



Healthcare information giving services: technologies and everyday practicalities

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This paper presents findings from observational studies of work practice in two 'information giving' services – a poisons information service and a mental health helpline – as a precursor to informing the design of such services. Our work highlights the interactions that constitute the requesting and giving of information and the role of intermediaries in the delivery of recipient-designed information. We propose a shift of focus from the logic of information in system design to one that encompasses the practicalities of information giving.

Keywords

information giving services, intermediaries

Information giving services and the NHS

Recent policy shifts in healthcare in the UK have argued for an increased role for IT as the route to a more effective healthcare service. The 'beautiful logic' [1] is one where IT is seen as key to the solution of the 'healthcare problem' and in this way it is argued that healthcare will become more effective, timely and dependable. Such arguments tend to obscure the nature of healthcare professionals' work in favour of re-engineering it.

We present some early findings from observational studies of work practice in a number of 'information giving' settings. The initial intention is to discover how current information resources, both paper and computer based, are actually used as a precursor to system design and evaluation. Our interest is in the embedded nature of such resources, and how this informs our understanding of the information and communication needs of healthcare professionals, voluntary workers and patients in information giving services.

The emphasis is on understanding the everyday, practical accomplishment of 'information giving' work in the NHS, particularly as it relates to the use of IT by healthcare professionals and voluntary staff. The objective of our research is to uncover, through an ethnographic study, the nature, value and possible future development of the IT systems currently being utilized. IT-based information giving services utilize systematized corpuses of knowledge: the ethnographic explication of 'common sense' and the work practice of members who use the corpus may provide 'useful' information for designing or improving the corpuses. The main emphasis is on *evaluating systems in use* as the necessary precursor to an iterative process of system redesign. As Bannon notes:

Given that our designs will inevitably be flawed, the important point is that the results of these designs are tested and the findings used to help in the re-design process. Indeed, in recent years, this realisation of the inevitable need for re-design has become a commonplace. [2]

While acknowledging the difficulties involved in any evaluation – in particular, determining 'users', defining measures of 'utility' and so on – we believe that ethnographic accounts can be useful in helping to inform the requirements process, through developing an appreciation of the 'application domain', that is, how people work with or around designed systems [3]:

A careful systematic account of what happens in particular settings when a prototype or system is installed, and how the system is viewed by the people on the ground, can provide useful information for 'evaluating' the system and its fitness for the purpose it was designed. [2]

The case studies

Methodology

The case studies in this paper were undertaken under the rubric of ethnomethodologically informed ethnography. Ethnomethodologically informed ethnographic studies of work practices (e.g. [4]) focus on the specific and detailed organization of activities. The results we report are drawn from 6 months' observation of activities at the service and a corpus (~100) of tape recorded calls. Calls were transcribed in detail so as to focus on the interactional accomplishment of information and advice giving, and where possible calls were video recorded in order to observe what information was accessed at particular points in the course of the call. Our approach does not necessarily yield to statistical analysis: while this is not the place to argue over quantitative versus qualitative methodologies, or to suggest the possibility and potential of a balance between these, we would argue that the presentation of transcribed data allows readers to see what is going on for themselves. As Schegloff points out, the attribution of statistical significance to data is 'but one form of significance' [5] and something that occurs n times within or across a particular instance or corpus of data may or may not have significance *for the participants to the interaction(s)*. The explications presented here are the result of immersion in a substantial corpus of data and we would argue that the 'thickness' of the description here provided perspicuously illustrates our arguments. To be sure there are arguments that can be made as to the need to look at occurrences of particular phenomena over the corpus, but as Schegloff [5] points out, because one can do a quantitative analysis

this does not mean one must do so: there has to be a payoff. Our payoff is located in the explication of the *in vivo* work of advice giving as an interactional accomplishment; we leave it to others to determine the statistical significance of what we present.

The poisons information service

Unlike, for example, North America [6], advice on the management of accidental or deliberate ingestion of toxic substances or overdoses of substances is not given to members of the public: in the UK such inquiries are managed through healthcare professionals. For example, a patient may present at their general practitioner's office or the local hospital emergency room; parents, relatives, carers and so forth may telephone NHS Direct/24 to inquire about substance ingestion; and in all these cases, advice on management will be given either to or through a healthcare professional. Poisons advice for healthcare professionals in the UK is delivered in the following ways:

- TOXBASE,¹ a web-based database of poisons data that contains information on substances, their toxicity and management strategies for healthcare professionals treating patients;
- a network of poisons information centres located throughout the UK to which phone calls can be made if further information is required or if information cannot be found on TOXBASE.

