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For many years it was assumed, after Heider (1958) and Kelley (1967), that ordinary people are something like scientists in the ways they go about answering the question ‘why?’ to arrive at veridical (or at least maximally accurate) attributions of causality. However, by the late 70s and early 80s, this assumption began to be treated with suspicion (e.g. Antaki, 1988). For example, Kelley (1980) noted that people might not always act as naïve scientists; instead they may act as stage magicians by manipulating the information available to others to constrain the types of attributions that may be made. Soon the metaphors of ordinary attribution began to multiply, including: naïve lawyers (Fincham & Jaspars, 1980; Hamilton, 1980); naïve judges (Weiner, 1991); naïve politicians (Tetlock, 1991; Tetlock, 2002); naïve ‘cognitive social theorists’ (Shoda & Mischel, 1994); naïve prosecutors (Goldberg, Lerner & Tetlock, 1999) and even naïve theologians (Tetlock, 2002).

The first thing that strikes us is that all of these metaphors are also job descriptions. More specifically, they are jobs in fields that have distinct inferential schemas (cf. Levinson, 1992) in which context-specific types of causal reasoning make sense. This is unremarkable to the extent that it is their distinctiveness that gives these descriptions their power as metaphors. However, they are all contexts in which the holder of the job description has (a) a licence to make attributions within a clearly defined social context and (b) enough status that their attributions have some credibility with colleagues and laypeople by virtue of their position. Since these metaphors have been used to describe attributional resources more generally as if they are universal cognitive processes, they obscure the fact that the power to make attributions, or expertise, is unequally distributed in society. For example, adults have more credibility as attributors than children, and scientists have more than their experimental subjects. Simply put, expertise is asymmetrically distributed (Drew & Heritage, 1992; Gill, 1998; Heath, 1992). In addition, attributional power is related to attributional responsibility: judges *can* make causal attributions by virtue of their positions, but also *must* make causal attributions in order to attain and maintain them.

Additionally, each of these job descriptions *requires that attributions be made in relevant ways*. Each context is associated with: (a) social consensus about the types of questions that can (or should) be appropriately answered by the holder of the job description; (b) procedures or schemas for generating appropriate questions; and (c) appropriate methodologies and logics for answering them (cf. Levinson, 1992). By universalising these categories as metaphors for attribution in ‘everyday’ contexts, attribution theorists have largely avoided

grappling with the messy problem-contexts of attributional work and expertise, for example, asking how scientists, judges, or theologians arrive at valid ‘why’ questions to answer; or how they agree that adequate attributions have been made.

In contrast to the ‘metaphor’ approaches that have attempted to universalise attributional processes, we have explored a specific attribution-related job context – that of computer support – in detail in the tradition of ethnomethodology (eg. Drew & Heritage, 1992; Heritage & Maynard, 2006). Our analysis is particularly interested in the micro-mechanics of how talk about reasoning, attribution and explanation link into demand characteristics of the working environment, job descriptions and moral careers (cf. Goffman, 1961/1968) of participants and the instant (but constant) demands of getting the job done. The argument has two aims. The first is to provide a detailed description of interactions in the sociotechnical context of computer repair, as others have already done in the context of medical interactions (e.g. Heath, 1989; Gill, 1998; Gill & Maynard, 2006; Drew & Heritage, 1992; Heritage & Maynard, 2006) and other institutional contexts (e.g. Drew & Heritage, 1992). The second, which emerged as we began to make sense of the interactional work being done by computer technicians and users in this context, is to provide an empirical account of how consensual attributions are socially achieved in this context (cf. Antaki, 1994; Edwards & Potter, 1993).

### **Functions of attribution in talk**

Gergen and Gergen (1980) argue that attributional talk “... functions primarily as a device for making oneself intelligible or justifying one’s behaviour within the structure of normative understanding” (p. 202). They argue that such talk is a means of advancing one’s moral career and social standing (after Goffman, 1959, 1961, 1963). Although ordinary people have been found to be flexible and opportunistic users of attributional talk (Antaki, 1994), some regular features and functions have been identified.

First, attributional talk can be a means of locating personal experience in broader ideological, moral or normative frameworks (Radley & Billig, 1996). For example, if fatigue can be attributed to illness, then work can be avoided without censure.

Second, many attributions are associated with particular types of social accountability. For example, someone who *accidentally* kicks a puppy may be considered ‘clumsy’ while someone who does so *intentionally* may be considered ‘cruel’. Talk about attributions is

therefore used to contest, shrug-off, enforce or satisfy various types of social accountability (cf. Buttny, 1993; Cody & McLaughlin, 1988; Fisher & Groce, 1990; Turnbull, 1992).

Third, attributional talk is a powerful means of constructing dialogical intersubjectivity, shared meanings and/or agreement (Hammer & Ruscher, 1997; Potter & Edwards, 1990). For example, friends commiserating with each other about an unpleasant interaction with a boss can generate shared meaning (and camaraderie) by jointly constructing the boss's behaviour as 'unreasonable' and attribute it to a dispositional quality of the boss.

Fourth, attributional talk can be an interactional strategy or conversational device for contesting the content, direction or outcome of dialogue (Antaki, 1985, 1996; Fisher & Groce, 1990; Weber & Vangelisti, 1991). In particular, attributional talk can be a powerful means of fortifying one's position by generating *facts* that are difficult to assail (Antaki & Leudar, 1992; Edwards & Potter, 1993; Potter & Edwards, 1990; Shi, 1999, 2000).

Fifth, attributional talk is a social resource for navigating certain types of power relations. For example, Gill (1998) studied attribution in the context of doctor-patient interaction and found that attribution-response sequences are an essential tool in the construction of expertise, or "a distinctive social order where knowledge and authority are distributed unequally" (p. 342; see Drew & Heritage, 1992; Heath, 1992; Heritage & Maynard, 2006). In such interactions it is the patients' responsibility to provide enough relevant information about symptoms to allow the doctor to make a diagnosis. Gill (1998) demonstrates that patients are experts of the self: they are 'authorities' on their own symptoms – in other words, authorities in the empirical realm. However, they did not have a mandate to infer causes from symptoms and, although they often mentioned their own theories about the causes of their ailments, they put these forward tentatively and tended to downplay them (see Beach & Metzer, 1997; Potter, 1996). Doctors, on the other hand, had the authority to decide which elements of the patients' experiences were important, to ask intimate and penetrating questions and to ignore or respond to utterances as they saw fit. They had the final authority to objectify experience by inferring fact from symptoms. Gill (1998) argues that the asymmetrical relationship is both constructed and perpetuated by the rhetorical production of attributions.

### **Method and data**

Observations were carried out with the participation of the IT help-desk of a university. Five computer technicians were responsible for maintaining approximately 850 computers on the

participating site. Four technicians (the fifth was on long leave) were shadowed for at least a working day each and their interactions with users were unobtrusively tape-recorded with the written consent of all parties.

The dataset consists of 16 interactions involving 21 users. Recordings were transcribed for analysis (see transcription notations attached as Appendix 1), yielding approximately 87,000 words of text. In many cases a single interaction may have addressed multiple ‘problems’, where a ‘problem’ was defined as any computer-related state of affairs flagged as abnormal by any participant that resulted in any kind of troubleshooting. The dataset contains 35 relatively discrete problems<sup>1</sup>.

The qualitative analysis draws on discursive and conversation-analytic approaches (Heritage, 1988; Potter, 1996; ten Have, 1999) especially drawing on Edward’s (1997) discussion of ‘scripts and dispositions’ and Edwards and Potters’ (1993) outline of a discursive approach to attribution. As such, talk is seen to be active and constructive, and close analytic attention is paid to the social functions of talk as participants interact.

In this context, most interactions were initiated and preceded by a call to the ‘help desk’ in which a ‘problem’ was reported and logged on a database. The technicians responded to calls in the order that they were logged and were required to ‘close’ each call by recording the eventual outcome. For technicians, both their success in dealing with these logged calls, and the speed with which they did so, were key performance indicators analysed weekly by their managers. Sometimes requests for help were made informally to the technician while they were on site, which generally involved more negotiations. Nevertheless, in every interaction the user had a legitimate claim to have a reported problem attended to and – if it was a problem of the right kind – it was the technician’s role-related responsibility to do so.

We had initially expected that many problems would be solved without causal explanations. For example, we expected that a problem that had ‘disappeared’ by the time a technician arrived could be dismissed very rapidly with minimal explanation; or that a problem that was solved by trial-and-error (such as simply reinstalling a software package) would be resolved

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<sup>1</sup> This dataset has also been reported on in the human-computer interaction literature to argue (a) that computer failure is a regular aspect of computer use (b) that is defined functionally in terms of what users were trying (but failing) to do at the time of failure and (c) that has social consequences for users and technicians (Quayle & Durrheim, 2006).

without causal explanation. However, when we examined the transcripts of this type of situation we noticed that technicians were spending a great deal of time trying to isolate and explain the reported errors, even when there was no practical reason to do so. We soon realised that, for technicians to produce a valid closing (cf. West, 2006) or exit-point that would allow them to move on to the next item on their list, they first had to negotiate agreement that the reported problem had been solved and, to do so, they generally had to reach consensus with the user about the cause of the problem. We therefore began to look at how users and technicians arrived at final (consensual) descriptions of the problem which required them to jointly address “the question ‘why?’” and to implicitly or explicitly agree on a causal attribution of some kind.

