

Entrepreneurship as translation: Understanding entrepreneurial opportunities through actor-network theory

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Entrepreneurship scholars argue that opportunities are at the heart of entrepreneurial activity. Yet, there is still a heated debate on the nature of opportunities. The discovery view argues that opportunities are discovered and have objective existence prior to the entrepreneurial process. The creation view argues that the discovery view is incomplete and makes wrongful assumptions about agency, process and opportunities in entrepreneurship. More conceptual development, however, is needed for the creation view to become a fully developed theoretical alternative to the discovery view. In this article, Actor-Network Theory is used to develop the creation view and further our understanding of entrepreneurial processes.

Keywords: opportunities; entrepreneurial processes; actor-network theory

1. Introduction

Recent research on entrepreneurship places opportunities at the heart of entrepreneurial activity (Shane and Venkataraman 2000). While much entrepreneurship research has focused on the entrepreneur, the opportunity concept signifies important features of the external circumstances in which the entrepreneur operates. There is a widespread agreement that the opportunity concept is central, but there is also an ongoing debate about the nature of opportunities and how the external environment is construed (Berglund 2007). The dominant theoretical views of entrepreneurship, the discovery view of opportunities, found in parts of Kirzner's work (1973, 1997) and the nexus perspective of entrepreneurship (Eckhardt and Shane 2003; Shane 2000, 2003; Shane and Venkataraman 2000; Venkataraman 1997) see opportunities as something pre-existing in the market that the alert entrepreneur responds to. Yet, a growing body of literature points to problems in the discovery view (see Korsgaard 2009 for a review of the critique), and it has been recognized that the discovery view needs to be counteracted by a fully developed alternative (Alvarez and Barney 2007). The critics argue that the discovery view is incomplete and generates inadequate accounts of entrepreneurial processes (Baker and Nelson 2005; Berglund 2007; Berglund, Dahlin, and Johansson 2007; Gaddefors 2005; Garud and Karnøe 2003; Sanz-Velasco 2006; Sanz-Velasco and Magnusson 2004; Sarasvathy 2004). The reason for this is that the discovery view makes problematic assumptions about agency, process and opportunity (Korsgaard 2009). Instead, the

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so-called creation view suggests that opportunities do not pre-exist and that the entrepreneurial process creates the opportunity (Fletcher 2006; Gartner, Carter, and Hills 2003; Sarasvathy 2008).

Theoretical alternatives for understanding entrepreneurial processes and opportunities are therefore needed. While the critique of the discovery view has been extensive, the formulation of such alternatives is still in an emerging phase (Alvarez and Barney 2007). The notion of opportunity creation holds promise of a fuller and possibly more complete account of entrepreneurial processes, and efforts have been made introducing concepts such as creativity (Dimov 2007), enactment (Gartner, Carter, and Hills 2003) and effectuation (Sarasvathy 2001).

This article seeks to develop the creation view of opportunities. This is done by drawing on Actor-Network Theory (ANT) as a theoretical and methodological resource in confronting the critique points raised against the discovery view in terms of agency, process and the nature of opportunities. ANT emphasizes distributed agency, non-linear processes and continuous (re-)creation of artefacts. The article thus furthers our understanding of opportunities as a conceptual tool in entrepreneurship research as well as providing an assessment of the significance of ANT for the creation view of opportunities and entrepreneurship research in general.

The article proceeds by introducing the discovery view of opportunities and the critique, which has been directed at this view. Then, a selective introduction to central concepts of ANT is given, before these are applied to the problematic issues of agency, process and opportunity. Here, the notion of translation as the driving dynamic of processes is central. Finally, the implications and potential limitations of ANT in relation to the creation view and entrepreneurship research in general are addressed.

2. The discovery view

The discovery view of opportunities has its roots in Austrian economics (Hayek 1945; Kirzner 1997) and has most recently been promoted by scholars such as Shane and Venkataraman (Eckhardt and Shane 2003; Shane 2000, 2003; Shane and Venkataraman 2000; Venkataraman 1997). In its original form, the discovery view was concerned with the entrepreneurial function in the market, and the concept of discovery was deployed to account for the tendency of markets to equilibrate (Klein 2008). The function of the entrepreneur was to discover the errors in the market as expressed in price differences and an opportunity was seen as a situation in which it is possible to sell resources acquired at low prices at high prices (Kirzner 1973; White 1990).

The nexus perspective has adopted the discovery view of Kirzner (1973) and suggests entrepreneurship to be seen as the discovery, evaluation and exploitation of opportunities (Eckhardt and Shane 2003; Shane and Venkataraman 2000). While opportunities are perceived as objective phenomena, the discovery of them is a subjective process. Or, as phrased by Shane and Venkataraman (2000, 220):

Although recognition of entrepreneurial opportunities is a subjective process, the opportunities themselves are objective phenomena that are not known to all parties at all times. For example, the discovery of the telephone created new opportunities for communication, whether or not individuals discovered those opportunities.