We focus here on the work of information officers (IOs) in a poisons information service. A primary concern is information use and information management across professional boundaries with specific reference to the use of IT within these services. How is information oriented to healthcare professionals, by which we mean both advisers and those seeking advice? We argue that advising and being advised are thoroughly social in character and that what we see is not simply the reading of information to a healthcare professional who thereby understands what must be done. Our focus is on the notion of 'doing advising': we use the term 'doing' as we attend to the situated practices of advising (on the part of both IOs and callers) in terms of the uses of information by IOs and in terms of speech exchanges between IOs and callers. That is to say, attending to 'doing advising' highlights advice as an achievement, an artful accomplishment cooperatively undertaken in real time.

The mental health helpline

A series of observational studies was conducted at a mental health helpline (hereafter the helpline). The results reported here are drawn from observations of 12 shifts of 4 hours each, made over a period of 6 months.

The helpline was launched in 1996 by an NHS trust after the need for an out of hours information and listening service was identified in a major review of local mental health services. The helpline was set up for use by 'mental health survivors', users, carers and relatives and is staffed by volunteers. These come from all walks of life and have 12 weeks of training before they are able to operate the line. The helpline is confidential except in cases where there is a perceived threat to life (such as a suicide call) and provides a freephone number. The helpline aims to empower callers with a choice about how their own healthcare is provided.

The helpline holds details of statutory and voluntary services on its database, and also holds a large quantity of literature that can be forwarded to users on request. This large body of information must continually be updated. The helpline also logs call information that is used to provide detailed reports of needs for mental health service provision and for helpline services. The helpline has been successful and, whilst increasing the geographic areas that it covers, has recently had to use technology to block calls from beyond this area. The helpline is seeking to make much of its information available online.

The helpline has many regular callers and rarely receives direct requests for information. There is no clear distinction between a listening call and an information call, in that callers wanting to talk might benefit from information they did not know or had not considered, and those who are calling for information rarely know what it is they need. Operating the helpline can be a gruelling task, callers often being difficult to talk to and often having harrowing stories. In the near future the helpline foresees expansion to providing information not just for service users but also for providers. Service providers such as GPs will increasingly have to give their patients choices about services. The helpline's information will be useful for this purpose and provision of information online is part of this strategy.

Fieldwork evidence

Here we present examples of information giving from our fieldwork. They show how information giving is a real-time, collaborative accomplishment on the part of both the information services and callers.

The poisons information service

'Calls' are best described as ongoing and developing sequences of action, actions that get formed up into organizational events. [7]

In a previous article [8], we noted that there are broadly three openings in queries to the poisons information service:

- 'Is there anything I should be concerned about in a patient who has taken [substance]?'
- 'Our TOXBASE is down: can you give me some information on [substance]?'
- 'I can't find any information on [substance] in TOXBASE – can you help?'

Information officers will give the required information in all of the above types of call. In the main, the information officer will read from the TOXBASE entry, but s/he can also draw upon other sources. In the data extracts that follow we show how information giving works, concentrating on:

- formulating reason for calling;
- doing searching.

Formulating reason for calling

Extract 1

Ideal05#1

Caller: could you tell me whether there's anything we need to worry about in a little kiddie that's drank an unknown quantity of compact disc cleaning fluid

IO: right hhhh ok
(five lines of transcript omitted)

IO: how old's your patient?

Caller: errrm its a toddler I've just had a phone call from a worried mum

Extract 2

Ideal05#7

IO: hello _____ poisons can I help you?

Caller: hello yes, it's sister here at ((name)) I wonder if you could give me a wee bit of advice I've got a fifteen month old baby he's fine he's well he's no frothing at the mouth he's no vomiting nothing

Extract 3

Ideal05#5

IO: _____ poisons information bureau

Caller: Hello, I just wonder my names' ((gives name)) one of the GPs at ((surgery)) it's just uhhm I had a mother on the phone asking about a two and a half year old that had taken probably erm one of or maximum three aspirin but probably one or two aspirin three hundred milligram and that was twenty four hours ago and the child's been absolutely fine since

IO: mmhmm

Caller: I'd just wondering whether we should do anything about it

We see that in the first case the caller formulates their reason for calling, asking 'if there is anything we need to worry about' as well as giving their source of information; in the second, the caller asks for advice and gives a candidate set of symptoms; and in the third case, again we see both the basis for information, maximum dose and candidate description of symptoms. Information requests have within them an orientation to what the IO might be expected to need to know. Indeed, the caller's opening utterances might be thought of as 'recipient designed' [10] to give information and to exhibit the call worthiness of the call: that is, they set out the information required for the IO to provide an appropriate response and to secure the call as a poisons call. Apropos of Whalen's [7] comment above, we can see that this initial formulation is a necessary predicate for the organizational event of doing poisons advising.

