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Systematic and serendipitous discoveries: a shift in sensemaking

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Abstract

Purpose – The purpose of this paper is to enrich the theoretical understanding of the phenomenon of sensemaking where a conceptual shift was provoked by a serendipitous encounter.

Design/methodology/approach – A theoretical framework consisting of three elements of reflexivity: the cognitive, the social, and the normative, all of which support the study. Semi-structured interviews were conducted in the investigation of a serendipitous Episode that occurred in a larger research project. This Episode took place at a meeting between a social welfare officer and a psychologist in which they discussed the treatment of a psychiatric patient. When the psychologist left the meeting for a brief period, the researchers, unexpectedly, were able to interview the social welfare officer alone.

Findings – This interview revealed a deviation from the institutionalized patient treatment procedure that was explained to the researchers in earlier interviews. The study shows that shifts in sensemaking are possible when researchers are open to serendipitous encounters. This shift in sensemaking in this Episode was strategic because it concerned the three most important aspects of the actor's decision making: how to make diagnosis, treatments, and cooperate around the patient.

Research limitations/implications – It is recommended that researchers use the theoretical framework of reflexivity to test their sensemaking processes as well as remain open to changes in planned, traditional methodological approaches.

Originality/value – The study applies a *post-hoc* analysis with reflections on serendipitous events that may guide researchers when they encounter unanticipated events and make anomalous discoveries.

Keywords Qualitative research, Serendipity, Abduction, Sensemaking process, Serendipitous

Paper type Research paper

Introduction

Research in the social sciences is built on certain beliefs, values, and assumptions, one of which is empirical rationality – the regularity of empirical phenomena and the relationship of cause and effect. Therefore, the validity of empirical research requires that it be carefully designed before and during data collection. Nevertheless, even the best-laid plans can lead to unanticipated and anomalous discoveries. Previous research has indicated that such discoveries occur frequently in the information seeking and problem-solving research phases, not only in the natural sciences but also in the social sciences. When such events occur, researchers necessarily re-evaluate the aim and design of their work and contemplate reinterpretations of their data (Foster and Ford, 2003; Merton and Barber, 1958/2004; Cunha *et al.*, 2010; Makri and Blandford, 2012a, b).

Merton and Barber (1958/2004, p. 159) write: "Since it is the special task of scientists to make discoveries, they themselves have often been concerned to understand the conditions under which discoveries are made and to use that knowledge to further the making of discoveries […] the factor of accident has not been given its due". Such accidental discoveries, which are said to result randomly from luck, chance, good fortune, etc., can often lead to new empirical and theoretical insights. Then these discoveries are appropriately described as serendipitous.

At this point, it may be helpful to examine the word "serendipity", the nominal form of the adjective "serendipitous". the *Concise Oxford Dictionary* (2014) defines serendipity as "the occurrence and development of events by chance in a happy or beneficial way: a fortunate stroke of serendipity". *The New Webster's Encyclopedic Dictionary of the English Language* (1997) defines serendipity as "an aptitude for making desirable discoveries by accident". Merton and Barber (1958/2004, pp. 246-249) list the numerous definitions of serendipity that they found in Anglo-Saxon dictionaries published from 1909 to 2000.

Serendipity can be used in many situations (Merton and Barber, 1958/2004; Makri and Blandford, 2012a, b). Although it is challenging to use the word in an empirical, social sciences context, various social science researchers have studied the occurrence and value of serendipitous discoveries. For example, Lawley and Tompkins (2008) investigated the process of serendipity in a sequential model of perceptions. In an interview study, Foster and Ford (2003) studied researchers' perceptions of the properties of serendipity. Makri and Blandford (2012a), in a study using semi-structured critical incident interviews, examined how researchers discover information serendipitously. Their study aimed at increasing our understanding of how researchers make and exploit serendipitous discoveries.

However, while recognizing that serendipitous discoveries occur frequently in the information seeking and problem-solving research phases, few studies deeply investigate the nature of serendipity in an empirical, *post-hoc* context. In this study we look at the research process in a self-experiential situation that, in hindsight, was serendipitous.

The main research project was conducted at three Swedish Child and Youth Psychiatric Units (CYP). The incident (the Episode) occurred at a counsellor team meeting in one CYP unit where treatment of a patient was discussed. The Episode occurred about midway in the main research project. The counsellor team consisted of a social welfare officer and a psychologist; when the latter briefly left the meeting, we had the unexpected opportunity to interview the social welfare officer alone. The interview revealed a departure from the planned patient treatment procedures it had been explained to us in previous interviews. This revelation caused us to review our theoretical framework and our empirical sensemaking related to both previous and subsequent data collected.

