

A Quasi-philosophical Approach to the Industrial Network Approach

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by

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Abstract

This paper is concerned with the philosophical underpinnings of the industrial network approach. The approach is discussed in relation to different epistemologies, especially idealism, realism, and relativism. A variation of epistemologies are employed by researchers within the approach, and these are discussed in relation to what the focus on industrial networks tries to explicate. The three layers in the network model; activities, resources, and actors may require different treatment.

Introduction

As a newcomer in the field it was hard to tell what the industrial network approach was really about. A lack of formal training in economics did not make the task easier. But the biggest problem was probably that of coming from a background in the natural sciences without a conscious relation to the methods and language of social sciences. In this paper I will take on the bold task to explore the epistemological and ontological stands of the industrial network approach. The approach has often been embraced for, or accused of, encompassing a large number of alternative views and perspectives (e.g. Easton, 1992). That may be the reason why it is called an approach rather than a theory, and may complicate the issue of finding any clear epistemological basis. The paper will thus start with a general discussion of the

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industrial network approach. I will thereafter focus the discussion on the network model (Håkansson, 1987) and the three layers of substance therein, namely activities, resources and actors. One important aspect to explore is whether these three layers can be formulated within the same epistemology, or if they require different approaches to knowledge creation.

In order to shed light on the epistemology of the industrial network approach, I will take advantage of those papers already written which have focused on epistemologies and/or methodologies applied within the approach. An overview of papers and books presented by the IMP group will be used for the general discussion while I pick those books and papers I believe to be central to discuss the network model. To get additional information I will contrast and compare the approach to knowledge creation in the industrial network approach with other theories and perspectives within economics and other sciences.

The outcome of the paper may be twofold. On the one hand, it may provide a discussion about issues buried in the black box, as Bruno Latour (1987) has used the term, of the industrial network approach. On the other hand, it can contribute to an understanding of what the industrial network approach can say something about and thus with what other theories it can be compared.

Odontology? And Episte...What??

A normal dilemma for a young scientist is what constitutes good science.² The discussions run in all directions, presumably sensible researchers accuse each other of making no sense. They discard each other's methods with the claim that they produce invalid results or irrelevant result or, in the worst cases, both. Frequently, such disagreement can be traced back to basic ideas held by the involved researchers, or in other words, differences in the researchers' ontology and epistemology. Ontology and epistemology are two of the most basic terms in research, as their meaning can be expressed as 'theory of what the world is' and 'theory of how knowledge of the world can be produced' respectively. Albeit the words should be of interest to anyone seeking knowledge of the world, they seem to be used only by those especially interested in meta-matters.

² It may also be a dilemma to elder scientist, but as such I have no experience.

Epistemologies are classified in numerous ways according to authors' view on what are important dimensions. Researchers vary in their familiarity with words like positivism, idealism, and phenomenology, and I will try to keep the occurrence of such epistemological concepts to a minimum. The matter is complicated enough as it is, and does not need a whole range of additional concepts begging for definition. It is, however, almost impossible to avoid them completely and I will employ a few, especially idealism, realism, and relativism. Other epistemological concepts that are mentioned will hopefully be clearly related to those selected. The discussion will be aimed at explaining how researchers working with industrial networks produce knowledge and how their methods are coupled to a certain view of the world.

This last sentence points at another complicating issue: epistemology, ontology, and methodology is intertwined in a way that can make them hard to separate. There are certain methods that cannot be used if one wants to have a consistent belief system. For instance will some qualitative techniques be rendered useless in a positivistic research program, while some quantitative techniques have no application within epistemologies that search for deeper understanding of human activities and structures.

The Industrial Network Approach

The industrial network approach has undergone large changes since its' beginning in the seventies (when it was not even about industrial networks). A lot of work has been, and is, done on positioning the approach in relation to other theories. It all started with a group of young academics in Sweden, UK, Germany, France, and Italy who had a common interest in the study of industrial marketing. They called themselves the Industrial Marketing and Purchasing (IMP) group. According to Wilkinson (2001), "They were dissatisfied with the dominant marketing paradigm of the time, which focused on consumer goods and adopted a stimulus response, arms-length approach to the customer with seller as the active party." In this traditional approach the exchange between firms was looked upon as atomistic events without history and without consequences for the future.