Doing searching

In many cases the information that callers require information about is relatively easy to obtain using TOXBASE. However, given the large number of household cleaners and so

forth currently available it is not always possible to find information on a specific brand directly from TOXBASE. In these cases, the information officers will use a number of other information resources. In the following extract (a continuation of extract 1 above) the IO is given the generic substance 'compact disc cleaning fluid' and seeks further information.

Extract 1 continued

Ideal05#1

IO: right hh I'll see what I can find

Caller: 'kew

((Sounds of typing))

IO: there doesn't appear to be anything on our main database on toxbase ehmmm
I'll just try a number of different sources see what I can find

Caller: 'kew

((Typing))

IO: I don't suppose you have the errrm bra- specific brand?

Caller: it's called (brand) compact disc [cleaning] fluid

IO: [(brand) hhh] right hh okay compact disc cleaning fluids on this American database but none that particular hhhh brand ehhm a couple of them contain isopropyl alcohol

Caller: yeah

IO: lets just try another one phhh yeah what eh: I could do is actually try and get hold of the company errm to see whats [in it] I don't suppose that mum gave

Caller: ['kay mhm]

IO: you any information from the actual packaging

Caller: no

In the above we see how the IO gathers information from the caller and how the IO fits information and a narrative of their ongoing search into the interaction. That the IO cannot find information on the substance is instructive for our purposes in that it shows the IO's knowledge work over a range of potential resources (in this case web-based resources, but in other calls paper-based resources such as BNF are used) as the call continues. The IO skilfully consults a wide range of information while maintaining an interaction with the caller. In another context this has been called improvisational choreography [11], i.e. the 'available to hand' arrangement of information resources so as to be able to respond to callers without interruptions and so on. Further, we should not imagine that calls are in any way routine; any sense of routine is an *achievement* of the IO. The IO orients both to callers' displayed knowledge and to information in a range of databases in order to fulfil the request. The transcript shows how the IO shapes the call to organizational-informational requirements during its course. At the outset the caller does not specify the age or gender of the child and does not give information about symptoms or time of ingestion (all of which are central to giving correct advice): the IO repairs these gaps *in vivo*.

Looking at what the IO says during the call regarding the presence of isopropyl alcohol in the CD cleaner, we see another feature of advising: *candidate formulations*. These are made across our corpus where a product such as toilet cleaner can be said to have a set of generic ingredients: they are not a definitive statement of contents but a 'placeholder' so as to alert callers to potentially problematic substances (often callers respond, saying

that substances mentioned were what they had thought might be present). This strategy of flagging candidate substances fits with callers' questions as to what 'we need to worry about': that is to say, both parties orient to what are immediate concerns as a part of the course of advice giving. The candidate status of these formulations should be kept in mind. From prior experience IOs can offer a formulation of what a product may contain; they do not definitively state that substances are present. In all cases IOs produce a full account of the constituent substances and relevant treatment strategies.

What Watson [12] calls 'doing the organisation's work' requires that both IOs and callers enter into a collaborative 'practical sense making' enterprise when transacting information. It is not mere reading out and transparent understanding: information transaction is an achievement of both parties. Callers formulate their reason for calls and their case details as well as their understanding of the information given by IOs, and IOs perform a range of intermediary roles that fit with the displayed needs of the caller regarding the substance ingested and its management. IOs suggest candidate accounts, and repair both misunderstandings and the adequacy of the information given (as well as suggesting potential sources for acquiring more information).

The helpline

The helpline provides a 'listening and information service'. The majority of calls are classified as listening, whereby the operator will have a conversation with someone experiencing mental health problems or caring for someone experiencing these problems. Information may be given or offered as a part of these calls. Information calls are less frequent: operators might receive about one or two in a 4 hour shift. Information calls where the caller is simply asking a question are rare; the only clear-cut examples are students or service providers wishing to find out about specific issues or services in the region. Most information calls involve a combination of listening and information giving, where the operator works to discover and classify problems and then to find information relevant to those problems.