We describe the Episode as serendipitous in accordance with Merton's (1957, p. 104) description of serendipitous observation as "unanticipated, anomalous, and strategic". Because of our experience with observational research and with abductive reasoning, we feel qualified to recognize a serendipitous discovery. Our previous abductive reasoning research, applied to similar data, was useful in the revisions of our analyses in the current study. The Episode explains the reason for the shift in our sensemaking process. This shift resulted from a retrospective analysis of the incongruity of our previous sensemaking with our subsequent sensemaking that occurred following the serendipitous discovery. As we found this same shift in our main research project, we conclude the Episode observation was strategic in that it is an integral part of the larger project.

This paper aims to enrich our theoretical understanding of the phenomenon referred to as serendipity through observations and analyses of a serendipitous discovery in social sciences research. We pose the following two research questions:

RQ1. Is it possible to prepare for, search for, and control serendipitous discoveries in research?

RQ2. Is it possible to apply abductive reasoning to such discoveries that call for shifts in sensemaking?

The paper is structured as follows. Next, to provide background for the Episode, we describe our main research project. Then we relate serendipity to sensemaking and to research practice. In our discussion of abductive reasoning, we suggest that serendipitous situations may lead to new discoveries that therefore cause a shift in sensemaking. We retrospectively analyze our shift in sensemaking in the Episode, using reflexivity elements to explore our shift in sensemaking. These elements, which are introduced in the theoretical framework section, are cognitive, social, and normative. We then present our findings. Finally, we discuss our conclusions and offer suggestions for further research.

The main research project

The CYP units

At the beginning of the twenty-first century, Swedish health care units for young patients with severe psychiatric illness were restructured. New specialist units called CYP units were formed. Treatment Conferences (TC) are used to discuss patient cases. One feature of these units is the two-person counsellor team that makes many patient treatment decisions. Such teams usually consist of a psychologist and a social welfare officer. The mini-team members' responsibility is to collaborate around the patient in diagnosis and treatment.

The methodology

The main research project was conducted at three CYP units. For this research, we conducted interviews (Czarniawska, 1999) and observed TCs (Czarniawska, 2007). We also observed meetings of two-member counsellor teams. We began our progressive understanding of the research phenomenon (Merriam, 1998; Bryman, 2008) and of the participants' decision making at the first CYP unit and continued at the second CYP unit. The Episode described in this paper occurred in the second CYP unit. All participants in this research, who were informed of the study's purpose and design, voluntarily agreed to take part. The anonymity of the CYP units and of the participants was also guaranteed in the event of publication of the findings. Our research was guided by the code of *Good Research Practice* adopted by the Swedish Research Council (2011).

Interpretations of the CYP units before the Episode

As explained in the Episode, our reinterpretations deal with three important areas of patient care: diagnosis, treatment, and staff cooperation. Here we explain those areas.

Diagnosing and treatment planning: at the TC, procedures for diagnosis reveal the team members use a consensual, systematic, and "scientific" approach in making treatment plans. The team members complete a form based on their notes from initial patient contacts. The form is the starting point for the teams' discussion. The result is a rather generic treatment plan that is agreed to as a guide for the initial work with the patient. The CYP unit manager notes the next steps in patient treatment: the necessary physician contacts, parental approval, and the next appointment.

Staff cooperation: psychologists and social welfare officers, in two-member teams, meet before the patient arrives with her/his parent(s). Then the psychologist on the team meets the patient while the social welfare officer interviews the parent(s). After these two parallel sessions, the psychologist and the social welfare officer meet to discuss the diagnosis and the treatment plan. After the CYP psychiatrist-physicians, the CYP psychologists rank second as far as professional status in the TC. Next are the social welfare officers and the nurses. Despite they have professional norms that differ from those of the psychologists; they seem to accept the psychologists' talk-oriented way-of-working.

