action. Starting from this idea, Mezirow describes adult learning as a dialectical process that aims to understand the meaning that is generated by a context. Transformative learning thus adopts those concepts coming from the Frankfurt School, in particular the Habermassian theorization of critical self-reflection: The validation of acquisitions is a fundamental prerequisite for emancipation from conditioning that must support every area of human knowledge; the technical premises of empirical verification of environmental data; and communication procedures geared to understanding the social world. Learning in emancipatory terms means acquiring awareness of how our history and biography have expressed themselves in our relationship with ourselves, in our assumptions about learning and the nature and use of knowledge, as well as in our social roles and expectations, and in the repressed feelings that influence.

Echoing Kelly (1991)'s theory of personal constructs, Mezirow also emphasizes the importance of the fundamental roles fulfilled by the frame of reference acquired by an individual, through which meaning is built. Finally, the red thread of all his work is the epistemological matrix of Dewey (1938) intertwined with previous perspectives, which allows him to describe the dynamics with which adults learn to negotiate and validate meanings through a thoughtful process that allows them to critically process the experience. It is the emancipatory interest that must sustain learning in adulthood, feeding the explanation and the evaluation of the premises on which the learning is built. The key construct of transformative learning theory is identified in the word "transformation" and how it unfolds in a particular investigation. Thus, the investigation of thought on cultural, epistemological, and psychological constraints allows the transition from pre-reflective thought to reflective thought. Therefore, the logic that sustains the tension of transformative learning is reflective rationality.

The reference to the literature on adult development leads Mezirow to underline the positions of those who question the assertions that describe the concept of socialization as a dynamic and inexorable process that leads to maturity. Some sociological studies, especially those by ethno-anthropologists, reject this concept. According to such research, the change would result from cultural contact, rather than from the transition to a higher evolutionary stage. It is a culture that can hinder or facilitate the development of self-awareness and the ability to perform symbolic representations. The ability to become aware of the self, to distinguish personal-psychological reactions from external events, to distinguish between one's thought or description of a thing and the thing itself are the skills necessary for decentralization, for decontextualization, the construction of identity. In these terms, the achievement of the ability to be part of increasingly complex systems of action emerges from a perspective of evolutionary learning and refers to a process of intentional learning.

It thus outlines an implicit idea of the self as a construct incorporating the idea of meaning. Meaning exists within ourselves, and the relationship that each subject has with the world is a function of their previous personal experiences. Through socialization, the subjective self is constructed in a unique way from the biographical point of view. It is this point of view that provides a set of interpretative rules to give meaning to everyday life.

To the extent that we realize that our perception of reality has been conditioned by cultural constraints and prior circumstances, rather than by a view of history as an impersonal account of the past and by a stadial development, reflection becomes the most influential way of drawing meaning from experience, because it is defined as the central dynamic of intentional learning and verification of validity that is carried out through rational dynamics.

It is a reflection that allows an enlightened action that focuses on the explication of the meaning of an experience or the reinterpretation of that meaning. Reflection becomes an intrinsic element of learning that allows the recovery and rational analysis of one's own experience, in a process of explanation and critical review of those assumptions on which knowledge is structured and justified. Transformative learning theory is based on the assumption that learning is the result of a process of elaboration of knowledge, carried out in light of codes and interpretative criteria acquired in previous experiences, reproduced mostly uncritically.

Transformative learning is learning nourished by reflective rationality that, in verifying the validity of its interpretative models, builds the basis for a more integrative knowledge of experience, open to possible and alternative visions, free from pre-reflective, tacit, and crystallized distortions. Learning implies the ability and willingness to elaborate, transform, increase existing interpretations, or to build new ones through the transformation of dysfunctional patterns or perspectives through four phases:

- extension of meaning schemes;
- creation of new patterns of meaning;
- the transformation of old patterns; and
- change in outlook.

Transformative learning lays the foundation for a more integrative knowledge of experience; alternative revisions to epistemological, cultural, and psychological assumptions that previously seemed obvious, immutable, and all the more tacit.