The discovery view defines entrepreneurial opportunities as 'situations in which new goods, services, raw materials, markets and organizing methods can be introduced through the formation of new means, ends, or means-ends relationships' (Eckhardt and Shane 2003, 336) or as 'opportunities to bring into existence new goods, services, raw materials, and organizing methods that allow outputs to be sold at more than their cost of production' (Shane 2000, 451). The entrepreneurial process is thus initiated by an alert individual discovering an opportunity and continued through evaluation and exploitation of the opportunity.

By incorporating both the individual and the external circumstances, the latter in the form of the opportunity, the discovery view challenges and extends prior approaches to entrepreneurship. On the one hand, equilibrium theories of the market are challenged by introducing subjective factors such as unequal distribution of information and prior knowledge. On the other hand, psychological theories of the nature of the entrepreneur are challenged by arguing that the external circumstances are also important. Regardless of the characteristics of the entrepreneur, entrepreneurial activity always unfolds in a context that both enables and restrains the activity. The discovery view thus signifies an important move away from the unworldly neoclassical economics that left no room for the entrepreneur (Eckhardt and Shane 2003) and essentialist trait theory, which showed little promise (Gartner 1989).

2.1. Critique of the discovery view

Despite its merits, the discovery view has received considerable critique in later years (Korsgaard 2009). The strongest and most widely sounded critique against the discovery view of opportunities is that it is incomplete (Fletcher 2006; Gaddefors 2005; Gartner, Carter, and Hills 2003; Piühl 2005; Sarasvathy 2004). The general sentiment among the critics is that entrepreneurial processes are more dynamic and complex than the framework that the discovery view can capture. The descriptions of entrepreneurial processes generated through a discovery view will therefore tend to be incomplete. The reason is that the discovery view makes a series of assumptions about entrepreneurial opportunities and the entrepreneurial process that limit descriptions and analyses (Korsgaard 2009). The assumptions concern issues of:

- (1) agency,
- (2) process and
- (3) development (or lack thereof) of opportunities.

Ad (1) According to critics, the discovery view places too much emphasis on individual cognition and agency (Baker and Nelson 2005; Dutta and Crossan 2005; Fletcher 2006; Gaddefors 2005; Garud and Karnøe 2003; Lavoie 1991). As Fletcher (2006, 425) states: 'too much agency tends to be attributed to individual people who make judgements about where there are gaps in the market'. The effect of this over-emphasis on the cognition and action of the individual entrepreneur is that the social and relational aspects of the entrepreneurial process are overlooked (Fletcher 2006; Gaddefors 2005).

Ad (2) The discovery view is also criticized for assuming that there is linearity in the entrepreneurial process; a linearity we rarely find in actual practice (Baker and

Nelson 2005; Fletcher 2006; Sarasvathy 2001). The scheme of discovery, evaluation and exploitation incorporates a temporal ordering (Baker and Nelson 2005) or sequential logic (Fletcher 2006; Piihl 2005) that critics find is incongruent with the realities of entrepreneurial processes. Instead, it is argued that such processes are non-linear and indeterminate (Baker and Nelson 2005).

Ad (3) Finally, contrary to the discovery view's assumption that opportunities exist prior to discovery, the critics argue that opportunities do, in fact, not present themselves as fully developed (Ardichvili, Cardozo, and Ray 2003; Sanz-Velasco 2006; Sarasvathy 2004). What is there at the initiation of the entrepreneurial process is something less than a fully developed opportunity. In order to arrive at a complete opportunity, development is required.

One may speculate that the source of these assumptions and the problems they entail is the substitution of the explanandum and the explanans; of that to be explained and that, which explains. In the discovery view, the individual, opportunity and the circumstances of their meeting explain the process initiated by the meeting. Yet, as indicated by the critics, in the close study of entrepreneurial processes it is not clear what the opportunity is (Sarasvathy 2001, 2008; Sarasvathy and Dew 2005) and who the entrepreneur is (Garud and Karnøe 2003). Indeed, the entrepreneurial process may appear in some respects to be exactly the process of establishing the identities of the opportunity and the entrepreneur (Down 2006; Sanz-Velasco and Magnusson 2004; Warren 2004). It may thus be conducive to substitute back the explanandum and the explanans; to let the identity of the opportunity (and entrepreneur) be that, which must be explained. To do so it is 'simply' necessary to unmake the assumptions concerning agency, process and opportunity made by the discovery view, and for this purpose ANT is well suited.

The so-called creation view of opportunities is emerging from the critique of the discovery view. Common to the contributions making up this emerging view, is the idea that opportunities are created in the entrepreneurial process (Alvarez and Barney 2007). The discovery view's notion of the entrepreneur as responsive to the external circumstances is rejected, and instead the entrepreneurial activity is seen as an active creation of the circumstances; a form of world making (Sarasvathy 2008). Yet, the formulation of the creation view as a fully developed alternative conceptualization will benefit from further conceptual revision of the problematic issues of agency, process and opportunity (Sarason, Dillard, and Dean 2010).

3. Actor-Network Theory

ANT combines insights from semiotics with the attention to the constitutive force of everyday practice found in ethnomethodology and symbolic interactionism (Esmark, Laustsen, and Andersen 2005; Latour 2005). According to Law (1999, 3), ANT is the 'ruthless application of semiotics'. The semiotic insight being that words derive their meaning from their relations to other words and therefore have no inherent qualities nor derive meaning from an extra-linguistic reality. ANT, however, extends this semiotic insight to everything thereby suggesting that the identity of any object, human, non-human, abstract etc. is the result of the relations into which it enters. ANT therefore tries to go beyond language and text as such to incorporate

material and technological elements, which have either been neglected or over-emphasized in social science.