Previous research

Merton (1957, p. 100) observed: "Fruitful empirical research not only tests theoretically derived hypotheses; it also originates new hypotheses. This might be termed the "serendipity" component of research, i.e., the discovery, by chance or sagacity, of valid results which were not sought for". He explained further:

> The serendipity pattern refers to the fairly common experience of observing an *unanticipated, anomalous and strategic* datum which becomes the occasion for developing a new theory or for extending an existing theory. [...] The datum is, first of all unanticipated. A research directed toward the test of one hypothesis yields a fortuitous by-product, an unexpected observation which bears upon theories not in question when the research began. [...] The observation is anomalous, surprising, either because it seems inconsistent with prevailing theory or with other established facts. [...] And thirdly, in noting that the unexpected fact must be strategic, i.e., that it must permit of implications which bear upon generalized theory, we are, of course, referring rather to what the observer brings to datum than the datum itself (Merton, 1957, pp. 104-105).

Merton (1957) explained that observation of surprising data provokes researchers' curiosity; therefore, they are stimulated to "make sense of the datum" to fit into a broader frame of knowledge, which is then followed by abductive reasoning. Peirce (1932, § 96, p. 53; §100, §101, pp. 56-58) explained that the scientific method's assignment is to find a hypothesis which explains a problem (abduction), to derive consequences from these hypotheses (deduction), and to confirm or to reject these consequences and the hypothesis by the means of the experiences (induction). Accordingly, Hanson (1958, p. 85) concluded: "Deduction proves that something *must* be; Induction shows that something *actually is* operative; Abduction merely suggests that something *may be*" (emphasis in the original).

According to Peirce (1932), abduction is the process of abducting Theory A from Observation B, although Theory A does not guarantee a conclusion. Theory A is sufficient but is not necessarily the explanation. An example of abduction is the following: when a doctor diagnoses a patient with red spots on her skin as measles, the diagnosis may be a possible explanation but not necessarily the correct explanation. Thus, reasoning by abduction, unlike deduction and induction, can result in new conclusions. In reasoning by deduction, the conclusions are logically based on premises. In reasoning by induction, the premises offer evidence for the conclusions (Merton, 1957).

Foster and Ford (2003) studied researchers' perceptions of serendipity in information seeking. They studied both the nature of the discovery process and the importance the researchers attached to serendipity. They analysed the discovery process from two perspectives: whether the existence or location of the discovery was unexpected; and whether the value of the information was unexpected. They found that the importance of serendipity depended on whether the discovery reinforced, "the researcher's existing problem conception or solution"; and on whether the discovery took, "the research in a new direction, in which the problem conception or solution is re-configured in some way" (p. 330). Accordingly, the researchers in the study applied a broader meaning to the concept of serendipity than strict application of the definition admits.

Foster and Ford's (2003) understanding of the concept seems consistent with Robert's (1989) description of serendipity as a retrieval strategy. The interviewed researchers in Foster and Ford's study thought it was possible (to some extent) to control "chance encounters" (p. 337) by circumnavigating institutional ways of organizing and by controlling information-seeking systems (e.g. computerized library classification systems).

Other research studies claim it is possible to increase the chances of making serendipitous discoveries, for example, by serendipity browsing (Rice *et al.*, 2001) or by serendipity-focused

research (Toms, 1998). Studies by McCay-Peet and Toms (2010), Foster and Ford (2003), and Makri and Blandford (2012a, b) claim that certain researcher attitudes favour serendipitous discoveries (e.g. attitudes such as being prepared, relaxed, alert, and positive). In a later study, Makri *et al.* (2014, p. 2180) argue that serendipity cannot be directly controlled although it is possible to design serendipitous situations that increase the likelihood of finding unexpected events if researchers vary their "routines" and make "mental space".

It seems as if some reported serendipitous research experiences meet Merton's first criterion of serendipity as an observation of an anomalous, surprising fact or Van Andel's (1994) categorization of "negative serendipity" (Van Andel, 1994, p. 639):

(1) positive serendipity (Barber and Fox, 1958): a surprising fact or relation is seen and followed by a correct abduction;

(2) negative serendipity (Barber and Fox, 1958): a surprising fact or relation is seen but not (optimally) investigated by the discoverer; and

(3) pseudoserendipity (Roberts, 1989, coined the word): the act of discovering, inventing, and creating something you were looking for, in a surprising way.

However, if serendipity is related merely to how the researcher encounters information (i.e. negative serendipity), its character in problem solving is not experienced. Because the reasoning in serendipitous discoveries is abductive, it is difficult to explain how the conclusions are reached. It is especially difficult to describe how a theory is invented from a surprising fact, in the so-called creative abduction (Van Andel, 1994).