Although there is general agreement that attribution is an important aspect of many types of social interaction (cf. Edwards & Potter, 1993; Edwards, 1997), there is no consensual method of identifying attribution in ordinary interactions. Although granular attributions (i.e. clear and bounded statements of causality) were certainly present in our data, these were the exception rather than the rule and were the object of a great deal of rhetorical tussling between interactants. Since surrounding talk was oriented to attacking, defending or otherwise modifying the attribution statement being consensually achieved, it seemed fair to include it in an analysis of collaborative attribution. Therefore, in this analysis ‘an attribution’ is understood as a negotiated outcome that is arrived at through interaction over time rather than a granular and self-contained statement of fact representing an individual cognitive act. In this paper the most basic definition of attributional talk will be used (after Heider, 1958 and Kelley, 1967), that is, any talk or interaction concerned with the question ‘why?’ This involves talk oriented to determining whether there is or is not an attribution to be made (*contesting* the question ‘why?’), talk about cause (*about* the question ‘why?’), talk oriented to determining causality (*answering* the question ‘why?’), and talk oriented to determining whether the question ‘why?’ has been satisfactorily answered. Although this definition of ‘attributional talk’ is much broader than attribution theorists may be used to – and includes talk that is *about* attribution – it allows us to provide a detailed account of how users and technicians approach the social task of arriving at a consensual attribution and to explore the functions of attributional talk in this context.

Instead of trying to claim that the patterns we have found in this context can be universally generalized, we take the opposite approach of exploring in detail how participants manage a

specific socio-technical form of expertise. Although it is likely that “answering the question ‘why?’” is an important part of a very large spectrum of social positions in many walks of life, or possibly even that it is a universal aspect of social life (Harré, 1988), it is not expected that all contexts produce the same *kinds* of attributional engagement. On the contrary, it is likely that the demand characteristics of particular environments (particularly those as stylised as ‘scientist’, ‘judge’, or ‘theologian’) require incumbents to make different kinds of attributions and to draw on different kinds of resources to do so within the demands of each context.

### **Analysis**

Since the overwhelming focus of attribution theory has been on how people produce granular statements of causality by collecting and combining different forms of information, we will begin our analysis with an example of how this type of information is exchanged in a typical interaction.

### **Diagnosis and repair**

In Extract 1 the technician has been called in to investigate a problem that the user has been having with saving a document to a floppy disk drive. While the technician investigated the problem the user had been working on another computer in another room. Just prior to this exchange the technician had called the user back. The technician explains that she has been able to open a file on the disk that the user was using when the error occurred and has been able to save a new file to the disk (lines 2-10). She seems to be exchanging what Kelley (1967) would call distinctiveness information (by showing that the problem is not caused by either the disk or the disk drive), consensus information (in that the problem occurred with the user but not with the technician), and consistency information (in that the problem has not reoccurred at this time)<sup>2</sup>. Logically, according to Kelley’s model, the attribution of causality should be inclining towards the user, since it is only the user who has experienced this problem.

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<sup>2</sup> Although there is no space to report on this aspect of the study here, we did undertake a detailed analysis of how often, and in what circumstances participants requested or mentioned different types of attributional information (cf. Kassina, 1979; Lalljee, Lamb, Furnham, & Jaspars, 1984) and found that participants seemed to avoid requesting or giving consistency information (the most social of the information types) when it had potential to cause offence but used it more freely at other times.

### [Extract 1 about here]

The technician mentions that it's working "perfectly" for her, "so there may be a problem with one of the documents that [the user was] using" and then asks the user to demonstrate the actions that resulted in the failure situation. Although the technician *says* she is seeking information that Kelley (1967) would understand as consistency and distinctiveness information, the user responds not by demonstrating her actions as she has been asked to but by listing the actions she has taken herself to diagnose the problem (lines 18-38); specifically that she has tried exactly the same actions as the technician (trying different disks, both new and old). She seems to have oriented to the apparently neutral request for information as a possible accusation. The technician does not respond directly, but instead repeats her request for the user to demonstrate her actions with a new document (ln26). Once again, the user responds defensively. She says that she gets an error message "every time". She begins to say "it came up" but corrects herself and says "it *just* came up" (lines 31-37, emphasis added). The addition of the word 'just' uncouples the error message from her own actions and modifies the types of attributions that can be read into her account. The technician then asks the user a third time to demonstrate her actions but, this time, softens the blow by saying that if that is unsuccessful then she will perform a virus check (ln47). Finally, in silence, the user demonstrates her actions (ln53).

It is revealing that the suggestion that "... there may be a problem with one of the documents that you were using..." (ln13-14) was responded to by the user as something that required a defence. However, the notion that observing the user saving a document will provide information about the failure relies on the assumption that the presently observed actions could correspond to the actions taken at the time of failure. Despite the technician's disclaimer that she is interested in the document the user was using, the user seems to orient to the logic of the technician's strategy rather than her overtly neutral description of it. Although it is unlikely that the technician would suspect that the user *intended* such a failure, if a dispositional inadequacy or lack of ability were detected then the responsibility for the problem would shift from the equipment to the user.

In this light the technician notices that the user was using WordPerfect (lines 54 to 58). The user replies that she "*was* using it" (ln55, emphasis added), thus implying that she does not *always* use WordPerfect. At this point it is necessary to move beyond the strict bounds of the exchange to contextualise the user's response: several years prior to this exchange,



WordPerfect had been the standard word processing software used across the entire site. Over time, Microsoft Word was increasingly installed on new computers until approximately a year previously when the information technology department had announced that WordPerfect would be removed from all computers. Many users protested, and it was eventually agreed that the site-license for WordPerfect would be extended to accommodate users who were reluctant to change. Therefore the comment “Oh you’re using WordPerfect” may carry implications of backwardness or reluctance to adapt to new technology and the user appears to resist being seen as someone who routinely uses WordPerfect.

The first point that we would like to make is obvious and unsurprising: that people in this context do seem to be interested in the types of information of interest in cognitive theories of attribution (e.g. Kelley, 1967). A brief glance ahead at the other extracts confirms this: for example, in Extract 7 the user calls on consistency information by arguing that the problem happens “every time” (ln24, 28 & 45); in Extract 8 the user uses consensus information by calling on the opinion of another technician (ln20-24); and in Extract 9 the technician introduces distinctiveness information by noting that “the same disk works in another machine” (ln1).

However, given that these interactions occurred in the socio-technical context of computer repair, it is entirely unsurprising that participants make use of information that roughly maps to the classic dimensions of attribution theory. What is of interest here is *how* participants make use of these kinds of information (as utterances, rather than in the sense of internal mental representations) in order to accomplish the social work of collaboratively answering the question ‘why?’ in this context.

Our second point is one that is now familiar (cf. Edwards & Potter, 1993): that the types of talk of interest in psychological understandings of attributional processes can be a powerful *resource* for constructing and defending social positions, especially since attributions are concerned with contesting causality and thereby determining ‘facts’. Third, we will argue that in this context (and in many others) attributions are ‘made’ in social matrices where, (a), they are socially required and where their absence will require explanation, and (b), where different participants have different rights, obligations and responsibilities with respect to their making. Fourth, in this context (and many others), attributions are often binding social commitments (that may require further action such as repairs) because of their special status in this socio-technical domain.

### **An emerging shape to the interactions**

To borrow Jefferson and Lee's (1992) description, we realised that the interactions between users and technicians had a fairly regular 'shape' to them; a set of recurring activities, limits and resources that participants attended to as they went about the business of computer repair in this context (figure 1). Although we are neatly defining each set of activities and constraints for analytic convenience, in actual interaction the participants attended to many in one utterance; they used one to modify another; they used them as resources or were bound to them as limits. In other words, they were as opportunistic and flexible as they could be within the bounds of their accountability to their role-related obligations and to their personal moral careers.

### **[FIGURE 1 ABOUT HERE]**

To start with, every participant in the present study entered the interaction with relatively well defined roles and/or institutional responsibilities – at the most basic level, everyone was either working for the help-desk or was a client, with the exception of the interviewer who had a well defined role as a researcher which he explained to each participant by means of an informed consent procedure. This level of meaning has been depicted as the encircling boundary in the diagram simply because it is the most basic reason that these people are interacting at all. It is extremely unlikely that any of the technicians would have had these interactions in this context if they were not being paid to do so and, if they had, they would not have been able to draw on the same kinds of role-related discursive resources.

Moving inwards, we have depicted the concern that participants have for their moral careers – most immediately as an expert or a competent user – between their immediate practical concerns (clustered in the centre) and their more stable role-related positions and obligations. This highlights the temporal features of these levels of resource, because the instant demands of the interaction will certainly impact on the moral career of participants (especially if they can be seen to fit a recognisable pattern over time), but it is only over time that issues of moral career will impact on institutional roles by, for example, promotion, censure or changes in responsibilities.

In the centre of the diagram we depicted a cluster of activities (or resources or limits) that are all substantially involved in the social accomplishment of attribution: problem definition, contract negotiation, diagnosis and repair, and agreed outcome.

Linking all of these levels of meaning are the overarching issues of expertise and accountability: accountability that each participant has to the others; that representatives of the institution have to clients; that clients have to not be negligent; authority that technicians have to make inferences; authority that users have to hold them accountable to their institutional responsibilities; and so on.

Participants have most immediate control over those activities/resources depicted around the centre of the diagram. Those immediate aspects have an effect on participants' moral careers and, over time, their moral careers may impact their roles in terms of their institutional positions and related authority and responsibilities.<sup>3</sup>

### **“That’s great - I’m a happy customer”**

We will start by discussing an interaction that neatly demonstrates something of each of these components, and we will try to show how participants work with all of these constraints and resources in order to arrive at a satisfactory outcome. Although it is a long extract, it will introduce each aspect of our analysis quite neatly. After showing how participants negotiate the attributional engagement in this context we will discuss each aspect of the process in more detail with reference to additional interactions, and then finally return to discuss this interaction with respect to how participants deal with issues of expertise and accountability. The interaction begins when the user approaches the technician just after she has attended to another problem in the same department and she is on her way out:

#### **[Extract 2 about here]**

*Contract negotiation:* The first social task for the user is to persuade the technician to attend to his problem. The help-desk at the institution is formally organised, such that problems are supposed to be reported through the official help-line and enter a service queue. In practice, however, many problems were introduced and dealt with informally as happened here.

