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# On Coordination: Stories and Meaning Making in Markets

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How do actors coordinate their actions in a nascent market, when it is unclear who the participants will be, which resources will be available and which products will be traded? Over the past 30 years, economic sociology has shown the role of social networks and institutions and has proven that markets are *social* formations. Seminal studies have also shown that markets are *cognitive* formations. According to Harrison White (1981), the key variable in the construction of markets is that participants “watch each other within a market” to obtain cues on comparable others’ actions and moves. Through the review of perceived peers, market actors are able to sort themselves into a ranking order and to establish a market niche. Markets in this view are thus constituted on the basis of observations by competing market participants. Moreover, *cultural* approaches have highlighted the role of interpretation, attributions, as well as meaning making of relationships and products. Research has shown that economic products have meaning beyond their economic value (e.g. Zelizer 1978), that products get qualified and categorized as meaning is attributed in competition (e.g. Callon et al. 2002), and that a set of conventions serve as logics and resources for evaluating worthiness (e.g. Boltanski/Thévenot 2006).

Yet what actually allows actors to draw inferences, interpret, and evaluate heterogeneous elements and thus to make connections in a nascent market? In his general theory and in extension of his general market model, White shows that stories and their interactions are the principle medium of social formations (White 1992, 2000, 2002, 2008; White et al. 2007; White/Godart 2007). In telling stories about themselves and others, actors attribute meaning to their own actions, to their relations, to products, processes, as well as to their position within these networks. In turn, relationships and involved actors are influenced by the stories told. This applies to all social actors, including economic actors. For instance, in press statements, economic actors not only tell about themselves but also give cues about how they perceive their position

in the market (what they are about, what they are not). Stories, written or spoken, help economic actors to compare themselves to their competitors and make evaluations.

This essay suggests that actors leverage culture to deal with ambiguities in the emergence of a market. More specifically, actors are involved in meaning making processes, which I suggest to trace by studying stories. An empirical focus on stories – understood here as exchanges of communications or as flows of conversations over time between different actors, irrespective of size – can connect the various approaches in the study of markets: stories connect (social), draw on repertoires or conventions (cultural), and need to be interpreted although their meaning is undetermined (cognitive). I argue that stories are both the result of actions as well as devices used for acting in the future, by way of constructing expectations or imaginations. Stories not only link together heterogeneous elements making up markets, they also help to coordinate them.

The research described here (and explored further in Mützel forthcoming) brings together insights from Harrison White’s works, i.e. the cultural turn in structuralist network thinking, with approaches in French pragmatist sociology, namely actor-network theory and the economics of convention (for a methodological overview see Diaz-Bone 2011). First, I will present different approaches to the study of, simply put, “the discursive” in “the economy”. I will then suggest a relational approach to the study of stories. In a third step, I will discuss the perspective by way of briefly introducing an empirical example.

## Stories in the economy and in organizations

Over the past 30 years, we have witnessed a growing attention to the role of rhetorics, metaphors, storytelling, narratives, and discourse of economic actors. These analyses have flourished in the fields of economics, organizational studies, as well as economic sociology. Similar attention to the role of stories and narratives has been paid in studies of technical and scientific innovation. Largely, how-

ever, these developments have occurred with different aims, theoretical perspectives, and also with little interconnectedness.

Economists studying rhetorics and metaphors of the economy have highlighted the persuasive force of economic arguments using insights of literary theory (Klamer et al. 1988; McCloskey/Klamer 1995): economic models are metaphors (McCloskey 1995) and narratives of economic expertise are expressions of beliefs and, when studied empirically over time, often self-fulfilling prophecies (McCloskey 1990). Others similarly argue that we need to study the force of words, as it is an "economy of words". But rather than focusing on the literary quality and the metaphorical character of economic models, this research indicates that words of economic actors create the context for further analysis, they also communicate expectations and shape action (Holmes 2009).