We think the interviewees' reflections on *post-hoc* serendipitous discoveries reported in Makri and Blandford's (2012a) study are especially relevant to our research. These interviewees said that such discoveries made them "more 'prepared' " for making and exploiting future serendipitous connections" (p. 702). We also conclude, with abductive reasoning it is possible to benefit from reviewing earlier conclusions when serendipitous discoveries challenge these conclusions. In our research approach, we recognize that the necessary abductive reasoning is not an easy matter because the abducted theoretical explanation may challenge our previous conclusions.

Theoretical framework

In the Episode of this study, we demonstrate the shift in the researchers' sensemaking that involves a conceptual shift that has been provoked by a serendipitous encounter. This shift led us to interpret actors' decision-making processes as social processes that are fundamentally and contextually grounded and are open to interpretation (Berger and Luckmann, 1966; Garfinkel, 1967). In this study, we explore and make the shift in the researchers' sensemaking visible as the result of an interpretative, reflexive process drawing on Gherardi and Nicolini's (2001) elements of reflexivity.

In their discussion of "reflexivity", Gherardi and Nicolini (2001, pp. 51-52) relate the concept to sensemaking. They argue "reflexivity results from the disruption of or breakdown between subject and object" and is "characteristic of all ordering-producing social activities". These reflexivity elements are the following:

(1) self-monitoring: the cognitive element, which produces knowledge;

(2) accountability: the social element, which creates a discursive order; and

(3) institutionalization: the normative element, which produces and reproduces social institutions.

We connect the cognitive element to the researchers' difficulty in identifying aspects of the studied phenomenon, the social element to the researchers' difficulty in determining whether the interviewed or observed actor presents lived experiences or accounts, and the normative element to the researchers' difficulty in distinguishing between institutional norms and the actors' understanding of their contextual situation.

Self-monitoring: the cognitive element
Theories can exert a powerful influence on research phenomena that researchers and the wider community observe (Cunliffe, 2003; Ackroyd, 2004). We also use different theories, some overlapping and some competing (Bhaskar, 1978, 1979), to explain different aspects of these phenomena. Theories, thus, are socially negotiated instruments that construct and explain knowledge. When we study how actors explain their social reality, we use theories to understand what they say and do (Schotter, 1993).

The ontological and epistemological premise of the functional perspective supports the claim that knowledge is enhanced when multi-method research designs are used (Berger and Luckmann, 1966). In such studies we need research designs that help us understand actors' social reality. Researchers must be open to, and sensitive to, several possible explanations of events and various theoretical perspectives on them. Multi-method research designs often serve that purpose. Therefore, in our study, we use two data collection methods to enrich the collection of our empirical data: observation and interviews.

Accountability: the social element
In explaining their experience with and understanding of organizational life, organization members may present accounts of their recollected lived experiences (Scott and Lyman, 1968; Czarniawska, 1999; Alvesson, 2003). This is a non-reflective type of consciousness that precedes reflection. Van Maanen (1988) claims that the recollection of lived experiences allows the informant to experience the world while living it. These recollections – described by Weick *et al.* (2005) as the discursive constructions of reality – are important for researchers trying to make sense of accounts.

Researchers who collect interview data have to determine whether interviewees' responses present authentic lived experiences (Schutz, 1970; Czarniawska, 1999; Alvesson, 2003). The credibility of interview data depends on this authenticity. Interviewees may present accounts, which might be their true understanding of their social reality. Alternatively, the accounts might be descriptions of the social reality the interviewees think the researcher expects, or accounts that convey a calculated impression of the activities the interviewees wish to present (Scott and Lyman, 1968). Interviewees may present accounts that they think reflect their social reality or they may deliberately shape their accounts to meet expected impressions of that reality (Scott and Lyman, 1968). As Czarniawska (2007, p. 13) points out, interviewees' accounts cannot be regarded as "the windows into the depth of reality". Therefore, we used an observation to confirm the consistency of the interview accounts. Throughout the research, we maintained researcher distance in order not to influence the accounts.

