

Actor-network theory: new perspectives and contributions to consumption studies

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Abstract

There is an increase in the use of the Actor-Network Theory (ANT) in various fields of social sciences and most recently in marketing and consumption research. In marketing discipline, however, this approach has been incorporated more widely in international studies. This article argues for the applicability of ANT to the field of research consumption in Brazil. ANT's main contribution relates to its unique perspective in analyzing human-things relationships, interactions and trajectories. This article, therefore, aims to explore the existent themes and contributions, the methods of application, criticisms and comparisons with other ontology approaches facing the social and actors involved. Finally, the study discusses possibilities raised by ANT for future research, showing how its resources can rejuvenate marketing research with focus on the collective and worldly learning that exceeds cognitive, economic and cultural connections, and emphasizes socio-material aspects present in the consumer realm. Using thorough investigation of actors and their direct connections, ANT reveals findings about what is unique, but also universal in studies developed by Brazilian researchers.

Keywords: Object oriented ontology. Actor-Network Theory. ANT. Consumption.

Teoria Ator-Rede: novas perspectivas e contribuições para os estudos de consumo

Resumo

Nota-se um crescimento do uso da Teoria do Ator-Rede (TAR) em várias subáreas da administração, como organizações, estratégia e marketing. No último campo, entretanto, o uso dessa abordagem ainda se concentra nos estudos internacionais. O presente trabalho tem por objetivo apresentar a TAR e como ela pode contribuir para o campo de pesquisa do consumo no Brasil, tendo em vista seu olhar singular para a relação entre os indivíduos e as coisas, suas interações e trajetórias. Visa, assim, a explorar o apanhado de temáticas e contribuições já alcançadas, a aplicação de métodos, bem como críticas e comparações ontológicas acerca do olhar sobre o social e atores envolvidos. Finalmente, discutem-se possibilidades para caminhos futuros abertos pela TAR, evidenciando como seus recursos podem rejuvenescer a pesquisa de marketing ao focar seu olhar nos aprendizados coletivos e mundanos, que superam conexões cognitivas, econômicas e culturais, a partir da ênfase nos aspectos da sociomaterialidade contida na cena de consumo e seu entorno. A partir da investigação exaustiva dos atores e de suas conexões diretas, a TAR descortina descobertas a respeito daquilo que é singular, mas também universal, nos estudos desenvolvidos por pesquisadores brasileiros.

Palavras-chave: Ontologia orientada ao objeto. Teoria Ator-Rede. TAR. Consumo.

Teoría del actor-red: nuevas perspectivas y contribuciones a los estudios de consumo

Resumen

Se observa un aumento del uso de la teoría del actor-red (TAR) en diversas subáreas de la administración, como organizaciones, estrategia y marketing. En el último campo, no obstante, el uso de este enfoque aún se centra en los estudios internacionales. Este estudio tiene como objetivo presentar la TAR y cómo esta puede contribuir al campo de investigación del consumo en Brasil, dada su visión singular sobre la relación entre las personas y las cosas, sus interacciones y trayectorias. Así, se propone explorar el compendio de temáticas y contribuciones ya alcanzadas, la aplicación de métodos, así como las críticas y comparaciones ontológicas acerca de la visión de lo social y de los actores involucrados. Finalmente, se discuten las posibilidades de futuros caminos abiertos por la TAR, mostrando cómo sus recursos pueden rejuvenecer la investigación de marketing al enfocarse en los aprendizajes colectivos y mundanos, que superan conexiones cognitivas, económicas y culturales, partiendo del énfasis en los aspectos de la sociomaterialidad contenida en la escena del consumo y su entorno. A partir de la investigación exhaustiva de los actores y de sus conexiones directas, la TAR revela hallazgos no solo sobre lo que es singular, sino también universal en los estudios desarrollados por investigadores brasileños.

Palabras clave: Ontología orientada al objeto. Teoría del actor red. TAR. Consumo.

Article submitted on October 5, 2016 and accepted for publication on May 11, 2017.

[Translated version] Note: All quotes in English translated by this article's translator.

DOI: <http://dx.doi.org/10.1590/1679-395164275>

INTRODUCTION

Recent studies in the field of administration shed light on Actor-Network Theory (ANT), which has its' origins in the context of science and technology studies and has been adopted in several other disciplines such as organizations, strategy and marketing. In Brazil, the theory has been explored most prominently by organizational researchers (CERRETO and DOMENICO, 2016; CAMILLIS and ANTONELLO, 2016; ANDRADE, 2004; CAVALCANTI and ALCADIPANI, 2013; AMÉRICO and TAKAHASHI, 2013; TONELLI, BRITO and ZAMBALDE, 2011; ALCADIPANI and TURETA, 2009; TURETA and ALCADIPANI, 2009; DONNELLY, 2010; ANDRADE, CORDEIRO NETO and VALADÃO, 2013). In the field of marketing, however, ANT approach still remains limited in focus and references thereto are primarily from international studies.

One of the challenges in adopting ANT lies not only in understanding the concepts and broad repertoire of terms, but also in understanding the researcher's perspective regarding the research objective, which is different from other approaches extant in the field of administration. Thus, this study briefly presents the fundamental assumptions of this complex theory, its vocabularies and methods. More specifically, this study aims to reflect on ANT's contributions and application within the field of consumption, using the articulations and rereading international studies in the theory considering ANT theory's unique look at the relationship between individuals and things, their interactions and trajectories.

ANT is grounded on the work of authors such as Latour (1988; 2012), Callon (1986) and Law (1986), and it is aligned with the so-called object-oriented ontologies, such as Assemblage (DELEUZE and GUATTARI, 1987; DELANDA, 2006) and Entanglement (HODDER, 2012; 2016). Both of the aforementioned approaches avoid the traditional hierarchies that privilege human agency, in favor of paying special attention to things. Understanding the contributions of ANT to consumption studies requires, first, differentiating the ways of conceiving the relationship between subjects and objects within the field of consumer behavior, from the phenomenological and material cultural perspectives.

