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Healthcare Innovation—The Epital: A Living Lab in the Intersection Between the Informal and Formal Structures

Abstract This study explores an alternative healthcare innovation project in its making using ethnographic research methods. The project is a confined space—a living lab—that cannot fully be described or explained in the same way we normally understand set-ups for healthcare innovation. By creating its own space, in the intersection between formal and informal structures, it draws our attention to a new way of organizing healthcare innovation.

Taking an ethnographic research approach, it is suggested how a concept of a bubble can be used to describe the nature of the living lab as a partial and flexible object that constitutes multiple future possibilities. The concept of the bubble challenges the notion of the living lab as a cheese bell, which is the term used by the field participants, inspired by Clayton Christensen. Bringing in theoretical points from Bruno Latour regarding laboratories, this study explores the materiality of the laboratory and its political nature.

The study contributes to the debate on innovation in healthcare and especially fuses to the discussion of how to organize healthcare innovation. It argues that we need to pay attention to new kinds of living labs—like the one introduced in this study.

Keywords Healthcare; Healthcare Innovation; Living Labs; Laboratory; Epital

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An ongoing discussion, both from an empirical and a theoretical point of view, is whether innovation best takes place outside or inside an organization.

A theoretically and empirically based model has been proposed by Professor Clayton Christensen, who developed, on the basis of observations of large U.S. companies, the theory of disruptive or market creating innovations. The theory explains how large enterprises will be disrupted by smaller and more agile companies and how large enterprises can respond to this challenge by establishing new divisions outside the enterprise instead of inside.

According to Christensen, a disruptive innovation is an innovation that replaces costly and complex products designed for specialized narrow markets and makes new affordable products available for larger markets (e.g., the shift from mini computers to personal computers). Christensen has highlighted not only the nature of these kinds of (disruptive) innovations but also the challenges related to the development of these innovations. He has termed the tension occurring in the space between inside/outside the *innovator's dilemma* (Christensen 2003; 2009). The innovator's dilemma is that disruptive innovations meet resistance in the beginning because they question the existing way of doing things and because the innovator cannot prove the value of the innovation as it builds upon something disruptive—something radically new that cannot be explained, valued, or evaluated within the existing system and procedures for doing so. Therefore, new companies will arise outside existing organizations if existing organizations do not allow disruptive processes to take place inside them (e.g., Intel's development of an RISC processor).

Another aspect of the discussion of whether innovation best takes place inside or outside organizations is illustrated by the story of VistA and the Hardhats (Timson n.d.).

The project started inside the system as an office established to work on a standard for computer assisted systems in 1977. The people involved developed within the organization an intra-organizational network across the U.S. The people in the network, although unauthorized to do so, worked to develop a more efficient and coherent program to suit the needs of the hospitals and doctors. As the development was in conflict with the existing systems, those involved had to hide, work undercover, or work from outside the organization. In 1982, the new system was in a form that could be presented to clinicians. From their response, the management realized that the solution was precisely what was needed, and within a few months it became an integrated part of VA (Timson n.d.).

This discussion of where radical innovations best take place is of particular interest in relation to the healthcare sector, where there is a call for redesigns (eHealth Task Force 2012). Further studies of innovation processes in this context are urgently needed. We have taken a unique opportunity to study a health innovation project in its making, during its constitution and positioning as a confined space (laboratory). The project cannot be fully described or explained the way we normally understand innovation in healthcare environments. The space

(laboratory) is named the *Epital* and those who are involved in the project are named *the Epitalists*. The laboratory of the Epitalists creates its own space, which is neither fully inside nor fully outside the formal organization of the Danish healthcare system, as it is based in a municipality. In Denmark, municipalities are not providers of hospital and specialized healthcare services, but they are responsible for health promotion and disease prevention (Kierkegaard 2013). What makes this case so interesting is precisely that it is at the intersection of inside/outside. The debate and discussion, both from an empirical and a theoretical point of view, tend to focus on whether innovation best takes place inside or outside the existing structure—be it an organization, industry, or sector. This article will focus on the construction of a certain kind of laboratory and, inspired by Bruno Latour (1983), argues that we need to pay attention to new ways of organizing healthcare innovation by focusing on the construction and position of a laboratory within a "societal milieu." As Latour argues, the distinction between inside and outside is actually what laboratories are destabilizing.

Introduction to the Epital Project

In 2011, a project group gathered to develop the ideas of the Virtual Hospital project (Phanareth et al. 2013) into a whole system approach to assisting people with Chronic Obstructive Pulmonary Disease (COPD) and those with other chronic conditions to cope with the condition on a daily basis and during exacerbations. Participants in the project came from the healthcare service sector, private companies, universities, and patient associations. In 2011, the project emerged as an informal inter-organizational network (IION), which planned a proof-of-concept that took place in the summer of 2012. In January 2013, the project initiated a pilot study, which by mid-2014 had 50 COPD patients enrolled.

In the emerging phase of the project, which is described in this article, more than 100 individuals coming from, but not necessarily representing more than 20 organizations, have participated for shorter or longer periods in the planning and development of ICT and organizational solutions, including ways to improve people's self-management and empowerment.

Research Method: Entering the Laboratory of the Epitalists

In November 2011, the first author of this article, Louise Hesseldal (LH), entered the laboratory of the Epitalists in order to explore the emerging project and network in practice from within the network itself. The observer entered the field of *the Epitalists* as participatory observer and followed the daily practice at the Frederiksberg Hospital, Section of Telemedicine Research (STR).

When the observer entered the laboratory of the Epitalists, she quickly realized that she was in a field where everything was in the making and there was no clear boundary between inside/outside the laboratory. The Epitalists were working just as much inside the laboratory as outside. They were interacting with politicians, investors, and research foundations and with technological equipment, algorithms, and clinical data. Similarly, even though the Epitalists had an identity in terms of a name, it was hard to find out in practice who they actually were. There was no clear boundary between who was included and who was not included in the project. In practice, the STR, the physical gathering place and laboratory of the Epitalists, functioned on a daily basis as a revolving door for people coming in and out of the door.