Institutionalization: the normative element
Actors who take the world (i.e. social reality) for granted (Berger and Luckmann, 1966) do not challenge institutionalized norms. They seem unaware that, as actors, they can change their common practice and, with respect to each other, their positions of influence. Instead they act normatively in various situations because of their institutionalization of values and procedures. Giddens (1976, 1994) explains the

production and reproduction of social order by society and its institutions is a process of change that allows actors to take some objects of practice for granted as they reproduce the life of society, the team, or the group. The actors' compliance with institutionalized norms conceals important aspects of their space for manoeuvrability from the researcher. Researchers must guard against the possibility they are studying institutional power rather than the actors' understanding of their situations.

We assumed the power of the institutional structure, with its controlling norms and that the staff members acted normatively in various situations because their values, beliefs, and goals are institutionalized. Although we researchers were outsiders, we could take the actions of the staff for granted.

Findings: the Episode, the sequences, and interpretations

The Episode

This description of a two-person councillor team involved in a patient treatment plan is a small part of the larger research project conducted at the three CYP units. The Episode illustrates a departure from the planned patient treatment procedure. A fortuitous opportunity occurred when we shadowed two councillors (a psychologist and a social worker) at a meeting in which they discussed the treatment of a patient. As a result, we could witness how the team functioned in the CYP unit.

The sequences present the departure from the planned patient treatment procedure. In our commentary, we use the term "observation" to refer to observations by the researchers rather than to observations by the psychologists as they diagnose patients.

The three sequences

Here we list the three sequences we used for our data collection and analysis:

- *Sequence 1*: observation: we observed the social welfare officer and psychologist in a meeting. The two counsellors are in the psychologist's office after the meetings with the patient and his relatives.

- *Sequence 2*: first interview: we conducted an interview with the social welfare officer when the psychologist left the office.

- *Sequence 3*: second interview: when the psychologist returned to the office, we interviewed the social welfare officer and the psychologist jointly.

In Sequence 1, directly after we presented the team members' conversation, we began the process of reconstructing our interpretations from the interviews and observations before the Episode. In Sequence 2, we continued the reconstruction from the interaction between interpretations and the sensemaking process and between previous and new understandings in the interview with the social welfare officer. This process then continued when we interviewed the social welfare officer and the psychologist jointly (Sequence 3). Our impressions and interpretations changed as we moved from sequence to sequence. There are several possible interpretations of the actors' decision making.

In the Episode, a dashed line indicates that passages from the excerpts have been excluded. The entire Episode took about one and a half hours. We identify the psychologist as "P" and the social welfare officer as "S".

Sequence 1: observation excerpt

This two-person team is assigned to the patient, a 13-year-old boy who is accompanied by his father and his paternal grandmother. The boy, presented at the TC by the

psychologist, has experienced many difficulties in life that have included a number of family changes of residence. According to the psychologist, his psychological development appears delayed:

> P: I don't know really know how we should deal with it […] I think you did a good job in the conversation, about the loyalties amongst the different parties. And he has apparently told you a lot about his grandparents.

> S: Yes, I still think that he says only as much in the conversation as they allow him […].

> S: Yes, it is a little different for him. We must deal with that. It also depends on how he handles school.

> P: Absolutely […] I think there is no point in investigating something [psychological tests] […] rather, it is more that we should lay out what he needs now.

> S: […] yes, exactly.

> P: What is more important is that he does well in school and that he continues to have good relationships with friends […] (P. leaves the office).

Comment 1 on our interpretation process. It appears from the observation that the psychologist and social welfare officer agree on the patient treatment. They have reached a common conclusion about the treatment although it is not evident which treatment they have agreed on. One interpretation of their conversation is that they agree to follow the social welfare officer's recommendation not to give the patient a psychological test. The psychologist states: "There is no point in investigating something". This is an inductive impression, according to our interpretation.

Our theoretical understanding of the two counsellors' way-of-working is that they should, and will, work along two parallel tracks before meeting and deciding on the diagnosis and the treatment. This is in accordance with our understanding from preceding studies in the main research project. However, our interpretation at this stage is that the psychologist has difficulty in substantiating her ideas following the meeting with the patient and his relatives. Therefore, the psychologist has to relinquish the idea of beginning with a psychological test of the patient. Our interpretation is that this is not the normal situation. We had understood that, because the psychologist had more professional status and influence than the social worker, patients are usually treated as the psychologist recommends.

Furthermore, our interpretation is that the decisions on diagnosis and treatment are the result of bargaining between the two counsellors as each assumes a professional role. From our prior research, our interpretation is that bargaining is not an optimal way to make these crucial decisions (as we learned from the interviews and was demonstrated in the TCs). Before this research stage, we thought that the two professionals expressed their professional opinions in order to reach a conclusion without any give-and-take discussion.