Both participants showed that they were oriented to the fact that the extent of the technician's obligation to help was related to the legitimacy of the request (i.e. that it was being dealt with

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<sup>3</sup> Although we can show in this analysis that participants are oriented to this temporal aspect of their life in the institution, we are engaging in some conjecture here since our data collection was done over a matter of weeks – a relatively short time span.

informally). To begin with, the technician starts the interaction by setting a limit – “if it’s not too long” (ln4) – and the user agrees. A little later, while the technician is diagnosing the problem, the user reiterates that he is aware that if it will “take too long” he will have to report the problem through the official channels. The technician realises that the problem will be easy to resolve (ln25-33) and commits to a course of action (ln33). Then, once the problem is resolved and the participants are closing off their engagement the technician reiterates that it was “fine” because it was “not too long” (ln85). We will show a little later that contract negotiation was a regular feature of the observed interactions and that it has important functions in tying the immediate interaction into roles and institutional positions with respect to the moral careers of the participants.

*Problem definition:* Many commentators have already discussed (often with dismay) that with attribution the answer you get depends on the question you ask (e.g. Jones & Kelley, 1978). In this study participants always spent some time negotiating what the problem was and, in some cases, this activity formed the core of the attributional process, because ensuring that the ‘why?’ being asked is one that you can answer is a useful way of being competent. In this interaction the problem definition was straightforward (ln8-19) but we will show that in other circumstances it was the matter of substantial negotiation.

*Diagnosis and repair:* In this interaction the technician starts with a potential cause to explain the user’s problem (that Adobe Acrobat may not be installed; ln13) and confirms the diagnosis with a quick look at the computer.

*Agreed outcome:* In this context an apparently veridical attribution was not essential to participants so long as they could agree that the question ‘why?’ had been answered and that the problem was resolved. In this interaction agreement was straightforward, since by the end of the interaction the user was able to open the document that he had wanted to read, and he was openly grateful (ln73-87). In other cases, as we will demonstrate, an agreed outcome was much more difficult to achieve but, in every case, the engagement could only end once the technician had either fulfilled the obligations of the social contract they had negotiated with the user or a successful outcome had been negotiated and agreed upon. The important thing here is that a successful outcome is not a self-evident event, but something that was negotiated between the user and the technician.

*Moral careers:* In this interaction the user and the technician are both oriented to the fact that the technician is not *obliged* to help the user in this context and, consequently, the technician is “a star” for doing so (ln33). This emphasizes that, in going beyond the call of duty, the technician has enhanced her moral career with the user. In many other interactions issues of moral career were very important in interactions, to the extent that they were often (as they were here) placed before practical concerns such as time management, and even determined the types of attributions that were acceptable (e.g. in Extract 13, below).

*Roles and institutional positions:* At the most basic level the technicians have an institutional obligation to attend to certain types of problem because it is their job to do so. Participants in this interaction were obviously oriented to this role-related obligation because of the simple fact that the user requested help from *this* employee as she was walking past and therefore must have known what her institutional responsibilities were. Additionally, both were aware of more subtle features of her role-related obligations, for example, that problems reported unofficially should be “really quick” (ln5; cf. ln4, 22, 29-31). Later the user emphasizes the institutional role-based nature of the interaction by saying “I’m a happy *customer*” (ln87).

*Asymmetrical expertise and accountability:* Accountability has been depicted in the diagram as spanning between the relatively fixed domains of roles and institutional positions, the more malleable moral careers and the immediate concerns of the interaction. To use a jaded metaphor, social accountability is the ‘glue’ that holds the social practices of attribution together in this context. Both participants show that they are oriented to issues of accountability in this interaction. For example, in lines 44-72 the user essentially asks “why did this happen” and the technician is required to defend her ‘side’, showing that there is an accountability to the user as the representative of a department whose responsibility it is to ensure that computers are delivered with the correct software installed. In other interactions other types of accountability were drawn on: users oriented to their own accountability to be competent, and technicians to their accountability to management. Accountability permeates these interactions and provides a basis for the various demands that participants are able to make of each other which, in turn, have important effects on the attributional process: from whether an attribution needs to be made at all (e.g. Extract 8); to the asymmetrical authority that different participants have to suggest causes or courses of action (e.g. Extract 14).

We will now look at each of these components in detail. We have tried to order the discussion in a way that allows us to highlight the interconnectedness of the activities without too much repetition.

### **Roles and institutional positions**

Extract 3 and Extract 4 are examples of the way that technicians initiate interactions with users about problems that have previously been reported to the helpdesk.

**[Extract 3 about here]**

**[Extract 4 about here]**

The point that we are making is very simple: that from the outset participants relate to each other in terms of their institutional roles, positions and related responsibilities. Notice how in each interaction the technician introduces herself as being “from IT Services” and, in Extract 4, specifically outlines the agenda for the interaction. The technicians’ responsibilities for maintaining the equipment in the context of clients’ specific requests for help provide the general backdrop and the form for these engagements. Extract 5 shows a stretch of dialogue where a user has a chance meeting with a technician and asks her the procedure for reporting a problem. Notice that the technician says “you can report it to *us*”, rather than “to them” or to “me”, demonstrating her orientation at that moment to her role as a representative of a department whose responsibility it is to attend to this sort of problem (see Drew & Heritage, 1992).

**[Extract 5 about here]**

Extract 6 is another example of participants’ orientation to their institutional responsibilities and rights. The interaction occurs towards the end of an apparently successful resolution to a recurring virus infection:

**[Extract 6 about here]**

Once again, notice that the technician says “*we’re* really promising you this time”, highlighting the fact that that she is a representative of a department and the responsibility is not hers alone. Then, the user asks if “it’s okay now” and the technician gives a somewhat non-committal response (ln5-6) but reminds the user of her corresponding obligation to be a responsible user and to avoid opening “funny emails” (ln9).

Having demonstrated that participants were clearly oriented to the more general and long-term issues of institutional roles and responsibilities, we will now discuss the more immediate concerns in the moment-to-moment social process of achieving an attribution: diagnosis and repair, contract negotiation, problem definition, and agreed outcomes. We will return a little later to show how roles and institutional obligations both impinge on and are affected by these more immediate activities.

### **Contract negotiation**

If a problem had been reported through official channels then technicians had relatively little room for manoeuvre and were professionally obliged to either solve the problem as it had been reported or to re-negotiate the details of the problem with the user in a way that allowed them to satisfy their responsibilities (for example, by agreeing with the user that a problem is ‘gone’ and no longer requires resolution.) However, technicians were often asked casually to attend to a problem. Where this happened they were careful to negotiate the terms of engagement before accepting the social contract. Extract 7 is a typical example: a user (U8) informally reports a problem to the technician who tries to resist taking it on. U9, with the support of U8, finally convinces the technician to take on the problem with the proviso that it is a “five minute job”:

#### **[Extract 7 about here]**

After the technician asks the user if she’s “enjoying” her new computer the user’s opening gambit is sophisticated: she reframes the aspects that she is not “enjoying” as “things that need to be done” (ln4-5). Now she is no longer talking in the subjective language of enjoyment, but about problems that objectively “need” attention. She then mentions that she has already reported a problem through the official channels. Even then, the technician is reluctant to engage and fails to respond in six open silences (ln6-8). Although the participants’ focus on the computer as an object of inspection “temporarily suspend[s] sequential commitment” (Heath, 2006, p. 193), it is likely that the technician’s multiple dispreferred responses signal her reluctance to respond. Finally she asks “To do with?” and “what’s the problems you’ve got” (ln9 & 13) and, from this point, becomes increasingly committed to the engagement. The user responds with a description of the problem that, in a similar way to Extract 2, calls for some kind of diagnosis or attribution.

However, the technician still resists engagement. First she confirms that the user has followed the correct channels by logging the call at the helpdesk (ln20). It seems that the technician would be under less obligation to help if the fault was not reported through the proper channels – in other words, the strength of the social obligation may be related to its legitimacy (cf. Extract 2 in which the technician accepts a task on the condition that it's 'quick'). The user does not initially orient to this question as a challenge, simply answering "yes" (ln21). However, the technician replies with a very quiet "ok" (ln22) and leaves it at that, as if the fact that it is logged at the desk (and therefore in the process of being responded to) means that she does not have to deal with it *now*. The user counters by adding that the fault was logged "quite a while back" (ln24). This gets no response, so she adds "about a month ago". Since the technician is subject to institutional responsibility as a representative of her department and shares responsibility for the successful running of the help-desk with her colleagues, she finally admits that "they would have responded by now" and agrees to "check it out" (ln29). The alternative would be to accuse the user of lying, which would violate conversational norms of politeness.

However, it turns out that the "it" that she intends to "check out" is the *helpdesk database* to ensure that the complaint is still on the system. U8 seems to agree (ln32) and, if it were not for U9, this may have allowed the technician to avoid engagement. However U9 makes an argument for the importance of a resolution and U8 concurs. In the context of the slow response, this forces the technician to engage with the problem.