According to Heidegger (1971; 1973) and Merleau-Ponty (1962; 1963 [1942]), phenomenology contemplates subject-object duality and looks at things based on their relationship with the subject. The aim is to understand how this relationship helps to define and is useful for, projects developed by the subjects. Phenomenology presents an anthropocentric perspective, in which the individual is the starting point to map and integrate everything that is around them (BORGERSON, 2005; HODDER, 2012).

With ANT, things are more than merely tools, background or stages on which human social actors play their main roles. In his essays on symmetrical anthropology, Latour (1994) proposes a perspective that advocates the same status and attention to human and non-human actors. Objects have agency, which means "to be associated in such a way that makes other actors do things" (LATOURE, 2012, p. 158). Humans are not victims of the process, nor are they autonomous protagonists in action. ANT proponents also presuppose a break with the subject-object dualities. According to Latour (2012), for example, a man (subject) with a weapon (object) is not a subject with an object, but a new hybrid, a new "man-weapon" entity. Latour (2012) rejects the very concept of actor as substance, that is something that preexists, is finished and endures. For Latour, actors are events, that, unlike "substances", cannot be differentiated from their manifestations and relations.

In turn, for material culture (MILLER, 2005), the focus of attention is not on the individual's consciousness or body, as is the case in phenomenology, but on the external environment that habituates and prompts them to act. The key agent making an individual part of their own society is things, through the various processes of habituation of the human with society's order. The system created by and with the things form the people, and the circulation of things creates society and the culture that surrounds it. In material culture, the subject-object duality is maintained, and where the locus of interest is the understanding of the existing dialectical relationship (BORGERSON, 2005; HODDER, 2012).

Latour (2012) understands that in the view of material culture the importance of the object is recognized solely to "reflect social values" (LATOURE, 2012, p. 126), "it voids the appeals to power relations and social inequalities of any real significance" (LATOURE, 2012, p. 127). Latour's (2005) perspective does not see objects simply as having significance, but as objects whose materiality brings agency and specific characteristics which are as relevant as the symbolic ones. For ANT, anything that performs an act and/or modifies a status is considered an actor. Non-human objects do things, just like human actors do, and they produce effects in silence (Butler, 1872), but nonetheless playing roles and helping to trace social connections. In this sense, ANT suggests overcoming the oppositional relationship between things and people, while drawing attention to the fact that objects have agency (GELL, 1998; LATOURE, 1993; PREDA, 1999), as discussed in the next section.

Having briefly presented the fundamental differences in ANT in relation to the main approaches in the field of consumption in order to analyze subject-object relations, the following section presents the conceptual bases of this theory, and discusses its implications for marketing studies. To do this, recent applications of ANT in this field are analyzed, exploring the themes and methods adopted. The third section discusses the criticisms of ANT in this context, and in the conclusion the main contributions of ANT theory to the field of consumption are highlighted.

The conceptual bases of ANT

Latour (1988), Callon (1986), and Law (1987) reflected on ANT to reassert the capacity to elaborate new visions on the constitution of social relations, thereby discovering what the collective existence (or society), has become. The theory emerges as an object-oriented ontology whose main purpose is to redefine sociology through a 'sociology of associations'. One of ANT's main goals is to discover new institutions, procedures, and concepts capable of collecting and regrouping social relations.

The singularity of ANT begins in its ontological perspective of breaking with current dualities in scientific thinking, such as society/nature; human/non-human; agency/structure; context/content; macro/micro, and local/global (LATOUR, 1994; 2005). Latour (1994) describes three distinct moments in scientific development. The first is the break with nature and understanding of science as a new way of explaining phenomena, creating the dualistic attitude of society/nature. The second is the problematization of this "modern" Western dualistic attitude as a particular way of understanding the relationship with nature itself and with different cultures. Based on this reflection that reconnects the social relations in the forms of apprehension of nature, Latour (1994), presents a third element, suggesting the principle of generalized symmetry. This principle implies: 1) to eliminate projecting epistemological assumptions to create explanations prior to the field work itself; 2) to give attention to both human and non-human production; and, finally, 3) the researcher must be positioned at an intermediate point between the traditional and the new, without using, for example, previously embraced notions, such as culture, as an element when articulating the explanation about the different collectives.

The principle of symmetry, however, should not be confused with the effort to make differences homogeneous or consensual. On the contrary, for Latour (1994), equal attention must be given to human and non-human aspects, in the absence of imposing overlaps on one side over the other. For Tonelli (2016, p. 384), through generalized symmetry, one can understand a fundamental assumption of ANT, that "it is the perception of the world without the division of distinct poles, in which the world, the reality and all the active entities, are the product of relationships, fabrications, and interminable constructions, in which the objective and the subjective blend and transform each other."

The relevance of the break of dualism is translated into the very name given to the theory, where the term brings the 'actor' and the 'network' together, with the 'hyphen' connecting them as a single entity (LATOUR, 1990). In other words, the actor whether human or non-human is the network. The actor only acquires an identity, expressive meaning, and materiality in this context. The reality, therefore, needs to be explained by articulating this entanglement, without isolationism that only emphasizes one or the other.