Sequence 2: interview excerpt: social welfare officer

> S: He is a boy one can understand in many different ways. We have discussed this. We have thought a little differently […] on how to treat him […] but it seems that these different views of him, which seem useful, can be difficult. There are times when people think differently about things. But it seems that we have agreed that he has special needs so one can perhaps think more fundamentally. But he also has had great trauma in his life. That is where we must begin. And we must understand that he has to feel quiet and safe. Then we can see where we stand. But it has been a back-and-forth negotiation.

Interviewer: What do you think is most specific, that is, a little unique, compared to what the psychologist sees?

S: At an earlier stage, when "P" was more involved, she thought more about examining him to find out what his difficulties were. There are various ways of understanding, and "P" and I sometimes think alike. However, "P" has more a biological perspective and I have more a sociological perspective […] if you understand what I mean.

Interviewer: Mmm.

S: Yes […] we addressed the problem with our supervisor. We received help with the problem from our coaching team who thought we should first allow the boy to settle down and then see what to do […] It is not the right time to do any tests to see what could help him.

Interviewer: Do you mean that the pieces of the puzzle now fit because they came from different sources? You are not taking a position on whether it is right or wrong? You are only concerned with their order?

S: Yes […] and perhaps you heard that in our reasoning. We are fairly consistent even though we have different views.

Interviewer: But it seems that it is now a rather harmonious situation.

S: Yes, we have come to a decision. This is how we will deal with the boy. If the situation had come up six months ago, it would have been different. I would have expressed my views more strongly, have asked for evidence, and tried to maintain my position […] to see the difficulties.

Comment 2 on our interpretation process. Our interpretation from the observation in Sequence 1 is confirmed; the decision on diagnosis and treatment is the result of a bargaining process. However, in addition to their work along two parallel tracks, the two counsellors have also discussed the patient with their supervisor. At this point, we learned that the supervisor's comments support the decisions on patient diagnosis and treatment; these decisions no longer depend solely on face-to-face bargaining between the social welfare officer and the psychologist. Our interpretation, at this stage, is that the decision on diagnosis and treatment now depends on the result of a bargaining process between two professional logics, that is, between two professions.

Again, based on our previous observation and interviews, our interpretation is that the psychologist has agreed to a decision that probably is inconsistent with her ideas on patient treatment.

Sequence 3: interview excerpt: psychologist and social welfare officer

(P returns to the office)

S: Yes, we have often talked about that fact that our views are different, that we have different guidelines. However, we have reached an agreed-on decision.

P: Mmm.

S: We have decided, in some way, to go forward. We have made that decision.

P: Absolutely. I think, in any case, that it isn't an either-or-decision. We just need to look a little wider before we decide on something narrowly. I have a neuropsychiatric perspective. That makes me think the boy has very difficult problems that need to be addressed […] So it is more a case, not so much of making a diagnosis, but of how we can help him with all his difficulties in his social environment and elsewhere.

Interviewer: Do you think that your conclusion is really a good one? Or do you think you have given something up?

P: No [quickly]. I think it feels great how we are working now. What became clear today is that we have been trying to catch up on his history. We have talked a lot to his relatives, even when he was present. It has been rather easy for his relatives to take over the conversation and to criticize him for what he has said and all that. But today went very well. He had more space and was allowed to talk even when his relatives were present.

P. Now it feels good.

S: Mmm.

P: Or rather, very good. I feel more comfortable with the process. The supervisory session was a real eye-opener for me when we went through our data. It became much clearer.

S: As I said, it is very important to be there. Being there is different from hearing information at second or third hand. You were there […].

P: Yes.

S: You were there the whole time.

P: And that was something I wanted.

S: Exactly.

P: That seems important.

Interviewer: To meet the boy?

P: No, to meet the parents. This is usually called social inquiry. Normally it is the social welfare officer who conducts the interviews, listens to what they say […] and speaks more directly and intimately.

We psychologists usually don't get involved in discussion about growing up or about pregnancy.

Interviewer: Typically you would not be involved?

P: No, but this time I was. And I have gotten a great deal out of the experience.