The results are socio-material descriptions in which social and material elements feature symmetrically and where the interaction between human and non-human actors is defined relationally. In a comment on the debate about gun control Latour (1999b, 179) offers this eloquent quote, summarizing a fundamental insight of ANT:

You are different with the gun in your hand; the gun is different with you holding it.
You are another subject because you hold the gun; the gun is another object because it has entered into a relationship with you.

Latour's point is that neither the gun nor the person in itself kills, but the assemblage of a person and a gun can perform the act of killing. Agency is not the privilege of reflexive humans but of networks of human and non-human elements. Furthermore, identity and existence is an effect of the binding together of artefacts in these networks.

Accordingly, ANT can be said to embody the fundamental constructivist premise that the scientific and social reality, which seems objective and indisputable, is in fact the result of a collective, constructive effort (Burr 2003). In the case of ANT, it is argued that reality is the result of a series of practices in various forms, which incorporate hybrids of social, technological and material elements (Olesen and Kroustrup 2007). However, ANT goes beyond the forms of constructivism that privilege language and thought and which see non-human elements as socially determined. ANT treats human and non-humans as symmetric in analysis, so that the social and material is mutually constitutive. For ANT, the continuous construction of reality is accomplished as much through materials and material practices as through mental or discursive activities. In that sense it maintains a form of realism as extra-mental or extra-discursive elements are not constructed through mental or discursive operations.

By virtue of its constructivist premise ANT goes against the dominant paradigmatic stream in the field of entrepreneurship. The field has been dominated by a positivist and functionalist paradigm, as embodied in e.g. the discovery view of opportunities (Grant and Perren 2002). The positivist and functionalist paradigm emphasizes the use of variance models, which take the entities involved to be fixed and readily comparable. ANT, on the other hand, represents a form of process model, emphasizing the dynamic becoming of entities (Van de Ven 2007). As such, the ANT approach subscribes to an ontology of becoming (Chia 1995; Steyaert 2007) in which social entities such as organizations, entrepreneurs and markets are seen as effects created in relational exchanges, and where the focus of analysis is on the processes of becoming rather than on characteristics of the social entities. The ANT approach thus shares many features with the post-structuralist, social constructivist and narrative approaches to entrepreneurship, which have gained ground in the entrepreneurship field recently (Hjorth and Steyaert 2004; Lindgren and Packendorff 2009; Steyaert 2007).

The ideas of ANT have been unfolded in numerous studies of scientific practice (Latour 1987; Latour and Woolgar 1986), innovation (Akrich, Callon, and Latour 2002a, 2002b), economics (Callon 1999), technology (de Laet and Mol 2000; Law 1986) and medicine (Mol 2002; Mol and Law 1994). In these different areas ANT has shown how facts and artefacts are created in the process, and how they, once the

process is concluded, can emerge as the cause of the closure. While the process is ongoing, the identities and existence of the facts and artefacts are subject to controversy; but once the controversy is ended, the prior truth or existence of the fact/artefact comes to be seen as the reason for closure.

There is thus a striking resonance between ANT and the issues in play in the debate between the discovery and creation views. By turning the process upside down, ANT shows how the state of affairs, allegedly discovered, is in fact the product and not initial point of departure of the process (Latour 1987). Therefore, ANT is likely to provide a fruitful theoretical and methodological resource in the further exploration of entrepreneurial processes and opportunities.

In the following, a summary of selected key concepts of ANT is presented. The purpose of this is to explore how these concepts might be leveraged into a new conceptualization of entrepreneurial processes and opportunities.

3.1. *Studies of scientific practice*

The roots of ANT can be traced back to the studies of scientific practice conducted by Latour and Woolgar (1986). In the seminal book 'Laboratory Life' Latour and Woolgar (1986) found a fundamental difference between studying scientific discussions as they are ongoing and when they are concluded. According to Latour (1987), if you venture a flashback to when the discussion on whether a scientific statement is true or false was still ongoing, you find uncertainty, competition, controversy and people hard at work. The work is first and foremost about gaining support for the statement, by mobilizing actors, scientific papers and laboratory experiments that concur with the statement. Yet, in all of this there is no reference to nature. It is only once the discussion is concluded that it appears as if the accepted statement reflects a fact in nature, which was always there awaiting discovery. This is because, once accepted, the statement becomes a split entity (Latour and Woolgar 1986, 176):

On the one hand, it is a set of words which represents a statement about an object. On the other hand, it corresponds to an object in itself which takes on a life of its own. It is as if the original statement had projected a virtual image of itself which exists outside the statement.

Suddenly, it appears as if the object of which the statement attempts to speak was the cause of the utterance of the statement in the first place (Olesen and Kroustrup 2007). The statement appears to be the consequence of a discovery of a fact of nature, and the acceptance of this statement instead of other possible statements appears to be caused by correspondence with the fact.