Mezirow (1995) suggests a hierarchy of learning processes that can help outline possible validation steps of experiences. Understanding new situations may require different categories from those previously relied upon. In this case, the reflexive dynamics can create the conditions for a redefinition of the meaning schemes that, while remaining compatible with the perspective that contains them, are improved. In this case the experience is reread, revisited, and otherwise problematized, remaining in tune with the previous interpretative orientation. Therefore, transformation is not always necessary or appropriate.

Actually, transformative learning theory is expanding its boundaries beyond adult learning research. Yorks and Kasl (2002) explore a more integrated learning model of transformative learning theory, while Taylor (2008) recognizes five perspectives of transformative learning theory: psychoanalytical, psychodevelopmental, social-emancipatory, neurobiological, and cultural-spiritual (Taylor, 2008, p. 10). Other researches have connected transformative learning theory to the theory of the communities of practice, to the performative methodologies, to the coaching practices, to the studies on organizations, complexity, and social change (Melacarne, 2019).

So, transformative learning theory has seen in recent decades an important evolution passing from its initial elaboration (Mezirow, 1978, 1991), to an important reinterpretation made by its founder (Mezirow & Taylor, 2009), until the emergence of a third iteration in which transformative learning theory has also been reread in light of studies from different streams of research (Taylor, 2007).

Actor Network Theory

Sociomaterial approaches, such as those generated by ANT (Law & Hassard, 1999), Theory of Systems of Activity (Engeström, 2009), or Theory of Complexity (Varela et al., 1991), have assumed increasing importance in recent years, both theoretically and methodologically. From a sociomaterial perspective the theoretical problem is this: "in some definitions, the term workplace learning has been limited to individual change, with organizational learning reserved for groups. However, the problem with this division is that many recent perspectives of learning in work refuse to separate the individual from the collective in examining learning processes" (Fenwick, 2008, p. 19).

Fenwick argues that sociomaterial studies start from those theories that we might call post-human, stating that matter is a fundamental variable in the constitution and recognition of all phenomena, as well as their relationship with people and the way they change and learn. The sociomaterial perspectives question the dichotomous readings and the binary modalities with which the research has categorized the events, differentiating them between individual/organization, subject/object, knower/known. She said that

> often these notions of participation are confined to human interactions, focusing on social relations and cultural forces and the ways in which humans 'use' tools or move through contexts.' In such conceptualizations, the very processes of materialization that designate these different entities and their possibilities for interaction become obscured. (Fenwick, 2010, p. 107)

Within the sociomaterial framework, ANT is an approach that has evolved mainly within social studies and technological sciences that today, for the same scholars of ANT, looks more like a sensibility than a real

theory (Fenwick, 2000). It is the synthesis of many widespread traditions that have evolved in such ways that sometimes betray its original principles.

Developing in the field of epistemology, sociology, and engineering, authors such as Latour (1999), Callon (2005), and Law (1991) have contributed from different perspectives to the generation of ANT combining a constructivist perspective, a semiotic material method, and an extension of social understanding, by focusing on networks of human and non-human actors. Their work is relevant because they have tried to overcome essentialist perspectives, often concentrated in drawing causal lines between phenomena, but also to develop a theory capable of mapping relationships that are simultaneously material and semiotic, thus also recognizing the action of the "no human," their power to transform society. They thus introduce the idea that there is no opposition between subject and reality, nor an earlier or later stage in which the acts of generating knowledge are consumed. While distinguishing itself from the studies of Lave and Wenger (1991), ANT shares with these the idea that knowledge is emerging and situated, embodied in practices that are born, grow, and dissolve over time.

ANT is based on performative ontology rather than on representative epistemology (Barad, 2003). In this sense, we can say that the plane of meanings, the way in which people shape the world through their own language, is not pre-existent to an external reality but is comprehensible within the relationship situated and in which they manifest themselves. This distinctive feature introduces a challenging theme for adult education research, because the understanding of learning processes or educational practices does not pass from the study of individual knowledge-building processes, but by how knowledge is produced in the interaction between human and non-human, between learners and technologies for example, or between learners and social rules, or between worker and material artifacts that build the field of work. This is a relational epistemology.