The following example is from part of a call lasting 51 minutes made by a woman whose baby has been taken into care. Due to issues of confidentiality, only the operator's utterances were recorded: the caller's turns at talk are indicated using three periods (full stops). The call begins with the operator establishing that this is a new caller:

Hello . . . is this the first time you've rung?

The operator continues with establishing how the caller might be helped:

Can you give me some more information about what we might do to help you?

There is now a 2 or 3 minute conversation about the woman's baby being taken into care, during which time the operator also tries to establish information about the woman's circumstances:

How old was the baby? . . . Are your other children with you? . . . Do you see them? . . . Are you living on your own? . . . How often do you see your health visitor? . . . Have you got any friends? . . . Why did you move to [this area]? . . . Do you visit the baby regularly?

At this point the operator starts to look up information, not about care but about self-harm. The conversation continues:

Do you see your doctor? . . . It's hard when you get involved with social services . . .
What kind of benefits are you on? . . . It's income support isn't it? . . . You really need
someone to advise you with this.

The operator then says:

I've got information on self-harm. I've just brought the information up on my screen.

The operator reads the caller some information about a national support organization for
women who self-injure, including the telephone number. The operator then says:

I was wondering if there is anything in [your] area.

She then silently reads some details about the National Self Harm Network:

I'm just reading something off the screen . . . no . . . this is [city].

The operator then goes to the filing cabinets and removes the self-harm folder. She leafs
through:

Hello . . . I've got a leaflet on 'Understanding Self Harm'. Now, we could send that to you.

The operator continues to leaf through, she pulls out a leaflet 'Advice for Friends and
Family', puts it back and continues to leaf through. She does this with another leaflet,
while asking:

What's happening with the baby at the moment? . . . They haven't said they'll put her up
for adoption yet?

The operator takes out a leaflet 'Minimising the Damage from Self Harm' and puts it by
the phone. The operator continues talking:

Have you told them that he's violent? . . . You were in a hostel? . . . A refuge.

The operator then asks:

Is that how you found the telephone number of this?

The conversation continues, the operator is now not looking through the leaflets or at
the computer:

And you don't know people . . . You say you have mental health problems? . . .
depression . . . Do you think you've a lack of support?

The operator then starts going through the A-Z menu on the computer:

I'm just wondering if advocacy can help you at all . . . You could ring numbers . . . Are
you on the phone in your flat? . . . Do you have a phone? . . . I'm just wondering if
advocacy. I don't know. I've just brought up advocacy on screen . . . It could be that the
CAB could, you know . . . this is not just to do with mental health.

The operator then starts going through other advocacy organizations on the computer:

That's not the one, that's for homeless . . . I'm just looking through . . . I'll go back. This
is the CAB in [nearby city]. Have you actually been in touch with them? . . . They have an
awful lot of information.

When this call ends the operator comments:

The caller has got all the support she needs. She is embroiled in it all, social services etc.
... She is probably trying to let off some steam.

The operator adds:

You only get to hear their side of the story.

This comment is made after a long and difficult conversation with a distressed woman with mental health difficulties. The operator has acted as an intermediary in this call by both listening to and questioning the caller and attempting to categorize problems so that relevant information or organizations can be found. The operator has also provided a service simply by allowing the caller to talk through her difficulties and let off some steam.

Getting a 'beautiful logic' to work: configuration, adequacy of responses and usability

While undoubtedly 'evaluation' has taken on some of the characteristics of an advertiser's 'weasel word', few contest its importance. However, the evaluation of IT systems is especially difficult, not least because of uncertainties over what exactly constitutes an evaluation, how it should be implemented and when and where it should take place. Grudin [13], for example, cites the difficulty of evaluation as just one contributory factor in why computer-supported cooperative work (CSCW) systems fail to deliver the benefits intended. In particular, the view that evaluation should be regarded principally as a summative process is deeply problematized by any interest in the 'real-world' context of use. Thus Bannon [2] argues that design, use and evaluation should be viewed not as distinct activities but as being necessarily interwoven; and that 'evaluation' issues, informed by the context of use, should effectively saturate the design process.

In this preliminary ethnographic evaluation we recognize the complex and particular needs of organizational users and providers of information giving services. Configuration is both a design issue and a system user issue. The systems involved in these settings need to incorporate a degree of flexibility and responsiveness, e.g. in the light of changes to prescribed drugs, availability of voluntary services, particular toxic hazards etc. Information resources such as TOXBASE have a range of users and use scenarios; they were designed originally with healthcare professionals in mind but now have much wider public access. The structure of TOXBASE is navigable by those who are familiar with it, but occasional users need guidance and interpretation of its contents. Of particular interest here are the design issues involved in the scripting of appropriate responses to particular types of service user, responses that may also incorporate security and privacy issues. In a similar fashion, the helpline was designed with service users in mind, but now faces expansion to provide information to service providers. Set up as an out-of-hours phone service, it now faces providing an all-hours, online service. These two groups have similar and related information needs, but access and request it in very different ways.