3.2. *Translation*

Later, the findings of these science studies were broadened to include other forms of practice, such as technology and innovation. Here, Latour (1986, 1987) and Callon (1986) introduced the notion of translation as a general account of the process by which 'the social and the natural worlds progressively take form' (Callon 1986, 224). There are three central aspects of translation (Latour 1986). First, the spreading of anything in time and space is in the hands of people. Second, an artefact has no

impetus on its own. In order to move, it must continuously be given energy from people doing something to it. Third, the people adding movement to the artefact do not simply pass it on. The artefact is shaped by the actors who pick it up according to their interests; they modify, transform and displace it; they translate it.

According to Callon (1986), a translation process involves the establishment of an obligatory passage point; a place (in the most abstract sense) that relevant actors must pass in order for their interests to be served. Yet, the establishment of this obligatory passage point requires that relevant actors along with their identities and interests are defined, imposed and accepted (Callon 1986). In Callon's famous example of the scallops of the St. Brieuc Bay, three scientists attempted to establish the cultivation of scallops in collectors in the bay as an obligatory passage point. This entailed the definition, imposition and acceptance of the scallops as something that would attach to the collectors and the fishermen as people interested in the long-term profit of continued scallop harvesting in the bay. If successful, the efforts of the researchers and the enrolled actors would have led to the establishment of an actor-network, which determines the identity of the actors, their interactions and the space of possible actions (Callon 1986; Olesen and Kroustrup 2007). If accepted, a translation would establish a reality in which certain things are possible and legitimate, while others are not; in which the identity and roles of the actors involved are determined as well as the relations between them.

In fact, the researchers did not succeed as very few scallops attached to the collectors, and the fishermen decided for a quick but smaller profit as they harvested those few scallops that did attach. As such, the identities defined and imposed by the researchers were rejected. This points to the essential role of keeping actors' interests aligned. As the scallops did not attach to the collectors, it became very difficult to keep the fishermen interested, as the hope of long-term profits dwindled.

Law (1986) refers to the process of establishing an actor-network as heterogeneous engineering, meaning the bringing together of elements into a stable formation. By employing the word heterogeneous, Law is emphasizing that an actor-network is made up of both humans and non-humans. ANT analysis thus makes no *a-priori* distinction between human and non-human actors. This is not to say that they are the same, but to point out that they are equally fundamental parts of an actor-network (Latour 1991).

Latour's science studies and Callon's sociology of translation are central in early ANT. Later developments have questioned some of the undercurrents of early ANT (Gad and Jensen 2010; Latour 1999a; Law 1999). The network concept of early ANT emphasized control and stability, and controversy played out between opposing programmes (Czarniawska 2004). The failure of the 'programme' of the three researchers in Callon's example thus constitutes the success of one or more anti-programmes (e.g. the anti-programme of reaping short-term profits for the fishermen). In this view, existence and success becomes a binary matter. Either the network is established and the identities of actors stabilized or a counter network wins and different identities are fixed. This Machiavellian tone in early ANT is counteracted later, as the notion of complexity is introduced to account for the fact that multiple networks may exist and produce multiple versions of the same phenomena (de Laet and Mol 2000; Gad and Jensen 2010; Mol 2002; Mol and Law 1994). The notion of complexity thus points to the fact that the identities of facts and artefacts are not either/or ones (either the scientific statement 'A is B' is true or 'A is

C' is true). Several enactments or translations of 'A' may co-exist, and they may even be connected in various ways.

In relation to the early ANT of Latour and Callon, the notion of complexity emphasizes ideas that were slightly underplayed in Latour and Callon's earlier efforts. The first idea is that processes are never permanently closed. Any statement, fact or artefact can be questioned and undone, even if the costs are immense (Latour 1987). Furthermore, reality construction is a continuous process that is never brought to a hold (Callon 1986). The temporary equilibriums attained through the establishment of an obligatory passage point may at any moment be disrupted. We should therefore not see translation as having only two potential outcomes: success or failure. Translation as reality construction is ongoing, and reality is not an either or. Identities can be complex, as they are enacted at different co-existing sites (Gad and Jensen 2010; Mol 2002).

4. ANT and opportunities

The insights of ANT, as summarized above, can be leveraged to enhance our understanding of opportunities. This is done in the following by specifically addressing the central critique points raised against the discovery view of opportunities relating to the problematic assumptions concerning agency, process and opportunity. In the following sections, ANT-informed interpretations of the critical concepts are laid out, and it is pointed out how these relate to existing research on the creation of opportunities.

4.1. Agency

Critics of the discovery view have pointed to the assumptions about agency as a source of problems. The discovery view follows traditional social science by assigning intentionality a special significance in relation to agency. Real agency requires intentionality on the part of the acting entity; and therefore agency becomes the privilege of humans. Shane (2003, 7) explicitly states that 'entrepreneurship requires a decision by a person to act upon an opportunity because opportunities themselves lack agency', i.e. agency involves a conscious and intentional decision to bring about a certain state of affairs, and it is this agency that initiates the process.

ANT makes different and less restrictive assumptions about agency. Indeed, Latour (2005, 71) suggests a definition of agency as: '*any thing* that does modify a state of affairs by making a difference is an actor'. The key concept in terms of agency thus shifts from intentionality to difference; from the psychology of the actors to the actions and their impact.