It quickly became a methodological challenge: Where do you start when there is no solid ground since it is all in the making? How do you study an organization when the "group" you are trying to follow is more a revolving door than something stable? How do you study organization in practice when this does not have a tangible form and is not geographically defined?

Following the Actors

The methodological challenges and practical issues that arose when the observer entered the field were partly solved with inspiration from Latour's work, *Reassembling the Social* (2005), which is an introduction to actor-network theory (the ANT). The starting point is not theoretical explanation perspectives on the social but practice and how to follow the connections to the social (Latour 2005). Latour argues for following the actors rather than starting the study of the social in pre-defined sociological explanation perspectives. The actors make the work, so to speak, in their work on establishing the social or in their work on organizing themselves. The role of the observer is simply to "follow the actors" (Latour 2005) and the connections they are making, and to do so with patience—the observer must simply just "follow the actors."

Taking her point of departure in Latour's theoretical and methodological principles to just "follow the actors," the observer found that it is a matter of letting the field categorizations, boundaries, and definitions be stronger than sociological explanations, which Latour refers as *social aggregates*. Whether the Epitalists are working on establishing a laboratory or establishing a network (in terms of an IION), the starting point is the connection work needed in order to establish "The Epital" project. Further, focus is on group formation rather than established groups: "No group, only group formation" (Latour 2005:27-43). It is about studying the process of organizing rather than the organization itself. This approach opens up for considering disorder and instability as productive—as research objects themselves—that can bring something interesting and new to the social. They become prerequisites for the study rather than problems.

The theoretical outset in Latour (1983; 1987; 1988; 2005; 2008) has shaped the way the observer has observed—and also the way she has analyzed the observations and the following presentations. The observer has included theoretical concepts to open up the analysis and to add to the empirical observations. The concepts have emerged rather than been forced onto the setting. In practice, this means that the observer has continuously found new theories and literature as an outcome from the interaction with the field and the observations. Analytical concepts are included in order to open the analysis of the observed. These concepts are both purely theoretical concepts, primarily from Steven Brown's (2002; 2013) reading of Michel Serres and Bruno Latour (1983), but also concepts in terms of metaphors

developed and introduced by the observer based on the interaction with the field.

Multi-Site Ethnography

The ethnographic field study was chosen as the primary method to acquire data, as the objective was to study the dynamics of the emerging project and network in practice. For the very same reason, the ethnographic interview rather than the structured interview has been used in order to ask questions about practice (Emerson, Fretz, and Shaw 1995:19). The ethnographic interview is a long conversation, rather than a one-time interview, which allows more in-depth knowledge to emerge about the studied field.

Entering into the social context and daily practice of the Epitalists enabled the observer to observe practice and processes from within. The observer carried out all observations, which formed the basis for the subsequent analysis, while writing her Master's thesis in 2011-2012. During the field study, the observer participated in a wide range of meetings both formal and informal, including coordination meetings, strategy meetings, progress meetings, briefings, "testing technology" meetings, and crisis meetings. Moreover, the observer also joined informal conversations and observed the daily routines and dynamics in the network as she participated in the daily work of the Epitalists.

The observer-researcher was aware during the field study of how she might influence the field she was studying when she participated in the daily activities of the Epitalists, such as attending meetings and joining formal, as well as informal conversations. The challenge is always to be informative about the research as it proceeds and develops. However, as the researcher became an integrated part of the network for almost 11 months, the ongoing dialogue about the field and the field study itself was an integrated part of the formal and informal dialogues with the Epitalists. The observer-researcher revealed herself to all participants on the first contact with STR and when new people entered the network. LH always informed the participants that observations and conversations would be gathered for research purposes in an anonymous form. All participants agreed to this.

Since the laboratory was not limited to STR, the "field" could not be limited to the physical laboratory at STR. In order to capture the emergent nature of the object of study—the emerging network in practice—*multi-site ethnography* was chosen. The multi-site perspective opens up for a new understanding of what the field is and how this field can be examined. As George E. Marcus (1995) puts it, multi-site ethnography is a mobile method, which allows the study to travel across locations and boundaries:

> This mobile ethnography takes unexpected trajectories in tracing a cultural formation across and within multiple sites of activity. [p. 96]

In order to capture the emergence and dynamics of the network, the observer did not limit the field study to the physical site of STR but extended the observations beyond the walls of STR by following the actors when they acted "outside" STR, for example, giving lectures or attending meetings in other networks.

However, the extension of the field concept was not limited to moving from working inside to working outside the physical space but also involved moving into the non-physical space. The observer also read literature related to the network on topics such as "open source software" and "management literature" and followed as well the ongoing debate about telemedicine in Denmark. These sources of information were not purely background knowledge but an integrated part of the field study itself.

Moreover, the field study also took place in the partly digital space, where the actors communicated through emails and shared documents in a *Dropbox* folder. The observer was included in the email list and had access to the *Dropbox* folder, which allowed her to observe the network in front of her computer in the late evening when she received emails and pop-up (update) notifications, indicating that new documents had been added or modified in the folder. In addition, the expansion of the network became visible when new members were added to the email list. Thus, the observer had to turn her gaze to different sites to explore different aspects of the object of analysis: the emergence and dynamics of the Epital project.