Our studies of the poisons information service and the helpline have sought to understand the context of searching and interpretation of systematized corpuses of knowledge. They illustrate the sometimes invaluable contribution of the intermediary in navigating

and making sense of a range of both paper- and computer-based information resources. They also indicate that we should reflect on other ways in which information giving services may be supported:

- tailoring of information organization to local needs;
- evolving information organization around patterns of use (cf. [11]);
- sharing searching strategies and outcomes, and making these accountable to the callers, as shown in the CD cleaner inquiry to the poisons information service and the reading of information on self-harm in the helpline.

In the case of the helpline, the emphasis is similarly on an intermediary with expertise in translating between everyday talk and the provisions of the database – with the operator mediating between medical language and the everyday world through a range of interrogative devices.

In line with Berg [14] we think that the future of advising systems lies neither in the forcing through of a protocol as some distillation of ‘best practice’ nor in the wholesale rejection of advising systems as unworkable. The provision of an understanding of what we would term ‘worldly contingencies’ – how the work of advising gets done *in vivo* – is essential. This does not lose the value of the advising system itself (what Berg terms the ‘hard’ and ‘technological’ data), nor does it abandon advising to the ‘soft’ and ‘subjective’ human adviser: these dichotomies are not descriptors of anything other than the *simpliciter* of ideal typical formulations found in theory. As our examples above show, the situation is more subtle than this: systems have to be fitted into the work practice of those who use them and these work practices are themselves shaped by the use of the system.

As Bowker and Star note, ‘tools need to be sensitive to the working conditions of those encoding the data . . . Imposed standards will produce work-arounds. Because imposed standards cannot account for every local contingency, users will tailor standardized forms, information systems, schedules and so forth to fit their needs’ [15, p. 159]. A part of the work of advising is the development of practical classification schemes. We find that while in some cases information is prestructured (in terms of database entries and so on), other information has to be *made to come to hand* as it were. That is to say, there is a mutually elaborative relationship between classification schemes and the work in which they are embedded, based in part on prior experience of doing advising. In terms of design, then, we need to look to these practical ‘ontologies’ in order to be able to design work affording artefacts. The ‘beautiful logics’ to which advocates of ‘informed’ [16] procedures subscribe can sit uneasily with the practical business of doing everyday work. ‘Beautiful logics’ are persuasive but ignore practical work (usually by re-engineering it). We advocate the use of ethnography by designers to explore work practice since, without it, it is likely that the beauty of logics will rapidly be seen to be skin deep. It is interesting that the ‘beautiful logics’ mode of reasoning continues to pervade the development of information resources. Research on information seeking in libraries (see, for example, [17]) has highlighted the role of intermediaries and the need to orient to the sociality of information seeking and giving; yet the urge to reconfigure practice through technology appears obdurate.

From our studies key research questions that arise in both settings and with both technologies are whether the database can be presented in a more effective manner so that access to key information is not overlooked by end users; whether the needs of the various

types of users are adequately met within the format of the database; and whether standard statements used in the database convey the appropriate clinical action categories intended by the authors. In the case of the helpline, given that operators have a variety of backgrounds and approaches to callers, should the user interface support a variety of methods or support one 'best practice'? To what extent should intermediary expertise be writeable into the database – e.g. by highlighting or grouping? Given that expertise is neither uniform nor universal, consideration should be given to the impacts of such interventions and the potential for their being shared within an organization. Put simply, what one person regards as useful/logical may be counterintuitive to a colleague (and may be a barrier to their work). Allied to this we should also examine the impact of user interfaces on expertise and interaction: what are the affordances of interfaces? Do they assist or obstruct the work of advice giving?

Factors which influence the potential success of new technology concern matters of design. In particular, unless issues such as ergonomics, interface design, ease of use, and fit with daily work routines are addressed at the outset then new IT initiatives court failure. Indeed, there may be a significant tension between the demands of day-to-day activities centred around patient care and the requirements of orderly information management and audit. This tension and how it is managed represents an important dynamic in the ongoing construction and refinement of information systems.

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Notes

- 1 TOXBASE is a registered trademark of the National Poisons Information Service.

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