Why accept Latour's definition of agency, with its counter-intuitive exclusion of intentionality? It offers three distinct advantages in terms of describing entrepreneurial processes. First, it allows more actors to be included in the analysis. The account is not forced to focus on the initial actor but may in principle include all that have made a difference, be they customers, advisors or suppliers. Agency is thus distributed on a larger number of actors. An entrepreneurial process by definition, thus, has distributed agency (see Garud and Karnøe 2003 for an exploration of distributed agency in entrepreneurial processes).

Second, Latour's definition allows more types of actors. The ANT notion of treating humans and non-humans symmetrically in analysis springs from the unwillingness to make premature assumptions about agency (Callon 1986; Latour 1987, 1992, 2005). If a software programme that runs the database of an internet venture does not work, surely it makes a difference; it refuses to play the role suggested, thereby compromising the actor-network. This is not to say that an account of an entrepreneurial process must include all kinds of non-human actors, but excluding them in advance as passive and inconsequential may prove problematic.

Third, the agency of the entrepreneur must not be seen as an aspect of the psyche and will of the actor. The individual human actor is powerless without the agency of others. The single individual contributing all agency from start to finish in the process is an illusion, as the agency of the actor is an effect of the network in which he is embedded. That only one person *post hoc* comes to be seen as *the* entrepreneur is the outcome of negotiations (Akrich, Callon, and Latour 2002a, 2002b). Who is given the role of 'entrepreneur' is not evident and given in the process and more often than not settled later in what may be fierce negotiations. This approach is both controversial and useful in the field of entrepreneurship that has traditionally emphasized the heroic entrepreneur (Jones and Spicer 2005) and posited a significant explanatory force in the individual entrepreneur (Gaddefors 2005). ANT shifts the perspective from the general to the army (de Laet and Mol 2000) and forces the researcher not to take agency for granted, and to relax the assumption that there is *an* entrepreneur or *a* team that should be seen as the centre of gravity for the whole process. Furthermore, this approach to agency emphasizes the dynamic and relational creation of entrepreneurial identities (Down 2006; Down and Warren 2008; Warren 2004). Actors are not born entrepreneurs, entrepreneurial identity is created in the process of becoming an entrepreneur and does not depend on intentionality, thus allowing for accidental entrepreneurs (Görling and Rehn 2008). Emphasizing a central entrepreneur, as has been the tradition in entrepreneurship, disguises the becoming stories of both the entrepreneur and the opportunity.

A well-known example of this is given by Latour (1987) in the description of Diesel and the engine referred to as the Diesel engine. While Rudolf Diesel is considered to be the entrepreneur behind the invention and success of the Diesel engine, Diesel's ownership of the engine is less than straightforward. He can neither build nor spread the engine himself. He is reliant on engineers, buyers and machine parts to realize his idea of a combustion engine. Any power or agency Rudolf Diesel might have depends entirely on the agency of those who partake in the project. Diesel's agency is bestowed on him in the actor-network of which he has limited control. In fact, he has great trouble aligning the machine parts, engineers and users of the engine. In this sense Diesel, the entrepreneur, does not create or control a network but is an effect created in the network. Accordingly, when trying to understand the entrepreneurial process of the Diesel engine, the character of Rudolf Diesel cannot explain, neither fully nor partially, the outcome of the process. Instead, focus must be on the network of humans and non-humans in which the effects of agency and entrepreneur are created.

The distribution of agency to multiple actors puts a somewhat different spin on the question of whether opportunities are subjective or objective; are they in the minds of the entrepreneurs or do they reside in the structural context awaiting

discovery (Mole and Mole 2010; Sarason, Dean, and Dillard 2006; Sarason, Dillard, and Dean 2010)? An ANT approach sees the in-here versus out-there distinction as an effect of the process. The actor (be it human or non-human) and the opportunity are not seen as pre-existing entities that may or may not engage with one another, but rather as something that comes to be in the process. The question is thus not how structure and agent interact, but how a particular structure and agency constellation (or actor-network) has come to be?

4.2. *Process*

With regard to process, the critics have argued that the discovery view expects a linear and sequential process (Fletcher 2006). The logic is that the process starts with discovery, followed by evaluation and ending with exploitation. Each sequence is distinct and entails different activities. An ANT view makes no such assumption. Instead, the process is here seen as radically non-linear and indeterminate.

Latour (1987) explicitly rejects the notions of phase and trajectory. In his discussion of innovation processes Latour argues that once the black box has been opened the distinctions between the phases of invention, development and innovation are problematic. In the process of creating the innovation the technology and its potential uses are thought out simultaneously, making the distinction between invention and implementation/innovation doubtful. Also, the development phase may change the technology beyond recognition, so that development is really continued re-invention. If we want to know how an innovation of entrepreneurial opportunity comes to be, the idea that an innovation follows a pre-given trajectory is analytically useless (Latour 1987).