The Desktop as the Second Field

All the sites described above constitute the field study and the empirical basis for the analysis. The observer has systematically and continuously recorded all observations from the "visited sites" in logbooks and transcribed these observations into field notes. However, the transcription of field notes has only been one part of the fieldwork; the subsequent practice of analyzing and reworking the field notes into analytical field descriptions has been an equally large—and essential—part of the fieldwork. The practice of writing has not been something outside the fieldwork, but instead an integrated part of the fieldwork itself. The anthropologist Marilyn Strathern (1999) formulates the practice of writing as "the second field" (Hansen 2011), where the two fields are partly connected:

> The relationship between the two fields can thus be described as "complex" in that each is an order of engagement, which partly inhabits or touches upon, but does not encompass the other. Indeed, either may seem to spin off on its own trajectory. [Strathern 1999:2]

The observer also experienced how the analytical descriptions were created in the interplay between the two fields. In front of the computer, the observer recalled additional observations and insights from the field study, which were not included in the written field notes. Instead, these insights emerged in the interplay/interlink between the field notes and the work behind the desk. In front of the computer, the field was "replayed," so to speak, but at a temporal distance from the concrete observations from the "first field" and without the physical presence of all of the actors (e.g., technology, doctors, contracts, expectations, IT architects). The work of writing the field descriptions—transforming the observations and notes into analytical descriptions—was a part of the work equally important to the hours spent in the "field."

The unique position of the observer—within the network and the field—enabled her to continuously

jump between the two fields, instead of separating the two fields temporarily. From the beginning, the observer spent much time in front of the desk in order to write, and right up to the end of the study, the observer returned to the field in order to gain new insights into it. As Strathern (1999) points out, it is "time" rather than "place" that sets the limits for fieldwork. This is precisely the point of this analysis: it is a snapshot from a certain period in time. The project and network evolved after the observer walked out of the door and turned off the computer.

During the fieldwork, the observation, and the structuring and analysis of the data, two distinct and important results emerged. The first was the development of a confined unique environment, which can best be understood as a dynamic living lab. The second was the formation and dynamics of an informal inter-organizational network, which is reported in our second article ("Healthcare Innovation—The Epital: An Ethnographic Study of a Unique Way of Organizing Healthcare Innovation [in this issue of QSR]).

The following study builds upon field observations, which were conducted as part of the ethnographic field study that took place from November 2011 to September 2012. The study is divided into three sections:

1. The cheese bell
2. The living lab
3. The bubble

Section 1, *the cheese bell*, introduces the laboratory of the Epitalists from the perspective of the Epitalists themselves. This presents the case and serves as a starting point for the subsequent analysis of the laboratory in its making, which will be presented by introducing Bruno Latour's story of Louis Pasteur. The story of Pasteur is introduced as an analogy in order partly to introduce the laboratory and partly to question the notion of the laboratory as a "cheese bell," which is the term used by the Epitalists themselves.

Section 2, *the living lab*, studies the dynamics between the laboratory and the surroundings. The purpose is to show how the laboratory is much more than an isolated cheese bell; in practice, the laboratory is a living lab reaching far into society. By bringing in some theoretical points from Bruno Latour regarding laboratories, including the concept of "piggyback strategies," this section explores the materiality of the laboratory and its relation to the "outside," as well as the political nature of the laboratory.

Section 3, *the bubble*, introduces the notion of the Epitalists' laboratory from the perspective of the observer. The observer, on the basis of her field observations, develops the metaphor of the bubble. The observer argues that the bubble metaphor captures the nature of the laboratory as a partial and flexible object that constitutes multiple future possibilities and that also ties together multiple actors due to its partial and flexible nature. The Epitalists' laboratory is not a static and isolated cheese bell; it is a living lab reaching far into society, but also a living lab that, due to its flexibility and partial nature, can float to various places and take various forms. The concept of "bubble" is introduced in order to explain the nature of the laboratory as a particular construction.

The Cheese Bell

Early in the process the Epital project in the municipality was called a cheese bell by the Epitalists to signalize an independence from formal structures and to invite participants to join an innovative and disruptive process without any known constraints from the existing formal structures of the Danish healthcare system. As described in the project protocol, cited below (Phanareth K., personal communication), the nature of the project makes it necessary to establish a well-defined space (within the existing system):

> The breadth of the project's ambition challenges, of course, the existing structures and frameworks, including legislative and legal matters, ways of settling accounts, management and organizational structures, power balances, culture, and attitudes; virtually, all of the concepts that define healthcare today. The formation of a cheese bell is therefore necessary, in part to create an experimental space that unleashes all components and breaks down all barriers and in part, to enable a kind of future pocket in the present that can expose the potential opportunities that the technology-driven service transformations of the future can offer. [translated by the authors]

From this, it appears that, due to its nature, the project needed to create an experimental space, without any interruptions or distractions from the established system. To understand the Epitalists' perspective, it is relevant to introduce their theoretical inspiration.

Inspired by Clayton Christensen (2003; 2009), the Epitalists see the cheese bell as an experimental and necessary space—a kind of future pocket—where it is possible in the present to experiment with the future. Thereby, the cheese bell becomes a metaphor for the workplace of a new concept—the metaphor for the isolated and confined space needed in order to establish a disruptive innovation, namely, the Epital. From the perspective of the Epitalists, the Epital is seen as disruptive in the sense that the concept challenges many of the existing institutions in Danish society: legislation, financial accounting models, and organizational structures. From the perspective of the Epitalists, the challenge is to create a radical market creating innovation—as highlighted by Clayton Christensen—and at the same time be able to interact with patients who are still part of the existing healthcare system, participating in activities such as visits to general practitioners and outpatient clinics. The solution was therefore to establish a cheese bell in the intersection between existing services and alternative solutions in order to demonstrate a new concept and build a business case. In other words, the laboratory of the Epitalists is much more than just a laboratory. Let us take a closer look at the laboratory of the Epitalists.

Give Me a Laboratory and I Will Change the Healthcare System

Bruno Latour (1983) has highlighted how science and innovation take place in the intersection between inside and outside the laboratory, as he exemplifies by proclaiming, "Give me a laboratory and I will raise the world." A lot has happened with regard to laboratories since Latour wrote this in 1983. The boundaries between inside/outside have become blurry; indeed, breaking them down has become an ideal in

research politics (DEA 2013).[1] Nevertheless, Latour proposes a line of enquiry that is highly relevant today and for this case in particular: we should not focus on the laboratory itself but on the construction of the laboratory and its position in the societal milieu (Latour 1983:258).