The technician's response is to make a firm attribution of the cause of the problem ("Oh your views are incorrect") and to ask if the user is "unable to do anything" (ln37). This question is a double-edged sword. If the user says "no" then she is admitting incompetence especially since it has already been made clear what the problem is. On the other hand, if she says "yes" then she protects her competence but admits that she does not need help and allows the technician to terminate the engagement. Her non-committal response forces the technician, after *another* two-second pause, to make a tentative and guarded offer to "look at it" (ln38-41). She tries to set a boundary of five minutes on her engagement to which the user responds with a chuckle – in other words, fails to validate (ln43-44). After another two second pause, the technician modifies her terms to "*hopefully* it's a five minute job" (ln45-46). Now, instead of a time-based obligation, the technician has committed to an open-ended "job" that she hopes will take five minutes. In other words, she has finally committed to attending to the



attributional work demanded by the user by her description of the problem in lines 14-17. In the end, this engagement consumed several hours and several visits and had still not been resolved by the time the observation period ended.

This type of negotiation about the purpose, limits and boundaries of engagements was very common. Only five of the 34 recorded problems did *not* contain any talk oriented to negotiating the boundaries for the interaction and, of these, three are not relevant because the problem was addressed in the users' absence and one was 'explained away' by the technician without a troubleshooting engagement. Only one problem was observed where contract negotiation was possible but absent, and this may be explained by the technician's expressed affection for the genial semi-retired user. Given its regularity, talk oriented to contract negotiation can be seen as a regular feature of computer repair work in this context.

This type of talk reveals something important about attribution in this context: it is not true that people are engaging in it purely because they are "scientists in miniature" (or judges, theologians, prosecutors, lawyers or social theorists) and have a primal drive to do so<sup>4</sup>. On the contrary, they are acting in a context of social demands, rights, obligations and commitments in which 'making attributions' (or failing to make them) has important social antecedents and consequences. Therefore negotiation of whether and why the 'why' question should be answered at all is an essential aspect of the social accomplishment of attribution. Additionally, because they are embedded in this social process, identifiable granular 'attributions' (i.e., instances of causal explanation) are indicators of social commitments as much as they are simple answers to 'why' questions.

### **Problem definition**

Firstly, notice that, in Extract 2 (abbreviated below), simply describing a problem was understood as a request for help (ln8-19).

#### **[Extract 2 (Abbr. A) About Here]**

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<sup>4</sup> And, indeed, Heider (1958) and Kelley (1967) – the scientists *in vivo* – were also paid to make attributions, and did so *in certain ways* because of their institutional rights and obligations rather than (or as well as) because of an ineffable urge to ask 'why?'

Returning to Extract 7 for a moment (abbreviated below), notice that much of the work involved in securing engagement is done through what we have called ‘problem definition’; lines 14-17 and 34 are primarily concerned with establishing that the problematic effect happens every time.

**[Extract 7 Abbr. About Here]**

This has the dual effect of proving that the effect is indeed a problem and motivating for attention, because it is not a transitory glitch. Since it is the technician’s official responsibility to attend to problems of this nature, it is primarily by constructing a valid problem that the user is able to secure engagement. Again, in the context of the technician’s institutional responsibilities, simply describing a computer problem is understood as a request for attention and – more importantly – makes it institutionally impelling for the technician to attend to it.

Extract 8, below, is an ideal example of problem definition: the user reported to the helpdesk that a particular computer is ‘slow’ and the extract cuts in as the technician is confirming the user’s statement. For the sake of brevity, extraneous talk has been omitted (represented by ellipsis).

**[Extract 8 about here]**

In the user’s absence the technician relates to the interviewer that she cannot ‘in all honesty tell anybody that it’s slow’ (ln4). When the user returns she softens this conclusion somewhat, saying “it’s not *particularly* slow” (ln9). The user disagrees, first citing his personal experience (ln14-16) and making the complaint more specific – that it is slow only when “booting up”. The technician begins to dispute the user’s definition of the problem (ln17) but the user then externalises the judgement by calling on the opinion of another technician (ln18-19) who not only said that the computer is slow, but that it is “abnormally” slow. This forces the technician to review her diagnosis and agree that “it was slow going into Windows” even though general operation was “fine” (ln21-23). She also externalises her judgement by saying she “should actually have a stop-watch,” (ln26) and then by actually timing the boot-up process. Finally she agrees with the user’s definition of the problem (ln33-37) and, after that, is committed to the engagement which ultimately took about half an hour to solve.

If we can take the luxury of counterfactual conjecture for a moment: it is likely that if the user had accepted the technician's redefinition of the problem (i.e. that it was not *particularly* slow) then it may have provided the technician with an opportunity to leave. It was by convincing the technician that the computer was *objectively* slow that he secured the technician's concerted engagement.

### **Exit points and agreed outcome**

Once a problem has been defined through negotiation, and a social contract has been struck up – either by virtue of having reported it through the proper channels – or by negotiating one informally, it is difficult for an technician to leave without both parties agreeing either (a) that the terms of the negotiated social contract have been met (e.g. if the technician has specified that she will “take a look” then she can justifiably leave without solving the problem) or (b) that a satisfactory outcome has been achieved. Although many attempts to exit involved negotiating a satisfactory agreed outcome, valid exit points could also be engineered by deferring the problem, escalating it to another department or redefining the problem.

We now return our attention for a moment to Extract 2, shown in abbreviated form below.

### **[Extract 2 (Abbr. B) About Here]**

The engagement was entered into on condition that it was “not too long” (ln4) and an assurance from the user that he thought it would be “really quick” (ln5). Notice that the technician refers back to this negotiated clause when she concludes the interaction in line 85. This termination is a perfect example of a pattern for terminating a *successful* troubleshooting engagement. Firstly the technician asks the user to ratify the outcome (ln73) and the user does so (ln74-79). The user thanks the technician (ln80) and the technician acknowledges his endorsement (ln81). The outcome is amicably agreed and the attribution can be considered ‘made’ to the extent that the user’s acceptance of the solution ratifies the technician’s diagnosis that the problem behaviour was due to certain software not being installed.

Extract 9 and Extract 10 document efforts to construct exit points in an engagement where the technician was called in to repair a faulty disk drive and was unable to find the cause of the problem. The first attempt to exit occurs about a quarter of the way through the 50 minute engagement.

**[Extract 9 about here]**

The technician begins by listing the steps she has taken to diagnose the problem. She concludes that they'll "just have to shrug [their] shoulders and say [they] know what caused it" (ln8-9), although she then makes a more certain diagnosis by concluding that the problem is "gone now," (ln12) after which she says, "Well I hope you come right," which seems to be an attempt to transfer the responsibility for the problem back to the user. The user says "Okay" and the technician waits seven seconds before saying "Okay?" again, as a question. She seems to be waiting for some kind of response from the user here that is not forthcoming. She then and says "mystery ...", waits, and says "mystery" again (ln24-26). However, the user does not respond – instead she leaves the room without a word<sup>5</sup>. After this, the technician keeps searching for a possible cause of the problem for a further three-quarters of an hour. What is it that keeps her there for so long after declaring the problem "gone now" (ln12)?

Finally, just before the technician actually leaves, the following interaction occurs:

**[Extract 10 about here]**

This interaction is subtly different from previous attempts to construct exit points. Firstly, the technician apologises for lacking "answers" (ln1), but offers an upgrade to an unknown software component (ln2). The user responds by saying "thanks a lot" (ln4) which, in turn, allows the technician to say "pleasure" (ln5). Now, finally, the technician is free to leave.

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<sup>5</sup> In 'normal' conversations this response would be highly disaffiliative and rude. However, the computer as an artefact, and the activity of inspecting it as a superordinate focus of interaction, allows different affordances for conversational behaviour that, as we have previously alluded, has parallels with doctors inspecting bodies (cf. Gill, 1998; Heath, 2006; Maynard & Frankel, 2006), writing or examining records (cf. Gill & Maynard, 2006) or using computers to prepare prescriptions (cf. Greatbach, 2006). In this case, the fact that the technician was engaged with the activity of computer inspection and the fact that the utterance was not addressed to anyone in particular combine to suggest that the user's non-response—although non-cooperative—was not rude.

Where the previous attempts at producing acceptable exit points were unilateral – not ratified by the user – this time it is jointly negotiated (cf. West, 2006). In other words, the attributional process only ends when both parties agree that it can end and they release each other from the social contract. However, notice that by constructing the problem as “gone” and therefore impossible to diagnose, the technician is only able to negotiate a conditional release, because the recurrence of the problem will require re-engagement. We will discuss this in more detail in terms of the technician’s moral career later.

It is useful to tally instances of exit points that match this pattern to see to what extent it is, in fact, conventional. There are two difficulties with this. Firstly, several problems are embedded in much longer interactions and therefore have no physical exit point in which technicians remove themselves. In these cases the termination of the problem engagement is not an exit point and the social work of termination is blurred in with other talk. Secondly, exit points are sometimes difficult to observe due to physical movement of people that disrupted the tape-recording. These difficulties notwithstanding, in total there are 17 problems in which it would be reasonable to expect a clear exit point. Of these, two conclusions are inaudible and thirteen follow the conventional pattern of acquittal (i.e. ratification, then thanks, then exit) to the letter. Although this by no means demonstrates that termination has to be done in this way, it is clear that this is a *conventional* way that termination can be done (cf. Silverman, 2000). There is only one exit point (problem 34) that clearly does *not* follow this conventional pattern, which we will discuss in more detail below (Extract 14 and Extract 15).

### **Moral careers: competence and expertise**

There are higher-order social objectives in these interactions that may take precedence over the simple goals of problem solving and achieving a consensual attribution. Extract 11 is an interaction that occurred while the technician was modifying the user rights on a computer running Windows 2000 to allow certain users of a PC to save files in a directory, but not to install software. This operating system was not common in the institution, and the technician had been visibly struggling to alter the settings for some time.

