Serendipity and business development – Design anthropological investigations at The Post

Mette Gislev Kjaersgaard
Aarhus University

This paper describes how 'The Post' (a postal service company in the northern part of Europe) sets out to design an online digital platform for involving their employees in developing new services for the company. It is a story of a design project that failed to accomplish this task, but through sensitivity to serendipity disclosed other and potentially more valuable business opportunities in the process. It is also a story about design anthropology as a particular way of engaging with 'the field'; challenging assumptions and eliciting insight through design orientated investigations of actual and potential relations between people, things, practices and contexts.

INTRODUCTION

This paper is based on material from an interdisciplinary design and research project focused on designing technologies for involving 'communities' in innovative collaborations with companies through the use of social media. The case presented here derives from collaborations with The Post (a postal service company in the northern part of Europe) on designing a social media platform for involving their employees in business development. Though the project never managed to fulfil the initial dream of an online platform, our various attempts to make it (or at least parts of it) come true elicited unanticipated and serendipitous insights, potentials and results we could not have envisioned in advance. In fact what initially seemed to be serendipitous discoveries and byproduct of the design process, turned out to hold potentials of greater value to business development at The Post, than a potential realization of the initial dream of an online platform.

In this paper I will show how these serendipitous discoveries were not simply the effect of good fortune, but also the result of a particular design anthropological approach. Here the initial dream was treated not as a predefined destination to be reached in the future, but rather as a hypothesis about the potential with embedded assumptions about the actual, which needed to be challenged and developed in dialogue with the social, political and material circumstances at hand. In this approach an understanding of the field and its design potentials evolved through a continuous engagement with the dream, not detached from it. Our seemingly serendipitous discoveries thus grew from a critical engagement *with* the dream not *in spite of* it. I would argue that the dream – which we might also call the design intention - thus served as a constructive agent or catalyst in this process even if it was never realized and was perhaps not even a very good idea to begin with. Based on the case presented in this paper, I will argue that:

1. Entering the field with a particular design intention in mind can be a fruitful way of engaging business developers, employees and researchers in an enquiry into what is and what might be, providing valuable insight and disclosing interesting potentials regardless of whether it leads to the fulfilment of the original design agenda or not.
2. The value of (design) anthropology is not in its ability to provide data and clear-cut solutions to a given design problem, but rather in its sensitivity to serendipity and its ability to re-frame design problems and change conversations through design oriented engagements in the field, as well as in the design studio.

I shall elaborate on this towards the end of this paper, for now lets return to our story about The Post and their dream.

THE DREAM

A Dream of an online platform and a linear design process

When our story begins The Post is under pressure to develop new services as the mail delivery business is becoming increasingly less profitable. The innovation department therefore has a dream of developing an online digital platform, where employees (and eventually also end-users) can *feed in* their observations, knowledge and ideas in order to help the company identify and develop potential services and business opportunities.

The drawing below illustrates the dream as it was presented to us (designers and researchers) during one of our initial meetings with The Post:

FIGURE 1. *The innovation team's dream of an online platform – A reconstruction of their original sketch*

As we will see in the following this was a dream with embedded assumptions about work, community, collaboration, knowledge, innovation, technology and value.

As the illustration shows it was a rather concrete and specific dream, of not only finding a solution to a particular problem (the need for the development of new innovative services within The Post), but also of doing so through the development of particular technologies; i.e. an online digital forum and various 'enabling technologies'.

The assumption at the time was that knowledge and ideas were simply lying about 'out there' (with the postal workers and the users) and that with the right kind of technology The Post would be able to collect and render it accessible for business development.

But this was not only a dream of particular outcome, it was also a dream of design as a rational and linear process, through which preconceived ideas where compliantly turned into material objects and predetermined plans straightforwardly implemented (for descriptions and critiques of rational and linear approaches to design see Halse 2008, Ingold 2012, Suchman 2007, Kjærsgaard 2013). Here the move from the initial idea to the final product seemed to be simply a matter of gathering the right material, finding the right form and then building the thing. So that is what we initially set out to do; gather the material (data, drawings and technology) needed in order to build this platform. However, the material was not as compliant as expected and was not easily moulded to fit the initial dream.

