Corporate Foresight in Open Laboratories – a Translational Approach

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Many companies have lately started to use open laboratories for innovation. This paper looks into the added value of these practices for corporate foresight. To differentiate corporate foresight in open laboratories from innovation, the paper uses the concept of translation from cultural theory, which addresses the treatment of semantic differences in the ways how different groups of people express meaning. Based on a multiple case study, the paper collects evidence about translation practices in open laboratories and investigates how they relate to corporate foresight. The results show that translation in open laboratories enables companies to gain insight into their own situation and engage in an ongoing re-negotiation of their relation with other stakeholders in commercial interactions. This is a distinctive aspect of corporate foresight in open laboratories which has so far been widely neglected in research. It creates various opportunities for further development of foresight practices.

Keywords: laboratories, open innovation, corporate foresight, translation

Introduction

In the dynamic and volatile economic environment of the early twenty-first century, corporate foresight and innovation management have developed a very close relationship. According to von der Gracht, Vennemann, and Darkow (2010), one can even speak about a symbiosis between the two functions: innovation management increasingly assumes a strategic role in setting the direction for further development by designing business models (Massa and Tucci, 2013) and establishing ecosystems for shared value creation (Gawer and Cusumano 2014); at the same time, corporate foresight engages in common activities with decision makers using foresight data (Rohrbeck and Gemünden 2011; Cuhls 2003) which provide new opportunities for

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immediate learning and direct validation of hypotheses about future trends in practice (Rohrbeck, Battistella, and Huizingh 2015; Daheim and Uerz 2008). The overall goal of corporate foresight is the early detection of economic change to ensure the strategic fit of the company to its environment (Ruff 2015; Battistella and de Toni 2011). It is therefore particularly interesting for corporate foresight to engage in activities which involve external participants to gather information about the company's environment right from the source. Open laboratories provide a perfect setting to do so.

Many companies have recently become involved in open laboratories. The Ford Motor Company, for example, works with a TechShop which gives access to advanced fabrication tools for everyone who wants to build objects and devices (Richardson, Elliott, and Haylock 2013). Ford encourages employees to use the TechShop, start tinkering and exchange with other enthusiasts from inside and outside the company in idea generation and solution development. BMW pursues similar goals with a Maker Space (Troxler 2016). GE Appliances has started its open microfactory 'FirstBuild'; Companies like Airbus, Chevron and Northrop Grumman have set up Fab Labs for their employees (Troxler 2015). Ericsson and others have turned towards Living Labs (Bergvall-Kåreborn and Ståhlbröst 2009), pursuing a less technology-centric and more human-centric approach to collaboration (Levén and Holström 2008). Lego and German Telekom have established interactive spaces in store settings to engage with customers in the exploration of new products and services (Roth et al. 2015).

Scientific literature emphasizes the added value of collaborative design and information exchange in open laboratories for innovation (Troxler 2015; Hatch 2014; Almirall, Lee, and Wareham 2012). Open laboratories, however, also have other advantages for companies: they include them in collective urban governance (Voytenko et al. 2016), connect them to larger social or political movements (Toupin 2014),

support training and education (Halverson and Sheridan 2014) and mediate technology transfer (De Arias et al. 2014). Open laboratories are therefore interesting for other corporate functions than innovation management as well. As Hyysalo et al. (2014) have shown, open laboratories can be used as settings for trend identification; furthermore, they are known to support grass-root strategizing activities, particularly in the context of urban sustainability (e.g. Boeri, Longo, Gianfrate, and Lorenzo, 2017). This raises the question about the contribution of open laboratories to corporate foresight which is addressed on the following pages.

Instead of looking at the application of specific foresight techniques in open laboratories, this paper picks up on the notion of a symbiotic relationship between corporate foresight and innovation management (von der Gracht, Vennemann, and Darkow, 2010). It explores how the engagement with external contributors during innovation activities in open laboratories generates insights about the company which are relevant for corporate foresight. As a theoretical basis, the paper uses recent work on cultural translation, which posits that the experience of contrast and contradiction is essential to the formation of any social relationship. Evidence from a multiple case study indicates that this process also applies to the creation of a strategic fit between companies and their economic environment, which opens a new dimension for the discussion of corporate foresight.