Narrated expectations have, in particular, been studied by scholars interested in innovation processes (e.g. Borup et al. 2006; Brown/Michael 2003; Brown et al. 2000; Hedgecoe/Martin 2003). Understood as "forceful fiction" (van Lente 1993) or "narrative infrastructure" (Deuten/Rip 2000), a focus on narrated expectations helps to analyze the success or failure of company transformations or technological changes. In that view "emerging technologies rely on promising stories to garner support in the early stages" (Selin 2008: 1884) much like in self-fulfilling prophecies or technological visions.

Scholarship working with the performativity thesis, which states that economies are scripted and designed by economists, economic models, and theories, goes beyond mere beliefs, self-fulfilling prophecies and rhetorics (e.g. Callon 1998, 2007). Studying narratives of actors, models, devices as heterogeneous assemblages, just like in the actor-network theory program, scholars have shown how economic models create economic phenomena and shape economic behavior (e.g. MacKenzie 2006; MacKenzie/Millo 2003; MacKenzie et al. 2007). Typically, these studies focus on a single actor (non-human or human) and follow its narrative in interaction with others. Narratives in this sense provide data for further analysis; their role in meaning making is not an explicit focus of the analyses.

Stories and narratives have also become an established component of organizational analyses, which focus on processes inside of organizations (e.g., Boje 1991; Boje et al. 2004; Czarniawska 2007; Schreyögg/Koch 2005). Sto-

ries convey knowledge and create communities (Bragd et al. 2008; Czarniawska 1997). And beyond managerial storytelling as a leadership tool (e.g. Denning 2005), distributed communicative acts of organizational members are found to be constitutive of organizations (e.g. Ashcraft et al. 2009; Cooren et al. 2011). Stories are also pivotal in sensemaking as "sensemaking is an issue of language, talk, and communication. Situations, organizations, and environments are talked into existence" (Weick et al. 2005: 409). Sensemaking entails the processes by which meaning gets created and thus "the ways people generate what they interpret" (Weick 1995: 13).

Furthermore, research has shown that public stories or conversations influence other actors. For example, media reports can function as "sensemaking frames" (e.g., Fiss/Hirsch 2005). Media stories provide frames as organizing schemata that interpret events and guide action, but their meanings are in constant conflict with competing frames in other media stories. Particular "brokers", such as industry analysts, may serve as "promissory organizations" (Pollock/Williams 2010), which interpret and frame. "Dealing conversations" (e.g., Knorr Cetina 2007) between financial traders similarly present frames for interpretation. Stories help to interpret data as "calculative frames" (e.g. Beunza/Garud 2007). Moreover, models of particular processes that "frame decisions and quantify alternatives" (Beunza/Stark 2012: 388) are also stories that are interpreted by analysts.

Different types of stories exist. Some stories speak of the past, others are directed towards the future. Rather than providing an ex-post account of what happened, how that should be interpreted and made sense of, these stories are then filled with expectations about an unforeseeable future in an attempt to cope with uncertainties (Beckett 2011). We find such future-oriented stories in contexts in which something new is "emerging" such as in a new technological field (e.g. Selin 2007), when it is unclear what the new may be a case of (Kennedy 2008), who the legitimate actors are (Lounsbury/Glynn 2001), and which products and projects may be realized (Kaplan/Orlikowski 2012). Such stories then are provisional narrations, which may change over time as actors interpret and make sense (Bartel/Garud 2009) and project varyingly onto the future (Mische 2009). Moreover, the same actor may tell a different story at different times and to different others and thus signal different strategies and multiple identities. Indeed, this ambiguity can be a resource for economic activity (Esposito 2012; Stark 2009).

## Stories and relational sociology

The research described here picks up the relevance of stories for describing and analyzing markets. From the perspective of relational sociology (Mische 2011; Mützel 2009), it argues for stories as primary vehicles for contextual, situational meaning making.