Latour (2012) works the intuitions of social sciences not by means of an inventory of answers, but rather using a list of five sources of uncertainties, which include questions about the traditional sociology:

1. the nature of the groups – related to the contradictory way of attributing an identity to the actors, where there is no group, but only group formations including formation of antagonistic groups;
2. the nature of actions – in each course of action, a whole variety of agents seem to be intruding and cause deviation from the original objectives;
3. the nature of objects – the types of agencies participating in the interactions remain open;
4. the nature of facts – fact versus interest, the link between the natural sciences and the rest of society seems to be a constant source of controversy;
5. Risk reports – type of studies carried out under the label of social sciences, containing the very act of writing reports. As with the laboratory of the social scientist, this task requires accuracy and writing skills to objectively describe the connections in the phenomenon under investigation.

Box 1 below summarizes the five uncertainties proposed by Latour (2012)

Box 1

List of uncertainties generated by the ‘sociology of associations’ within the practices of sociology of the social

	Sociologists of the social	Sociologists of associations (ANT)
Group formation	The researcher delineates groups from previous contexts and criteria. The objects are rapidly taken as intermediates by the researcher. In this view, the actors are not able to capture the whole picture and are mere informants. Their testimonials are interpreted by the researcher.	There are no fixed groups and actors that must be followed in order to trace connections. There are formations of groups and anti-groups by the actors themselves. Actors can define their social context and to form their set of associations. The objects are held as mediators for as long as possible.
Nature of actions	Forces from the context, the individual and the researcher altogether, make it difficult to define the nature of the action.	The action is not conscious, but it is articulated. This is what the researcher must describe. It is not the context that pushes and it does not occur only because of the individual themselves. Mapping of controversies. Identification of actants.
Nature of objects	The researchers are concerned with the explaining of symbolic aspects and meanings in the individual-object relationship.	The objects are endowed with agency and there is a need to describe their roles in the action and in the tracing of social connections.
Nature of facts	The researchers rely on constructivism: it explains the solid objective reality by mobilizing entities that, when together, could fail.	They rely on social constructivism: the “construction” of the facts focuses on the scene in which humans and non-humans merge together. The work of the social scientist is to generate hard recalcitrant facts and passionate objects that resist social explanations.
Writing risk reports	The researchers try to understand the existence of a certain phenomenon by refusing to consider written reports and relying only on direct contact with the thing at hand.	They bring to the foreground the very act of writing reports with the purpose of weaving a net, registering differences, absorbing multiplicity, and reformulating themselves in each case. They assume a reflective, articulate and idiosyncratic role in the production of accurate, faithful, interesting, and objective texts.

Source: Elaborated by the authors.

Latour’s (2012) idea of the nature of groups has to do with removing the researcher from the usual comfort zone. In this view, the researcher’s best work comes from the mapping of: a) *controversies*, through the traces or clues left by the activities researchers carry out, and, therefore, to trace their social connections without establishing previous contexts, in a relativistic way; and b) *borders*, identifying the group and antagonistic group relationships exerted by the actors. Thus, a fixed list of groups is lost, the social validity is in the groupings that can be made and remade by the actors. Additionally, connections and boundaries are emphasized through comparison with other competing links. Latour (2012) uses the concept of *infralanguage*, and insists on the importance of giving voice to the actors with their own vocabulary, avoiding the risk of silencing them from the pre-elaborations of the researcher.

ANT has in its theoretical framework a series of elements, including *mediators* and *intermediaries*, which make a difference as a means of producing the social relations in “group formations”, which in fact, do not have a previous starting point. An intermediary “is what transports meaning or force without transformation” (LATOURE, 2012, p. 65). On the other hand, “mediators transform, translate, distort, and modify the meaning or the elements they are supposed to carry” (LATOURE, 2012, p. 65). They may be simple, but at the same time, complex in terms of the number of directions in which they can modify reports attributed to their role.

Intermediaries keep social associations invisible and they become named after receiving a social meaning attributed and built by the researcher. As mediators, the informants’ descriptions are visible, they can be disseminated and recognized. Latour (2012), for example, brings details of fashion, such as silk sheen, rather than nylon sheen. If brightness is an intermediary that conveys social meaning – “sophistication” for silk and “tackiness” for nylon - then the appeal for detail of the material

will be lost and the analysis will be focused on the social meanings that have been constructed by the researcher. However, if they are mediators, one can easily detect their innumerable material nuances, such as softness, color, brilliance, and others, causing this social difference not to exist (LATOUR, 2012). It is the researcher's role to "monitor how actors themselves stabilize uncertainties" derived from controversies that may arise from the action, "drawing formats, standards and metrologies" (LATOUR, 2012, p. 355).

Latour also problematizes the understanding of conventional sociology for action. This is neither something transparent nor conscious, but involved in connections which should be unraveled and described by the researcher. It is not the context that pushes the occurrence of the action, and it is not achieved by the individual alone. Action, according to Latour (2012), should be seen as a knot comprised of sets of functions to be understood. The researcher should not attempt to answer or resolve questions that arise from the action, nor use dualities. The supposed objective reality of the world is nothing more than a production of networks. It does not mean there are no divisions, but that they are effects or outcomes rather than something *a priori* established.

Translation is an essential concept to understand the action within the perspective of ANT (LATOUR, 2000; CALLON, 1986; LAW, 2003). The flow of translations is at the origin of the theory's name (actor-network), embracing both symbolic and material transformations and transfers resulting from the interactions among the actors. For Latour (2012), the network is not about a thing or something concrete, but about a revealing concept that allows for an understanding of the action. Translation processes refer to the movements within the network, distributed among a multitude of participants, which are indispensable for any action to occur. In these movements which originate from various interests and possibilities, the actors change, creating delimitations and negotiating action avenues or boundaries to achieving mastery such as knowledge or competence, within the process of building connections. Therefore, translation processes are never neutral or without consequences. They leave traces and transform the actors through the interactions.