Theoretical background

Corporate foresight as an open, interventional activity
The origins of the current discussion on corporate foresight date back to the middle of the twentieth century (Rohrbeck, Battistella, and Huizingh 2015; Jefferson 2012). Nevertheless, many aspects of the practice of corporate foresight, particularly in relation

of other strategic activities, are still little understood (von der Gracht, Vennemann, and Darkow 2010; Rohrbeck and Gemünden 2011; Rhisiart, Miller, and Brooks 2015). Daheim and Uerz (2008) distinguish four different stages in the development of strategic foresight exercises: from expert-based foresight over the usage of models and trend calculations towards the currently expanding practice of context-based open foresight activities, which 'pays tribute to the increased socio-cultural and socio-technical dynamic resulting from the emergence of the networked society' and focusses on open communication between all relevant stakeholders, which is 'set to diffuse into decision-making and blend into it instead of just preparing it' (Daheim and Uerz 2008, 13). This form of corporate foresight corresponds with a stronger interaction between companies and other stakeholders in open innovation activities (von der Gracht, Vennemann, and Darkow 2010).

Rohrbeck, Battistella, and Huizingh (2015) take another approach at the distinction of different phases in the development of corporate foresight, starting with its early attachment to systems thinking, followed by scenario planning in the 1960s and 1970s, the elaboration of methods and processes in the 1980s and 1990s, up to the understanding of corporate foresight as an general organizational ability today. Rohrbeck and Gemünden (2011) accordingly propose to assess corporate foresight exercises regarding their general contribution to the dynamic capabilities of a company in changing business environments.

The development of corporate foresight over the decades goes along with a wider change in business and management studies regarding the empirical methods applied in scientific research. Since the 1970s, qualitative methods have steadily gained importance which turn research into 'a situated activity that locates the observer in the world' (Denzin and Lincoln 2005, 3). Analytic approaches which try to uphold an

external perspective upon the observed phenomena are complemented with hands-on activities which are more closely related to bricolage than systematic problem solving (Klag and Langley 2013; Boxenbaum and Rouleau 2011). Recent practices in corporate foresight and strategy can be described in a similar way (Cunha, Cunha, and Clegg 2008). Corporate foresight thus becomes deeply entangled with a variety of different function is a company (Rihisart, Miller, and Brooks 2015): innovation management is one of them, next to other strategic decision-making and business development processes. Recent literature accordingly discusses the relation of corporate foresight to innovation in a general manner without assuming direct effects on specific outcomes (Anderson et al. 2004; von der Gracht, Vennemann, and Darkow 2010; Ramirez, Roodhart, and Manders 2011). Corporate foresight is rather expected to create the necessary 'new mindset' (Ratcliffe 2005), based on a 'holistic approach' (Durst et al. 2015), and an assessment of the company's 'strategic fit with the future' (Battistella and De Toni 2011).

Open laboratories

The conditions for corporate foresight practices in open laboratories are radically different from conventional settings. Company experts who engage with external participants in common activities do not only gain insight and directions for corporate development. They put them into action at the same time as they build the foundations for future business operations together with customers and other stakeholders on the spot. It is this simultaneity that needs to be better understood in order to describe the special value of open laboratories for corporate foresight.

Open laboratories are closely related to the concepts of open innovation, which purposively makes use of knowledge flows across organizational boundaries (Chesbrough 2003), and user innovation, which turns the focus to the inventiveness of

people in coming up with solutions to their own problems in daily business (von Hippel 2009). Innovation in open laboratories can be regarded as the outcome of the interaction in holistic business ecosystems (Adner and Kapoor 2010). Companies have lately spent particular effort on the integration of customers in their innovation activities, using virtual settings on the internet (Rohrbeck, Steinhoff, and Perder 2010). Such settings include discussion groups, marketplaces for ideas and solutions, virtual design studios and other types of tools, which can be combined in different ways (Möslein and Fritzsche 2017). Open laboratories provide similar settings in an offline environment, where people can meet in person. This gives them further opportunities to interact without involvement of information technology.

Open laboratories can be designed and equipped quite differently. FabLabs and TechShops focus on the construction of technical artefacts. They contain large sets of tools and machines like 3d printers, laser cutters, etc. which enable easy prototyping of solutions (Hatch 2014; Gershenfeld 2008). Living Labs do not necessarily use advanced technical equipment. They focus on open exchange and networking to engage people in common activities (Leminen, Westerlund, and Nyström 2012). Labs like these revolve around a wider notion of collective effort and communities as drivers for innovation (Benkler 2011; Fischer 2013).