The goal of ANT is to trace the process through which the elements that make up a situation (people, meanings, materials, technologies, rules, etc.) come together and succeed in resisting together and configuring themselves as a stable network. These networks produce energies, force and generate knowledge, identities, rules, routines, behaviors, new technologies and tools, regulatory regimes, reforms, diseases, and so on. The networks are not a static phenomenon and for this reason the knowledge embedded into them changes over time. Unlike a "pure" structuralist

perspective, in ANT analysis there is no distinction between human or social structure. What we observe is bounded by symmetric relations. Objects, nature, technology, and humans influence and mobilize networks that include tools, knowledge, institutions, policies, and identities. The processes that manifest themselves within a network thus become acts of translation and precarious stabilization. This is why qualitative research is the most used in studies based on this theory. Micro-negotiations make dynamic translations, and the processes of mobilization of knowledge can generate practices of inclusion and exclusion, differences in power management, and the dynamics of maintaining status and role. In this regard, Hughes Thomas' study describes the technological changes that have taken place on a large scale and show that technology cannot be understood without being part of a cultural context (Bijker et al., 1987). In the same year Callon (1986) reported the case of the scientific and economic controversy caused by the decline of the scallop population in the bay of St. Brieuc and told of the attempts of three biologists to develop a strategy for conservation of this marine population. In reporting the case it described and expanded the concept of translation, suggesting a new way of reading social phenomena as processes that arise from the bottom of interactions rather than from procedures.

Thus, objects are fluid; they are quasi-objects produced by nets that do not behave as stable and clear but that hide real "black boxes" of knowledge (Edwards et al., 2015). ANT considers the generation of knowledge a joint exercise of relational strategies within networks that are scattered in space and time.

ANT studies are particularly useful for tracing how phenomena arise, develop, and end up as an inseparable unit. It can show how people are invited or excluded from knowledge-building processes, how some connections work and others don't, and how connections can be strengthened to become stable and durable, connecting to other networks and things, accepting compromises, and inhabiting border areas where the value of the relationship is established by people and objects.

In addition, ANT focuses on the practices of articulation, moments and spaces in which a connection is generated and mechanisms are revealed, through which people engage to persuade, coerce, seduce, resist, and compromise with each other, as they unite and negotiate. ANT allows the revelation of the contradictions and the complexity with which people and artifacts generate alliances and networks together, revealing that each can connect with others in such a way that they are intentionally blocked,

or can pretend to connect, partially connect, or feel disconnected and excluded even when they are connected.

An important contribution of ANT is in emphasizing the need to include in analysis and research plans the study of human activity understood as the study of material actions and contexts of action. In this perspective, it is not the meanings alone that take on a value, not even the attention to actions alone. For example, unlike the Theory of the System of Activity (Engeström, 2009), where human activity is an activity of translation and transfer of material/structural constraints—artifacts, rules, roles, budget—and intangible/cultural constraints—in local systems of meaning, in ANT networks of management of decision-making power, professional, and organizational culture—are understandable if placed in the relationship between subjects and objects. It is the objects and concepts that mediate the interaction between individuals, which allow the building of alliances and networks of relationships, so much so that Blok and Jensen (2011) describe this passage as a real paradigm shift from epistemology and representation to practical ontology and performativity.

Analysis

Our intention is to try to expand and to integrate the transformative learning construct through the analysis of the connections between two perspectives not immediately close to each other; we used the results of the metatheory analysis of Hoggan (2016) to find comparison and analysis categories. Through a careful review of the literature, Hoggan tries to circumscribe some distinctive features of the transformative learning construct and formalizes three distinctive criteria: depth, breadth, and relative stability. Transformative learning therefore implies a profound revision of assumptions by changing the overall system with which the learner interprets all their past experience, present and future, in a stable and lasting way. In conducting this work, Hoggan also makes explicit some categories that emerge transversally to the debate on transformative learning (Mezirow & Taylor, 2009). It's these constructs that we're going to use to reread both traditions. Thus we assume that both theories while transforming over time, express: a vision of the world, a vision of the self, an epistemology, an ontology, the idea of behavior and ability.