This mirrors some important points made by entrepreneurship scholars engaging in narrative analyses of entrepreneurial activity (Downing 2005; Fletcher 2007; Fletcher and Watson 2007; Hjorth 2007). As pointed out by Fletcher (2007), sequential and temporal order are the result of *post hoc* narrative sensemaking. The causality of one thing leading to another found in many narratives offered by entrepreneurs, especially as they are influenced by the general discourse of enterprise (Fletcher 2007; Hjorth 2007), is not in the events as such as they are unfolding, but later installed in the process of making sense of what has happened.

As such, ANT becomes a way of reopening the established and dominant narratives of entrepreneurial activity by moving upstream (Hjorth 2007; Latour 1987) to the time and places when the opportunity was still in the process of becoming and no one knew how it would end up; where multiple voices were still audible and trying to send the opportunity off in many different directions. Moving upstream may reopen both those narratives concerning individual entrepreneurial processes as well as the general narratives of enterprise converging on opportunity discovery and exploitation (Hjorth 2007).

The notion of translation focuses on how identities of actors and objects are established in relational exchanges. As the identities of the actors and objects are an effect of the exchanges, their characteristics cannot pre-determine a certain sequence or direction in the process. That this may appear to have been the case *post hoc*, is an effect of closure, which silences obstinate and marginal voices (Fletcher 2007). Translation processes are therefore open-ended, and an opportunity is likely to be

're-invented' and transformed many times over as people adopt it and translate it to their interests. As pointed out by Akrich, Callon, and Latour (2002a, 205):

The result of such a description is a socio-technical diagram which combines two categories which we are prone to separating: the technological analysis which limits itself to a description of the object *per se* and its intrinsic properties; the sociological analysis of the object i.e. the environments within which it spreads and effects.

In other words, there is no object *per se* to evaluate. The evaluation consists in the object's or opportunity's translation; i.e. transformations as people adopt it. We may therefore be better off by suspending the internal logic of the process as described by the discovery view and replace it with descriptions of the transformations resulting from the agencies of multiple actors. Who is doing something, what are they doing and what are the consequences? The fate of the opportunity, thus, does not reside in the characteristics of the opportunity and the entrepreneur, but is, to paraphrase Latour (1987), in the hands of later users.

4.3. Opportunity

A third assumption made in the discovery view, which has been criticized, is the assumption that opportunities have some definite form which remains unchanged throughout the process (Ardichvili, Cardozo, and Ray 2003; Sanz-Velasco 2006; Sarasvathy 2004). Hence, in the discovery view an opportunity is seen as fixed; immutable throughout the process and defining a fixed relation between a specific set of means and ends. The reason for this is that the opportunities exist in the external reality or what some refer to as structure (Mole and Mole 2010). The external reality or structure, and by implication the opportunity, thus exists independent of the entrepreneurial agency applied in the process. In the alternative view point, opportunities are created and transformed in the entrepreneurial process (Piihl 2005; Sarason, Dean, and Dillard 2006; Sarason, Dillard, and Dean 2010), because entrepreneurial agency is understood to be fundamentally constitutive of the structure or external reality.

In line with the latter line of reasoning, Latour (1987) states that we should not look at the intrinsic qualities of the object under study, but at the transformations undergone by the object. Following the logic of translation, in principle, any characteristic of the initial opportunity can be negotiated or translated as entrepreneurial agency transforms reality. In practice, some characteristics may in fact be upheld throughout a process, but in any case it will be impossible to determine in advance what is altered.

Furthermore, an opportunity may become multiple as it is translated in multiple ways. The fixed singularity of the opportunity may be broken as it is enacted in different ways. Yet, the multiple enactments need not be discontinuous. As suggested by Mol (2002), multiple enactments are still less than many; the different enactments may co-exist and be connected in complex ways.

5. Discussion

In the previous sections, the ANT view of opportunities was demonstrated to offer alternative interpretations of those issues that pose problems for the discovery view.

Table 1. Summary of the differences between the discovery view and the ANT approach.

	The discovery view	The ANT approach
Agency	Singular agency – one protagonist	Distributed agency – multiple protagonists. Agency as bestowed in a network
Process	Linear and staged	Indeterminate and non-linear – subject to continuous translation
Opportunity	‘Situations in which new goods, services, raw materials, markets and organizing methods can be introduced through the formation of new means, ends, or means-ends relationships’ (Eckhardt and Shane 2003, 336). Definite, objective and existing prior to the entrepreneurial process	A relational effect created in conversational and material interactions

The differences between the ANT approach and the discovery view are summarized in Table 1.

The ANT alternative yields a more complete description of the complexities of entrepreneurial processes relative to the discovery view of opportunities. The list of protagonists is longer in an ANT approach. Where the discovery view emphasizes individual agency and cognition, the ANT approach makes no limiting assumptions about agency and the list of relevant actors. Additionally, an ANT approach will merge those elements that the discovery view refers to as discovery, evaluation and exploitation into a series of continuous translations. As a consequence, the discovery becomes a continued creative process that unfolds in the relations and interactions between the actors involved. Evaluation and creation co-exist and co-evolve as new translations are offered, denied and accepted. Exploitation is the continuous extension of the network of actors that acts on the opportunity.