Different types of open laboratories can also be distinguished in other dimensions. With O'Hern and Rindfleisch (2008), one can differentiate between various types of interaction: interaction with and without predetermined types of contribution, and interaction lead by consumers or by producers. Roth et al. (2015) distinguish laboratories run by companies from those run by intermediaries, and permanent installations from event-based setups. In any case, open laboratories facilitate a transgression of industrial boundaries in the practice of innovation, which forces

professionals to abandon accustomed procedural patterns, role models and hierarchical structures (Fritzsche 2017). Corporate experts are permanently required to set the company's interests in relation to the interests of other stakeholders who perceive common business operations from a different point of view. Innovation activities in open laboratories are therefore always accompanied by a search for a common understanding of business and a shared meaning of value, which allows companies to learn more about its own position on the market and future directions for development. The concept of cultural translation makes it possible to describe this process in more detail.

Cultural Translation and translation spaces

Cultural translation studies have long departed from the simplistic understanding of translation as a substitution exercise, replacing expressions in one language by others in a different one. Since the use of each language is embedded in cultural practice, finding direct equivalents for words of two languages it is generally impossible (Bassnett 2013). According to Benjamin (1968), the work of the translator is therefore a creative achievement in its own way, because it involves choices how to connect cultures: what has meaning in one culture is related to something else which has meaning in another one. Activities among the members of one culture can thus resonate in other activities among members of a second culture (cf. Rosa 2010). Cultural translation studies explore how such resonance is achieved. This includes two different aspects.

On the background of actor-network theory, translation can be studied as a process in which 'the identity of actors, the possibility of interaction and the margins of manoeuvre are negotiated and delimited' (Callon 1986, 203). The research interest is focussed on the conclusions actors draw from translation about their mutual relationship. This includes relationships between functional domains, which are

considered to be bound together by 'delegation' (Latour 1990): they 'co-constitute' themselves in complementary roles.

Post-colonial theories rather focus on the provisional nature of such relationships: the notions which actors achieve about themselves and others through translation are never fully accurate and exhaustive; they constantly need to be questioned, confirmed or adapted. One could say that translation is the opposite of a rational problem solving process with a clear starting and end point, because there is no ultimate resolution of the conflicts between the parties involved. Translation therefore seems applicable a concept to explain ongoing activities like corporate foresight, which continuously questions and reviews the position of a company and its future strategy.

With Foucault (1971), spaces in which translation proceeds can be described as heterotopias: real-world settings where contrasts and contradictions between different societal or personal interests and perspectives are acted out. Heterotopias allow the experience of different layers of meaning and appearance in certain phenomena as they really are, without looking for consistency and integration. While the concept of heterotopias has not remained unchallenged (Genocchio 1995; Saldanha 2008), it has been highly influential in the spatial turn in social theory (Warf and Arias 2008), which can be considered as a reaction to the ubiquity of systemic models at the end of the twentieth century. While systemic models assume that people are, in one way or another, functional parts of a superstructure, spatial models don't. They focus on differences between social groups or individuals which can ultimately not be resolved, but involve a 'third space' where transformations and transgressions from one to another take place without annihilating individual identities (Bhabha 2004). This third space is considered essential for societal development, as it allows exploration and formation of novelty in-between fixed cultural identities (Rutherford 1990).

Architectural studies have already discussed the design of such spaces quite extensively in urban planning (Dehaene and De Cauter 2008), regarding parks, assembly halls, marketplaces, theatres, but also for virtual settings of interaction (Liff 2003). An application to open laboratories seems justified, too, since they also attract people with common interests but different ways of expressing themselves (Hatch 2014; Gershenfeld 2008; McPhee, Westerlund, and Leminen 2012; Westerlund and Leminen 2011). In contrast to knowledge-based approaches, heterotopic or spatial approaches to open laboratories are less interested in resource integration. They turn the focus to the experience of contradiction and conflict as a background of economic interaction and the ongoing negotiation of relationships between the stakeholders. Open laboratories are, in this sense, no 'production facilities' for innovation and knowledge. Their impact cannot be reduced to a series of appropriable output items for a company. Companies can benefit from the engagement in open laboratories on a wider scope, which relates directly to the understanding of corporate foresight as an open, dynamic activity of bricolage. Open laboratories allow companies to reconfirm and actualize their own position within their current environment and to set directions for further activity.

