

The 'adequate' design of ethnographic outputs for practice: some explorations of the characteristics of design resources

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Abstract:

The community of “appliance design” rests generally upon a successful use of multidisciplinary user-centred design and often draws on an ethnographic component. Much has been made of the need for a multidisciplinary team and of the difficulties of making good use of ethnographic outputs in such a team. Discussions often centre upon the precise placement of the boundary between ethnography and design and the possibilities of hybridisation of these disciplines. Another way of looking at the issues of multidisciplinary teams is to look at the nature of the representational devices used to encapsulate and aid the communication of the ethnographic work in coherent and useful ways. Taking lessons from existing design practice, we look at how such representational devices actually work and propose some possible features important in the realisation of future best practice.

Keywords: Ethnography; Representational Devices; Design Resources; Work Practice

1) Introduction:

In this paper we seek to explore from a slightly different tack one of the more persistent and recurrent concerns within a number of design communities: how to make ethnographic findings tractable to the exercise of design. This has proved to be something of a vexed issue with a substantial literature visible in the HCI and CSCW communities (e.g. Bannon, 2000; Button & Dourish, 1996; Button and Harper, 1996; Erickson, 2000; Gilmore, 2002; Hughes *et al.*, 1994; Hughes *et al.*, 1997; Karasti, 1997; Lewis, 1996; Martin & Rouncefield, 2001; Millen, 2000; Ojelanki *et al.*, 1997; Plowman *et al.*, 1995; Shapiro, 1994; Simonsen, 1997; Spinuzzi, 2000; and so on). Rather than writing off these literatures and going on to offer yet another competing version of ‘how to make it work’ we would like to

offer up some observations about a number of important presumptions manifest in most available treatments of the question. We would also like to consider the ways in which designers draw upon certain kinds of resources in their ongoing working practices and the kinds of characteristics ethnographic results might need to have for a successful collaboration between designers and ethnographers to take place. In order to do this we draw upon our own experience as members of a design team and the ways in which we ourselves set about solving this problem. Our reflections here hinge upon the discovery that it is not so much the content of specific representations of ethnographic findings themselves that this success turns upon, as the efficacy any such representations have for the conduct of situatedly relevant collaborative work.

As a contribution to collaborative methodology, this is necessarily a preliminary step. The resources offered by diagrams and the actual *design* of ethnographic outputs for collaborative work *within* teams is a relatively unexplored topic.¹

We take the line here that representations of ethnography necessarily must not stand on their own: they should require situated work to make them meaningful. In order to demonstrate the import of this argument, our materials are organised into the following sections:

- The context for diagrammatic devices as an output of ethnography– i.e. “design ethnography” itself.
- A small number of design-based diagrams with an accompanying explication of their features and the attendant practices involved in their use.
- The workings of these features as a set of practical observations to be considered by other design teams.

2) *Doing and Representing Ethnography for Design:*

As our purpose here is to focus on the *work* of making ethnography relevant to design, we shall look at the overall aims of “design ethnography” and then proceed directly to looking at *ways* of representing the ethnography².

¹ Although, it is important to note Starr and Griesemer (1989) have made some important contributions to our understanding of the character of communication devices used between *different* communities.

If one takes a look at the literature on “design ethnography” there are several fairly broad points with which most people working in this field are likely to concur. One such point is *the importance of capturing the detail of people’s everyday lives and practices*. Kjeld Schmidt, put this particularly forcefully: “We need to understand *how* orderliness is accomplished in cooperative endeavours; we need to uncover the practices through which the myriad distributed and yet interdependent activities are meshed, aligned, integrated, because it is the very practices through which such orderliness is accomplished that must be supported” (Schmidt, 2000: 145). Another such point, riding on the previous one, is *the importance of not just providing the details, but of arriving at an understanding of the in-situ rationales whereby people find such details ‘meaningful’*. As Button points out: “...fieldwork that merely describes what relevant persons do may well be missing out on the constitutive practices of *how* they do what they do, the ‘interactional what’ of their complexes of action ... If we only described what they did, we might well only be touching the surface of their work endeavours, the details of which would remain known only to them, or to others who could do their work” (Button, 2000: 329).