After studying purchasing behaviour in industrial settings the researchers in the IMP group discovered that the atomistic view on buying and selling firms did not fit with companies' reality. Instead they saw that companies were engaged in long-term

business relationships. In the first IMP study (IMP, 1982), an interaction approach was developed and the involved researchers made an explicit comparison of their own work to work in inter-organizational theory and new institutional theory. By these comparisons, the researchers tell what they are aiming at saying something about, and also how their view is in contrast with the view in other theories. During the 1980s, the notion of industrial networks was developed, and the recognition of how one relationship was affected by, and affected, other relationships in a network was emphasised. Thus, an industrial network can be used to understand a business relationship, as well as understanding of business relationships can give understanding about a network. When I here write the network, I do not mean *the* network. The definition of a network in the mainstream industrial network approach is based on the researcher's choice about an appropriate size, in addition to the involved actors' perceptions. It is therefore a rather relative concept.

The development of the field of industrial networks borrowed ideas from several different theories, for instance history of technology (Freeman & Perez, 1988; Hughes, 1984), social network theory (Dosi, 1997; Granovetter, 1973), and transaction cost theory (Williamson, 1975). Easton (1992) has described the development in relation to other theories: "The industrial network approach has used traditional, and not so traditional economics, as stalking horses. In particular the notions of pure competition with atomistic and unconnected firms striking individual and instant deals with one another, in the face of competitors doing the same thing, is rejected. If strong relationships exist among buyers and sellers then the facile switching among easily available alternatives which is assumed in economic analysis no longer applies. History becomes important. Inertia is introduced into the system and the rules of optimum resource allocation fail as relational constraints start to bite and motives other than short term profit maximisation begin to dominate."

On the annual conference organised by the IMP group those interested in inter-organizational relationships meet and exchange ideas. At these conferences there are two distinct different directions. There is the main stream mentioned above that views network as a rather relative concept, which I will refer to as the "Swedish school". In addition, there is a group of researchers that view networks as a fixed concept. A network in this tradition is an entity that is governed by one strong focal actor. Within this view, where it is possible to make a closed system, it is not unusual to see

quantitative modelling, and a worldview and techniques that are within an empiricist tradition (Ritter & Gemünden, 1997).

The main difference between these two approaches to networks can be explained by examining the difference between the statements: “managing networks” and “managing in networks”. The former statement implies that a network has a function for the one who wants to manage it, whereas the latter is more about surviving in a complex world. The differences between the two have large implications for issues like boundaries and efficiency.

I must confess that when I read Snehota and Håkansson’s (1995) book on industrial networks the first time, I found it boring. I did not realise what was particularly interesting although I imagined that it provided a rather good description of business life. Most likely, the reason for this naïve reception of the text came from a lack of knowledge of the main streams in economy. Science is not something that can be evaluated by objective measures. The Norwegian philosopher Arne Næss claimed in his doctoral thesis that a man from March would be the ideal scientist (Næss, 1936). He later abandoned this position as he came to realise that a man from March would not be able to separate scientific activity from other human activities (Næss, 1965).

An Approach or a Theory?

So far I have referred to the industrial network approach. It has been labelled an approach since the earliest formulation of industrial networks. When I first wrote a paper concerning industrial networks I used the term ‘industrial network theory’, but was advised to shift it to ‘industrial network approach’ by a few reviewers. Upon asking them why, they could not provide a better answer than: “I have not seen it expressed as a theory.” In recent times the occurrence of the notion ‘industrial network theory’ has become more common. Whether or not this has been deliberate from the authors is open for discussion. I will not discuss what is needed to call something a theory but I will rather touch upon what consequences the use of words may have.