Comment 3 on our interpretation process. We realized that the two professionals were in the same meeting with the boy's relatives. We were surprised to learn this because our understanding of the normal process is that it is based on parallel (i.e. separate) work tracks. Furthermore, at that meeting, the psychologist noted the importance of the social aspects of the case that led to her recommendation for treatment. Our interpretation at this stage is that the two professionals have achieved a collaborative work relationship in which the patient is constructed as a boundary object (Star and Griesemer, 1989). It is very close to an ideal situation when treatment decisions are no longer bargaining topics. Our interpretation is also that this situation results because the way-of-working in this case is exceptional.

Thus, our interpretations have changed during the Episode. However, our new interpretations complement rather than replace others. The various interpretations of how diagnostic and treatment decisions are made seem plausible.

Reinterpretations
The Episode caused us to revisit our prior interpretations. Our reinterpretations dealt with three important areas of patient care (diagnosis, treatment, and staff cooperation).

Our first reinterpretation was that diagnoses are not necessarily agreed to harmoniously. They may result from a bargaining process between teams of counsellors when team members assert their professional roles or their professional logics. Our second reinterpretation was that psychologists, who are more highly ranked professionally than social welfare officers, do not always have final decision-making authority in patient treatment. Our third reinterpretation related to the idea of the two parallel sessions that obviously were unnecessary in this case. We reached this reinterpretation very late in the Episode. Until that point, it was difficult for us to make sense of the Episode.

The serendipitous discovery: a shift in sensemaking

Our observation of the meeting between the two counsellors facilitated our analysis of the treatment decision they agreed on. In this meeting, the counsellors could converse freely without researchers' questions that might have promoted interviewer-influenced responses. (e.g. an interviewer might have asked leading questions, such as: "Did you work together during the investigation phase?"). The combination of the two research methods – observation followed by interviews – resulted in the discovery of observation comments and interview responses that reflected the counsellors' actual experiences and honest reflections. Thus, we think our presence did not influence the data.

Our theoretical understanding, sensemaking, explains how our initial interpretations led us to our reinterpretations. An interpretation in a previous stage influenced our theoretical understanding and explained the new situation. Our earlier interpretations – our theoretical understanding – led us to our conclusions about the co-constituted dialogue. In this way, our understanding of the explanatory mechanisms increased. Our reinterpretations created new theoretical understandings that provided new ways of understanding the previous inductive impressions.

In making interpretations/reinterpretations of a sequence of events, the use of more than one research method helps the researchers observe variation in the data. The precise order in which the methods are used (in this case, the observation followed by the interviews) does not seem important. Interviews can guide observations, and observations can guide interviews. It is the interaction of the researchers' interpretations as they use the two methods that may produce reinterpretations as their theoretical understanding changes. Interpretations and reinterpretations are like layers of theoretical understanding that are used to explain actors' decision-making processes. One interpretation does not exclude a reinterpretation. This is a discovery process in which different interpretations/reinterpretations are possible rather than a traditional validation process in which an interpretation from one method is confirmed by an interpretation from another method. In this process, systematic self-monitoring is the source of knowledge production (Tracy, 2010).

In the following analysis of our interpretations and reinterpretations of the interview and observation data, we link our reflections to Gherardi and Nicolini's (2001) three elements of reflexivity: the cognitive, the social, and the normative.

We used these elements in our initial interpretations of the Episode. These elements concern three very important aspects: how diagnoses are made; how treatment decisions are taken; and how professionals work together in patient treatment. We used these elements in our reinterpretations of the Episode.

The cognitive element of reflexivity deals with the systematic, sequential process involving a shift between two research methods when new, impressions challenge interpretations from previous sequences. In interviewing the psychologist, we learned she thought she had relinquished some authority. From our interpretations of prior

research, we understood that the psychologist, with the higher professional authority, decided on patient treatment. In our reinterpretation, we had reason to question this relationship. In any case, we had to discover that the then-understood explanatory mechanism is not the rule in all circumstances.

The social element of reflexivity is illustrated in Sequences 1 and 2 when we tried to make sense of the actors' deliberations about the bargaining process in patient diagnosis. We thought this process was inadequate because the actors did not follow the objective (and ideal) way of making diagnoses. We had to be aware that deliberately shaped accounts might have replaced lived experience; such accounts might have been influenced by the researchers' presence in the main study's interviews and observations.

The normative element of reflexivity is illustrated in Sequence 3 when we became aware of the actors' taken-for-granted attitude towards institutionalized treatment procedures. The counsellors' discussion of the treatment solution surprised us because it revealed it was possible to work around the institutionalized procedures. Institutionalization, which was taken-for-granted in the CYP unit, was a normative element that we had to discover. The discovery of the deviation from institutionalized treatment procedures led us to the shift in our sensemaking.