Given these common requirements for ethnographic work for design, it is clear that there must be some important similarities in the methods necessary to fulfil them, although this is not explicitly pointed out in most texts. Firstly, it would be hard to capture the relevant order of detail without actually going and looking at the things that people do. That is, *there is a requirement for fieldwork*. However, above and beyond this, *there is also a need to provide some kind of formulation for design purposes*. The crucial word in this statement is ‘formulation’. Simply replaying the detail here will not meet requirements. To do that an ethnographer would be nothing better than a window through which designers might access such detail. That might be of some benefit, of course, but it leaves the designer with all of the work of uncovering the significance, the *meaningfulness* of what they are seeing still to do. Thus detailed descriptions are only able to meet one of the two basic requirements. But neither can we assume that it is simply enough to provide social scientific analyses, however well-grounded in a proper

² In order to do this there is no need to discuss the work of ethnography itself, but there are a number of excellent expositions of ethnographic practice available. For a thorough introduction

understanding of the actual accomplishments within the practices observed. This still leaves much to be done if these analyses are to be tractable to design.

There is no overall consensus on how best to create formulations of ethnographic work for the purposes of design teams. In fact, trawling through the literature, there would seem to be a plethora of different ways of bringing about such formulations (see everything from Hughes *et al.*, 1997 to Martin & Rouncefield, 2001). It might therefore seem that there is little consensus about how to arrive at an effective formulation, with each new exercise being resolved largely by local negotiation and fiat. However, as we shall endeavour to demonstrate, to allow that an appropriate formulation might be something only open to local resolution, is not at all the same as saying that such methods are not possessed of any discoverable, orderly characteristics. Thus we can observe that something immediately apparent in many descriptive accounts of design ethnography is the practice of using some kind of representational device in the form of a diagram. This device is presumed to work in some way as a conduit of communication, providing a resource for ethnographic findings to be channelled to designers.

However, it is important to note that this device has to be crafted in such a way as to make it immediately tractable to those who are expected to engage with it. What we are interested in discovering, then, is what the characteristics of a successful diagram in this context might be, and how such a device might be appropriately used as a design resource.

3) Reflections on Practice:

In order to get to grips with some of the most significant features of the kinds of design diagrams³ we are pointing to we are going to reflect upon the methods involved in their creation and use. To do this we are going to consider three different bodies of material encountered by us in our professional practice using different collection techniques:

- 3.1) Design documents made by designers in a small design and technology studio for communication to business-oriented clients. The

specifically geared to the systems design community see Randall and Rouncefield (2000)

³ We have sought to make a distinction between the kinds of diagrams used to support collaborative work in multidisciplinary teams and the Starr and Greisner (1989) notion of a 'boundary object'.

material was collected and reflected on by one the co-authors and subjected to subsequent analysis by the other.

- 3.2) A design diagram presented as part of an ethnographic output within a collaborative design team. The diagram was reproduced as part of an article in a scholarly journal and pointed out to the authors by designers working with them on a collaborative project, as indicative of the kind of outputs that they were looking for from ethnography.
- 3.3) A specifically designed output based on ethnographic work which evolved as a feature of the shared working practices of the co-authors when engaged together as members of a collaborative design team.

3.1) Commercial Design Practice:

In order to review the kinds of design documents that might be created to communicate with business clients we reviewed the generic client relationship-project-initiation life-cycle and looked at some of the specific documents one of us had created for various purposes within that cycle. We found that the most implicative documents for collaborative work were what one might broadly collect together under the heading of ‘response to brief’.

An initial client request in the particular commercial environment we are referring to might be called a “brief” but could take a form from a casual comment to a formalised document and might encompass a need for web, user interface, system and business process design. The response to this brief often took the form of a largely textual document, with a general similarity to minutes from a meeting. The text had to be couched in terms the client would relate to, but at the same time give enough detail for the designers to work with. It was also the case that “successful”⁴ documents often went beyond this purely textual format and were centred upon a key diagram. In these ways a ‘response to brief’ might be seen to be the closest of our examples to ‘boundary objects’ in that, as Star and Griesemer put it, they ‘inhabit several intersecting social worlds *and* satisfy the informational requirements of each of them’ (Star and Griesemer, 1989: 393). However, to put

⁴ ‘Success’ here did not necessarily relate to project or business success and profitability. Many ‘successful’ projects from a profitability, client satisfaction or ‘pure design’ perspective had little need for such documents. Other projects that ‘failed’ in those terms nonetheless made use of documents that were very important for facilitating early accomplishments such as making sure that ‘everyone understands what is going on’. Here ‘success’ relates to the effectiveness with which documents can support the conveyance of a concept. In each of these cases there was a key diagram that became effectively ‘iconic’ for the project itself.

emphasis primarily upon the *object* here is to underplay the extent to which it stands as a resource for other kinds of accomplishment and resides within a much broader body of practice. These are points we shall be elaborating upon in due course.