We used a card (Table 10.1) to analytically explain our reflections that we will share in narrative form in the conclusion, describing the gains that we believe can be achieved by this reading.

Table 10.1 Comparative card of foundational constructs

	Identity		*Knowledge*		*Action*	
Theory	*Self*	*Worldview*	*Ontology*	*Epistemology*	*Behavior*	*Capacity*
TLT						
ANT						

Transformative learning theory and ANT are born in different contexts, but both consider relationships, acts of producing meanings, and power, the three key concepts to understand how people learn. ANT uses the idea of translation rather than transformation, a key concept in the tradition of transformative learning studies. The concept of translation refers in fact to the idea that knowledge is produced within the interaction between people and things, and that this is not necessarily oriented toward an evolution of thought or practices in the critical and emancipative sense. The idea of transformation necessarily embodies for Mezirow (1978) the condition of a profound change in the ways in which meaning is generated, as in an act of emancipation from one's own learning history. Transformative learning theory is more focused on creating meaningful processes and the role of past learning in shaping interpretation in the present.

In addition, ANT stresses the materiality of the experience and stresses that the learning process is connected and integrated into standards, technologies, and artifacts. It adds that evolution and change are determined not only by some form of an intentional act of people, but that there are the things in the world that condition change. They condition it with respect to how these things (technologies, documents, procedures, books, objects of use, etc.) were built and designed (Norman, 2013). ANT allows us to rethink transformative learning in connection with the materiality of experience, because "material things are performative: they act, together with other types of things and forces, to exclude, invite and regulate particular forms of participation" (Fenwick & Edwards, 2010, p. 7).

This tradition should be developed with recent sociomaterialist studies and in particular with research that has sought to link the theory of ANT education with that of adults (Fenwick, 2000). By understanding the interconnections between transformative learning theory and ANT

(Table 10.2), we can expand the concept of transformation, so that the change cannot be interpreted in a dichotomous way, exclusively as an individual process or, on the other hand, as a social process. Transformation is the set of integrated processes in which people and contexts, employers and employees, human and non-human actors, interact and simultaneously create the conditions for transformation.

Table 10.2 Connection and differences

	Identity		*Knowledge*		*Action*	
Theory	*Self*	*Worldview*	*Ontology*	*Epistemology*	*Behavior*	*Capacity*
TLT	The construction of the Self is historically and socially conditioned. The meaning that the learner attaches to events is central	Social contexts anticipate the construction of personal meanings	There is a distinction between personal and social knowledge, between history and contingent situation. The ontological unit of analysis is the thoughtful act of the learner	Knowledge is produced through diversified reflexive acts, the most important of which is critical reflection	Behavior is the outcome of a set of meaningful expectations built by the learner in the course of his or her life	This focus is on the ability to self-destruct one's own learning process through the ability to critical reflection
ANT	The construction of the self is distribute within a context between things and meanings. The idea of translation and situativity is central	Social contexts are defined in the interaction between humans and non-humans. There is no meaning or thing preceding the act of knowing	There is no distinction between human and non-human. The ontological unit of analysis is interaction	Knowledge is an act of translation, that is, of situation negotiation, of which is the most useful knowledge to reach a goal that is emerging from practice	Behavior is the result of a contingent solution between people and things and takes value in its realization in a specific context	The focus is on the agency of the context, that is, the possibility of conditioning the course of events by humans and non-humans

Conclusion

Both transformative learning theory and ANT have experienced a profound revision of their initial theoretical assumptions, in favor of multidisciplinary readings and applications in different fields of science and professional applicability. For Law (1999) there is nothing strange about this process and, more than a factor of weakness and theoretical robustness, he sees this shift of a theory, from its original formulation to its redefinition, as an evolutionary process to appreciate positively, as "only dead theories and dead practices celebrate their identity" (Law, 1999, p. 10).