The perspective taken here starts out with the insight that “social action is interaction that induces interpretations and thus builds continuing relations. Thus, discourse is the stuff of networks” (Mische/White 1998: 695). Yet, how to analyze such intermingling of social relations and discursive, communicative processes? According to White (1992, 2008), networks are fluid, multilayered relational structures that are based on the attribution of meaning and also generate meaning themselves. Stories told by actors about events, actions and other actors are pivotal in these processes, as in these stories, actors attribute meaning to others and themselves. At the same time, stories help to establish an evaluation of others (what one is like, what one is not, what one wants to be), in turn contributing to the maintenance of *others'* identities. To be sure, the storyteller cannot control the interpretation of stories.

In White's market model, rivals watch each other. Their actions and their stories about these actions serve as signals to all players in the market, about their prior market situation, their current situation, their future trajectory, and also relationally affect all other involved actors. Stories in this understanding are at once about the conveyance of information and evaluation as well as the speaker's structural position. Through stories actors can take each other into account. Stories help to establish an interpretation of the perceived market structure and help to albeit momentarily stabilize market profiles, suspend competition, reduce uncertainty, and mobilize financial resources. In the long run, a market structure emerges. In sum, markets are created, used, and reproduced by participating actors in a network of stories as the principal medium of this social construction (White 2000).

This perspective resonates with ideas on distributed cognition (e.g. Hutchins 1995). Different actors have different impressions of what is happening and although ambiguities may persist, momentary comparability can be established. However, such studies have shown that not only humans need to be taken into account in such meaning making processes, but non-humans as well since cognition is distributed across humans, things, concepts. Actor-

network theory, which takes non-human and human actors into account, thus provides another conceptual building bloc for analyzing stories and meaning making in the economy. “Assemblages of heterogeneous actor” (Çalışkan/Callon 2010), including theories of organizing, tools, materials, humans, are needed to create a market. It is not stories and it is not only people that move a market. Indeed, money, organizations, tools, tests, and other non-human actors are needed as well. Though rather than “to follow the actor” (Latour 2005) in the singular, we have to take into account a plurality of stories and perspectives and a plurality of connections concomitantly crisscrossing each actor.

## Stories as data

Stories here are understood as a mean to inquire into the interactional constitution over time of actors, objects, and processes, providing descriptions and indicating meaning making processes. This perspective follows a basic tenet of both structuralist network analysis and pragmatist actor-network theory: there is no a priori ascription of who powerful actors are. The analyst is agnostic; rather she follows all sorts of actors in making associations. Positions of power get established in the processes of making connections, and may only be of temporary relevance. Much like in ethnomethodology, texts serve as the actually observable data.

The texts analyzed are publicly narrated stories of actors involved in the emerging market of innovative breast cancer therapeutics since the late 1980s worldwide. “Innovative cancer therapy research” develops new molecular models and compounds. The field is characterized by high uncertainties in terms of research strategy, by high investments in terms of R&D costs as well as by high expectations in terms of economic returns once the institutional gatekeepers, i.e. regulatory agencies, approve a therapeutic form. Industry and patients alike have high hopes that widely working, non-toxic, most often targeted treatments for breast cancer will continue to be developed within the next couple of years, in addition to the currently existing treatments. To be sure, breast cancer is the most frequently diagnosed cancer and the leading cause of cancer deaths in females worldwide. In 2008, 458 000 women worldwide died of breast cancer (Globocan 2008). These hopes are supported by accounts of the financial analysts, who expect genetically engineered molecules to be the treatment with greatest utility and economic returns. Accordingly, competition between companies is intense as

each seeks to find a powerful cure while also striving to hit a financial jackpot.