An approach has the advantage of being able to encompass a larger number of alternative views on specific issues than a theory. The industrial network *approach* is encompassing a large amount of researchers who share the idea of networks as a part of industrial reality, but who do not necessarily have the same view on what a

network is (as exemplified by the difference on “managing networks” and “managing *in* networks). Unfortunately, this advantage can also be turned into a disadvantage. If an approach is encompassing too many, or too different, views it can hamper the possibility of making progress, as there is no agreed direction to pursue.

My claim is that the evolution from an approach to a theory in dealing with industrial networks is mostly associated with the “Swedish school” where a framework is more and more established and employed by researchers for explaining phenomena. However, the notion ‘industrial network theory’ is as much used by those who perceive networks as being developed around a central actor (e.g. Tikkanen & Halinen, 2003) as those who look at networks as more or less arbitrary structures of interlinked companies (e.g. von Corswant, 2003). That may be a sign that there is no full agreement of what the theory really encompass.

The establishment of a theory (and probably of an approach as well) is about drawing boundaries around what the theory can explain. This is done by developing the body of knowledge within the theory, and by stating what theories the theory is opposing to. Such a strategy is easy to spot in the case of industrial networks. Many authors within the field are explicitly stating from what theories they are borrowing ideas or what theories they are providing an alternative to. I have mentioned how such diverse fields as social exchange theory and history of technology have influenced the development of industrial networks, and also how researchers have drawn a demarcation line between the industrial network approach and classic theories in economics and marketing. It is a common belief that the assumption of the rational actor is the core assumption in traditional economics. Also in the field of industrial networks are companies looked at as profit seeking entities with a bounded rationality, so the notion of rationality is not really opposed, but it is likely that the different view on industrial “architecture” deems rationality to be expressed different from how it is explained in for instance rational choice theory. However, it is contested that the rational actor is the most important bedrock assumption, and it is instead proposed that it is the view of resources as homogenous that makes traditional economics unsuitable for explaining dynamics, like technology development, in an industrial system. Perhaps needless to say, that resources are heterogeneous is seen as the most important assumption in relation to industrial networks.

When boundaries are made around a theory in this way, it is a danger that they will become artificial when other theories change. The industrial network approach started

to settle after the distinction to other theories was made. Afterwards, work has been made on developing the body of knowledge within the theory without much checking whether changes in other theories have made the critique of them outdated. One of the papers from the IMP conference in 2003 is discussing how business-to-consumer (B2C) marketing has changed the last 25 years and claim that the industrial network approach is still opposing a dying tradition in B2C marketing (Cova & Salle, 2003).

It is a strong claim that networks of business relationship may be one of the most important governance forms in economic activity. A lot of laws, regulations, and social structures are made according to a world where such relationships should not exist. That may be the reason for several authors to claim that industrial networks are an emerging form of industrial structure (Tikkanen and Halinen 2003). Whether the networks are a new development or whether it is just the focus that has changed is open for discussion. It can be claimed that researchers find what they are looking for and that some features of reality, or social life, cannot be observed before a language for capturing them are developed.

Selection Of Epistemologies

The rest of this paper will focus on a few epistemologies I believe to be central to the industrial network approach. The classification of epistemologies is done according to a scheme presented by Smith (1998). My initial idea was to focus on empiricism and idealism on a rather general level, but as I started reading for, and writing on, this paper, the hermeneutics of scientific understanding became more and more apparent. The initial ideas were contested by what I found both in literature on philosophy of science that improved my understanding of epistemologies and in literature on industrial networks that improved my understanding of the philosophical underpinnings of the industrial network approach.

Easton (1995) has written about epistemologies and methodologies within the field of industrial networks with a rather different classification scheme of epistemologies than Smith (1998). Easton uses four main categories of epistemologies, namely positivism, conventionalism, realism, and constructivism. I will stick to Smith's notions and focus on idealism, realism, and relativism. Where appropriate, or necessary, I will make references to Easton's classification. Here I will only give a

brief description of the three epistemologies in focus. These descriptions will be exhausted when they are discussed in relation to industrial networks.