Conclusions and future research
The study illustrates how a serendipitous discovery created a shift in our sensemaking. The discovery, which was unanticipated, occurred when the psychologist left the meeting with the social welfare counsellor. At this point, we could ask the social welfare counsellor spontaneous questions about their patient treatment discussion. Our sensemaking in the Episode was anomalous because we changed our interpretations, not only in the Episode but also in the larger research project. Our reinterpretations were strategic because they concerned the three most important aspects of the actors' decision making: how they make diagnoses, how they make treatment decisions, and how they cooperate around a patient. It was then clear that we needed to reinterpret our data if we were to understand the daily practice of patient treatment. Our previous interpretations were no longer the only possible ones.

Concerning our first research question about whether it is possible to prepare for, search for, and control serendipitous discoveries in research, our study shows that the researcher who can take advantage of such discoveries may encounter surprises. Such surprises may ultimately require an approach that differs from more mainstream-designed research projects, thus leading to reinterpretations of data. Several previous studies of researchers' opinions on serendipity encourage researcher openness to serendipitous information (Toms, 1998; Rice *et al.*, 2001; Foster and Ford, 2003; McCay-Peet and Toms, 2010; Makri and Blandford, 2012a, b; Makri *et al.*, 2014).

Such serendipitous discoveries surprise the researcher who is more accustomed to previous assumptions and is conditioned by previous evidence. Serendipitous discoveries challenge this taken-for-granted thinking because they differ from the usual interpretation of a particular phenomenon. Researchers may often be blind to anomalies because they are locked into taken-for-granted mind sets. Therefore, we think researchers who are open to serendipitous discovers are willing to deviate from planned, traditional research methodology, at least within areas of larger projects. Systematic, directed (re)search and research serendipity are not mutually exclusive; they complement and even reinforce each other. In practice, research improves not by design or by serendipity, but rather by design and by serendipity, and/or vice versa (Van Andel, 1994, p. 644).

Concerning our second research question about whether it is possible to apply new abductive reasoning in serendipitous discoveries, our study shows that the use of two research methods – observation and interviews – supports the sensemaking of our research data. The sensemaking is then grounded in multiple interpretations rather than one interpretation. In using this multi-method research approach, we linked the actors' interview responses to their comments in an observed meeting.

While it is difficult to make rules on how to improve the researcher's creative and abductive skills, we encourage researchers to be open to, and to look for, serendipitous discoveries. Being open to serendipitous discoveries necessarily means being theoretically sensitive. However, this study indicates the cognitive elements that create knowledge have a powerful influence on properties ascribed to the research objects that researchers observe (Ackroyd, 2004). Then the theoretically sensitized researcher may then be blind to new understandings because of previous theoretical understandings. Furthermore, the social and the normative elements may make it difficult to discover the anomalies in the observed situation. We agree with Makri and Blandford (2012a, b) that *post-hoc* reflections on serendipitous discoveries, such as this study describes, may help prepare the researcher to take advantage of such discoveries.

It may be claimed that a longer research time period (Garfinkel, 1967) might have produced the same insights into the researchers' sensemaking. However, we are not convinced because such research in a comprehensive project would have required a longer time period that was very likely unavailable in the study of the sensitive issues of this research.

In summary, good research is carefully designed in preparation and in execution. However, serendipitous discoveries can challenge that design. While such discoveries cannot be planned for, when they occur the flexible researcher takes advantage of them, even if it means reinterpreting previous conclusions.

Future research
We argue for the importance of systematic and interpretative sensemaking in distinguishing between the familiar and the unfamiliar in research. Therefore, we recommend that theoretical research focus on two areas: the linkage amongst the cognitive, social, and normative elements in communicative sensemaking; and the clarification of the contextual and philosophical commonalities amongst these elements.

We agree with Makri *et al.* (2014) that it is important to integrate routines for serendipity in everyday routines. We recommend that empirical researchers consider the use of reiterative interpretations and reflections as a methodological approach, especially in the health science and health care sectors. Many actors in these sectors are very concerned with managerial/organizational problems and opportunities. In such studies, we recommend researchers be sensitive to the value of serendipitous discoveries that challenge the methodological conventions of traditional research.

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