#### **[Extract 11 about here]**

The technician was in a difficult position here: although it was her job to adjust these kinds of security settings, the user had observed her uncertainty for several minutes. Knowledge of

computers is an important dispositional requirement for someone doing the job of computer support. Accordingly, in line 1 she defends herself: “I need to put myself on a refresher course for 2000...I don’t have many machines running it,” a sentence that does an enormous amount to defend her reputation. By using the word ‘needs’ she acknowledges that the knowledge is important; by saying that she needs a ‘refresher’ course she implies that she already has the knowledge required for competence, but just needs a little reminder; by saying that she needs to *put herself* on the course she implies that she is personally motivated and committed to maintaining the requisite level of knowledge; by specifying that she only needs a refresher for *Windows 2000* she implies that her other (more routine) skills are not deficient; by mentioning that she doesn’t ‘have any machines running it’ she emphasizes that she is the type of person who (a) has many computers and implies that (b) her computers run multiple operating systems. All of this powerfully defends her dispositional adequacy as a technician. The user’s reply (ln5) feeds into this construction very cooperatively: by saying that he would *like* to do a course he affirms their relationship as expert and client because, in relation to her *need* to do a course he positions himself as someone who has a desire, but not an obligation, to learn; by saying that he would like to do a *basic* course he affirms that the technician is much more knowledgeable since she only needs a refresher course to remember what she has forgotten.

Of course, technicians are not the only ones who have moral careers to protect; users are also expected to have a basic level of competence and to avoid causing damage by negligence (cf. Extract 6) and, when a fault occurs, they may be required to defend themselves against blame. Extract 12 cuts into an interaction that occurs in the context of an extended search for a virus infection that had required several visits by several technicians and was, as yet, unresolved. This interaction demonstrates something of the importance of causal attributions (or lack thereof) in locating participants as responsible agents in the matrix of institutional roles and responsibilities.

**[Extract 12 about here]**

Although the user admits responsibility for an action that could have resulted in (or caused) the virus infection, she is careful to do so in a manner that limits the dispositional inferences that can be made as a result of her admission. She asks if the ‘Sircam’ virus is associated with emails “where people said please help me:”, and emphasises the words ‘please’ and ‘help’ through elongation (ln8). However, although admitting something about her responsibility for

infection, she modifies this by saying she acted because she was 'kind'. In other words, she presents herself as a Good Samaritan who was taken advantage of, rather than as careless or ignorant user. The word 'too' (ln13) is somewhat ambiguous. One potential meaning is that this is not the only dodgy email that she has opened, and another is that being taken advantage of in such a way is not unusual or deviant. In a subtle sense she has guarded herself against an attribution of negligence and has increased the likelihood that the cause would be attributed to a virus that preys on well-intentioned and innocent users.

So far we have made an argument that participants orient to issues relating to their moral career in the institution during attribution-oriented interactions, but we would like to say more than that. Specifically, we want to argue that the issue of moral careers motivate the moment-to-moment attributional process and provides limits for the types of attributional outcomes that can be acceptable to both parties.

For example, immediately before the interaction represented in Extracts 9 and 10 the user had suggested a possible cause for the malfunctioning disk drive that, had the technician accepted it, may have provided an agreed outcome and allowed her to terminate the engagement. In Extract 13 we have cut into this conversation a few lines before Extract 9:

**[Extract 13 about here]**

By the time the user suggests that "It's having a bad day" in (ln4), the participants have exhausted their options. It has been determined that both the technician and the user experience the same (successful) result with different disks from within different applications, they have not been able to demonstrate how the failure situation differed from successful ones and they have delved into the history of the machine's behaviour prior to the failure without success. Finally, the user suggests that the machine is "having a bad day?" This attribution would suggest that the failure is due to factors that are both random and unfathomable. The question personifies the machine and endows it with moods – states of being that are unaccountable and de-coupled from cause and effect linkages. In other words, the user is offering an exit point that depends on accepting that a rational explanation is not possible in this case. The technician does not accept this, but rather explains the actions she has taken to test various possible causes that could result in this effect (ln7-12). She offers the alternative that they will "just have to shrug [their] shoulders and say [they] don't know what caused it" (ln14-15). She refuses to accept the user's suggestion that cause-and-effect have

somehow broken down. Her reconstruction of the problem does not release her from the engagement (as the user's suggestion would have), but it does protect her position as someone who *could* understand the problem if she only had enough information<sup>6</sup>. Some time later the technician makes a similar construction as the engagement is drawing to a close (see Extract 10 Abbr., below); the technician apologises for having “no answers” (ln1) and says that the user should contact her “if the problem *recurs*” (ln9) or “happens again” (ln11).

**[Extract 10 Abbr. about here]**

There is a subtle difference between a problem that is gone and one that is unknown. If it is “gone” then how can it be detected? On the other hand, if a problem is present but undetected then the expert may be at fault. Therefore this construction of the problem protects the technician's diagnostic competence in spite of her failure to solve the reported problem. In this interaction we argue the technician's social goal of defending her expertise and moral career superseded her practical goal of reaching an agreed outcome and making an exit, since she refused a possible (but unacceptable) agreed outcome early in the interaction at the expense of a great deal of time and effort.

**Expertise asymmetries, categorical entitlements and accountability**

Previously we discussed how participants were oriented to their institutional roles and positions, and we have discussed how issues of expertise and competence in the context of moral careers are as important in the process of ‘answering the question why’ as issues of simple causality. However, we have not yet discussed how roles and responsibilities enter the social process as limits and resources.

Gill (1998) found that knowledge and authority are unevenly distributed between doctors and patients. Patients are experts in the empirical realm of experience, but it is doctors who have access to knowledge, the authority to decide on the value of symptoms reported by the patient, and who have a mandate for inference (see also Drew & Heritage, 1992; Heath, 1992). A similar pattern has been evident in many of the engagements discussed so far.

Extract 2, repeated in abbreviated form below, offers an excellent example of this pattern. The user makes only two statements that are not hedged, or marked as uncertain in some way,

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<sup>6</sup> Compare Beck's comment that experts are “the guardians of rationality” (1994, p. 47).



namely, “I’ve received an attachment” (ln8), and “It does nothing you see” (ln20). Here the user is an expert in the realm of his own experience – in the everyday reality of computer use. However, when it comes to anything of a technical or inferential nature, this user constructs his observations as provisional by the use disowning devices such as “apparently”, “whatever” and “I’m assuming so”.

**[Extract 2 (Abbr. C) about here]**

Gill (1998; see also Heath, 1992; Peräkylä, 2006; Stivers, 2006) found that, in medical interactions, “patients exhibit caution when they offer explanations; they downplay their knowledge and they avoid setting themselves up for disaffiliative responses” (p. 342). This seems to describe the user’s talk very well.

Gill (1998) also notes that “... patients do not compel doctors to interrupt information gathering to assess their explanations” (p. 342) and, this pattern is clearly played out in lines 12 to 17. Although the user has already said that he “assumes” that the Acrobat reader is installed, a short time later he then asks, “Does that mean I haven’t got it?” This is the type of direct question that Gill argues occurs infrequently in interactions with experts because it opens up potential for contradiction or other types of disaffiliation. The user waits two full seconds, and then says “Sorry, if it’s going to take long then I’ll have to log a fault” (ln14). This demonstrates that the technician – like a doctor inspecting a patient (cf. Gill, 1998; Heath, 2006) – is not dialogically compelled to respond to the question (ln12) and, in *not* doing so, highlights the asymmetrical distribution of expertise in this context. The diagnosis comes more than 20 seconds later (ln17), and the technician decides that “it won’t take long” and accepts engagement.

After the relevant software is installed, the user says “thank you very much” (ln18). It is interesting that this could easily have signalled the end of the interaction. The terms which were agreed to in the opening gambit have been fulfilled: the problem is resolved. However, after the user’s “thank you” (ln19) there is a four second pause. The user says “That’s great” (ln20), pauses for two seconds, and then notes that “it’s strange because one” – and then another pause – “almost it seems that one has these things until ...” And then he waits. The technician responds to this as a challenge, and apologises for “an error on our side” (ln24-26). The user waits a further two seconds and begins a stretch of dialogue that, essentially, asks the question “will this happen again” (ln28-44). The technician is suddenly on the back foot,

trying to defend her “side”. After assuring the user that due procedure will be followed in the future and that the user will have full control over what is and is not installed on the new computers (ln46-51), the technician changes tack and asks “do you want to open this [document] now” (ln52). The user cooperates and expresses satisfaction with the successful outcome (ln57). The user expresses thanks (ln59) which, this time, is responded to with “pleasure” (ln60) and the interaction draws to a conventional conclusion.

What is the difference between the near-termination in line 18 and the genuine conclusion in lines 56-61? Obviously we cannot infer the motivations of either the user or the technician, but we would like to offer the tentative suggestion that, in this context, it is expected that the user test and ratify the solution in a way that fulfils the technician’s role-related accountability to arrive at an acceptable, consensual agreed outcome (cf. Stivers 2006; West, 2006). Although – unlike doctors (West, 2006) – it is computer technicians who enter and leave the client’s working environment, they do not do so freely or independently: although the technician has more authority to determine the final diagnosis, it is the user who declares the final acquittal which releases the technician from the social contract of repair.

It is interesting that, from lines 22-51, participants engage in asymmetrical relations almost opposite to those between doctors and patients (e.g. Gill, 1998; Peräkylä, 2006). Here it is the user who has the authority to interrogate and the technician who is defending her actions (and those of her ‘side’)<sup>7</sup>. There seems to be a slightly different type of accountability between doctors and patients than there is between technicians and users. In this instance there seem to be two overlapping domains through which interactants can apply accountability to each other. The first is a pattern of expertise very similar to that of doctors and patients where technicians have privileged access to expertise and, therefore, the authority to gather data and make diagnoses. In the second the user is positioned as an entitled recipient of services and the technician as a service provider. In this extract the participants have switched from expert/supplicant to client/service-provider domains of accountability in line 22 and then back again in line 52. Each of these models make different demands of interactants and allows them different category entitlements. As a client the user has institutional rights to ask ‘why’ questions and to define problems within the limits of the institutional definitions of

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<sup>7</sup> Some early readers of this manuscript have asked whether technicians are simply more attuned to the needs of users in more senior positions in the institution. However, this user was in a relatively junior position at the time of data collection.

help-desk responsibilities, but at the same time is limited in the claims to knowledge and rights to make attributions. On the other hand, technicians are bound by their institutional obligations as representatives of a department with defined responsibilities, but have much more diagnostic and attributional authority.