Idealism

A common denominator of different forms of idealism is that “they all agree that it is impossible to separate observation from the mental constructs we use to organize and understand our perceptions.” (Smith 1998, p. 129) Smith thus treats idealism as a “label to identify approaches which see knowledge as the use of ideas to organize experience.” (Ibid. p. 129) Nevertheless, this classification encompasses a wide range of different theories that are not obviously grouped together. Smith exemplifies idealism by going through neo-Kantianism, rational choice theory, and hermeneutic and phenomenological approaches. The important features of this epistemology is thus that the world cannot be observed in itself and that the theories that are made can never be totally value free.

Realism

Realists do believe that there is a world out there that can be studied, and the real question is how. They do, as the idealists, “accept that we do have to use our perceptions, impressions and sensations and that we do imaginatively organize our experiences...” (Smith, p.297) In realism, reality is separated into three levels; empirical, actual, and real or deep, and the main task is to understand how social events can be understood.

Relativism

Relativism is an epistemological orientation where, as the name implies, knowledge must be judged according to the time and place it is constructed in. “Epistemological relativism suggests that approaches to knowledge construction are best understood by locating them in the condition of their emergence, where they are plausible... Relativism is also invoked as a negation of all claims that one view of what is true, good, beautiful, or of what exists, can hold for all times and places. It counters all claims to universalism, all attempts to suggest that such claims are *objective*, i.e. beyond human judgment, and all attempts to establish foundations for these things. Nevertheless, many of the claims relativists make are also universal in scope.” (Smith, p. 350)

The Epistemologies of Industrial Networks

Many authors have stated that the industrial network approach started with empirical findings that did not fit existing theories. Initially, those statements led me to believe that the industrial network approach could be classified within an empiricist epistemology, i.e. an epistemology focusing on induction or empirical “truths”. However, Smith (1998) emphasises how empiricists separate between theory and observation, and facts and values. These separations are not there to be found in the field of industrial networks as some of the methodologies involved stress how theories affect empirical data as well as empirical data guide theory development. Easton (1995, p. 428) states that: “The various forms of positivism do not, at first glance, seem to be particularly appropriate to industrial network studies. It is true that researchers in the area have not been shy to collect data and relish fieldwork. However, it is also true that they have developed their own language for conversing about the topic, much of which has not been put to the empirical test.” Easton places the different forms of empiricism under the heading of positivism, and is thereby confirming that empiricism is not central to the industrial network approach.

If not empiricism, then what? As the research in the field of industrial network does not explicate a difference between theory and observation and between facts and values it is natural to look at it as having an idealistic epistemology. The recognition of complexity and the problem of capturing all aspects involved in industrial reality do point to such an epistemological orientation. In idealism, there is a “common acceptance of the different ways in which mental constructs shape and organize our perceptions, impressions and sensations...Unlike empiricists, idealists do not see a clear separation of theory from observation or of facts from values.” (Smith 1998)

Håkansson and Johanson (1993) treat different governance structures and propose a model for when different structures are viable. The classification is divided between the internal force (differentiated between interests and norms) and the external force (differentiated between specific and general relations) that applies. This approach seems to be based on ideal types and as such adhere to an idealism epistemology.

This is further accentuated in an article by the same authors from 1992 where they state that: “Actors in the network can act. Thus, the model is voluntaristic. On the other hand, the action possibilities are circumscribed by the relations between actors, activities and resources...in summary, the network model described here suggests

mechanisms whereby stability and change in industrial systems not only co-exist but are actually dependent one upon the other.” (Håkansson and Johanson 1993) Here they state that it is a model, and that the model is voluntaristic. Smith (1998) explains voluntarism as an approach where “the causes of phenomena are located in the actions of individuals or groups.” Williamson (2001) writes that the industrial network researchers’ “research tradition welcomed more descriptive in-depth case studies and longitudinal studies of industrial marketing and purchasing situations and important studies of this type were conducted that informed subsequent theorizing. There was less pressure to work out the direct management implications of any research and this climate encouraged more long term descriptive studies and general theories to be developed.”