DESIGN ANTHROPOLOGICAL INVESTIGATIONS AT THE POST

In search of communities and their innovative potentials

The design team set out to gather the various materials needed in order to start 'building' the dream. We wanted to uncover the kinds of ideas and knowledge that were supposedly 'out there' among the employees in order to figure out how it might be captured and shared online. The company had recently taken up a new service delivering meals to elderly and disabled people. As the meal deliverers and their experiences of entering a new service territory were of particular interest to business development at The Post, it was decided that they would be our first 'users' of the platform. Later communities for other groups of employees and eventually end-users would allegedly follow.

A team of university based researchers – consisting of a computer scientist, two interaction designers, an anthropology student and myself (an anthropologist) - set out to investigate the daily lives of the meal deliverers, hoping to identify the kind of knowledge, experiences and ideas these people might possess, and how that might be rendered sharable and useful through an online platform and various 'enabling' devices. At first we had a hard time getting access to the field partly because of internal procedures and politics at The Post, but also due to the fact that the meal deliverers and their managers were not particularly keen on having us there. On a practical level they feared that we would disturb the work and slow them down when out on the routes (which we did considerably). Moreover they did not see much value for them in this project and were worried (for good reasons) that it might simply create more work. Even so they eventually agreed to us following four meal deliverers for a couple of days on their job. Their hope, I guess, was that our presence might create awareness and recognition of their experiences and skills at the level of management.

We initially met the meal deliverers at the car park, where they were getting their cars ready for the routes. One researcher in each car, we tagged along to the office where they received their plans and routes for the day, then off to the kitchen to collect the meals and pack them in the cars, and finally out on the routes. In and out of houses, up and down stairs, with about 50 people to reach in different parts of the city within roughly 3 hours they had to move fast. But in their cars while driving from place to place, they could catch their

breath and chat about themselves, the citizens (as they called the people to whom they delivered the meals) that they had come to know, and the kind of insights and skills their job required. Even if our field studies were brief (compared to the classical Malinowskian ideal) we learned a lot from being there, and from engaging with this field and its design potentials in what I would call a particularly design anthropological way.

Invisible services and dilemmas

It turned out that the food deliverers knew a lot about how to make plans based on rigid logistics work in practice. Through their work they had developed skills, procedures and tools to help them bridge what they experienced as a gap between, on the one hand the rigid plans of their management - where everything seemed predictable, measurable and fitted neatly into spread sheets - and on the other the physical and fickle reality of their daily routes full of unexpected incidences, and citizens with different personalities and needs. On their daily routes the food deliverers did not simply move food from A to B (as the spread sheet plans seemed to suggest), but also provided care and a sense of security for the citizens. They engaged in conversations, checked that everything was ok, called for assistance if a door was not answered or if yesterday's food had not been touched, and even helped out with small practical problems to the extent (and beyond) which their tight schedule allowed it. On several occasions I saw one of my informants Susan comforting an elderly citizens who had been bruised from a fall, and had no one else to turn to. And Tom, another informant, told me how his colleague Hussein had possibly saved the life of a citizen on one occasion. Hussein had been delivering Mr T's daily meal as usual, when he noticed that Mr T was not his usual self. Normally he was happy, talkative and sharp, but that day he seemed a little out of it and not really present. Hussein therefore called home care to let them know what he had observed, and Mr T was immediate taken to hospital, where it turned out that Hussein's knowledge of Mr T and his attention to Mr T's behaviour had saved him from suffering the consequences of an untreated stroke.

For these meal deliverers caring for their citizens was thus an essential if invisible and un-recognized part of their job. It was a kind of invisible work, which did not appear in any reports, logs or spread sheets, but which nevertheless was an essential part of their service. Caring for the citizens was not only necessary for delivering a decent service, but paradoxically also for making the rigid plans work in practice. In fact it was only through developing some degree of knowledge of and relationship to the citizens that the meal deliverers were able to meet their targets and make things flow by cutting corners, making individual arrangements and improvising in unforeseen situations. Even though every move of these employees seemed choreographed, controlled and planned down to seconds, the meal deliverers still found room to do things their own way. Based on their knowledge of the routes and the practices and personalities of each citizen they were able to tweak, 're-design' and fine-tune their procedures to make the rigid plans work in practice.