A more subtle example of this shift between domains can be observed in the interaction that is dipped into in Extract 14 and Extract 15 below. To give a brief summary of the context, the user's computer has been repeatedly re-infected with viruses over a period of several weeks and at least two technicians have attempted to remove the infection already:

**[Extract 14 about here]**

The first thing to note is how deferentially the user asks the technician to look at a file called "handel" (ln1-10). By the time this interaction was over, she would have asked no less than five times. This persistence in direct questioning does not correspond to the patterns found by Gill (1998) in doctor-patient interactions, where patients were careful to avoid positions that would lead to disaffiliative responses. However, the first time she asks she is very deferent indeed, prefacing her query with a display of lack of entitlement to knowledge, saying "I don't speak computer so..." (ln3). Initially the technician is responsive and asks diagnostic questions much as a doctor would (ln15-17). Then the user repeats the request, but this time states it with less respect for the technician's autonomy. She says "find file handel" and that she is "sure that that is linked to it" (ln18-20). This is the type of strong formulation that Gill (1998) found led to disaffiliative responses and, indeed, that is the case here. Instead of acknowledging the user's assertion in any way, the technician remains silent (ln18, 19 & 21) and then says that she will run a general virus scan first, in other words, that she will ignore the user's attribution (ln22). The user then reinforces her assertion for the third time (ln25) and the technician ignores her again, and this time changes the subject after a three-second pause by asking her a personal question (ln25-26). The conclusion of the interaction is shown in Extract 15, below:

**[Extract 15 about here]**

As the interaction was drawing to a close, the user asks again "did you get rid of that Handel" (ln5). The technician replies very bluntly this time, saying "No ... it wasn't infected" (ln8) – a strongly disaffiliative response.

In this interaction as a whole, the user repeatedly refuses to defer to the technician's expertise. This pattern of interaction here is quite different to Gill's (1998) description of doctor/patient interactions because the expert is repeatedly challenged by the user without much regard for disaffiliative responses. From this it seems that the usual pattern of asymmetrical expertise entitlements may hold true when the troubleshooting process runs smoothly. However, in this instance it had gone spectacularly badly over a number of weeks and it is no surprise that the user is not treating the expertise of the technician with deference. On the other hand, the user still makes displays of "lack of entitlement" (e.g. Ln1-10 of Extract 14). Moreover, although the user attempts to share in the task of making inferences, the technician resolutely resists this, defends her own position of expertise, makes the final inferences and decides on a course of action.

### **Conclusions**

The first aim of this paper was to provide a detailed description of computer repair in an institutional context. The 'shape' of the interactions was structured by participants' orientation to their immediate accountability to each other, to their institutional and role-related accountabilities and to their moral careers – with the other participants, with their colleagues and in the broader institution. Their task of arriving at a consensual diagnosis or causal attribution and consequent solution to the reported computer problem could be done in many ways: by re-negotiating the problem (i.e. debating the question 'why'); by negotiating a social contract that put limits on the types of diagnostic activities that could be expected; by arriving at an agreed outcome that answered the question 'why?' by implication; and, of course, by the engaging in the kinds of activities described in cognitive models of attribution.

Secondly, this study shows that, in this context at least, the process of attribution *in vivo* is an activity that is thoroughly embedded in a complex social context and that final attributions or outcomes are to some extent social accomplishments. The activities of asking the questions 'why', deciding what kinds of questions 'count', disputing responsibility for answering them, holding others accountable (and evading accountability) for their resolution, negotiating outcomes that can be agreed upon, and attending to the social consequences of the questions and their answers (i.e. 'attributions') are all important aspects of what needs to be done to do (and to engage people to do) attributional work in this context.

Additionally, in the context of this study, successfully achieving an attribution was central to the more important project of managing moral careers in the context of the practical constraints, institutional positions and related obligations held by each participant in specific social engagements. The final ‘attributions’ that were agreed upon could be either social resources or liabilities for both experts and clients, and therefore the outcome was always something that was achieved through negotiation rather being a self-evident fact.

Our argument goes beyond the notion that attributions (as ‘facts’) can be used to construct and maintain social positions (cf. Edwards & Potter, 1993). This analysis shows that attributions – once agreed upon – are often also social *commitments* to the extent that certain types of attributions require additional engagement with problems while others do not. In this socio-technical context, managing practical demands and moral careers *requires* competent control of attributions for both experts and clients.

We are not claiming that the same process will play out in all social contexts. On the contrary, we argue that the specific roles and expectations brought to any particular context will result in a large variety of forms of social attributional processes. This is exactly why psychologists have claimed so many job-descriptions as metaphors for attributional processes: because the roles, responsibilities and inferential schemas embedded in those job descriptions *require* the social process to result in specific types of agreed outcomes in order for participants to live out successful moral careers in those specific domains. This way of understanding attribution is as applicable to academic psychology (and to this paper) as it is to any other domain in which “answering the question ‘why’” is an important aspect of identity performance (cf. Shi-xu, 1999).

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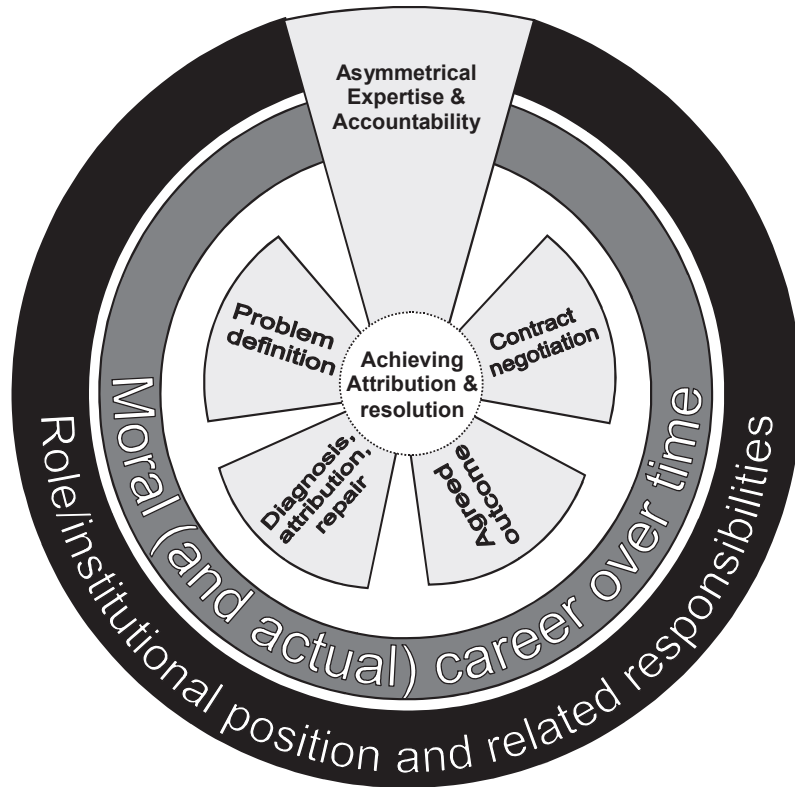
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- Key:
- Directly and instantly negotiable: the subject of constant negotiation
  - Not directly modifiable. } Although not directly modifiable these levels are still subject to negotiation, threat & defense.
  - Relatively fixed.

**Figure 1: Things to attend to while producing attributions in moment-to-moment interactions**

## Appendix A: Notation conventions

U or User:	A user's utterance
TECHNICIAN:	User consultant
OBS:	The observer
***	A name or identifiable characteristic censored to preserve anonymity
<u>Underline</u>	Emphasis
(.)	Short pause
(...)	Extended pause
(2)	Timed pause, in seconds
/	Marks a stutter or word correction without a pause, e.g. "he/he/help"
Ye:s	Elongated sound. Two or three colons for very long elongations, e.g. Ye:::s.
Huhuh	Laughter
(U1: Ya?)	A short interjection by another speaker, e.g. TECHNICIAN: From your tree? (User: ya) In your garden?
CAPITALS	Indicate that speech is LOUDER
~soft~	Quiet speech is enclosed in ~tildes~
~~very soft~~	Very quiet speech is enclosed in ~~double tildes~~.
(inaudible)	Marks inaudible speech
(Probably)	The probable transcription of hard-to-hear speech
((Comment))	Transcriber's comments, e.g. ((Loud background noises))
[Information]	Additional explanatory information to contextualise obscure talk.
...	A short section of transcript is omitted

## Appendix B: Extracts

### Extract 1

1 [U1 enters]  
2 TECHNICIAN: I've  
3 (2)  
4 TECHNICIAN: opened  
5 (2.5)  
6 TECHNICIAN: a file on here that can read this disk\* perfectly  
7 U1: hmmm  
8 TECHNICIAN: 'n then  
9 (1)  
10 TECHNICIAN: I used a new disk an' I made a small file? (.) and I saved it to (inaudible)  
11 that.  
12 U1: ~Ahhh~  
13 TECHNICIAN: OK so there may be a problem with on of the documents that you were  
14 using (.) So I wonder if you could (.) er call up one of those documents (.)  
15 and try to save that?  
16 (1)  
17 TECHNICIAN: Onto this disk  
18 U1: Because (.) you see what happened? I tried  
19 (1)  
20 U1: two disks  
21 (1.5)  
22 U1: One was an old one  
23 (1)  
24 U1: I tried two new ones. An' I just got (inaudible)  
25 TECHNICIAN: Mmmm  
26 TECHNICIAN: So with a new document  
27 (2)  
28 TECHNICIAN: OK?  
29 U1: Ya  
30 (2.5)  
31 U1: Every time  
32 TECHNICIAN: what  
33 U1: I get an error message.  
34 TECHNICIAN: ya  
35 TECHNICIAN: What error message do you  
36 U1: u:::m (.) Unable to write to disk (.) and it came up (.) u:m (Inaudible) It just  
37 came up.  
38 (2)  
39 TECHNICIAN: Ok?  
40 (1.5)  
41 TECHNICIAN: Um? Do you want to just try do something now?  
42 (1.5)

---

\* The same disk that the user was using when the error occurred.