The Epitalists' laboratory is particularly interesting as the laboratory itself is constructed in the intersection between established boundaries and ways of doing and organizing healthcare innovation. It is a special construction: a kind of living lab in the intersection between formal and informal structures, as it is neither fully inside nor outside the Danish healthcare system since it is based in a municipality (see: the introductory part of the article).

To illustrate Bruno Latour's point about the lab as a special materiality, it is relevant to consider Latour's story about microbiologist Louis Pasteur (1822-1895). This serves as an introduction to the laboratory and the Epitalists as the object of research and is the entry point to the subsequent analysis of the particular materiality of the laboratory.

Today, Louis Pasteur is acknowledged as one of the most prominent French scientists and a hero, since he has been recognized as the developer of vaccines in 1881 that became crucial to public health. He also developed the *pasteurization method*, which is used to kill pathogenic microbes in, for example, milk and wine (Blok and Jensen 2009:70). However, Bruno Latour does not support the above *diffusionistic* explanation that it was Louis Pasteur's brilliant ideas and scientific methods that were subsequently spread to the community. According to Latour, the success of *pasteurization* was due to the translation process through which a number of actors were mobilized and contributed to spreading the pasteurization method. Thus, 1) the success of the method was not due to Pasteur alone but also to the network around Pasteur; that is, he was one important actor among many others, and 2) Pasteur's success was linked to the fact that his laboratory was extended to society—thanks to the network. Let us introduce the story about Louis Pasteur.

In the French society, an epidemic was ruling as a killing anthrax roamed throughout society. The milt fire was of great concern to the agricultural society as animals died and it was also a concern for the rest of society, for whom animals had an interest. The microbiologist Louis Pasteur began studying the epidemic. To do so, he needed a specific object of research, for without this, his laboratory, including all its instruments, apparatuses, and scientists, was of no use. Therefore, Pasteur left his research laboratory at the École Normale Supérieure and established a temporary laboratory on a farm in the countryside. Out in the field, he could gain knowledge of the conditions in the country. After some time, he returned to his research laboratory, bringing back not the entire farm or the field, but only a single object of study, namely, a microorganism.

In the laboratory, Pasteur was able to isolate and control the object, so it became visible and tangible. Thereby, he was able to grasp the epidemic, which was eluding the farmers and veterinarians and killing the animals. In the laboratory, the invisible and elusive became visible and tangible. Out in society, the epidemic only came to light when it beat animals to death.

However, Louis Pasteur did not only make the invisible visible in his laboratory; he also developed the "pasteurization" method, which allowed him to control the object, the microbe, and made it predictable (Latour 1983). However, he needed to prove that the pasteurization method also worked outside the laboratory—as the epidemic was an issue outside in society, not inside his laboratory. Louis Pasteur was strong inside his laboratory, where he could control the object, but weak in society. To become strong outside his laboratory, he had to extend his laboratory by setting up the same conditions for success out in the community as he had inside his laboratory. If he did not succeed in extending his laboratory, the pasteurization methods could not be reproduced. In other words, his laboratory needed to be extended to a societal laboratory.

After numerous experiments in the laboratory, Pasteur staged the *Pouilly le Fort* trial, which took place on a selected farm in the French town of Pouilly le Fort. The experiment was carefully organized and had transformed the small French farm after Louis Pasteur's scientific prescriptions and instructions. All the right conditions were installed on the farm, so it was possible to extend the laboratory or rather, the pasteurization method. The trial was going to be the proof of the method: if it worked on this farm, it might also work on other farms. The recipe for success was simply to follow the procedure and instructions as prescribed: disinfection → cleanliness → grafting → timing → registration. The trial was staged as "the proof" not just by Louis Pasteur, but aided by the media, which were there to shed light on what they described as "the divination of Pasteur" (Latour 1983).

The story of Louis Pasteur is relevant for the case of the Epital as it shows why the laboratory is essential for creating change. The Epitalists want to drive change—they want to *epitalize* the Danish healthcare system. Their project is not just about building technology but also about influencing the future healthcare system in general. The Epitalists are not just building technology; they are building a new infrastructure for the potential future healthcare system. The project is indeed *politics pursued by other means* (Latour 1983:273).

With this introduction in mind, let us turn to the object of the Epitalists and their laboratory—or more precisely, their living lab.

The Object of the Epitalists

For Louis Pasteur, the microbe was crucial, since it was the important object he took with him back to his laboratory. It was his grip on this object that enabled him to control an otherwise uncontrollable epidemic. It was around this object that the continuous change between scales took place: from laboratory to society and the other way around.

Unlike Louis Pasteur, the Epitalists do not have a microbe and they cannot just find one out in the

[1] The mantra of "From Science to Invoice" has influenced the last decade of science politics in Denmark. The mantra is linked to the political plan of action, which was initiated by the former government (VK alliance) in 2003. The purpose was to increase the interplay between public and private science and to commercialize the work of the universities.

field, as they need to construct it themselves. The Epitalists have been out in the "Danish healthcare field" for many years as many of them have worked within the healthcare system and gained experience of how to do things—or perhaps more precisely, how *not* do things, as their point of departure is that the existing system does not work.