Research Design

Methodological Approach

The empirical study presented on the following pages takes a closer look at the practice of cultural translation in open laboratories to understand their actual contribution to corporate foresight. Since the concept of translation has not been used in this context before, an empirical method is necessary which complements incremental theory building with practical evidence. According to (Eisenhardt 1989, 548–549) case studies serve this purpose very well. Scholars in the field of corporate foresight often use case

studies in order to gain a sound qualitative understanding of the phenomena which are investigated (Rohrbeck and Gemünden 2011; von der Gracht, Vennemann, and Darkow 2010). Case study research also plays an important role in the context of open innovation, 'as it increases our understanding of how things work and it enables us to identify important concepts and phenomena, e.g., effective open innovation practices and crucial context characteristics' (Huizingh 2011, 7).

Yin (2009) differentiates singe, multiple, holistic and embedded case study designs. Single case study designs are considered to be particularly suitable for critical or extreme cases and the testing of a well-established theory, while multiple designs increase the methodological rigor of the investigation by 'strengthening the precision, the validity and stability of the findings,' (Miles and Huberman 1994, 30). Holistic designs consider a specific context for each case. Embedded designs study entities within one and the same context to gain insight into different facets of the overall phenomenon (Yin 2009). The subject matter at hand suggests a multiple, embedded case study design which looks at a set of different activities performed in an open laboratory. This makes it possible to reduce biases caused by specific topics addressed in these activities. At the same time, the common context of the open laboratory ensures comparability of the findings and reduces disturbances by external influences.

The aim of the study is to identify translation practices in open laboratories which go beyond the scope of the problem solving activities in innovation management and to find out how they affect corporate foresight. As mentioned before, such translations proceed through the experience of conflicts and differences between the parties involved and the insights they gain from this experience about themselves and their relationship to other parties. Conflicts and differences can surface during the interaction in open laboratories on two levels: one concerns the content of the

contributions which are made; the other concerns the way how the contributors interact, how they take the statements of others into consideration, build on them or discard them when they add something from their own point of view. This makes it necessary to take a multimodal qualitative approach in the analysis of the case units to assess content and interactions of the contributors at the same time. The case study presented here therefore combines techniques of content analysis (Mayring 2000) and conversation analysis (Wooffitt 2005) on different data collected from direct observations, interviews with the personnel in the laboratories and original material produced during the interaction of the participants in the form of text or physical artefacts.

Case Unit Selection

The open laboratory in which the data were collected is situated in the centre of a major European city in direct vicinity of major department stores, electronic retailers and many other shops and restaurants. It is run by an independent research institute with a regular staff of four persons on location, supported by numerous students who welcome visitors during normal shopping hours. A coffee shop is part of the design. The laboratory includes a workbench with technical infrastructure and a meeting room with extensive material for interactive sessions, used by companies for internal activities and by various other institutions for public events. While there is also a small shopping area included, most of the space is dedicated to projects of companies, public institutions or research centres. These projects use the laboratory over a period of three months to exchange with visitors who enter the premises whenever they want and with whatever intentions they have in mind.

The laboratory was chosen because it offers a broad range of opportunities for companies to interact with visitors. The technical equipment in the laboratory plays generally a minor role, although companies are allowed to setup specific devices which

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can be used by the visitors. Furthermore, there are no restrictions on the type of engagement with the customers. Companies use the laboratory for a large number of different topics throughout the whole innovation process from idea generation to prototype testing. In the early stages, drawings or mock-ups inspire exchange with customers about idea generation. In later stages, functional prototypes and pilot application scenarios are used to discuss the feasibility and value of the solutions. Independently from the subject of their interaction with the companies, visitors are free to test, tinker around and explore alternatives. Depending on the setup chosen by the company, they can leave input in the form of written comments, designed artefacts or conversations with the shop personnel and company representatives.