According to Tonelli (2016), translation processes produce the connection of elements that fabricate reality. Each participant element brings characteristics and repertoires, but it is in the joint action within the network that specific potentials are created in the reality arising from the interaction of these multiple actors. In this sense, the concept of translation helps us to understand that, for Latour (2012), actors are not substances, such as preexisting or delimited entities, but events that cannot be separated from the relations established in the network. According to Latour (2012), the sociological description of these encounters should prevail over filters, theories, and previous interpretations. To fully appreciate the richness of translations, the researcher should cultivate questions and put the conventional means of apprehending reality in suspension, which often results in greater attention to human agency as an isolated condition. A good description of analysis is seeing one who "is able to weave a net" (LATOUR, 2012, p. 189) through a well-detailed and descriptive narrative of the facts and actors' activities. Such a text should deal with mediating actors and their ability to interfere in the actions of other actors, as well as in their connections and translations.

Latour (2012) proposes a checklist of sorts to map controversies or different positions for relating or interpreting the action through a competition of actors, namely: a) the action must always be reported as an accomplishment; b) one must use the term *actant*, which creates a multiplicity of ways of inducing actors to do things for the same actions. According to Law and Mol (2008, p. 58), "this disentangles agency from intentionality. Within material semiotics, an entity counts as an actor if it makes a perceptible difference"; c) actors legitimize actions and condemn others and in doing so, they reinforce the formation of anti-groups surrounding their social world; and d) actors may have their own theories of action to explain how their effects occur. This perspective brings ANT closer to a fable process.

There must be a clearer view of the actors' positions as they delve deeper into a rhetoric study of the controversy. Therefore, it is possible that "objects can be maintained longer as visible, distributed, accounted mediators before becoming invisible, asocial intermediaries", or "mere intermediary faithfully 'transporting' or 'reflecting' society's agency" (LATOUR, 2012, p. 120 and p. 125).

Rejuvenating studies on consumption through ANT

The influence of ANT in consumer behavior studies is manifest in a variety of ways. They range from the adoption of some of its concepts in an isolated way, such as the notion of the object-agency, to a more dense and articulated incorporation of vocabulary and theoretical foundations of ANT. This article does not aim to catalogue all the existing quotations from Latour,

Callon and Law's work within the field, but to offer a genealogy of articles in which a more meaningful and comprehensively theoretical framework of ANT has been adopted. Thus, studies that use isolated quotations, without actually adopting ANT as a theoretical reference to organize the observation of the phenomenon are not included.

This literature review was not intended to be exhaustive. However, it has focused on major international journals on consumption studies over the past 10 years, such as the *Journal of Consumer Research*; *Marketing Theory*, *Consumption, Markets and Culture*, and the *Journal of Consumer Behaviour*. The articles discussed below represent, therefore, relevant studies using this theory. They evidence the growth potential of the discussion of ANT in the field of consumption. This contextual backdrop contributes to broadening insertion of this theory, and debates raised in studies carried out in Brazil.

The study of mundane consumption based on observations of shopping carts (COCHOY, 2008; GRANDCLÉMENT, 2006), showed that the consumer is the result of encounters between human skills and presented objects, in which they associate, combine or exchange properties among themselves in order to perform a given social task (LATOIR, 2012). From the simple "mobile space" represented by the shopping cart, the consumer fulfills tasks, such as pushing around large quantities of products or making calculations, as well as deciding what to consume. The idea is how shopping carts happen to diffract consumer calculation into postponed calculation, equipped calculation and collective calculation. The consumer may or may not consider a shopping list, but they may reflect on the family budget, and make judgments about the performance of products in the perception of the collective majority, observing what there is in shopping carts and what to look at on the shelves. Thus, a pun is made with the words calculation and *qualculation* to show the differences between a mere price calculation and a wider judgment of the buying process, which includes, among other things: volume of the cart, interaction with the shelves and with other consumers in the supermarket. Cochoy's (2008) study evidences the transformation of an individual consumer into a collective or a cluster around the same shopping cart, an object that starts to function as an articulator of collective consumption. The choices are not only thought about, but formed by the invisible vibrations existing in the exchanges of people and things in the consumption environment, as well as in the political sphere.

In another study, Cochoy (2014) proposes a reflection on the paradox of theories of co-creation through ANT, looking at the empirical case of the use of two-dimensional barcodes. The article shows that working consumers' live dualities between the passive/active levels related to co-creation. The consumer is active at the physical level, but passive at the cognitive and political levels, never realizing that their activity becomes a passive execution of scripts and delegated tasks. Cochoy (2014) aims to show that consumer behavior is better understood by avoiding frameworks of remote political or theoretical debates and by focusing on the concrete interaction among the consumer and the "market things" with which they engage.

Hansson (2015) focuses on investigating consumer performance with mobile objects in urban and everyday situations, based on the assumptions of ANT that humans and non-humans form hybrids. The study investigates parents with small children in purchasing processes. The author's idea was to illustrate difficulties, characterized as sensations of discomfort in carrying heavy products and feeling them as an extension of the consumer's own body and opportunities created in the interaction with objects such as bicycles, cars and baby strollers. Thus, for example, it examines convenience experiences such as carrying the baby close in a baby carrier and having their hands free and how this configuration impacts parents dealing with children while they are shopping. The perspective of ANT in this study allows observation of the exchange of competences between humans and things in the tendencies of portability and mobility, with special attention to the involvement of movement with products. Frequently, such products require the consumer to make a more qualitative calculation of gestures and movements, as predicted by Cochoy (2008), as well as adjustments in their consumption, considering the collective environment around them (CALISKAN and CALLON, 2010).