Embodied skills and situated innovation

Various routines had been developed and arrangements made with citizens to make things flow a little easier. John for instance, knew that when delivering the meal to Mrs D. she would normally be asleep in front of the TV in her living room not able to hear the doorbell. To save time and wake her up John would go straight to her living room and tap the window. Susan had made agreements with some of her citizens in the apartment blocks that she would ring the front door bell in a particular way (3 short rings for instance) before ascending the staircase to let them know that she was on the way, so that they could then be ready at their door upon her arrival at their flat. Not having to wait for them to answer the door (being elderly or disabled this could take some time) might save Susan the seconds needed for a brief chat about the weather or a quick look at a blooming cactus. Some of these arrangements and routines were written down and shared among the deliverers. Other procedures were less formalized, more tacit and developed through experience, such as the way Susan knew exactly how to manoeuvre in a blind citizen's apartment without moving any of the objects the inhabitant might use as clues to navigate the apartment. Or the way she knew which elevators to take and which to avoid because they were too slow, as well as how to discretely press the button for the elevator while having a conversation with a citizen to make sure the elevator was ready for her exactly at the point where she was ready to leave with a "Goodbye and bon appetite".

Susan's creativity and ability to make things flow had lead her to develop various innovative solutions to problems she encountered on the route. She had designed her own 'key-management system' to keep track of and be able to quickly find the right entrance keys to the various staircases and apartments on her route. And she had develop her own ways of dealing with the various sheets and lists (with essential information about each citizen) that the deliverers had to carry with them while out on their route. She simply had them neatly arranged in a binder that doubled as a tray for carrying and serving the meals. This, she found, was both practical for her (she could easily carry the papers with her at all times, and she did not burn her fingers on the often very hot meals) and a more hygienic and presentable way of serving the meals to the citizens.

Through our engagements in the field we had gotten a glimpse of the daily lives of these meal deliverers, and we had come to appreciate their knowledge and innovative skills. Based on our studies we felt that they definitely had something to offer in terms of contributing towards business development at The Post, but we were still unsure how our material and insights might help us build the envisioned digital platform, if at all.

THE DREAM REVISITED – RE-FRAMED POTENTIALS AND CHANGED DISCOURSES

From the field studies we had learned that these meal deliverers did indeed hold knowledge and skills that might be interesting and even crucial for business developers at The Post. Not only did they know the characteristics, preferences and routines of each citizen on the route, they also knew how to provide some degree of care for these people within the limited time that they had. Moreover they had become experts in the art of

making rigid plans and logistics work in practice (rather than simply on paper). As part of that they had learned how to adjust and tweak systems and procedures to make things flow a little easier. As such they had become a kind of innovator solving everyday problems through situated innovations. Taking the food deliverers knowledge, skills and ideas into account when trying to develop new and innovative services for The Post therefore seemed like the right thing to do. The question was how to do it, and if the dream of an online platform in combination with 'enabling technologies' was the way to go about it.

Though we saw lots of potential, there were equally many challenges. Even though the food deliverers wanted to be involved in business development (at least to the extent that it might influence their work), and felt they had something to offer, they were generally not particularly fond of the idea of a digital platform on which they could upload and share observations and ideas. On a practical level they did not have access to computers on the job, and did not see how they could find the time within their busy schedules to contribute to on an online forum and much less how they could benefit from that. Moreover they were generally not that into online forums, and were not even sure how and what to contribute with. It was unclear to them what might be of relevance and interest to their colleagues, managers and to the business developers, as they were not particularly aware of their expertises and did not necessarily realize when they were being innovative. So even if many liked the idea of being involved, they much preferred a face-to-face dialogue to an online forum. It mattered to them that they could meet and talk to managers or developers themselves, being able to explain and being recognized for their contributions. Still, as Susan pointed out, "nothing can replace that they [managers and business developers] actually get out here and see what we do." This was a very valid point indeed, as the meal deliverer's particular knowledge, skills and innovations were very much embedded in the context of their work and not easily extracted from it.