The case study presented here covers fifteen units of investigation, consisting of different projects which were purposively sampled to include a large diversity of subjects. Table 1 gives an overview of the subjects which were addressed

Table 1. Subjects of Interaction in the Open Laboratory
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Data Collection
Excluding the attendees of special events like public talks or dedicated workshops, the average number of visitors per month to the facilities rose during the observation period from around 2.000 to more than 3.000. More than half of the visitors stayed longer than 10 minutes on the premises; more than one third stayed longer than 20 minutes, which gave them time to engage in deep interactions with personnel and company representatives. 22 percent of the visitors left the premises after less than five minutes. These short-term visits did not allow much interaction and provide little data for evaluation. However, many visitors who spent more time in the laboratory explained that they had come to the premises before to take a first look and then decided to return

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later, often with family and friends. To avoid distractions from the innovation activity, the personnel did not intrude any further into the privacy of the visitors, but only collected information which was freely given. This information indicated that the professional background of the visitors was quite diverse, including engineering expertise among some visitors and diverse competences and experiences in sales, marketing and business administration among others. For the most part, however, the visitors had no specific affinity to the innovation projects in the laboratory other than being potential beneficiaries.

During the months in which the projects were run in the laboratory, a group of researchers conducted structured observational studies of verbal and non-verbal behaviour. The observations gave insight into the topics which were discussed and the dynamics of the conversation between the participants. The researchers also documented the attention to physical objects and displays of information, usage of tools and behaviour in terms of looks that were exchanged, gestures and movements (Cooper and Schindler 2003). In addition, interviews were performed with the personnel on location about their impression of the practices in exchange with the information systems, contrasts and conflicts between different groups and their resolution (Guillemette 2003). Standardized techniques for coding and categorizing data according to Krippendorff (2004) and Mayring (2000) were used to identify recurring patterns in the data, which were then set in relation with each other by triangulating findings across the source material.

Case Analysis

Patterns of expression

It became clear from direct observation, interviews, as well as the original material provided by the participants that there was a large semiotic diversity in the approaches to the subjects. Distinctive patters could be recognized in at least four different aspects of verbal and non-verbal expression.

- Regarding the vocabulary, different groups of participants used specific, technical terminology which was not accessible to others and served in particular for highlighting functional characteristics of the displayed solutions. This included aspects of data processing, physical function or even medical function in terms of the effects on the human body.

- With respect to the disclosure of personal information, many participants remained very abstract and general. Others talked exclusively about their personal opinions or took over the personal perspective of friends and family members. Both groups had very little to say to each other.

- Non-verbal behaviour also allowed the distinction of people who touched everything and others who kept a strict distance. Both, however, allowed people to engage in lively discussions and share their thoughts and experiences.

- Another difference was recognized between discourses about the value of the projects for individual customers, for society, or for the progress of science and engineering. There was frequent exchange between people who found the projects technically interesting and others who recognized value in them for their daily life. Discourses on societal or wider economic issues, however, remained isolated within smaller groups of visitors.

Experiences of difference

Participants who did not use the same pattern of expression often had difficulties to relate, which became apparent in the little amount of direct engagement between them. Many had problems to follow the arguments of others and frequently misunderstood what they meant. The companies and their offerings were discussed extensively from contrasting perspectives, without convergence to a common view. The following examples illustrate this phenomenon.

(1) The product information app (A09) allowed customers in a shop to scan barcodes or price tags to gain further information about products, in particular when they required further assembly or were complicated to handle. Technical discussions focussed on the speed and reliability of the scan, search in the database, and proper display of the given information. From a commercial perspective, A09 was discussed as an additional service for customers, providing easy access to information from the producers. From the user perspective, the focus was set on the learning necessary to work with the system and to integrate it in daily routine. Statements included many personal judgements about the quality and appropriateness of the provided content. While some people were testing and discussing the technical function of the devices and their potential application in shops, others went on criticising the content and suggesting improvements. Some engaged in competitions assembling the product as described by the app, or found better ways of assembly on their own.

(2) The recommender system for shoes (A12) consisted of a scanning device to measure a customer's foot size and a database in which these measures were matched with suitable shoes. Discussions emerged about stores in the city which might be interested in the installation of such a system. A map was set up on

which these stores were named, and there was a strong controversy on the role of internet retailers in this context. Some participants, however, were not interested in this issue at all, but instead fascinated by the three-dimensional image of their feet they saw. Some engaged in extensive conversations about orthopaedic problems with footwear and how the system let them address these problems independently from medical doctors who do not share information.