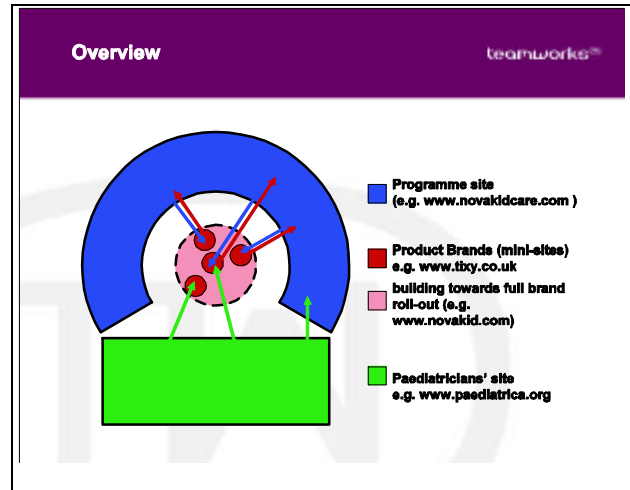


Figure 1: Conceptual diagram as part of proposal for a new consumer health support website

In the case of a proposed web structure for the consumer health division of a pharmaceutical multinational to support a new brand rollout and transition integrating professional support sites and consumer product sites, key diagrams served to sum up the proposal. They were carried around by the client, members of a partner agency and members of the co-author's company themselves, and referred to in a number of meetings until finally the project was pulled by the client and replaced with a much more modest ambition.

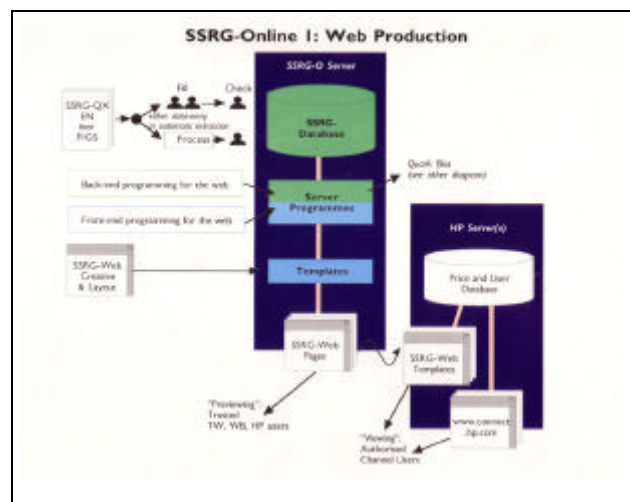


Figure 2: SOL System diagram

SOL was a web publication and content management system for a marketing centre of an IT multinational. Here an original sketch to explain some technical

details in one presentation became more and more elaborated until eventually it was on the one hand ‘iconic’ of the project itself, and on the other a geographical and technical map that could stand as a backdrop for future discussions (e.g. "so this change would occur in the blue area on the live server?").