From collecting ideas to facilitating reflection and dialogue

Through our engagements within the field we had learned that these food deliverers did indeed hold knowledge and innovative skills of interest for the company, but we also realized - through our subsequent design oriented analyses - that their knowledge and skills were of a situated, embodied and tacit nature that was not easily communicated in words (or pictures) on a digital platform, or transferred from one context to another. This challenged not only the company's dream of a digital platform, but also assumptions about knowledge and innovation on which it was formed. Our investigations suggested that knowledge and innovative potentials were not simply 'out there' in plain view for everyone to see, ready to be collected and shared digitally across practices and contexts. Which seemed to indicate that we could not leave it to the food deliverers to provide interesting observations and ideas via an online forum, and that The Post as an organization could not simply take on a passive role here as collector of information and ideas. Sharing knowledge and locating innovative potentials required so much more than that. At this point we were starting to realize that the dream of an online platform with its embedded assumptions (or hypothesis) about the world and its future potentials, when confronted with our observations and design oriented analysis no longer seemed very realistic or convincing. We started experimenting with other

design concepts with another embedded hypothesis of how the knowledge and innovative skills of these food deliverers could benefit business development at The Post.

Our new hypothesis was that knowledge and innovative potentials were not something to be collected and shared out of context, but rather something to be constructed at the intersection between the situated knowledge and creativity of the employees and the strategies and agendas of managers and business developers within the organization. Hence our role as the design team might not be to construct a digital platform where information and ideas could be uploaded and shared, but rather to explore how we might engage workers, management and business developers (and eventually even end-users) in a constructive dialogue about innovative potentials. Our challenge was therefore less about figuring out which technologies might help employees to contribute with ideas and observation to an online platform, and more about figuring out how to get from tacit knowledge and situated creativity to innovative ideas.

The design activities that followed struggled to solve these challenges. Technological fixes were still high on the company as well as the research project agenda, and attempts were made to develop various technological devices that could help provoke reflections and dialogues in different ways. A first step was to experiment with ways in which to 'capture' and share experiences and tacit knowledge, and thereby make the 'invisible' resources and potentials we had identified through fieldwork visible and shareable[51]. A new dream was born, which seemed more relevant and interesting from a research perspective, but which was not the company's dream, as it was still too abstract and in need of too much work to be attractive from a business perspective. Thus by the end of our six months on the case neither of our dreams had materialized[52], still I would claim that it was not an unsuccessful project.

From 'lean' to 'care'

Design solutions were not the only measure of success in this project. As a direct, if somewhat serendipitous, result of our work managers and business developers at The Post became aware of the invisible work (invisible from the perspective of management, lean thinking and spreadsheets that is) of their employees and its unrecognized potentials for business development. Through people within the company who participated in the project an internal magazine for managers picked up on our story of the food deliverers who did not only deliver food, but also care. This way of thinking about food delivery latched on to discussion within the company on what their business was really about and what it might be in the future. Here care was increasingly talked about as a new and important market and insight from the design process used to support this new dream of a different and lucrative business for The Post. Our design investigations thus resulted in a re-framing of earlier

---

[51] Unfortunately this is not the time and the place to elaborate on these experiments which though interesting and promising were also far too experimental and abstract to result in any concrete and immediately applicable solutions

[52] It does not mean that these dreams were abandoned altogether, parts of them still live on in different forms within new projects

assumptions within The Post - at least at the level of management - about the work, knowledge and (innovative) skills of their employees, as well as about the value and business potentials of their service. The project thus contributed towards a *change of discourses* within the company, where *lean* was no longer the only word in the vocabulary of managers and business developers, and the word *care* was increasingly also used when talking about future services and business potentials.

From building to growing

Within the company our findings, stories and design ideas gradually took on a life of their own, as they were twisted and moulded in various ways to fit the practices and agendas of differently positioned actors at The Post, making it hard to pin-point the outcome of the project to a particular product, service or strategy. The design process was not as envisioned at the beginning of the project a linear process where the outcome was simply the materialization or the logical consequence of preconceived visions and plans. Following Ingold, we might understand our design process not as a projection of ideas onto the materiality of the world, but as a process of continuous transformation of ideas and material within it (Ingold 2007, Ingold 2012), where ideas, strategies and design objects were not built according to preconceived ideas and plans, but grew out of the socio-material circumstances at hand as kind of by-products of various people's movements through the world (Ingold & Hallam 2007; Ingold 2012). It was therefore not simply The Post's dream of an online platform that was challenged in this project, but also their dream of a straightforward linear process where ideas are simply turned into physical forms. In this project the outcome was more ambiguous and less tangible. Here serendipitous insights which at first appeared to be nothing but by-products of the design process, turned out to be the most valuable and promising results of the project.