Epp and Price (2010) adopt the perspective proposed by Latour to show consumption as a network phenomenon, based on the context of small collectives, i.e. the families. The authors adopted ANT's assumptions regarding the nature of the groups formation, the nature of the action and nature of the objects. The study demonstrates how shared objects were exchanged, consumed, characterized, and how their flows were interrupted by some inactivity, capable of being re-organized and eventually maintained or not in that network. Analyzing the family's efforts to maintain an inherited and important dining table in its history, Epp and Price (2010) emphasize the stability that materiality provides, the dynamics of meanings, and the agency of objects. From the table-moving processes, they analyze the transformation of the network and, to what extent, objects can be substituted even when indexed or iconic associations persist. The authors use the object-agency perspective to explain this finding and approach inheritance objects not only with their symbolic links, but also as objects with material dimensions, their spaces, histories, and functions within the network.

Türe and Ger (2016) also highlight object-agency and an understanding of practice as a network structure for studying relationships with inherited artifacts. The authors investigate how the consumer solves tensions within relationships with objects, such as the relations between the past and the present, when tradition and modernity are simultaneously desirable, opening space for the transformation of these types of objects heretofore regarded as unchangeable, such that their authenticity is not put at risk. According to Türe and Ger, transformation is the manner in which to negotiate temporality tensions between past, present and future.

Bettany and Kerrane (2011) have used ANT assumptions to suppress dualisms in order to understand the consumption of the “Omlet Eglue” plastic chicken coop within urban poultry farming. Due to its easy maintenance, the product reached “cult” status among urban poultry farmers and amateur producers. The study describes the equipment as an ambiguous actor in the cultural environment of urban farming as a means of challenging the large corporations of the food industry. The chicken coop thus becomes an ambivalent node through which anti-consumption and resistance behaviors are configured. The contributions of Bettany and Kerrane (2011) reinforce that anti-consumption and consumer resistance literature reflect a field with apparent inconsistency and dissonances of its own anti-consumer behavior. To address this, the authors followed researchers who highlighted the need for more holistic approaches, rather than dissecting, isolating, and creating labels such as consumption or anti-consumption (MORAES, SZMIGIN and CARRIGAN, 2008; NEWHOLLOW, 2005; CONNOLLY and PROTEHER, 2003) , and, moreover, have indicated that the most productive object-oriented analyzes come from the interstices of this underlying dualism (BINKLEY, 2008; CHERRIER, 2009).

Recent studies have used ANT to understand not only consumption scenes but, more broadly, market dynamics, supported by the theory’s assumptions that humans and non-humans form hybrids. Giesler (2012), for example, researched the process of legitimizing the Botox brand from the interactions and disputes of various actors, such as brand managers, consumers and activists opposed to the product. Martin and Shouten (2014) focused on the phenomenon of the mini moto supercross race (MMSX) to understand the creation of new markets. Aligned with Caliskan and Callon (2010), the authors understand markets as sociotechnical arrangements or assemblages that organize the design, production and circulation of goods instead of understanding them as co-creations, interconnected with supply chains, producers and customers. Researching human, non-human, and hybrid actors, Martin and Shouten (2014) identified the conditions under which consumers align with existing market logic and co-create new relationships rather than passively adopting industry offerings, as in the traditional view of market formation. Box 2 synthesizes and highlights the main concepts of ANT and its use by consumption studies.

Box 2

Conceptual organization of ANT studies applied to consumption

ANT assumptions	Studies on consumption	Approach adopted	Theoretical contribution
Actors, human and non-human associate, agree or exchange properties among themselves, in an intertwined way, forming heterogeneous network to deal with a given social task	Cochoy (2008)	The choice in mundane consumption is a result of the connection of cognitive processes (e.g. price and family budget), of individual and collective judgements based on the mobile space of the shopping cart in the scene of shopping.	Consumption as a medley of activities and learning, not only economic but essentially social, resulting from collective exchanges.
	Cochoy (2014)	The study about the paradox of the co-creation theories, adopting the empirical case through use of bi-dimensional bar codes, shows that consumer workers live dualities between passive/active levels in a co-creation relationship.	The engagement of people and human and non-human entities, is the foundation on which the relation of consumers towards economy, as well as the meaning of their experience, is established.
	Jenkins, Molesworth and Scullion (2014)	Relations between individuals and objects lending or borrowing assets in more than one network simultaneously.	Improving the understanding about the biography and history of the objects and individuals.

Continue

ANT assumptions	Studies on consumption	Approach adopted	Theoretical contribution
Suppression of dualisms	Bettany and Kerrane (2011)	Understanding the consumption of the plastic chicken coop “Omlet Eglue” within the culture of urban poultry farming, offering a possible path to an alterantive model of consumer agency, exploring concepts, concerns, conflicts and convergences of anti-consumption and consumers’ resistance.	Reinforce that anti-consumption and literatures on consumer resistance reflect a field full of apparent inconsistency and dissonance of anti-consumption behavior. The theory offers more holistic approaches to find solutions.
Nature of group forming, nature of action and nature of objects	Epp and Price (2010)	The study of the interruption and reintegration flow of the social connections, based on the movement of objects shared (dining table) by small collectives such as families.	The gap found in the study relates to the movement of objects and to the different transformations they are subject to. It is noteworthy some paradoxal findings in studies on consumption: How do dislocated objects have agency power? How can irreplaceable objects be replaced? Why families sometimes dislocate and modify central identity practices.
	Türe and Ger (2016)	The study of inherited objects and tensions involved in relationships of consumption regarding these objects, such as dealing with the past and present, or when the tradition and modernity are simultaneously desirable.	The transformation of the object is the path to negotiate temporal tensions that exist between past, present and future.
Human and non-human form hybrids	Hansson (2015)	In mobile consumption, no consumer durable, ready or finished can exist without standard and formatting of relations among people, objects or meaning that contribute to constitute the subject.	The idea of meta-physical consumption, active for the subject and passive for the consumed object, is then discarded, considering that such division obstructs even more the concepts of consumption in the theory.
	Tadajewski, Chelekis, DeBerry-Spence et al. (2014)	The study on the new mobility’s paradigm and how connected or synchronized objects is fascinating because of how they are and work, and how the limits of what is the consumer and what is the object are entangled.	They emphasize how hard it is to distinguish what is <i>self</i> and what is the object, due to the exchange of elements between them; the sense of interior and exterior and the cognitive and technical reflexivity.
	Shouten and Martin (2014)	The study on market formation (Mini Moto), which is in constant transformation in relations between the actors and the many translations giving it form and stability.	They dive in the dynamic of consumer innovation and show impacts to ANT and other areas of consumption, such as identity formation.
	Giesler (2012)	A study on the dynamics of market creation, researching the process of legitimating of the brand Botox.	Identify interactions and disputes of several actors such as brand managers, consumers and activists that are positioned against the product.