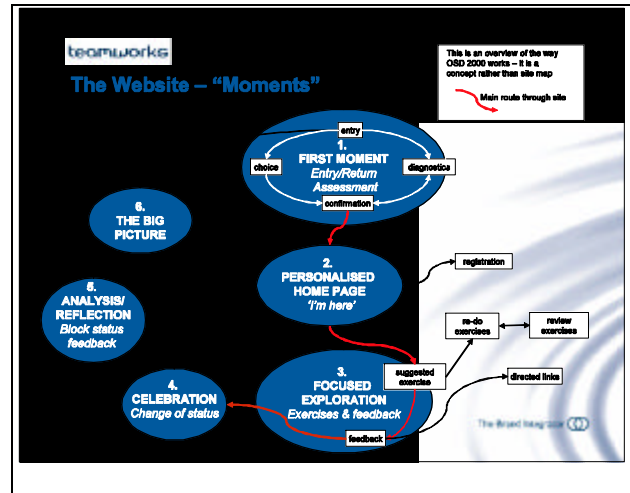


Figure 3: Nicotinell “Moments” diagram

Another presentation, Nicotinell ‘Moments’, was made as part of a broader initial presentation that related to the creation a pan-European web-support system for quitting smokers. In this case the diagram was perhaps less obviously powerful. However, it afforded the project a new terminology, specifically ‘moments’, and provided a way to avoid getting bogged down in the detail of single web pages as well as helping to maintain a focus upon the needs of user groups. Here the term ‘moments’ became adopted as a support for design discussions which were multiple two-party interchanges between different interested concerns, few of which were co-located: the client; the content expert; the graphic and informational design team; the two technical teams; and the localisation agency.

When we look at the actual conduct of the work that has been heavily glossed above, it turns out that the diagram is not enough. First of all, to state the seemingly obvious, it must be *presented*. It is easy to assume here that the important thing is the presentation with the diagram being just a scenic feature. However, it is not as simple as that. Instead the diagram itself is a central communication tool and the presentation stands as a critical means of ‘delivering’ that formulation with an appropriate ‘flourish’. It has to be situated within mutual interests and concerns. Features of it have to be made relevant in the course of a particular explication of its content. The significance and implicativeness of the diagram for all kinds of future activity and work has to be arrived at in ways that

everyone present can recognise as appropriate for the task in hand. Thus the presentation and the diagram have a mutual dependency. The diagram cannot be presumed to be self-evidently meaningful, but neither can the presentation operate without it. Similarly, and of particular significance for our argument here, the diagram can remain the same for different audiences (internal team, client, client’s internal clients, supplier, etc.) but the ‘flourish’ is always dependent on the audience and situated concerns.

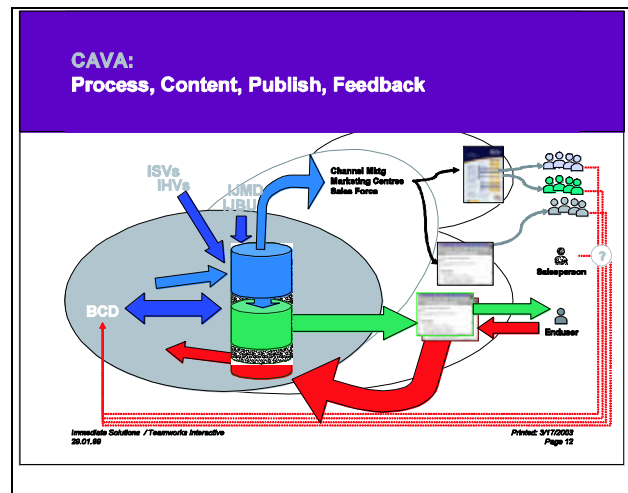


Figure 4: Complex “fully-revealed” diagram for CAVA project⁷

An example that serves to underscore this point is a study for the CAVA project for a global multinational. Here a complex information management strategy was summarised in an equally complex diagram. The diagram on its own would certainly have been too intimidating for any kind of effective communication. However, the presentational flourish was to build it up (reveal it) slowly and separately, piece by piece, with attendant, ostensive practices and locally relevant explanations working together towards the delivery of the summative, complex diagram at the end.

3.1.1) Some Preliminary Observations:

Before we proceed to our second set of materials we would like to briefly pull out some points of significance we have discovered about the ways in which designers can be seen to approach the design of diagrammatic resources for communication:

- *Economy* – It can be seen that the diagram fits onto a single page or screen. This is particularly important for the latter: it is perfectly possible to connect up pieces of paper in order to accomplish extension in ways

that screens simply do not provide for, and these kinds of presentations were almost always on screen first and delivered on paper later, if at all.