ANTHROPOLOGY, SERENDIPITY AND BUSINESS DEVELOPMENT

The question is what can we learn from this case? What does it teach us about design processes, business development and the potential roles of fieldwork, ethnography and anthropology within such processes? And how is that related to serendipity? Was our serendipitous discovery of the importance of care in delivery services and its business potentials simply a matter of chance discovery, or was there more to it than that?

Pieke describes serendipity as:

> …Less random and more proactive than suggested by the gloss of the term…[as it] describes the creative tension between structuration and event, and that balance between control and creativity which defines science as a vocation within a discursive community (Pieke 2000:129-130)

According to Pieke serendipity may thus be understood not as incidental findings, but as the potential result of a particular way of engaging with the field from a certain vocational vantage point. In that respect, serendipity has always played an important role in the generation of anthropological insights through fieldwork, whether in a design context or not.

Though serendipity cannot be forced, certain research strategies may be able to offer it a helping hand. My argument here is that within a design and business development context certain ways of approaching design, ethnography and the relations between them are more like to generate and make use of serendipitous insights than others. In our case with The Post serendipity was the unpredictable - but not accidental - outcome of a particular design anthropological approach, attempting to bring design agendas, field practices and academic perspectives into a dialogue throughout the design process, while making constructive use of tensions between them. Unlike in traditional anthropological fieldwork we approached the field with particular agendas and goals in mind, but as opposed to more traditional linear approaches to design and business development we treated these agendas and goals as starting points for rather than end points of our enquiry. In this design anthropological approach moving from the field to the design studio was not (as our project plans had prescribed) a simple move from ethnography to design. It was not - as in ethnographically informed design - a matter of translating ethnographic findings into implications for design (Anderson 1994 ,Button 2000, Dourish 2006, Kjærsgaard 2011, Otto & Smith 2013). Rather our field studies were from the start in a constant and critical dialogue with the design agenda – or the dream if you like. Both our work in the field as well as in the design studio was about developing an understanding of the field and its design potentials, through the production of analysis, field data, design concepts and artefact. As such the field and design studio, ethnography and design, were in a constant dialogue with one another throughout the project. Our serendipitous discoveries thus arose through a fieldwork-based anthropologically inspired dialogue with the design agendas of the project (and not despite of such agendas), but also through designers' and researchers' ability to wonder about, question and re-frame practices, relations and assumption in the field as well as in the design studio. In hindsight we might describe our design anthropological approach as based on two basic principles or strategies:

1. Treating ethnography and design not as separate fields and stages in the design process, but rather as part of the same design anthropological inquiry - As opposed to expectations embedded within the original set-up of the design project and traditions of ethnomethodologically and ethnographically informed design (Button 2000, Halse 2008, Dourish 2006 Kjærsgaard 2011, Kjærsgaard& Otto 2012)

2. Treating design ideas, agendas or dreams not as solid destinations to be reached in the future, but rather as some sort of hypothesis about the world that needs to be tested, challenged and developed through (design oriented) engagements in the field, and which (unlike in rational linear approaches to design) might as a result grow into something completely different.

In this project fieldwork was thus not simply about informing design or the organization about the world 'out there' but about entering into a critical dialogue with the design agenda through design oriented engagements in the field. Inspired by Henara et al. (2007) we might see this as a way of 'thinking through *the making of* things' or rather as a way of "thinking through *attempts to make* things", where the making of things, design concepts or strategies is a way of entering into a dialogue with the field, in order to explore and experiment with practices, context, relations, and our understandings of them (Kjærsgaard 2011, Kjærsgaard & Otto 2012).

In this process the dream - or the design agenda - played an important role as a starting point and a catalyst for such a dialogue. Approaching the field with a particular design intention in mind posed questions to and elicited responses from the field, which sparked serendipitous insights that might otherwise have remained unnoticed. Moreover the dream provided us with a shared focus, serving as kind of 'boundary object' (Star & Giesmer 1989) through which various interests, agendas and perspectives within the project could interact.