Source: Elaborated by the authors.

Methods adopted in studies of consumption based on ANT

ANT, as well as other object-oriented ontologies, instigates researchers to develop new methodological tools for conducting social research. Fox and Alldred (2015, p. 406) stress that it is critical that the study “attend not to individual bodies, subjects, experiences or sensations, but to assemblages of human and non-human, animate and inanimate, material and abstract and the affective flow within these assemblages”. Therefore, their research explores “the material and the cultural, and the micro, meso and macro into assembly together”. In addition, they propose to “explore the movements of territorialization and de-territorialization, aggregation and disaggregation within the assemblages studied, and the consequent affect economies and micropolitics these movements reveal”. Thus, for instance, an interview with an informant should not mean or infer obtaining a subjective representation, but rather as being evidence of how respondents are located in these social aggregates. The observation method should be employed in ANT studies. The types of data should vary, without specifically focusing on the goals, beliefs and human values of anthropocentric research experience.

The research of Epp and Price (2010, for example, used a two-year longitudinal case study, observing the movements to which a family dining table was submitted. The work included in-depth interviews and triangulation through informants, events at multiple times during the research period, with interaction spotlighted between theory and data.

Cochoy (2008) adopted a set of complementary methods with no intention to triangulate, but rather deriving maximum benefit from what each method could offer. In addition to participant observation, the author looked at a large database of a variety of materials, such as photos, field notes, scientific and journal articles, websites. The researchers also produced three quantitative observations, inspired by the video recording method used by Paco Underhill (1999) in retail based research. The images made it possible to detect consumer gestures while purchasing. In this method, things that are apparently insignificant, may be extremely significant when recorded, compared and aggregated. With the first observation, it was possible to generate more than 700 clusters at the entrance of the supermarket; with the second, another 700 at the cash register (observing what consumers carry, how they organize, etc.); and with the third another 234 clusters in the drink aisle. The research also included 77 transcripts of short conversations between consumers in the purchasing process, as well as three focus groups conducted with photo-intensive consumers to assist them in imagining themselves in real-life situations, activating their memories.

In the Hansson work (2015), empirical data was obtained using the go-along method, which mixes qualitative semi-structured interviews and participant observation in monitoring families in their daily routines and interrogating them along the way. The work also made extensive visual record in the form of videos and photos. One of the main purposes of using the go-along method was to examine the participants’ relationship with the environment and things, and the aspects related to mobility. Ten households participated in the study, in which families with children were selected using the snowball method, based on previous research that indicated their special relationships in terms of mobility and consumption practices. Preparatory mapping of stage of life, age, time, money and preferences was carried out, which in some way contradicts the recommendations of ANT. The method that was used draws attention to the embodiment of moving with objects. The study first presented the consumers who drove, followed by cycling consumers, and finally, consumers with strollers. The cases presented illustrate some of the difficulties and opportunities parents experience in the process of shopping with their children.

For Cochoy (2014), the method was not chosen based on assumptions established a priori, be it consumer culture or market alienation. Instead, the method starts from empirical cases whose results are the result of ongoing network actions. These actions combine with a wide and diverse range of elements, including human or non-human, cultural, social, economic or material (e.g. in the case of marketing, consumers, producers, advertisements, products and shelves). In this study, ANT is used to describe and unfold these networking processes and their bases. Based upon the direction followed, ANT formulates the appropriate conclusions. It is this pragmatic, empirical route that Cochoy (2014) proposes to follow to explain consumer’s activities and observe whether they should be interpreted as co-creators or not, as expressions of culture, as evidence of economic exploitation or as something different. In a practical way, the method combines primary and secondary sources within the history of self-service and then uses the case study on consumer choices.

In Bettany and Kerrane (2011), a one-year multi-site ethnographic project on urban poultry farm maintenance actions in the UK was conducted. The method consisted of meetings held in different sites, adopting observations and in-depth interviews.

In the research by Martin and Shouten (2014), the authors collected the primary data using interviews and observation. The MMSX race was the entry point to the market, but it was not the only or even the main focus of attention. The authors interviewed promoters, drivers, their support teams, spectators and sponsors. There were formal and informal interviews, all of which were unstructured, using surveys as necessary to obtain testimony from informants with minibikes. Material aspects of the actors' experiences were questioned, and the study investigated the closed relationships established among actors using observation. In MMSX racing events, both front and backstage activities were observed.