The research starts from the beginning of these scientific developments and follows them as they are happening. The data set comprises 22 years (1989-2010) of stories from various types of media sources: scientific discussions; press statements of companies, which claim to do breast cancer research; newspaper reports; reports of financial and industrial analysts. In qualitative textual analyses, I analyze how actors collaboratively make sense of what they are about, by comparing themselves to others and also pointing out how they are not, and what the field of innovative breast cancer therapeutics is about. In press releases and industry analyses, they tell how their research strategy and their progress compare to others'. While doing so, these actors also tell stories about an uncertain future: they relate expectations, tell of hopes, promises, and less of fears, and give projections. Some of this talk of expectation is conditioned by legal passages, namely "forward looking statements". Most of it though is stated expectations, beliefs, and projections. These kinds of orientations towards the future from the present characterize the emergent market throughout, and propel hopes, as well as careers, financial resources, and profits. These qualitative textual analyses over time and across different storytellers thus provide for insights into issues of time and projectivity in markets.

Moreover, the stories also allow for a tracing of how the worthiness of products and actors is collaboratively being constructed amongst rivals, collaborators, clinical tests, and molecules. Patients are of particular worth, as stories connect new biochemical mechanisms with "potential wonder drugs", which may provide a cure. In turn, these patients are also "a growing market" with "profitability" attached. Another worthiness is constructed in the duality of science and business. Scientific achievements and economic successes are tightly interconnected, when molecules perform up to expectations and cause an increase in stock prices, or when molecules in clinical trials do not perform according to expectations and stock prices plummet. A third kind of worthiness is constructed in reference to the newness of a biochemical mechanism. Worthiness here relates to time, when the novelty presents a "first mover advantage". New biochemical mechanisms are also of particular worth because they do not fit into the existing categories. For example, when researchers, journalists, and financial analysts try to make sense of particular biochemical mechanisms,

they may have to revise previous analyses as new knowledge may contradict existing categorizations.

In addition to qualitative textual analyses, the empirical focus on stories over time also allows for larger scale analyses. In particular, probabilistic topic modeling (e.g. Blei 2012; Blei/Lafferty 2009; Blei et al. 2003) proves useful for the study of emerging social formations, as it discovers groups of related words in a large corpus of texts, so called topics, which can be plotted over time. Technically, these topics are probability distributions over the unique words of the corpus. The underlying idea of topic modeling and its latent Dirichlet allocation (LDA) is that each document exhibits multiple topics. While all documents in the entire collection share the same topics generally, each document exhibits the topics in different proportions. The algorithm thus generates topics from the documents rather than imposing categories a priori on the texts. Substantively, topic modeling looks for "deep structure" and patterns of meaning in a corpus of documents.<sup>1</sup>

For example, topic model analyses on the stories of industrial analysts, in this case over 90 000 articles related to cancer and biotech between 1992 and 2010, show that expectations about the market growth in oncology were very prominent in the early 1990s and increased again after first innovative cancer products were approved by regulatory agencies. However, that topic weakens towards 2010 as few new products get approval and as the industry comes to understand that the blockbuster drug will likely not be found, rather different treatments for different molecular set-ups are needed. Drug discovery as such is a topic that increases from 1999 onwards, as research pipelines grow. Here, the intermingling of science and business is also evident.

As these brief examples from my empirical case point out, stories coordinate the nascent market as they help to make sense of what is going on. Stories are devices for acting towards and in the future as they relate expectations and imaginations about the future from the present. The construction of worthiness across different actors enables them to coordinate their actions. Albeit momentarily, the market may be about the newness of a mechanism or the economic value of patients. The market then emerges as a collaboratively created formation of rivals, which is based on observation and the telling of stories.

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## Endnotes

<sup>1</sup>Computationally, topic modeling finds the hidden structure that likely generated the observed collection of documents and words, in a reverse generative process. To do so, it uses Bayesian statistical techniques. The inferred hidden structure resembles the thematic structure of the collection. The LDA algorithm yields distributions of topics over the corpus of documents as well as lists of top terms making up topics. Topic modeling is prominently discussed in machine learning and computer science communities, where programs and codes are developed, though some applications in the social sciences (e.g. Grimmer 2010; Ramage et al. 2009) and the humanities (e.g. Yang et al. 2011) can be found as of recent.

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