However, the dreams role as an *object in* the design process should not be mistaken with its role as an *object for* the design process. As already mentioned, I find it more constructive to think of such dreams, design ideas or design agendas not as destinations in the future, towards which we simply need to find a path, but see them rather as starting points for critical inquiries about the actual and the potential. As this case suggests the role of fieldwork and ethnography in design cannot simply be to *inform* design in terms of filling in blanks within a pre-defined framework, or in terms of providing 'neutral' material and descriptions from which design ideas may be built. Instead, I suggest a design anthropology that challenges established frameworks through *re-framing* practices and relations within and between the field and design, and works as a kind of critique, though a constructive critique from within aiming to multiply perspectives within the design process as well as the organization. Paraphrasing Rabinow (and with him Luhmann), we might say that the role of fieldwork and anthropology in design and business development is not simply about producing knowledge or accurate accounts from the field, as much as about *establishing points of discourse* (Rabinow et al. 2008: 56). This is what we did successfully in the case of The Post. The case presented here suggests that the value of anthropology within design and business development may be hard to tie down to specific products or service, and that if we try too hard, we might loose out on what could possibly be the most valuable out comes of design anthropological investigations, namely the serendipitous insights and potentials that result from changed perspectives and discourses.

ACKNOWLEDGEMENTS

REFERENCES CITED

Anderson, R. J.
1994   "Representations and Requirements: The Value of Ethnography in System
          Design." *Human-Computer Interaction* 9 (3): 151-182.

Button, G.
2000   "The ethnographic tradition and design." *Design Studies* 21 (4): 319-332.

Dourish, P.
2007   "Responsibilities and Implications: Further Thoughts on Ethnography and
          Design." *Proceedings of DUX07*: 2-16.

2006   "Implications for Design." In *Proceedings of the SIGCHI conference on Human Factors in
          computing systems*: 541-550.

Halse, J.
2008   "Design Anthropology: Borderline Experiments with Participation, Performance
          and Situated Intervention." PhD Diss., IT University Copenhagen.

Hazan, H and E. Hertzog
2012   *Serendipity in Anthropological Research – The Normadic Turn*. Ashgate

Henare, A., M. Holbraad, and S. Wastell
2007   "Thinking through things." Introduction. In *Thinking Through Things: Theorising arte-
          facts ethnographically*. A. Henare, M. Holbraad and S. Wastell, eds. Pp. 1-31. London
          & New York: Routledge.

Ingold, T. and E. Hallam
2007   "Creativity and Cultural Improvisation: An Introduction." In *Creativity and Cultural
          Improvisation*. E. Hallam, and T. Ingold, eds.Pp. 1-25. ASA Monographs 44.

Ingold, T.
2007   Introduction. In: *Creativity and Cultural Improvisation*. E. Hallam and T. Ingold, eds.
          Pp. 45-55. ASA Monographs 44.
.
2012a   "The Perception of the User–Producer." Introduction. In *Design and Anthropology*.
          W. Gunn and J. Donovan, eds. Pp. 19-33. Surrey, England: Ashgate.

2012b   "Towards an ecology of materials." *Annual Review of Anthropology* 41: 427-442.

Kjærsgaard, M. G.
2011   "Between the Actual and the Potential: The challenges of design anthropology."
        Ph.D. Diss., Faculty of Arts, Aarhus University: Department of Culture and
        Society.

Kjærsgaard, M., and T. Otto
2012   "Anthropological fieldwork and designing potentials." In *Design and Anthropology*.
        W. Gunn and J. Donovan, eds. Pp. 177-191. Surrey, England: Ashgate.

Kjærsgaard, M. G.
2013   "Transforming knowledge and design concepts." In *Design Anthropology: Between
        theory and practice*. T. Otto, R. C. Smith and W. Gunn, Eds. Oxford & New York:
        Berg.

Otto, T., and R. C. Smith
2013   "Design Anthropology: a Distinct Style of Knowing." In *Design Anthropology: Between
        theory and practice*. T. Otto, R. C. Smith and W. Gunn, eds. Oxford & New York:
        Berg.

Pieke, F.
2000   "Serendipity: Reflections on Fieldwork in China, in Anthropologists." In *A Wider
        World*. P. Dresch et al., eds. Pp 129-150. New York & London: Berghan Books.

Rabinow, P. et al.
2008   *Designs for an Anthropology of the Contemporary*. Durham: Duke University Press.

Star, S., and J. Griesmer
1989   "Institutional Ecology, 'Translations' and Boundary Objects: Amateurs and
        Professionals in Berkley's Museum of Vertebrate Zoology, 1907-39." *Social Studies of
        Science* 19 (3): 387-420.

Suchman, L.
2007   *Human-Machine Reconfigurations: Plans and Situated Actions*. Cambridge University
Press.