43           TECHNICIAN:   While I'm here?  
44                           (1.5)  
45           TECHNICIAN:   um  
46                           (2)  
47           TECHNICIAN:   and then (.) I will check for viruses I haven't done that yet.  
48           U1:               ~OK~ (Inaudible)  
49           TECHNICIAN:   No uh just make  
50                           (1)  
51           TECHNICIAN:   a small ~document~ (or something) you just want to make (.) a new one or  
52                           call up something (inaudible) that you've saved on to the stiffy disk  
53                           (10)  
54           TECHNICIAN:   Oh you're using Wordperfect  
55           U1:               I was using ~it~.  
56           TECHNICIAN:   Oh.  
57                           (2)  
58           TECHNICIAN:   Right.

**Extract 2**

1                           ((The noise of the microphone being moved obscures a few  
2                           seconds in which U11 enters and seems to ask technician to look  
3                           at a problem before she leaves))  
4           TECHNICIAN:   (Inaudible) if it's not too long::  
5           U11:               Well I think it will be really quick  
6           TECHNICIAN:   Okay.  
7                           (1)  
8           U11:               Uh (.) I've received an attachment (.) which is apparently I read  
9                           the article in:: (1) Adobe Acrobat (.) or whatever  
10          TECHNICIAN:   Ya uh-huh because it's in p-d-f format  
11          U11:               Ya  
12                           (1)  
13          TECHNICIAN:   You got Adobe installed?  
14          U11:               I'm assuming so because  
15          TECHNICIAN:   If you just (.) if you:: (.) just say (.) open  
16          U11:               cause we haven't had  
17          TECHNICIAN:   just say open if you've got Adobe it will defau:lt it  
18          U11:               It does nothing (.) you see  
19          TECHNICIAN:   Okay let me just che[ck]  
20          U11:               Does that mean I haven't got it?  
21                           (2)  
22                           Sorry, if it's going to take long then I'll have to log a fault  
23          TECHNICIAN:   No no not at all (.) let's just see:: um  
24                           (13)  
25          TECHNICIAN:   No (.) you don't have it installed um:::  
26                           (1)  
27          TECHNICIAN:   U11  
28                           (1)  
29                           .hh it won't take long I'll just put it on it takes  
30          U11:               Oh! Ok.  
31          TECHNICIAN:   it's about five minutes (.) I've got it on a CD so I'll put it on  
32                           (1)  
33          U11:               You're a star  
34                           (1)

35 Are you guys going out in teams at the moment? }  
36 ... ((A short interlude follows in which the observer takes his chance } Role/Institutional  
37 to explain the research project and get informed consent. In that } Resp.  
38 time, the technician installs Acrobat reader.))  
39 TECHNICIAN: I've put the latest version five  
40 U11: Thank you very much } Agreed Outcome  
41 (4)  
42 U11: That's great  
43 (2)  
44 It's strange because one (1) almost it seems that one has these } Role/Institutional Resp.  
45 things until (1) } Accountability  
46 TECHNICIAN: It should have been installed on this machine so:: (.) um (1)  
47 it's an error on our side .hh  
48 (2)  
49 U11: [Technician's name] I bought another two  
50 TECHNICIAN: hm  
51 U11: um: PCs (1) fo:r (.) us um  
52 TECHNICIAN: out of your budget? and um oh yes  
53 U11: Well, um  
54 TECHNICIAN: Dells?  
55 U11: through/No they/no they were/they were budgeted for out of the  
56 central (.)  
57 TECHNICIAN: oh, okay  
58 U11: thing but they just (.) they just/just (1) hadn't arrived so I phoned  
59 \*\*\* to pick up them  
60 TECHNICIAN: hm, and?  
61 U11: And they're coming (.) I don't have to specify::?  
62 TECHNICIAN: No/no we've got all the:: (1) standard  
63 U11: all the usual:: (1) stuff  
64 TECHNICIAN: that's right  
65 U11: I don't know if you want us to do it  
66 (2)  
67 TECHNICIAN: What they'll do is all/when the machines are available they'll also  
68 contact you (.) to find out by then if you've changed your mind (.)  
69 you want additional stuff put on  
70 U11: okay  
71 TECHNICIAN: so can tell them (.) you can inform them  
72 U11: okay  
73 TECHNICIAN: um: do you want to open this now?  
74 U11: Lets see  
75 TECHNICIAN: Inaudible  
76 (3)  
77 TECHNICIAN: Okay? So is/now you see you've got Adobe there  
78 U11: ya (.) brilliant  
79 TECHNICIAN: Just pull it (.) (on to your desktop there)  
80 U11: Thank you very much  
81 TECHNICIAN: Okay, pleasure!  
82 U11: That's great.  
83 TECHNICIAN: I just need to get my keys  
84 U11: inaudible  
85 TECHNICIAN: No that's fine and it's not too long (.) it's okay  
86 (3)  
87 U11: That's great I'm (.) I'm a happy customer  
88 OBS: [Huhuhuh  
89 TECHNICIAN: [Huhuhuh } Role/Institutional



90 U11: [Huhuhuh

### Extract 3

1 TECHNICIAN: Hi I'm [Technician 3] from IT Services  
2 U18: Hello

### Extract 4

(One side of a telephone conversation)

1 TECHNICIAN: Hi U1, this is [Technician 1] from IT Services (.) How are you?  
2 (1)  
3 TECHNICIAN: I'm O.K. thanks (.) I see you've got a problem here with your stiffy drive  
4 ((i.e. slang for a 3.5" floppy drive))?  
5 (2)  
6 TECHNICIAN: O.K I'd like to come down and make (.) a (.) well (1) have a look and see  
7 what the problem is (.) Will it suit you if I come down now?

### Extract 5

1 U1: What I am saying (.) is when it's faulty what do you do?  
2 TECHNICIAN: Yes (.) definitely (.) if/if there's a problem (.) with your printer you can  
3 report it to us (.) definitely.  
4 U1: Do we have to report now or (.) I mean (.) do you have (.) do you fix it (.) or  
5 you take it along  
6 TECHNICIAN: You/you should phone the expert desk on 9479

### Extract 6

1 TECHNICIAN: We're really promising you this time. (.) It was just your F-prot that was  
2 corrupt on your machi:ne (.) and getting it to work has bee:n  
3 U14: Quite a mission?  
4 TECHNICIAN: Ya quite a mission.  
5 U14: Oka:y (.) but is it okay now?  
6 TECHNICIAN: Hopefully.  
7 (2)  
8 U14: (inaudible)  
9 TECHNICIAN: But refrain (.) from opening (.) those funny emails.

### Extract 7

1 TECHNICIAN: Are you enjoying your Dell (.) [U8]?  
2 U8: Um::  
3 (2)  
4 ye::s (1) In the beginning it wasn't (.) shutting down but there's a few things  
5 that needs to be done .hh  
6 (1)  
7 I have um (1) 'phoned (2) ITD (2) my um:: (2) to do with Word

8 (1)  
9 TECHNICIAN: To do with?  
10 (1)  
11 U8: To do with GroupWise  
12 (1)  
13 TECHNICIAN: What's the problems you've got?  
14 U8: Everytime I go into Group-wise I've actually got to go in (.) and:: (.) um (4)  
15 into display:: it doesn't display everything I've got to put all items.  
16 (1)  
17 Every single time.  
18 (1)  
19 It doesn't come up automatically  
20 TECHNICIAN: Have you logged it at the desk?  
21 U8: Yes.  
22 TECHNICIAN: ~ok~  
23 (2)  
24 U8: Quite a while back  
25 (1)  
26 U8: About a month ago  
27 TECHNICIAN: They would've responded by now  
28 U8: Ye::s, I think so  
29 TECHNICIAN: I'll check them/I'll check it out for you  
30 (2)  
31 TECHNICIAN: When I get back I'll check the logs  
32 U8: Okay  
33 U9: But that's quite important for us, Date, time (who they are)  
34 U8: And also the date. (.) I can't get the date display every time I (.) print  
35 (1)  
36 U8: um::  
37 TECHNICIAN: Oh your views are incorrect you (.) are you unable to do anything?  
38 U8: hm::  
39 TECHNICIAN: ~Okay~  
40 (2)  
41 TECHNICIAN: maybe I can look at it while I'm here  
42 (1)  
43 TECHNICIAN: five minutes  
44 U8: Five minutes huhuhuh  
45 (2)  
46 TECHNICIAN: Hopefully it's a five minute job.