But are idealism the only, or even the main, epistemological orientation within the industrial network approach? What is it that the researchers within the approach are aiming at describing, and how do they do it? The model is proposed as a better view of reality than a belief in a pure atomistic market model. But is the network model used to predict or explain? If the model is used as a tool to understand behaviour it can certainly be described as idealistic, but there are authors who look for “deeper” meaning in industrial networks. This resembles realism as an epistemological orientation. Smith (1998) writes that realists are interested in the deep or real level. This level can be separated into structures, mechanisms, and powers/liabilities. Structures are defined as “relations between the parts of an object give an object its characteristic properties and they exist independently of our knowledge of them.” Mechanisms are “the way in which the structure of an object can, within definite conditions, generate an observable event.” And powers/liabilities are intrinsic to the structure: “the particular structure of an object will ensure that the object has the capacity to do certain things in certain conditions *and* that it is susceptible to effects from the same or different conditions; these conditions are themselves made up of other structures and their mechanisms.” (Ibid. p.299) These definitions are not far from the explanations that were used for the network model.

There are a few studies that explicitly discuss the epistemologies involved in the field of industrial networks. The aforementioned article by Easton (1995) is probably the most comprehensive and it seems to have influenced a number of other researchers within the field. Easton is elsewhere explicitly stating his’ position as a critical realist (Easton 1995 b). He claims that the large in-depth case studies employed in the

network approach is ideal for undertaking realist science. Since then a number of articles on the use of case studies in investigating industrial networks have been published (Dubois & Araujo, 2004; Dubois & Gadde, 2002; Harrison & Easton, 1998). All but one of them are discussing case studies in the light of critical realism, and it may thus seem like this is the most important epistemology for industrial network researchers. However, Easton (1995) states that most of the work on industrial networks has been undertaken with a constructionist epistemology. What Easton describes as constructivism looks similar to what Smith (1998) describes as idealism, Easton even includes what he denotes ‘Hegelian idealism’ and different sorts of interpretivism to this category.³ He says that: “these approaches have several basic axioms in common: human beings construct multiple realities, the researcher and the phenomena are mutually interactive, the aim of research is to produce ideographic knowledge, cause and effect can not be separated, research inquiry cannot be value free, and knowledge is socially constructed.” According to Smith, there is a focus on values in realism: “Through the identification of structures as human constructions, realists hope to identify the ways in which it is possible to transform social life and secure the emancipation of human beings.” Easton (1992) seems much more reluctant of including values into the study: “The focus [in the industrial network approach] is upon the network and not the individual firm. The goal is primarily description and explanation not prescription. A network perspective has profound normative implications but they spring from the approach rather than drive it.” And:

“[The industrial networks approach] is positive and does not smuggle normative principles into its models.” (Easton 1992) The emancipation of human beings is maybe not an absolute prerequisite for adhering to a realistic epistemology.

Although both idealism and empiricism seem like viable epistemologies in the field of industrial networks, the discussion does not end here. In a reply to Easton’s article on methodologies, Tikkanen (1997) asked for a higher level of relativism and constructivism in the industrial network approach. He is basing his argument on work done by Berger and Luckmann (1966), and does not separate between constructivism and relativism. This is a bit confusing as Easton puts relativism under conventionalism (as do Smith) and uses the constructivism label for other approaches.

³ In this paragraph I have clearly fell into the trap of epistemological verbosity and it even may get worse on the page to come.

Tikkanen identifies that Easton sees a similarity: “Easton views constructivism as closely related to conventionalism (relativism). However, he sees some important ontological differences between the two orientations. Most importantly, where relativism sees knowledge about reality as relative to situation and time, constructivism assumes that the reality we study is constructed, for example through a social process.” It is at times hard to say whether Tikkanen is making a case for constructivism or relativism as he does not really separate these epistemologies himself. However, he makes an explicit statement that: “two forms of relativism, cognitive relativism and critical relativism, should be particularly interesting to a network researcher”. It is especially good for its reliance on theoretical diversity, integration and information source triangulation. These methodological choices adhere to Tikkanen’s conceptualisation of the world-view of the Nordic network researchers:

- (1) the subjectivity and context-boundedness of reality and knowledge, both in business and research situations.
- (2) The emphasis on benevolent, cooperative behavior aiming at mutual goals, which seems to refer to an intentional, voluntaristic view of human nature instead of a mechanistic, deterministic picture of self-interest seeking network actors.
- (3) The reliance on the subjectivistic focal firm’s view on its business context instead of, in accordance with earlier system and network theories, trying to reveal a complete network system reasoned to be relevant in a research situation.
- (4) The general interest in the understanding of the dynamic processes related to various complex, fragmented and textured network contexts.