- *Iconicity* – A single diagram is able to represent a project as a whole and at the same time embody some of its conceptual thinking.
- *Indexicality* – The diagram provides a tool for local methods of ‘relevancing’. It has internal features that can be pointed out, pointed to, or gestured over and thus explicated in a variety of ways. In short it is open to ‘recipient design’ (Sacks, 1992).
- *Sequentiality & Organisational Accountability* – The diagram has to be presented at the appropriate place within the project cycle so that it can be appropriately used and referred to,
- *Ordering & Logic of Practice* – There is an attached ‘logic of presentation’ such that it can’t just be put on the table and seen to self-evidently represent something. Instead, it takes the specifically ordered work of presentation to make visible what it ‘means’ and to make the argument that it represents (e.g. “you need this”, “here’s this”, “you need that”, “here’s that”, “put them together, you get this”, and so on until the diagram is fully explicated for current purposes and its meaningfulness for the current audience is made visible).

3.2) ‘Design Ethnography’:

Let us now move on to examining a diagram that was proposed to us by our collaborators in a research project as an example of the kind of outputs they were looking for from ethnography. It is interesting as it both throws up the challenge of what kinds of representation a designer is looking for and also brings up some of the dangers that can attach to the use of such formulations of ethnographic data.



Figure 5: Diagram from Salvador, Bell and Anderson (1999)

This diagram is taken from a paper by Salvador, Bell and Anderson (1999) that for many seemed to put the term “Design Ethnography” on the map, whilst simultaneously giving a name to the practice of ethnography for the purpose of collaborative design work at Intel (amongst other research laboratories) .

Although the paper is not simply focused upon people's shopping behaviours, their research in this area is used to make an argument about what ethnographic research might offer to design in a commercial environment. Referring back to the preceding observations, we might be able to see this diagram as offering the following kinds of practical resources:

- *Iconicity* – It presents, in diagrammatic form, a summary of the findings produced by a 'design ethnography'.
- *Indexicality* – In relation to the surrounding text, it provides a situating device for various examples.

The usability of these resources stands upon certain other accomplishments. Thus we can note that:

- *Appropriate Format* – It uses a matrix layout (two dimensional axis) that is presumed to be immediate recognisable and self-evident in its organisation and the relationship of its parts for members of a design audience. Thus the quartering of the diagram, the implications of the arrows, the use of bold and ordinary type, and the co-situating of the text is all assumed to be readily intelligible to designers who might engage with it – they do not attempt to explicate the actual mechanics of the diagram. There is a background assumption that designers will have a set of practices available for use of the diagram within their design work.

Outside of these ways in which the diagram is able to draw upon the kinds of basic, 'mundane' competences that might allow designers to engage with it, it also offers some additional *in situ* resources to those who might work with it, that are not made explicit in the text. So, elaborating upon the previous observation on 'indexicality', we can observe that:

- It can be pointed to in a variety of ways or otherwise gestured to in interaction, providing for a rich variety of ostensive practices and deictic relevance.
- It can also be annotated in a variety of ways, allowing for the *in situ* embedding of more specific ideas.

Taking the relevance of this diagram more directly to the design community, Salvador *et al.* propose that "each of these ecologies [the quarters of the diagram] suggests different design constraints" (Salvador *et al.*, 1999: 54). For them, one example of such constraints might be that "maintenance shopping should require the absolute minimum of effort on the consumer's part" (*ibid.*).

However, it is precisely in the apparent expectation that this device might serve as a *generic*, rather than an *indexical* resource that its greatest drawbacks can be seen to lay. The "flourish" of *this* diagram is the presentation of its significance within

the surrounding text - and this text points to generic understanding of what shopping behaviour might amount to rather than a specific explication of their orderly features. Beyond this, the diagram is capable even of “carrying a master narrative” when it is viewed on its own.

Thus a designer following this diagram and its explication, is led toward seeing someone buying some tomatoes, an onion and some pasta, merely as an instance of ‘maintenance shopping’ without seeing how this person had just rushed out of their house to buy these items in the middle of setting up to cook their partner a birthday dinner, after finding these items were missing. The particular logical organisation of these purchases within an ongoing course of action is no longer available, despite the fact that the particularities of such a case might be of interest to those who are engaged in certain kinds of design.