For the very same reason, they need to construct their object. In other words, the object of the Epitalists—the telemedicine platform—is an object in the making. It exists as fragmented sub-elements—building blocks—that need to be developed and connected to create a coherent telemedicine technological platform. These sub-elements include, among others: 1) *hardware*: a screen, a tablet, a server to store patient data, a telephone connection, and monitoring instruments, such as heart rate and oxygen meters and pulmonary function measurers, and 2) *software*: a stratification algorithm, software to coordinate interactions between the patient and the healthcare professional, and server software exchange of patient data between systems. These sub-elements must be connected and work together before the Epitalists have a tangible object. Despite the fact that the Epitalists do not have a telemedicine platform, they have already established the social organization that is going to embrace the technology and make it part of their practice: the municipality of Lyngby-Taarbaek has found the first test patients and appointed the healthcare professionals who will bring the technology to life. The municipality has also bought the tablets and monitoring devices that will be installed in the homes of the patients. At STR, located at Frederiksberg Hospital, the "Epi Call Centre" has been established, with the monitors and computers that the healthcare professionals will use to "treat" patients in the Epital.

Thus, there are patients and healthcare professionals who are just waiting for the technology to be brought into play, there are tablets and monitoring devices ready to be unpacked, and there are monitors and computer screens ready to be turned on.

The object—the telemedicine platform—is an object in the making. It exists as different constituent elements, but does not yet exist as a coherent telemedicine platform that is ready for demonstration. Before the platform is ready for demonstration, it must be a "socio-material arrangement" that works in practice. Interestingly, a social organization was in place—ready to bring the technology into play—a long time before the technology took shape. This tells us that the distinction between development and implementation does not make sense in practice. What it also tells us is that building technology and doing healthcare innovation is not just about building technology and infrastructure. It is also about building strong networks that can carry forward the technology and speak on behalf of its existence.

The Danish STS researcher Casper Bruun Jensen (2010) has written about these types of objects that have not yet reached the status of facts (black boxes) since it has not yet been acknowledged what exactly they are and what they do. He introduces the term *partial existing object* for such objects and highlights how the unstable nature of such objects gives them a special status:

> Partially existing objects; not black boxes, but translucent boxes with highly diffuse and ephemeral content. This property of vagueness enables their flexible distribution and adoption in widely variable material and discursive circumstances. For this reason, they are also so crucially related to processes of creating expectations and envisioning the future. [Jensen 2010:35]

Partially existing objects are objects that have not yet achieved the status of a matter of fact. Interestingly, partially existing objects create a kind of flexibility, as they have different expectations attributed to them—both in terms of what they are supposed to become in the future, but also in terms of how the objects are supposed to be used in the future.

Similarly, the object of the Epitalists—the telemedicine platform—is a partially existing object. The partial existing nature creates a space for expectations for the future and for the finished product. The Epitalists share a common idea that something needs to be changed and they also share the idea that the *Epital* is part of the solution. However, none of them know exactly what the object is and what it is going to be in the future. Nevertheless, this emerging object is a placeholder for expectations—to an object and to a change in the healthcare system.

Let us now turn to the laboratory. When there is only a partially existing object, it becomes crucial to have a laboratory.

The Laboratory of the Epitalists

Just as the laboratory was crucial for Louis Pasteur, the cheese bell is also crucial for the Epitalists. The cheese bell is the isolated and confined environment where the Epitalists can experiment with an alternative organization of the healthcare system—just as the Epital concept prescribes. In order for the Epital to be more than just a vision and dream materialized in a concept on a piece of paper, the Epitalists first need to prove that it is possible to organize the healthcare system in an alternative way. Second, they need to prove not just that it is possible to organize differently, but also that the re-organization can lead to an accessible, affordable, and modern healthcare system. In other words, they must demonstrate their business case.

As one of the Epitalists puts it, the cheese bell is crucial as it visualizes an alternative:

> One thing is for sure—the cheese bell is the prime mover. The cheese bell visualizes that there might be an alternative to how things are organized today. [Epitalist, meeting April 2012]

The cheese bell is the laboratory of the Epitalists and the cheese bell is intended to visualize what is not visible outside in the community: an alternative way of organizing the Danish healthcare system. Note that the intention is not just to visualize a technological telemedicine platform but also to visualize an alternative organization of healthcare system. The laboratory is not just building a future health technology but also gathering ammunition for an alternative organization of the healthcare system. The laboratory of the Epitalist is a political laboratory—*politics pursued by other means* (Latour 1983:273).

Constructing an alternative healthcare system requires strong arguments. Much ammunition is

needed to challenge one of Danish society's most firmly established institutions. Bruno Latour (1991) has studied how the so-called *fact builders*, that is, scientists and innovators, gather ammunition to strengthen their scientific and innovative statements. In order to succeed, a statement must be loaded literally: it must be loaded with ammunition, so they cannot be avoided, opposed, or ignored (Latour 1991). In the same manner, the Epitalists need to gather strong ammunition by loading their statement: *Epital is a glimpse of the future healthcare system, and telemedicine in general is the solution to the challenges of the current healthcare system*. As long as their statement is merely a claim, it can easily be challenged by other statements like: *The future healthcare system is all about building new super-hospitals where telemedicine is just one element among many others*.

The Epitalists are aware of this, and they have therefore built the concept for the future healthcare community. It is not just about building new technologies but about building new infrastructure and processes. They have developed a detailed description of the telemedicine platform and its infrastructure, organization, actors, technology, and values, all of which have been materialized into a concept—*the Epital*. This concept is a living document among actors and is being distributed by email when critical voices disturb the statement of the Epitalists by questioning the project: *Well it's nice that you have an idea, but how will you realize it?* Think, how often a discussion, where different arguments are flying around, is settled when one of the parties throw a report, a graph, a contract, prototype, or ID cards on the table, as the conclusive proof or demonstration of the truth of a certain statement. However, a concept materialized on a piece of paper is not enough for the Epitalists to convince the proponents of the existing healthcare system: they need to prove in practice that their concept is just as promising as it is on paper.