In summary, the works that use ANT must incorporate methods capable of exploring the phenomenon considering the context in which they occur. This becomes a fundamental condition for living up to three assumptions of this theory. The first assumption concerns contemplating not only human agency, but also non-human agency. Thus, it is essential to go beyond the discourse of the interviewees, including methods capable of capturing materiality in the consumption context. Secondly, the methods of observation also become fundamental to understanding the hybrids formed, the processes that keep them together and transformations that the network stimulates in the actors. Finally, the micro-social approach is a starting point for a new understanding of the phenomena, without surrendering to theoretical formulations or previous concepts. Latour (2012) rejects what he calls shortcuts or accelerations, illustrating his point with the example of the international financial system. In place of using broad notions to explain the phenomenon such as global power or capitalism, the author suggests the systematic exercise of drawing connections, for example by evoking all the relationships established by a Wall Street financial investment office. These would include Bloomberg terminals, risk calculation procedures, unexpected competitor movements, large losses or profits. As Latour (2012) argues, it is precisely this meticulous perspective that makes a completely mysterious and little understood structure visible.

Criticisms regarding ANT

ANT receives much criticism for the political positioning in the face of science, technology and, above all, traditional sociology. In proposing emphasis on the descriptions built by actants rather than on the explanations based on previous theories or the researcher's interpretations, Latour disputes the *modus operandi* of scientific knowledge production. A common criticism leveled at ANT is that it is descriptive, and does not intend to build a theory. For Latour (2012), however, good descriptions would be more useful for explaining social relations than the explanations resulting from previous theoretical frameworks and interpretations centered on the researchers' point of view, which interpretations disregard the actors involved in the action.

Although Bajde (2013) seeks a rewarding alignment between ANT and consumption studies, in his view ANT itself is seen as an ongoing, multi-faceted and precarious theory, insofar as its principles of openness and symmetry are considered insufficiently consolidated.

Ingold (2012), an anthropologist interested in natural studies and advocating causes of material culture, criticizes Latour because, similar to Heidegger, Latour fails to make a distinction between object and thing. Ingold (2012) emphasizes that "in place of the opposition between subjects and objects, confined to their respective domains of society and nature, Latour (2004a, p. 53-90; 2004b) posits associations of humans and nonhumans, forever gathering themselves into collectives" (INGOLD, 2012, p. 436). For the author, Latour's non-human objects are completely inanimate. Borgerson (2014) agrees, arguing that ANT incites a complexity of network effects that would invalidate the function of human perception. Ingold and Borgerson, therefore, oppose the materialist perspective proposed by Latour, considering that creates a relativity between the universe of human choices and values.

Miller (2005) questions the suppression of dualities proposed by Latour (2012), with his theoretical abolition of notions such as subject versus object, natural versus social, structure versus agency, context versus content. Miller (2005) points out that Latour has never described himself as a dialectical thinker. Perhaps because "the Hegelian dialectic, according to Latour, expands the abyss between the poles of subject and object that it aims to fill" (DOSSE, 1999, p. 99). This is more or less the opposite of what Miller suggests, who further sees no merit in a dispute in which scholars influenced by Latour accuse dialectical thinkers of retaining the dualism of subjects and objects they claim to have transcended. Similarly, dialectical thinkers make the same accusation to Latour's followers. For Miller (2005), in line with Ingold's definition of materials (2012), when Latour emphasizes objects of science rather than artifacts, a degree of quality is lost because the artifact is impregnated with creativity and prior history. In Miller's view (2005), it is the artifact that is the focus of Bourdieu's *habitus*.

As to the agency of objects, Miller (2005) confronts Latour (1993) and Gell (1998) in highlighting the prevalence of human agency over object agency. In Miller's (2005) point of view, Latour situated non-humans below the level of human agency,

that is, privileging human perception in the first instance. In a similar perspective, for Miller (2005), Gell is looking through objects to incorporate human agency. Ingold (2012) points out that the agency view of the object by means of qualities (tactile, visual, olfactory) and its properties, which can be changeable and inconstant, causes an object to offer some answers and to restrict the possibility of other objects. However, perceptions, memories, thoughts and actions reside within the individuals. Borgerson (2014), in questioning Law's view of agency, adds that the author is confronted with a conflict when he addresses this issue by referring to the danger of things, the fascination they exert over individuals and how things may intervene in relationships and interfere with the ability to offer a testimony about interactions.

FINAL CONSIDERATIONS

Theories are lenses that cut through reality and allow highlighting certain aspects while leaving others out of the field of analysis. It is no different for ANT, and the criticisms addressed at this theoretical approach are a healthy exercise in recognizing its limitations. However, the importance of ANT is undeniable for rejuvenating the scientific view considering the overlap between human and non-human, nature and social. At this point, it is appropriate to focus on ANT contributions to the area of consumption and marketing.

Within consumption studies, one of the possibilities brought by ANT was to problematize the focus on the individual usually observed from dyadic consumer relations. Thus, instead of exploring the direct and isolated relationship of the consumer with an object of consumption or a brand, ANT allows for perceiving relationships as "entangled" between individuals and objects during consumption (COCHOY, 2008; EPP and PRICE, 2010; JENKINS, MOLESWORTH and SCULLION, 2014; HANSSON, 2015). In this new perspective, no consumer is a durable, ready or finished entity. Instead, the consumer is constituted in the relations between people, objects and meanings within the networks in which they participate (COCHOY, 2008; EPP and PRICE, 2010; HANSSON, 2015). From this perspective, consumption actions are not carried out by human beings alone, but by the mobilization of a network of entities.

More than focus on multiple actors, ANT allows a renewed look at subject-object relations, terminating the hierarchy between humans and non-humans, and blurring the boundaries between the two through the exchange of characteristics between them. This feature makes it possible to recognize the importance of learning processes and skill arrangements in the context of these networks. It is interesting to note that there is a sense of "collective learning" as a background that also establishes exchanges during consumption activities. ANT thus emphasizes collective and mundane learning that overcomes cognitive, economic, and cultural connections with its' emphasis on the socio-materiality aspects of the consumption scene and its surroundings.