As it stands, this diagram offers no resources for grounding the argument in specific instances or for the designer and ethnographer to arrive at the significance and relevance of such instances to the conduct of *particular* enterprises. Instead it is a device that stands as a *post-analytic formulation* of the significance and relevance of those findings to design. In this way it may run the risk of obscuring all of the indubitably rich data that must originally have been gathered, and condemning it to the role of an adjunct to a single set of possible relevances. In this way it offers a ready-made ‘theory of shopping’ with equally ready-made constraints. At this point, then, the designer is only able to interrogate the theory, not the real world the theory is indexically bound to. Out of this, then, we ought to offer two warnings:

- *Reductivity* – (Reducing to theory) The ethnographic instances become embedded in a graphical representation of a broader theory and become intelligible only in terms of that theory.
- *Constraint* – (of future thinking) The diagram stands as a resource for proposing an appropriate understanding of ethnographic data and its significance/relevance, particularly to a design audience, thus constraining such understanding to its terms.
- Together these serve to limit the indexical effectiveness of the diagram.

It might seem that we are just ungenerously picking up on certain weaknesses within the Salvador *et al* diagram that the authors themselves would readily recognise and additionally are violating the diagram by extracting it from the

context of its use (we don't know how it was actually used within the Intel design team). However, we would wish to stress that we actually consider this to be in many ways an effective and attractive diagram that conforms to a number of the observations we have already suggested, most notably that of *economy*. Designers rarely have the time to plough through endless ethnographic reports, even assuming that such reports could manage to offer them something relevant. So a single diagram clearly suits the needs of designers rather well.

Nonetheless, a clear lesson that needs to be drawn from our observations so far is that the communicative outputs of ethnography in a design context need to be *designed* for their purpose. And clearly where the Salvador *et al* diagram *does* fail is in the ways it resists such nuanced and indexically sensitive design. What it would seem is needed is some kind of representational device that preserves the need for economy, whilst allowing for an effective relevance to the particular circumstances of its use.

So then, having appreciated the inevitably indexical character of these kinds of representations, we can begin to note the following kinds of implications this may hold for the use of such resources:

- As with the Salvador *et al* example, they need to be economical
- They need to be organised and presented in a way that draws upon readily-available, mundane competences to be found amongst 'just anyone' who does the job of design
- They need to provide for local, *in situ* practices of ostension and annotation (for example, people working together can use its two-dimensionality to point to features of interest, and can attach post-its to it)

The most critical implication, which we address further, is the following:

- Formulations of findings for design need to be open to being made situationally relevant rather than pre-formulating what that relevance might be

And, as can be seen, whilst many devices may be able to meet the first three of these requirements, the real problem resides in arriving at a solution to the fourth.

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3.3) The Situated 'Grounded Innovation Map':

In our final body of materials we would like to move towards offering a possible resolution to the problem we have just outlined. In order to do this we shall be

discussing a diagrammatic device that evolved in the course of some work we did together as members of a multidisciplinary team engaged in research and design for a European project entitled 'MIME' (Multiple Intimate Media Environments).

MIME was one of the projects making up the Disappearing Computer initiative. It was made up of a consortium led by Philips Design in Eindhoven, whose primary focus was product design, and with partners in Nottingham University's Computer Science department with a technical focus, and Xerox Research Centre Europe's Cambridge laboratory where the emphasis was upon ethnography for design. A designer was recruited to join the team to contribute to the translation of the ethnographic outputs to design, and that was how the two co-authors of this paper first came to work together.

The ethnographic co-author had conducted a number of studies of domestic environments and, in the first instance, the 'grounded innovation map' we shall be discussing here, was born out of discussions between this ethnographer and the newly appointed designer. We were together confronted with an as yet undifferentiated body of data and the loose brief of arriving at some technology innovation in the domestic sphere that might draw upon the co-ordination of ubiquitous devices.

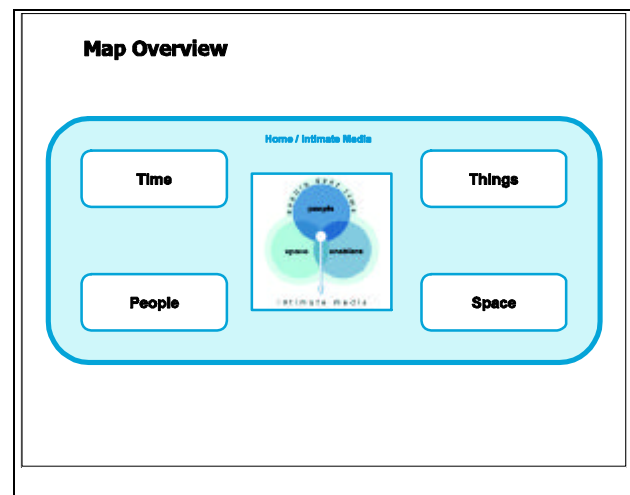
Reflecting upon this work that we conducted together in numerous, ad hoc meetings over several months, we can make the following observations about the way that work was progressed, the methods we used, its characteristics, and the role the map came to play within it:

- First of all, by sitting together around the table with lots of fieldwork instances their particular relevances were brought to bear in highly specific ways, according to the current interests of the designer and the ethnographer.
- Out of this initial, relatively unstructured work some heuristic categories and ways of organising them began to unfold.
- These 'heuristic' placeholders allowed other categories to arise that might serve as 'nodes' around which the fieldwork and innovation could be articulated.
- It became sensible, in turn, to organise some of these nodes into higher level nodes, though these were wholly informed by what was sensible for the purposes to hand.
- What began, in that case, as a body of fieldwork and an aim to engage in a certain kind of innovation evolved through many iterations into a map that

was both thoroughly grounded in real world instances, yet able to evolve in use as and when new ideas were articulated.

- Most importantly, with regard to our observed need to maintain the situational relevance of ethnographic findings, the status of the various categories was far from fixed. Instead, numerous different categories could evolve out of each new enterprise, with the higher level categories being anything but inevitable, despite their appearance.

Let us talk through the character of the map in a little more detail. The map had more than one “view” – in level of detail and spread over a number of sheets of paper. This might seem to violate the principle of Economy, however, it is important to note that we mostly worked with the map in paper form, which as we have already observed, is more open to extension and collocation of parts (spreading out on a large table, sorting the sheets, pinning on the wall etc.). Furthermore, we designed (but did not implement) a potential on-screen based hyperlinked view where the viewer/user could navigate up and down levels of detail and instantiation.



“Grounded Innovation Map”, top-level diagram

For the top level diagram, we chose to use the already established top level categorisations from the product design team (people/space/enablers/events) as a way of relating their terms to our own organizational devices.

At this gross level however the map had little meaning or use, beyond its notional status as a boundary object. That is, as with anything that might be characterised as a boundary object it could be seen to offer some *integrative* resources, by drawing together textual and graphical material from different organisations and put them within the same frame. This served to force a relationship between them that might then be implicative for future discussions and renegotiation.

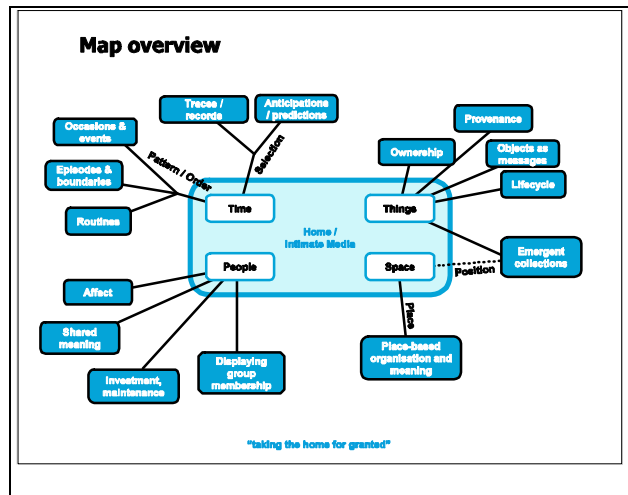


Figure 7: “Grounded Innovation Map”, detailed top-level diagram

Working out from these gross categories we arrived at what might be termed the “iconic” form of the map (referring back to our observations on “iconicity”). That is, the categories used at this level served to represent the ongoing work itself. At this level the map was mostly implicative of further explication, leading to the next pullout.