The actor-network approach to opportunities thus undoes the substitution of the explanandum and the explanans. ANT shows how the apparent prior existence of artefacts such as opportunities is an effect created by (temporary) closure of a process. By focusing on entrepreneurship in the making, this effect can be undone, and the complexity and uncertainty of entrepreneurial activity can be made visible in analysis. As such, ANT is a way of ‘starting inquiry on the basis of uncertainty’ (Gad and Jensen, 2010, 63). The existence and specific form or identity of an opportunity is not assumed or relied on to provide an explanation for the process. The shortcut (Latour 2005) offered by the discovery view is replaced by a slower and more open approach in which much less is assumed and taken for granted (Law 2004).

ANT offers a promising avenue for future research into entrepreneurial processes by translating traditional concepts and themes of entrepreneurship research. As indicated above, ANT translates the concepts of individual and opportunity. In the discovery view of opportunities, the nexus of individual and opportunity is seen as the interaction of two distinct and pre-existing entities. In an ANT perspective, both individual and opportunity are effects created in the process. The individual is created as an internalized effect, which can be ascribed wilful and intentional action,

while the opportunity is created as an externalized effect, passively awaiting action that will set it in motion.

Furthermore, ANT translates the notion of market (Callon 1999). In an ANT perspective, the market does not exist as an omnipresent structure independent of the actions of individual actors. Markets, in the plural, come to be only in the practices of actual concrete actors creating local patches of order through mobilization in temporarily stable networks (Barry and Slater 2002; Callon 1998). In this sense, entrepreneurship is always market creation. It is the creation of a stable network of buyers and sellers. There is no pre-existing market to be analysed and penetrated.

Research into entrepreneurship as the nexus of opportunity and individual must thus always consider concrete individuals, opportunities and markets as embedded and created in processes of entrepreneuring (Steyaert 2007), in which the dancer (individual and opportunity) is indistinguishable from the entrepreneurial dance (Sarason, Dillard, and Dean 2010). This entails what Chia (1995) refers to as a priority of the micro-logics of organizing over its effects (entrepreneur, opportunity and market). A summary of the ANT translations of the concepts of individual, opportunity and market is provided in Table 2.

In terms of analysing entrepreneurial processes, this means that enterprising individual, opportunity and market are all effects created in the same network and therefore should be considered simultaneously. Furthermore, it means that these effects may be enacted differently in various temporal and spatial aspects of the process. Thus, an opportunity may be enacted e.g. as a material artefact embodied in the text of a business plan, or a represented goal to which entrepreneurial action seeks or the process as well as an outcome of the mobilization process that creates an actor-network.¹

Also, the entrepreneur or enterprising individual can be enacted in various forms. It may thus be a matter of dispute, who the entrepreneur is. Was Steve Jobs or Steve Wozniak the 'true' entrepreneur of Apple? Furthermore, even with such controversy overcome, the entrepreneur may be enacted in various ways playing different roles. From the outside, Steve Jobs appears to be a vital entrepreneurial force for Apple, which is highly functional, as Jobs is a very charismatic spokesperson for Apple. From the inside, however, the agency of Steve Jobs is clearly the function of the many human and non-human actors creating a local patch of order in the network producing and consuming Apple products. 'Steve Jobs, the entrepreneur' is thus a role created and assigned in this collective. Researching the entrepreneur is always a matter of researching the network in which the role is embedded. Of interest then are not the psychic, experiential and personal characteristics of the entrepreneur, but how he or she has come to appear as the entrepreneur and the functions of the various enactments of the entrepreneur in the network. See also de Laet and Mol (2000) for an enactment of a non-heroic entrepreneur.

Finally, the ANT perspective presents a different view of the entrepreneurial function. The discovery view presents the entrepreneurial function as one that equilibrates a market by being alert and responsive to opportunities. ANT will conceptualize the entrepreneurial function as one of creating local patches of order by mobilizing actors in a temporarily stable network, which defines the identities of the actors, their interaction and the space of possible actions.

In terms of developing the creation view of opportunities, ANT offers a number of important elaborations. On an overall level, the ANT approach offers an account

Table 2. ANT translations of central concepts of entrepreneurship research.

	The discovery view		The ANT perspective	Research focus in the ANT perspective
Enterprising individual	A human individual with specific psychological, cognitive and experiential characteristics	A relational effect continuously (re)created in conversational and material interactions	Individual as embedded in practices of entrepreneuring and in the network of relations that allows the individual to appear as acting. Focus on the different enactments of the entrepreneur and their functions.	
Opportunity	An objectively existing object in the market, represented through price differences	A relational effect created in conversational and material interactions	Opportunities embedded in the entrepreneurial process, which makes the opportunity appear as an object with specific characteristics. Focus on the enactments, representations and functions of the opportunity	
Market	Objectively existing structure beyond the control of individual actors and organizations	A concrete network of actors engaging in ordered interactions	Markets as performed in actual practices. Focus on the concrete local interactions and mobilization processes	