Therefore, the cheese bell is of high importance. The cheese bell is their laboratory, where they are going to create a mini healthcare system in a controlled environment. Like Louis Pasteur, they need to stay inside their laboratory until they have gathered enough strength and resilience to meet the critical community outside the cheese bell. As one Epitalist puts it:

> We have created this cheese bell and it has to be bulletproof…We must first and foremost be able to show that we can build a mini-system up and get it running. We need to ensure peace to consolidate the cheese bell now. [Epitalist, meeting March 2012]

The Epitalists are strong inside their laboratory, but weak outside, as long as they cannot prove their claims. Therefore, the Epitalists must stay inside until the project is bulletproof. It is natural to ask: When is the cheese bell bulletproof? How long are they supposed to keep it isolated? And finally: When are the Epitalists ready for their *Pouilly le Fort* trial?

For the Epitalists, the cheese bell will be bulletproof when they enter into the "proof of concept" (POC) phase. POC is the term the Epitalists use in their daily work to refer to their key milestone—the demonstration. In practice, the POC is defined as that point in time when they have gathered all the technological elements into a telemedicine platform and have enrolled and mobilized the first six patients as the Epital concept prescribes: with the help of the technology, they must measure and report data, so it is possible to act upon these on the other side of the screen—in the "Epi Call Center," where healthcare professionals are ready to treat the patient—if needed.

When this is in place, they will be able to go out and show the first demonstration film or give the first physical demonstration of STR and say: *See for yourself, it is possible, and it is not just us saying so; the patients are also saying so.*

It is crucial to get the patients enrolled and mobilized so they can speak on behalf of the Epital concept's existence. In this way, they can contribute to bringing into play, or at least putting on the public and political agenda, not just the telemedicine platform but also an alternative healthcare system.

The POC demonstration is just as important for the Epitalists as the "Pouilly le Fort" demonstration was for Louis Pasteur. The Pouilly le Fort demonstration was a staged experiment to convince the investor—in terms of confidence and later in money—that the translation made by Pasteur was a fair contract (Latour 1983:264). Equally, the POC is essential for the Epitalists, since it is a demonstration that is intended to convince the public and investors that the Epital is a promising investment. Thereby, POC is an important prerequisite in order to mobilize the interests of a wider network outside the cheese bell—a network that includes private and public investors and research institutions, politicians, and the general public. It is crucial that the demonstration is able to meet some of the expectations created by the Epitalists and at the same time establish new expectations: *There is much more than what you can see, this is only the beginning…*

The Living Lab

The Epitalists are not just working inside their laboratory; they are working just as much outside as inside their laboratory. The laboratory of the Epitalists is not merely an isolated laboratory or cheese bell; it is a living lab reaching far into society.

These continuous leaps between inside and outside are crucial to the Epitalists—not just for extending the laboratory into society but also for maintaining the laboratory. Interestingly, while Louis Pasteur had a physical laboratory with research assistants and equipment, the living lab of the Epitalists is something that must be created. It is not merely the object that is in the making—the same goes for the living lab itself. This is also why the Epitalists' laboratory is of interest in itself: it is much more than a laboratory. It is a living lab that destabilizes well-known distinctions such as development/implementation and inside/outside.

Interestingly, it is not just the partially existing object that could arouse enthusiasm among different interests and actors on the "outside"; the living lab itself—the experimental space in between—could, too. For the very same reason, the Epitalists have engaged with several different actors: they have held meetings with politicians, policy makers, and private companies and they have written research applications. In other words, the Epitalists have

sought various *piggyback rides* in order to maintain their laboratory and extend it into society. The concept of piggyback rides (strategies) is introduced by Bruno Latour (1987):

> The easiest means to enroll people in the construction of facts is to let oneself be enrolled by them! By pushing their explicit interests, you will also further yours. The advantage of this piggyback strategy is that you need no other force to transform a claim in a fact: a weak contender can thus profit from a vastly stronger one. [p. 110]

As Latour highlights, it may be advantageous to enlist a stronger player by taking a piggyback ride. By riding on the back—or the wave—of a stronger player, you can borrow strength and put the wind in your sails.

Let us take a look at how the Epitalists have considered different piggyback strategies in order to maintain and extend their laboratory. To illustrate this, two specific strategies will be presented. This presentation is based on various episodes that took place in the spring of 2012, when the Epitalists engaged with various strong actors in the healthcare industry, including commercial and political actors.

Building a Commercial Network

In the late spring of 2012, the Epitalists were contacted by one of the big actors in the healthcare industry. The supplier was very interested in the Epital and the idea of service transformations in the healthcare system, for perhaps there would also be a position for the supplier in the future (re)organization of healthcare as outlined in the Epital concept.

The supplier expressed an interest in potentially investing in the project, making it possible to upscale the number of patients being enrolled. The Epitalists and the supplier decided to continue the dialogue about possible collaboration and they had both put their thinking caps on: it was time for both parties to think and calculate carefully.

From the perspective of the Epitalists, the advantages of cooperating with the private supplier were obvious: they would get massive financial support for the project, and the collaboration would also potentially open up opportunities to enter into the international healthcare market (The Promised Land). Getting a foothold in the international healthcare market was the dream of the Epitalists. The international healthcare market is much larger than the Danish one and it was "The Promised Healthcare Land" where they might be much more disruptive than in Denmark.

On the other hand, the risks of cooperation were just as obvious: they would undoubtedly lose ownership of the project, and it would be hard to preserve the values and organization that had been the basis of a grass roots movement and had carried the Epital forward. As one Epitalist explained, "The proposal for cooperation would not be an easy decision for the idealist, but perhaps a necessary decision, if you ask the realist." If you asked the realist, financial resources were essential in order to be able to prove more than just a partially existing telemedicine platform or provide more than just a POC demonstration. To sum up, stabilizing the technology and increasing the number of patients would require more resources, but acquiring resources meant running the risk of being devoured by commercial interests as the supplier undoubtedly would demand ownership in return for the financial investment. That is the downside of taking a piggyback ride: you lose control, and you cannot be sure of what your contribution will become when it falls into the hands of a stronger actor (Latour 1987).