By overcoming the subject-object dualities and understanding the relationships between consumers and the materiality around them forming new hybrids, ANT offers new perspectives of ontological symmetry for research, regarding the history of the individuals and objects of consumption, without privileging one or the other. No actor is more important than another, and this perspective is what shapes several heterogeneous networks that aggregate, destabilize, re-organize and/or disintegrate. This view is particularly appropriate when investigating new realities of technology-driven consumption, in contexts such as the internet of things and machine-machine communications (HOFFMAN and NOVAK, 2016). ANT offers resources to capture not only the implicit, tacit or unconscious layer of human knowledge, but also the material agency of things that promote relationships with far-reaching consequences. This is, for example, the case of devices that interact with each other, and in certain cases, creating consequences that are not obvious for human apprehension and understanding. A simple example of this dynamic is that of algorithms that execute a complex set of choices by selecting specific results for users. Bajde (2014) further argues that with ANT's ability to think in terms of extensive heterogeneous networks (LATOURETTE, 1988), scholars in the field of consumption may consider it more seriously in its inherent connection to production and problematize the relation of active consumers, subjects and objects of passive consumption, deprived of their complexity and material and technological power (BETTANY, 2007; BAJDE, 2013).

Another innovation suggested by ANT to research in the field is the need to adjust the focus on group formation in view of the sense of living in the same collective. The task of delineating and forming groups is challenging for the researcher in the field of consumption. The usual studies are concerned with previously mapping the profiles, characterize consumers or social aggregates from specific criteria, such as segmentation. In general, this procedure is adopted as a starting point. By avoiding these procedures, ANT offers tools to overcome explanations based on demographic aspects – age, gender, social class – that have long been unable to account for the complexity of consumption phenomena. The very practice of marketing

managers has revealed the fragility of this previous process of group forming, for example, in the cases of products and brands adopted by groups that are inconsistent with the offer's original proposal. Instead of random explanations based on internal or aspirational motivations, ANT offers the opportunity to think of these surprising relationships in a more complex way, including the incentives and barriers found in the networks and the contours of materiality.

As proposed by Fox and Alldred (2015), object-oriented ontologies such as ANT suggest a material and cultural alignment at the macro, meso and micro levels together, as opposed to the traditional research in the field, which focuses on observation of consumption considering the consumer's context. Bajde (2013) also points out an alignment of context and content that explores not only a first level of consumption, or a context, but also a larger background, such as a macrocontext, a local effect arising from a global cause. This requires an ability to observe social reality by conceiving a network of associations born from mapping the social connections produced by the actors and mediators themselves, rather than from the researcher's framing as in previous theoretical elaborations that determined what would be related to the micro or macro-social, or to the local or global. The idea is for the researcher to analyze the phenomenon by keeping the focus on the social reality investigated, on the actions of the actors and on the richness of the descriptions, without using divisions, judgments or contradictions based on previous and intermediate concepts. Thus, the study adopts a more holistic view, allowing the non-human to contribute to the understanding of the human, considering the social reality.

By dissecting the theoretical connections of ANT with the findings of articles from the field, as well as presenting the main methodological aspects of these studies, this work sought to make a contribution that provides a basis for Brazilian researchers to expand the range of methodologies in consumption research and improve the process of theorization in this area. From the dialogue with the research that has been produced and published in the main international journals within the field of marketing and consumer behavior, it is possible to observe that ANT has been present in the area of technological and connected consumption, with emphasis on consumption skills and learning both of individuals and social groups, in the transformations of objects and in their agency power. This presence shows that there is still room to advance independently from the narrowing perspective of the relevance of the research's geographic and cultural context.

Thus, ANT tends to be particularly interesting to Brazilian studies because it promotes an approach that emerges from the field, avoiding previous theoretical frameworks to explain certain social realities. In this sense, it stimulates Brazilian researchers to abdicate from explanations offered by theories produced in other countries. On the other hand, ANT can also help equalize dialogues of researchers around the world. Insisting on the exhaustive investigation of the actors and their direct connections, this theory adds value with its findings about what is singular, as well as what is universal, in Brazilian reality.

In Brazil, there are still few studies that apply ANT to marketing (LEME and REZENDE, 2016). Thus, this article contributes to understanding the potential of this theory for researchers in this area. The instant article presented a synthesis of conceptual views of ANT, its origins as well as ontological and epistemological differences that constitute its theoretical basis. In addition, the study showed how the main concepts of ANT are operationalized in recent consumption research, published in international journals. In articulating the recent and still dispersed literature that applies ANT within the field of marketing and consumption, the intention is to stimulate the development of research that incorporates the tools offered by this theory. This work suggests alternatives for research based on a change of view and conduct of the researcher focusing on the consumption relations and their materiality.

As a theoretical work, the article presents several limitations, which should be considered in future studies. The intent is not to carry out an exhaustive review of ANT, but to offer a view of the most important works related to the approach, this work does not extensively record the influence of Latour, Callon and Law's contributions in the field. In this sense, a bibliometric study would be a great contribution, offering an accurate measurement of the presence of ANT and pointing out the networks of publications, researchers and themes associated with the theory. The article is presented as an instrument to review – based on the resources offered by ANT – the perspectives usually adopted by the field of consumption, such as phenomenology and material culture. Considering the goal of providing an inventory of key concepts and the use of ANT in the field, it was not possible to carry out a more exhaustive comparison of these concepts and practices. A future study may reveal in more detail the nuances and potentialities of each of these concepts. In addition, ANT is in the repertoire of object-oriented ontologies, which include other approaches, such as Assemblage (DELEUZE and GUATTARI, 1987; DELANDA, 2006) and Entanglement (HODDER, 2012; 2016). A recommendation of what would contribute to the development of the body of knowledge about ANT and other related approaches would be making a comparison and contrast of these new ontologies, exploring their points of convergence and divergence.

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