This world-view asks for a constructionist approach, according to Tikkanen, which furthermore links constructivism to relativism: “In essence, constructivism questions the “given” and gives room for a plurality of “realities”. These “realities” or social constructions can and should also be viewed and assessed in terms of conceptual frameworks, groups of individuals, situation and time, which, in turn, forges a link between relativism and constructivism.”

From another angle, Cova and Crespin-Mazet (1996) integrate the fact that the client is active and that the transferred offer does not correspond to a demand but rather to the result of an adaptation process of the offer and demand. Yet, Cova and Crespin-Mazet (1996) further argue that the IMP approach cannot be entirely classified as a constructivist approach since it involves a static definition of the offer. Thus, the basic offer and the adapted offer are not in line with constructivism in stressing an offer which is entirely constructed during the interaction between the parties. The authors argue that the approach is static, since it fails to take into account the historical process of offer and demand development.

I believe that constructivism sorts under the idealistic epistemology in Easton's classification scheme, and as such brings us back to idealism as an important epistemology in studies of industrial networks. More on this will be provided in the next chapter on epistemologies related to investigating the actors in industrial networks.

The Epistemologies of Actors Within Industrial Networks

It is questionable whether the epistemologies involved in investigating the actors in the industrial network approach can be separated from the epistemologies involved in studying industrial networks as a whole. Especially since actors are a part of the networks in the model. My, somewhat limited, account of literature on industrial networks shows few occasions where actors are treated in any explicit manner. It may be due to the general character of the framework that actors are not really treated as subjects. Activities and resources can be observed in a more or less objective manner in the real world, whereas actors may be harder to describe without interaction with subjects. An important aspect in this respect is how actors are viewed. They can be viewed as a structural element in the network model or as the decision-makers who decide the structure of the network. How the actors are viewed (their ontology) is highly influential in deciding the epistemological orientation when studying them. If the actors are only treated as a structural element, there is no need to use an interpretative approach. The relationships do not contain anything that needs to be understood and a quantitative approach towards them can be sufficient. There are

several researchers in social exchange theory that have counted the number of relationships for individuals in a network.

It is not resources and activities as disentangled from human beings. Still, they should be physical and thus observable for a researcher. Not so with the actors. Of course they can be observed themselves, but the important characteristics in industrial networks; identity, trust, and commitment can only be observed indirectly through communication with subjects. This distinction between activities and resources on one side and actors on the other seems to me to be similar to the division between the natural, and the social, sciences. For me to include this distinction shows that I do believe in a separation between a physical world “out there” that can be observed and a socially constructed world produced through negotiation of meaning that is only “visible” through communication. I do discover references to both these worlds within industrial networks and believe that the confrontation between the two is one of the main features the approach/theory tries to grasp.

Some researchers in industrial networks have done the same, but others have stressed the importance of the content of a relationship and the involved actors’ perceptions. To really understand what is going on it is necessary to investigate how different partners in a relationship view each other. Turnbull, Ford, and Cunningham (1996) express their attitude on this issue: “An understanding of buyer-seller relationships for any participant in those relationships depends on being able to understand the definition of the situation and the expectations of the other party in a relationship and parties in a network. We believe that there is a strong tendency in the academic literature to look at networks as entities in themselves. This reified network restricts our abilities to explain the actions of any individual within that network in terms of its definition of the nature of marketing – that the good marketer is a person who can stand outside his own company and see that company in the eyes of those customers and competitors which surround it. It is also a reaffirmation of the ideas of the symbolic interactionists in trying to understand society. They reacted against those who had taken a structural-functionalist view of individual action and society as a whole. They emphasized the importance of looking at individual meanings and individual definitions of situations. There a strong parallel between that criticism and the approach of some recent network ideas.” This approach is also compatible with