Building a Political Network

As mentioned, the Epitalists did not only invite private actors partly inside the living lab; they also built relations to politicians and policy makers—those who knew about politics in full scale.

In the late spring of 2012, the Epitalists began to work on the idea of becoming part of the government's annual budget. This would allow them to create the sector-neutral space needed, as outlined in the Epital concept. In this space, different sectors could be involved, but none of them could claim ownership of the project. The idea emerged from discussions with politicians and policy makers in the healthcare area. Telemedicine was of high interest among politicians from all sides of the Danish political landscape—so there might be an opportunity to gain broad support for an ambitious telemedicine project such as the Epital.

If the Epital became a political laboratory, the issues of lacking funding and institutional anchoring would be solved. However, the Epitalists would hardly be able to maintain the freedom and openness that had been the driving forces behind the network. A political laboratory would allow the needed sector-neutral space to emerge. However, the very same anchoring would also make the laboratory in "partial full scale" and therefore in the spotlight—and would probably require the Epitalists to get out of the lab before they were ready for it.

In other words, a political laboratory would be in the firing line for criticism and opposition from all those who were "not invited" inside. Moreover, there would be a demanding employer, constantly working on maintaining political legitimacy and defending the tax-funded experimental (political) laboratory.

The observer left the field before any decisions regarding the above piggyback strategies were made. Nevertheless, whatever piggyback strategy the Epitalists may chose in the future, one thing is certain: the Epital will change accordingly. Taking a piggyback ride is not free; the Epitalists would need to adapt to the given actor and requirements. In this case, the innovator's dilemma is how to maintain the independency and bottom-up, grass roots living lab while ensuring the maintenance of the living lab and the progress of the "disruptive innovation." That is why it is a difficult decision for the idealist, but a necessary decision for the realist. The Epitalists' dilemma is to balance between being idealists and realists.

The Bubble

Let us return to Bruno Latour's line of enquiry concerning laboratories, focusing on the construction of the laboratory and its position in the societal milieu (Latour 1983:258). The Epitalists themselves termed their laboratory "the cheese bell," but as we have

seen, the laboratory of the Epitalist is not merely an isolated cheese bell, but rather a living lab reaching far into society.

From the observer's point of view, a *bubble metaphor* would be much more appropriate to capture the nature of the living lab: while a cheese bell points in the direction of something static and something that must be kept isolated and airtight, the bubble points in the direction of something that can float and move around freely in response to the blowing winds. The wind can blow it to new places—far from where it originally came from. Like a bubble, the living lab of the Epitalists is something temporary—something that eventually will either fly out into the world or burst.

Let us take a closer look at how the future would look from the perspective of the Epitalists by introducing extracts from a fieldwork episode. The episode took place in December 2011, when an actor/vendor from "outside" came by the laboratory to see what was going on inside. This episode shows how the Epitalists are working just as much with the future as with the present and just as much outside as inside the cheese bell. The episode is of particular interest as it shows 1) the potential future strategies for the cheese bell from the perspective of the Epitalists themselves and 2) the dilemma of the Epitalists: balancing idealism and realism.

After a short pause in the conversation, the vendor asked the Epitalists: "How have you planned to get off the ground with this cheese bell?" The Epitalists replied that they had discussed various possibilities: they could "move the cheese bell, crack it, or expand it." However, they did not yet know what to do and from their perspective, it was not the most important thing at this stage. That was the cheese bell, as well as the decisive driving force behind visualizing an alternative way of organizing the healthcare system.

When the Epitalists refer to the possibility of moving, cracking, or expanding the cheese bell, they are referring to different kinds of potential future strategies for the cheese bell on the other side of the POC: they could move it to other municipalities, regions, or countries. Alongside building technology, the Epitalists have also built a network of interested municipalities, which are waiting to get their own cheese bell. The Epitalists just need to prove that it works on one farm—just like Louis Pasteur did—namely, in the municipality of Lyngby-Taarbaek. From the perspective of the Epitalists, the growth model of the Epital—building the proof and extending it into society—is simple: if they can demonstrate that it works in the municipality of Lyngby-Taarbaek, it will also work in other municipalities in Denmark, as long as they follow the prescriptions of the Epital concept.

When the Epitalists refer to the possibility of expanding the cheese bell, they are referring to the possibility of up-scaling the project: moving it from a mini-scale cheese bell project to a large-scale project with a critical mass of patients included. While the cheese bell has been consolidated, a research network has also been formed: the network has been established and research applications, based on the idea of up-scaling the cheese bell, have been initiated. As Bruno Latour (1983:259) has highlighted, "Science is one of the most convincing tools to persuade others of who they are and what they should want." Up-scaling the project with a critical mass of patients would be crucial to mobilize the interest of a wider network—a network of private and public funds and investors, research institutions, politicians, and the general public.

Finally, when the Epitalists refer to *breaking the cheese bell* as a third option, they are referring to the possibility of lifting the cheese bell. In contrast to the two other options, this third possibility would imply that they have succeeded in *epitalizing* the existing healthcare system, or conversely, that they have modified and adapted the Epital concept so that it fits into the existing healthcare system.

Interestingly, the Epitalists are working on all of these potential future strategies alongside the process of building the object and maintaining their laboratory. The Epitalists are working just as much with the future as with the present—and they are working just as much outside as inside the cheese bell.

Let us turn back to the field episode in which the vendor also introduces an interesting point: that it takes more than a laboratory to change the healthcare system.

The vendor smiled and said after some hesitation that changes can happen quickly if there is political support behind them, but that it can be a long and difficult process if a change is modeled from the bottom up. The Epitalists quickly added that the network was the driving force: "It's a grass roots movement."

Notice that the vendor is referring to two different kinds of driving changes: you can go the long way and try to model the change from the bottom up, or you can take a shortcut by building political networks and alliances. The vendor is pointing to the fact that "it takes more than a laboratory" to change the healthcare system[2]: from the vendor's perspective, it takes political endorsement or a revolution from the bottom.