From this reading emerge at least three key points to develop research practices inspired by transformative learning theory and ANT: (a) consider artifacts, technologies, and standards in transformative learning research; (b) do research with the network/communities and not for them; and (c) rethink transformative learning as social actions rather than as an individual process.

Transformative learning processes in everyday life or in organizations involve radical changes in the way people have meaning and behavior. Mezirow's work (1991) describes this process in a constructivist context as a transformation of perspectives. This transformation is the process of becoming critically aware of how and why people use a specific frame of reference. Within a reflective perspective the objective of the training processes is, above all, to explain the nature and role of these interpretative structures and to identify the type of rationality necessary to modify them if they are distorted, are not appropriate to new contexts of action, or in any case limiting new and more fruitful interpretations of experience. To learn in adulthood requires the willingness to revise meanings about experience, through the criticism of unexamined premises that have supported and justified previous interpretations. The task of education is to accompany communities toward a double reading:

- one that has as its object the mental schemes, the interpretative categories that act as a symbolic matrix of practical activities, behaviors, ways of thinking, and the judgments of the actors. In this case, the emphasis is placed on the transformative potential of a subject epistemologically able to give meaning to the world in which it lives and to validate the criteria with which it builds and manages its knowledge;

- one that allows us to recognize that every activity of thought is first and foremost a social activity, mediated by artifacts, by relationships, by belonging to local histories and knowledge, by the division of work that emerges as an aspect of working action. It is a type of reading that, starting from the construct of a system of activity, ascribes knowledge, competence, criteria for the attribution of meaning within the dynamics of a materially connoted system. Knowledge in action has to do not only with a mental nature, but also with material nature, historically determined.

The perspective of a double reading allows the enhancement of complementarity of different approaches to the analysis of practices. There emerges a form of analysis that calls into question the recognition of subjects as builders of reality, of a materially connoted reality.

The transformative learning construct and ANT contribute to the theme of practice as a system of material activity in which knowledge is not separated from doing, and learning is themed as a social activity and not just as a cognitive activity. Knowledge is the result of a contextualized or situated activity, where there are not only representations, ideas, thoughts, but also an intricate world of phenomena and processes that are only partially explored by transformative learning theory and its evolutions. The adoption of these perspectives problematizes and moves toward overcoming the distinction between knowledge and experience, between theoretical and practical thought. Practical is not opposed to theoretical, but is that culturally mediated thought, located in frameworks of historically and culturally determined activities.

Using transformative learning theory and ANT jointly could expand our knowledge of adult learning processes and educational practices in three directions:

1. Empirical research: Consider the unit of analysis as the relationship between individuals and the material world of things. How can we promote transformations or emancipatory processes if we do not consider the material limits of the context? Sociomateriality encourages transformative learning theory traditions to move in a third direction; not only individual transformation, not only social transformation, but also transformation of the relationship between individual and things, rules, roles, artifacts, and technology.

2. Educational practices: ANT and transformative learning theory suggest that educators of adults pay attention to the context in which people live and work, considering that that context is not only an individual or social construction. It is a network of human and non-human actors, so the transformational processes are not only a transformation of meanings of a person, a group, or a culture organization. To transform, in this hybrid connection from transformative learning theory and ANT, means to change the material environment as well;
3. Theory of education: ANT could open a new area of interest in the field of comparative research. In the tradition of sociomaterial studies, it could be interesting have a look to the links with the System of Activity Theory or the tradition in feminists and race studies, or the study on power in social sciences. ANT expands transformative learning theory in the direction of a more inclusive and complex understanding of the limits of a constructivist perspective, often individualistic, where the power of the material world is not considered. Sociomateriality stresses transformative learning theory in some points at least: the connections of the ontology of the sign and the ontology of things, the idea of transformation as situated revolutionary phenom of an environment, the occidental matrix within which this theory was born, and the capacity of this framework to intercept another point of view from over the world.

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