### Extract 2 Abbr. A

8 U11: Uh (.) I've received an attachment (.) which is apparently I read  
9 the article in:: (1) Adobe Acrobat (.) or whatever  
10 TECHNICIAN: Ya uh-huh because it's in p-d-f format  
11 U11: Ya  
12 (1)  
13 TECHNICIAN: You got Adobe installed?  
14 U11: I'm assuming so because  
15 TECHNICIAN: If you just (.) if you:: (.) just say (.) open  
16 U11: cause we haven't had  
17 TECHNICIAN: just say open if you've got Adobe it will defau::lt it  
18 U11: It does nothing (.) you see

19           TECHNICIAN:   Okay let me just check

### Extract 7 Abbr.

13           TECHNICIAN:   What's the problems you've got?  
14           U8:                Everytime I go into Group-wise I've actually got to go in (.) and:: (.) um (4)  
15                           into display:: it doesn't display everything I've got to put all items.  
16                           (1)  
17                           Every single time.  
                          ...  
33           U9:                But that's quite important for us, Date, time (who they are)  
34           U8:                And also the date. (.) I can't get the date display every time I (.) print

### Extract 8

1           ((While the user is out of the room:))  
2           TECHNICIAN:   I'm happy with this machine.  
3                           (2)  
4                           I cannot in all honesty tell anybody (.) that it's slow.  
5           INT:                Ya.  
6           ...  
7           ((User returns))  
8           ...  
9           TECHNICIAN:   I had a look at that machine (.) it's not particularly slow.  
10                           (1)  
11           U5:                Isn't it?  
12           TECHNICIAN:   No.  
13                           (2)  
14           U5:                It seems very slow to me (.) very  
15                           (2)  
16                           especially when it's booting up it's (.) it's / it's  
17           TECHNICIAN:   Bootting up is (3) ok (.) let me boot it (.) but  
18           U5:                Uhh (.) because (2) the Durban technician came in (2) said it's abnormally  
19                           slow (.) when starting.  
20                           (1)  
21           TECHNICIAN:   It was slow going into Windows.  
22                           (2)  
23                           But (.) once we were in Windows it was fine.  
24                           (3)  
25           U5:                Ya ya that is (.) correct.  
26           TECHNICIAN:   Ok (.) I should actually have a stop-watch and see  
27                           (1)  
28           U5:                It's not really really serious (.) I just thought it might be (1) a problem that  
29                           (.) could (1) get worse ~or something~  
30           ...  
31           TECHNICIAN:   Ya,  
32                           (1)  
33                           no, you're right.  
34                           (2)  
35                           this is/it's taken over two minutes from the time I pressed the button  
36                           (4)  
37                           this stage especially.

## Extract 2 (Abbr. B)

1 ((The noise of the microphone being moved obscures a few  
2 seconds in which U11 enters and seems to ask TECHNICIAN to  
3 look at a problem before she leaves))  
4 TECHNICIAN: (Inaudible) if it's not too long::  
5 U11: Well I think it will be really quick  
6 TECHNICIAN: Okay.  
...  
73 TECHNICIAN: um: do you want to open this now?  
74 U11: Lets see  
75 TECHNICIAN: Inaudible  
76 (3)  
77 TECHNICIAN: Okay? So is/now you see you've got Adobe there  
78 U11: ya (.) brilliant  
79 TECHNICIAN: Just pull it (.) (on to your desktop there)  
80 U11: Thank you very much  
81 TECHNICIAN: Okay, pleasure!  
82 U11: That's great.

## Extract 9

1 TECHNICIAN: Well if the same disk works in another machine  
2 U1: ya  
3 TECHNICIAN: there's no problem with the disk (.) so you go back to your machine here (.)  
4 It seems like there's either a problem with (2) the stiffy drive of your  
5 machine (.) o:r WordPerfect (.) And now the stiffy drive's working okay and  
6 WordPerfect's working okay so it could be a virus I will run a (.) scan  
7 U1: mmm.  
8 TECHNICIAN: But OTHER (.) than that (2) we'll just have to shrug our shoulders and sa:y  
9 (.) we don't know what caused it  
10 (1)  
11 U1: ya:  
12 TECHNICIAN: Gone now.  
13 U1: I think I'll try (inaudible)  
14 TECHNICIAN: But did you? Huhuhuh  
15 U1: Huhuhuh  
16 TECHNICIAN: I'll give you the log numbe:r um (.) so that if the problem recurs (.) you just  
17 ask to reopen that call. And your name is at the top of it (.) ~ya~.  
18 U1: Ya. Okay.  
19 TECHNICIAN: Well I hope that you (come right)  
20 U1: Okay  
21 (7)  
22 TECHNICIAN: Okay?  
23 (1)  
24 TECHNICIAN: mystery.  
25 (1.5)  
26 TECHNICIAN: Mystery.  
27 ((U1 Leaves))



6 (1)  
7 Well if the same disk works in another machine  
8 U1: ya  
9 TECHNICIAN: there's no problem with the disk (.) so you go back to your machine here (.)  
10 It seems like there's either a problem with (2) the stiffy drive of your  
11 machine (.) o:r WordPerfect (.) And now the stiffy drive's working okay and  
12 WordPerfect's working okay so it could be a virus I will run a (.) scan  
13 U1: mmm  
14 TECHNICIAN: But OTHER (.) than that (2) we'll just have to shrug our shoulders and sa:y  
15 (.) we don't know caused it  
16 (1)  
17 U1: ya:  
18 TECHNICIAN: Gone now.

### Extract 10 Abbr.

1 TECHNICIAN: Okay. (.) I'm sorry I've got no answers for you here  
...  
9 TECHNICIAN: if the problem recurs (4) Seven six (.) seven three nine  
10 (5)  
11 TECHNICIAN: So if this happens again (1) um (3) try to get them to contact (inaudible) so I  
12 can see...

### Extract 2 (Abbr. C)

10 U11: It does nothing (.) you see  
11 TECHNICIAN: Okay let me just che[ck]  
12 U11: Does that mean I haven't got it?  
13 (2)  
14 Sorry, if it's going to take long then I'll have to log a fault  
15 TECHNICIAN: No no not at all (.) let's just see:: um  
16 (13)  
17 TECHNICIAN: No (.) you don't have it installed um:::  
18 U11: Thank you very much  
19 (4)  
20 U11: That's great  
21 (2)  
22 It's strange because one (1) almost it seems that one has these  
23 things until (1)  
24 TECHNICIAN: It should have been installed on this machine so:: (.) um  
25 (1)  
26 it's an error on our side .hh  
27 (2)  
28 U11: [Technician's name] I bought another two  
29 TECHNICIAN: hm  
30 U11: um: PCs (1) fo:r (.) us um  
31 TECHNICIAN: out of your budget? and um oh yes  
32 U11: Well, um  
33 TECHNICIAN: Dells?  
34 U11: through/No they/no they were/they were budgeted for out of the  
35 central (.)  
36 TECHNICIAN: oh, okay

37 U11: thing but they just (.) they just/just (1) hadn't arrived so I phoned  
38 \*\*\* to pick up them  
39 TECHNICIAN: hm, and?  
40 U11: And they're coming (.) I don't have to specify::?  
41 TECHNICIAN: No/no we've got all the:: (1) standard  
42 U11: all the usual:: (1) stuff  
43 TECHNICIAN: that's right  
44 U11: I don't know if you want us to do it  
45 (2)  
46 TECHNICIAN: What they'll do is all/when the machines are available they'll also  
47 contact you (.) to find out by then if you've changed your mind (.)  
48 you want additional stuff put on  
49 U11: okay  
50 TECHNICIAN: so can tell them (.) you can inform them  
51 U11: okay  
52 TECHNICIAN: um: do you want to open this now?  
53 U11: Lets see  
54 TECHNICIAN: Inaudible  
55 (3)  
56 TECHNICIAN: Okay? So is/now you see you've got Adobe there  
57 U11: ya (.) brilliant  
58 TECHNICIAN: Just pull it (.) (on to your desktop there)  
59 U11: Thank you very much  
60 TECHNICIAN: Okay, pleasure!  
61 U11: That's great.  
62 TECHNICIAN: I just need to get my keys  
63 U11: inaudible  
64 TECHNICIAN: No that's fine and it's not too long (.) it's okay  
65 (3)  
66 U11: That's great I'm (.) I'm a happy customer  
67 OBS: [Huhuhuh  
68 TECHNICIAN: [Huhuhuh  
69 U11: [Huhuhuh

#### Extract 14

1 U21: [Technician's name] I don't know really what you can do to it truly  
2 (2)  
3 unfortunately (.) I can't speak (.) computer so (1) I'm happy to scan  
4 (inaudible)  
5 U20: Ya  
6 U21: Oh (1) won't you do a (.) er (.) look for a:: (.) file called handel  
7 (2)  
8 'H' - 'A' - 'N' - 'D' - 'E' - 'L'  
9 TECHNICIAN: Ya  
10 U21: I think that's linked to it  
11 (2)  
12 because it's in Pastel:: ((*Pastel is an accounting package*))  
13 (1)  
14 and it's got 'handel dot now'  
15 TECHNICIAN: On your H drive?  
16 U21: No, no  
17 TECHNICIAN: On your C drive?  
18 U21: Ya, I just run (.) fin::d (1) file (.) handel (.) 'H' - 'A' - 'N' - 'D' - 'E' - 'L'

19 (2)  
20 (inaudible) I'm sure that that is linked to it (.) that thing  
21 (2)  
22 TECHNICIAN: What I'll do:: (.) is run a virus scan 'cause (.) we could disinfect it first  
23 U21: Mmm  
24 (1)  
25 TECHNICIAN: because I don't know where it comes from (.) or what it's (.) purpose is or  
26 (3) You learning Zulu?

### Extract 15

1 TECHNICIAN: We've taken (1) we've deleted one (.) file that was infected with Nimda  
2 (1)  
3 U21: Ya  
4 (1)  
5 U21: oh did you get rid of that Handel?  
6 TECHNICIAN: No::  
7 (1)  
8 it wasn't infected  
9 (3)  
10 U21: Good