Tikkanen's wish for future work on industrial networks. He claims that: "a more profound understanding of alternative underlying philosophical perspectives and available research methods is needed more or less desperately...[Several] qualitative methods related to the action-oriented or subjectivist research paradigm other than "the case study", so far relatively unknown among network researchers, would come in question. These could include, for example, human action research, participant observation, ethnomethodology, or various further phenomenological approaches. The most important common denominator between the above methods is the centrality of the actors' perceptions interpretations of their world and contexts." (Tikkanen 1996, pp. 606-7)

So idealism as an epistemological stand is proposed as suitable for industrial networks. Considering Tikkanen's view of including multiple methods, it is also possible to employ a relativist epistemology. So what about realism? I am not sure whether it is possible to isolate the actor and still subscribe to a realist's epistemology. As in understand realism, the actor and the structure is intertwined in such a way that they are inseparable. However, it should still be possible to discuss the actor when always keeping the structure (i.e. the broader network) in the back of the mind, and as a context the actor is moving within.

Conclusions

I set out to investigate the epistemologies applied in the industrial network approach, and thought I had a rather straightforward task ahead of me. It is more than ten years ago that Easton (1992) wrote a review of the industrial network approach stating that: "The industrial network approach is both new and rich. The paradigm is less than a decade old. The infant is precocious. It needs time to mature. But already it challenges the orthodoxy of traditional perspectives in a number of disciplines. It provides an alternative and plausible view of the world it seeks to describe. It depicts a new reality." It still seems like a young paradigm. Still, the word 'approach', rather than 'theory' is used.

In the paper I have shown that a variety of epistemologies are used in studying industrial networks. I have focused on idealism, realism, and relativism, which all three are present to some degree. Whether there is *one* main epistemological orientation is still open for discussion, but it is clear that different research traditions

involved in the approach has had different ideas of the ontology and epistemologies that can be used.

It can be frustrating with researchers with a seemingly unconscious attitude towards ontology and epistemologies. The industrial network approach can be hard to pinpoint due to few accounts of explicit treatment of epistemology. Still, it is probably more frustrating with those researchers all too conscious about their epistemological position. When trying to characterise Giddens in an epistemological tradition I stumbled over a statement by Margareth Archer (1995) where she claims that the contrast between Giddens' structuration theories and her own critical realism is the difference between elisionism and emergentism. Perhaps needless to say, I did not feel that the issue became much clearer. The range of different concepts, and different words for describing concepts, involved in epistemologies is so vast that it is troublesome to understand them all. All these words are maybe needed in order to demarcate research from other non-scientific activities, but should be used with care. When such words are enlightening matters they are useful, not so when they obscure.

If there are all these problems in defining what an epistemology really is, and if the task of investigating the epistemologies involved in a theory or a research program is more of an intellectual puzzle solving than actual scientific work, what is then the reason for undertaking the task? In my opinion, the possibility of bringing the bedrock assumption of a theory on the table and scrutinize how they are connected to views on the world and knowledge production can develop the level of reflexivity and thus make it clearer what a theory can say something about. Maybe just as important may be what a theory cannot make claims about and how a theory relates to other theories. Many scientific controversies are clouded because of different assumptions about the world. And I believe even more controversies are never brought into life since researchers from different traditions (with different epistemologies) lack a common language for expressing their disagreements. In addition, one should be aware of ontological and epistemological choices in order to secure a stringent, non-conflicting logic in a theory. And to have an understanding of the epistemologies involved in a theory is not only important to secure internal validity. The communication with researchers from other fields is eased when it is possible to point out how different fields relate to each other. I have earlier claimed that the industrial network approach can aid in bridging the language gap between economists and engineers (Brekke,

2003). The approach is concerned with providing rich descriptions of activities, resources and actors involved in industry and shows a higher appreciation of involved technologies than traditional economics. Thus, the knowledge of the engineers becomes important in understanding the economics of the industrial network. The same is true for the reverse relationship.

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