of the dynamic relation between the entrepreneurial individuals and the external circumstances in which the activity plays out. Like other versions of the creation view, this approach emphasizes the reality constructive quality of entrepreneurship. Furthermore, it supplements the other versions in a number of important respects. First, ANT emphasizes the importance of material and technological artefacts in the constitution of social relations (Latour 1991). As such, the framework points to the need to explore further the role of technologies (in the broadest sense of the term) and artefacts in entrepreneurship. It would thus be interesting to explore how technologies are used to mobilize stakeholders and legitimize entrepreneurial activities. For such explorations ANT offers a distinct vocabulary. Second, and in continuation of the above, ANT supplements the predominantly conversational and discursive approaches offered in the creation view, such as narrative and social constructionist approaches (Fletcher 2006, 2007; Gartner, Carter, and Hills 2003; Hjorth 2007). While ANT does not contradict and de-emphasize the importance of narratives and storytelling, it does point to a need to incorporate extra-linguistic elements in the reality-productive relationalities. Third, ANT offers an interpretation of the creative and interpretive aspects of entrepreneurial activity emphasized by some critics of the discovery view (Dimov 2007; Endres and Woods 2007; Garud and Karnøe 2003; Goss 2007; Sarasvathy 2004). Yet, where most of these critics see creativity and interpretation as an individual or mental activity, ANT focuses on the creative and interpretive aspect of (collective) action. Creativity and interpretation becomes a quality, not of mental and imaginative operations, but of action.

ANT thus has the potential to send empirical research off in new directions and generate insights that will supplement the creation view as a whole and thereby enhance our understanding of entrepreneurship as a reality-productive process.

An in-depth discussion of how the theoretical and philosophical points of ANT can guide empirical research in entrepreneurship lies beyond the scope of this paper. Yet, a few comments can be made to indicate some key features. ANT proposes the use of case studies as the primary method, and the literature features several examples of case studies of processes with strong elements of entrepreneurship. Latour (1987) has, on several occasions, discussed the emergence of the Diesel engine and Kodak. Moreover, the study by de Laet and Mol (2000) of the Zimbabwe bush pump offers insights into an entrepreneurial process, showing how the success of a technology and product depends less on the entrepreneur and more on the flexibility of the technology and in particular on how and by whom it is adopted.

Furthermore, looking at exemplary case studies from the entrepreneurship literature it is possible to see how ANT would inform such studies. Both Fletcher (2006) and Rindova and Fombrun's (2001) studies of the coffee industry and coffee bars offer compelling evidence of entrepreneurial opportunity creation, yet, in these accounts the social, in the form of conversations, metaphors and sociostructural factors are given clear primacy, and the non-human practices and materials (e.g. the coffee beans and the machineries) are clearly subject to social or discursive determination. As ANT seeks to generate socio-material diagrams (Akrich, Callon, and Latour 2002a), where humans and non-humans are treated symmetrically in the analysis, ANT would contribute to such case studies by showing how the human

actors are powerless without the non-human actors such as coffee beans, roasting, coffee machines and the coffee bar decor, and how the coffee bar and niche coffee industries are created in networks in which both humans and non-humans play indispensable roles. For example the coffee roasters, whose techniques of roasting the beans darker inspired the later coffee bar entrepreneurs such as Starbucks, required beans that could take the darker roast and machinery to do it. Indeed, the flavour response of the beans to roasting is likely to determine how the human actors engage in bean selection and roasting and not the other way round. So, a symmetric treatment of human and non-human actors, as proposed by ANT, is likely to both broaden and deepen case studies of opportunity creation.

What is of importance is that the analysis follows the translations involved as opportunities, identities and ventures change. Thus, for the purpose of empirical data collection and analysis a translation can be seen as entrepreneurial action. Action here is understood as making a difference. Such differences will typically be made whenever new actors, human and non-human, become involved in or are disengaged from the process, or when actors for whatever reason change how they act in relation to other actors; e.g. when fishermen decide to harvest the few scallops in Callon's (1986) example. As such, an ANT analysis has strong similarities with other process-oriented methodologies including narrative analysis (Riessman 1993), critical events analysis (Miles and Huberman 1994) and process studies (Van de Ven 2007). Hence, such methodologies share the focus on research questions emphasizing the importance of exploring how a given state of affairs has come to be, or is coming to be.

Merits aside, the ANT view does also have its limitations. First, the discovery view builds on extant and widely accepted theoretical and methodological resources in the field (Korsgaard et al. 2009), while ANT is a recent introduction to the field and by virtue of its constructivist tendency represents a break with the dominant theories in the field. It has been argued, though, that new frameworks that break with the established tradition in the entrepreneurship field are sorely needed, and that alternative approaches will enrich the field as a whole (Grant and Perren 2002; Lindgren and Packendorff 2009; Steyaert 2007).

A second and perhaps more problematic objection that can be made against the ANT approach, is the reduction of the human psyche. ANT makes agency a question of whether a difference has been made and not of intentionality, and there may thus be substantial benefit in combining ANT with other approaches to human identity and individualization such as can be found in positioning theory (Davies and Harré 1990), social constructionism (Burr 2003) or post-structuralism (Foucault 1998). Therefore, ANT as presented here is not promoted as an integrating perspective to unify the field around one single paradigm. Rather, it is suggested that this approach be set to work in order to generate complex descriptions of entrepreneurial processes that we can learn from and expand this learning by applying multiple other approaches as we explore the phenomenon of entrepreneurship. This is said well-knowing that the fate of this article is in the hands of later users (Latour 1987).

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Note

1. The author is grateful for this point made by one of the anonymous reviewers.

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