(3) The sound-based vase prints (A13) used acoustic recordings to 3d-print vases in individual shapes. Visitors considered them as highly personal gifts, to be offered at special occasions like weddings or birthdays. They started heated discussions about better and more flexible recording techniques and possibilities to reproduce the original sound from the printed object. Another argument emerged on the business model to commercialize the idea. Visitors described different kinds of occasions on which such gifts seems appropriate, or added further detail to the setting of the printing process and the delivery of the product. Many people also used the opportunity to test the system on location and experiment with recordings of different kinds of noises they produced or played on devices they brought in, focussing more on sculpturing the vases than considering the content of the recording.

Treatment of Conflicts and Contradictions

Overall, technical design, craftsmanship, efficiency and effectiveness of company offerings, their content and commercialization, but also adoption and appropriation by users, usage scenarios and personal implications were addressed in separate discourses and activities. Company representatives considered this as a distinctive characteristic of the setting. All other forms of engagement with customers and other stakeholders they had used had been guided by more specific purposes and anticipated certain kinds of

interactions and contributions. In absence of such guidelines and anticipations, the interaction was much broader and unveiled unexpected aspects of their offerings. At the same time, it turned out to be immensely difficult for companies to take advantage of these insights, because it was unclear how to relate them to business. Potential customers, on the other hand, worried that the company offerings could not effectively serve the purposes they had in mind.

In search for possibilities to make the different perspectives fit to each other, many ideas for new technical designs, commercialization strategies and application scenarios came up, which provided a fertile breeding ground for reviews of current innovation strategies, as illustrated by the abovementioned examples. They inspired, among others, ideas for interactive information sharing solutions connected with product information scans, ideas for health-oriented foot scan systems, and various new business models and technical concepts in the context of 3d-printing from sound waves. These innovations only seemed pursuable if companies changed themselves regarding competences, structure and positioning on the market. Companies could learn from this experience how many different options for future development existed and identify new market fits.

Discussion

Corporate foresight and translation in open laboratories
The case study shows that activities in open laboratories exceed the scope of the knowledge flows. Open laboratories are not only means of resource appropriation which expand the range of opportunities to develop new products, services or business models. They also provide a space in which companies can gain insight into the fundamental differences between their own understanding of business operations and the

understanding expressed by others. Companies experience difficulties of making sense of the views and opinions expressed by the visitors of the laboratory, who approach innovation from a completely different background than the companies themselves. Innovation management turns the focus on the outcome of this act, i.e. the input from the visitors which actually seems useful for the company; for corporate foresight, the act of translation itself is important, too, because it forces companies to review their relations to other stakeholders in commercial interactions and reflect on their own role in exchange with others.

Drawing on cultural theory, open laboratories can be described as heterotopias in which contrasting understandings of business and innovation become accessible. They open up a 'third space' which allows corporate foresight to face the problem of different attributions of meaning inside and outside the company. Companies can learn to appreciate outside contributors not only as additional resources in their own conceptions of value creation, but as stakeholders with alternate understandings of business. Cultural theory describes translation as an ongoing process in which the relation between different cultures is constantly re-negotiated. Ensuring that such re-negotiations take place can be considered as an essential aspect of corporate foresight which differentiates it from other corporate functions.

Theoretical and practical implications

This paper contributes to scientific research and managerial practice in various different ways. It introduces the concept of translation to research about open laboratories and corporate foresight, which drafts a new approach to interaction across organizational domains. This approach acknowledges the possibility of fundamental incompatibilities between the views of different stakeholders in commercial interactions and makes it possible to investigate their role of corporate foresight in symbiosis with innovation

management. Furthermore, the paper presents evidence of translation processes in open laboratories. It shows how such translation processes add to a better awareness of a company's situation and its options for further development. The findings indicate that open laboratories can help companies to think out of the box and explore new directions for further business opportunities. In this respect, open laboratories can play an important role as a setting for corporate foresight exercises.

Due to the theoretical background for the study of open laboratories in this paper, many other aspects which might be relevant to corporate foresight have not been addressed. The paper has investigated how open laboratories can further enlarge the scope of open and interventional forms of corporate foresight. Open laboratories can also contribute to open foresight in different ways, for examples as sources to big data analytics regarding customer behaviour, expectations and perceptions of value. Empirically, the paper has focussed on qualitative insights gained from direct interaction between different groups of people present in the chosen location. It remains unclear to what extent the same results can be achieved in other types of open laboratories with less flexible settings. Future research will be necessary to explore other options to make use of open laboratories in corporate foresight, and to understand how they can be systematically developed.

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