As we have seen, the Epitalists are well aware of the fact that it takes much more than a laboratory to change the healthcare system. That is exactly why they work just as much on the inside as the outside. They have held meetings with politicians, policy makers, and private companies and they have written research applications—alongside their work on building the telemedicine platform itself. This continuous leap between inside and outside has been crucial to the Epitalists—in order to maintain their laboratory and to extend the cheese bell into society. Note that the Epitalists refer to the process as being a "grass roots movement," in reference to the revolutionary bottom-up process. However, at the same time, we have also seen how the Epitalists are exploring various piggyback strategies in order to borrow strength—political or financial—that can put the wind in their sails. Again, the dilemma of the Epitalists is balancing between being idealists and realists.

The observer left the field before any decisions were made with regards to piggyback rides or future strategies. So whether the Epitalists will take a piggyback

[2] Daniel Kleinman (2003:138) has written an article in response to Latour (1983): *It takes more than a laboratory to raise the world*. He highlights how money and the ability to get funds go beyond laboratories and research. His work is a critique of Latour and his focus on laboratories.

ride to put wind in their sails or they choose to go the long way, creating change from the bottom up, is beyond the observation period of this study.

Discussion and Conclusion

As this article shows, it takes more than a laboratory to change the healthcare system. This article argues that when it comes to healthcare innovation, we may need to pay more attention to new kinds of living labs rather than formal laboratories.

Bruno Latour reminds us that we need to pay attention to the construction of the laboratory and its position in the societal milieu rather than focusing on the laboratory itself. The laboratory of the Epitalists is a particular construction: it is a living lab created in the intersection of formal and informal structures—it is neither fully inside nor outside the Danish healthcare system as it is anchored in a municipality. This construction short-circuits the way we normally structure living labs in the Danish healthcare sector.

This article argues that we need to pay attention to new kinds of living labs—like the one introduced in this study—rather than simply looking at formal laboratories. These living labs can take multiple forms; this study has introduced one kind that is particularly interesting as it is a bottom-up living lab. It was founded by a handful of people who felt that something needed to be done differently and they therefore initiated a living lab in the intersection between the formal and informal structures.

Unlike Louis Pasteur, the Epitalists do not just have a laboratory; rather, they need to continuously interact outside their lab in order to maintain the lab itself. We tend to take laboratories for granted and forget the political nature of the construction itself. The living lab of the Epitalists is indeed politics pursued by other means—these other means are to change the existing healthcare system in the name of disruptive innovation.

Bruno Latour also reminds us to consider laboratories as places where society and politics are renewed and transformed (Latour 1983). This study has shown an example of how this can look nowadays. Although the study does not show the potential impact on society and politics, it still shows an attempt to impact the wider healthcare system and health policy—in the name of enabling disruptive innovation. Thereby this study also contributes to our understanding of how health policy evolves in practice and shows an experimental set-up for policy development.

As we have seen, the Epitalists have actually managed to create a living lab in the intersection between the existing (inside) and the alternative (outside) environment. The living lab of the Epitalists has not, within the observation period, been able to release the full potential of "disruption." Instead, more like the Hardhats, the Epitalists have been able to utilize knowledge from within the organization to create new solutions outside the organization that are presented to the existing healthcare sector. It shows how the laboratory of the Epitalists is a bubble reaching far into society rather than an isolated cheese bell.

The study has only included the considerations of various piggyback strategies and no decisions regarding specific piggyback strategies and alliances. However, the study shows that the decision on whether to take a piggyback ride is a dilemma between idealism and realism. The idealistic Epitalists and Clayton Christensen would argue—referring to the disruptive nature of innovations—that driving disruptive changes will always be a kind of grass roots movement since the nature of the innovation conflicts with the existing (healthcare) system. Eventually, it will change the (healthcare) system due to the geniality of the disruptive innovation. From the perspective of the realistic Epitalists, it might be better to take a piggyback ride in order to maintain the laboratory and extend it into society. The dream of *epitalizing* the existing healthcare system is an ambitious project and the question is whether it is best to take the revolutionary or evolutionary approach.

When the Epital concept signals being disruptive and an alternative to the existing healthcare system, very strong alliances must be established to succeed. In contrast, the approach of being at the intersection of the existing (formal) and the alternative (informal) systems may be a strategy that makes the Epital concept easier to accept as it, at first glance, will be considered a normalization process/evolution (May et al. 2009) rather than a disruptive/revolutionary and potentially threatening process.

Funding

This article builds on a Master's thesis in the Danish language at Copenhagen Business School, Copenhagen, Denmark. Title: Epitalet – en ny organiseringsform for udvikling af sundhedsvæsenet? Defended in 2012. The work has not received any financial support.

Acknowledgements

Special thanks to Dr. Klaus Phanareth, first, for opening the doors to the laboratory of the Epitalists, a truly inspiring and admirable environment, and second, for creating an open environment for creativity and knowledge sharing that has fostered a unique living learning lab. Thanks to all the Epitalists for sharing their impressive work, passion, and thoughts on how to change the healthcare system and for showing us an alternative way of organizing healthcare innovation, which has only been possible due to their dedication and hours of volunteer work. Special thanks from the first author, Louise Hesseldal, to Birgitte Gorm Hansen, who was the supervisor of the Master's thesis, for teaching how to look beyond the boundaries. Thanks to Ms. Lena Sundby Jensen for assisting in editing and setting up the paper.

Ethics

In the documentation and in the presentation of data, all those involved have been anonymized. In accordance with Danish law, for qualitative studies not involving biological material, medical technologies, and diagnostics or treatment of patients, approval from the National Committee on Health Research Ethics (Den Nationale Videnskabsetiske Komite) is neither needed nor obtainable (Den Nationale Videnskabsetiske Komité 2013).

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