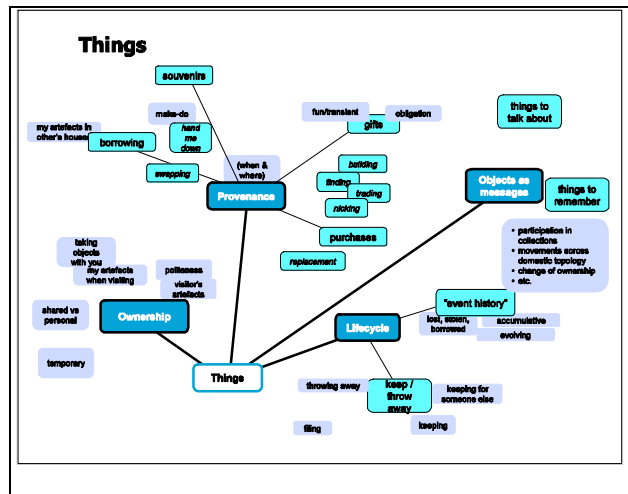


Figure 8: “Grounded Innovation Map”, “Things”

The map at the level of the next pullout focused on one of the indicated top-level areas (in this case, “Things”). This was the most useful “working document” in that it offered numerous resources for indexicality and could both support the negotiation of current understanding and stand as an arena for future work. In practical terms the current state of the map at this level was usually printed out onto larger scale paper so that we could “positioning” and “reposition” instances of fieldwork against different labels or even revise the labels themselves as and when it became apparent that they were being challenged by the instances. Numerous features already discussed came into play here. Sat with the map at the

warnings that we introduced earlier). Instead, by situating instances on the map, we reemphasized the local specificity of real world action and resisted the temptation to make a generically exportable gloss. Thus, there was nothing within the map that would enable it to stand on its own as a self-evident representation for informing the work of any design community. On the contrary, it actively promoted and implicated other bodies of work through which it might be made relevant and intelligible.

In summary, then, we can note that the grounded innovation map was:

- a communication mechanism that served as a point of articulation between design and ethnography without being an artefact of either discipline
- a way of presenting the multiple possible relevances of a particular design scenario or technological point instance
- an heuristic with no truth claim, its verification and validation turning upon each particular occasion of its use, making it purpose-specific and ongoingly adequate to its task
- a moving target that could be and was continually revised and re-annotated.
- never intended to be self sufficient but rather *mnemonic* (in that it was a way of remembering details), *articulatory* (in that it was a way of occasioning particular ethnographic accounts and/or recollections for debriefing), and *grammatical* (in that it was a way of organising internal, locally coherent and interesting cuts on the ethnographic data that might serve to build towards a collective and purposeful understanding of the domestic/intimate space).

3.3.1 Mutual appropriateness:

One of the most critical implications of our observations regarding the grounded innovation map is that in order that a particular formulation of ethnographic material is locally (indexically) relevant, it must have provide for mutual appopriateness among the interested parties (ie. the design team). . And mutual appropriateness is something that is worked up *in situ* between the ethnographer and designer, rather than something open to generic *pre*-formulation. The grounded innovation map was, for us, a mutually appropriate means of representing the ethnographic work for design, and it was designed and redesigned by us according to current need.⁵

⁵ It's worth noting that the actual work of arriving at a mutually appropriate (and mutually acceptable) form, is arguably the most important output of the formulation itself – it is in this collaborative design and negotiation that some of the most important transfer of understandings can take place.

One of the primary points to grasp here is that the kinds of representational devices we are talking about are not adequate to themselves. Nor do they in any way provide literal descriptions of the real world. Indeed, as we have already intimated, it is a mistake to presume that the problem of communication might be better solved by ever more comprehensive descriptions of the things people do. Just what level of detail *is* required is a local concern⁶. One might then speak of the collaborative work between an ethnographer and a designer whereby they arrive at an adequate description as consisting in part in ‘tuning’ the amount of relevant detail. What our work with the grounded innovation map does make clear, however, is that there are devices that *enable* adequate description to take place. The interest is not in exporting detail, but rather in supporting the provision of information that is relevant and meaningful for the purposes in hand. At the same time it is important not to consider these devices to be offering generalisations to cover all ends. The adequacy of ethnographic findings to inform design is equally a local concern that is negotiated around the representational devices. As we noted with the Salvador *et al* example, it is a mistake to presume that generic claims will be relevant and meaningful to just any particular design enterprise. Instead claims about the organisation of social affairs need to be made indexically coherent. Thus, the representational devices used also have to allow for the situated accomplishment of that kind of work. Indeed, one of the important features of the map was the way in which particular details could trip up any tendency towards generalisation. This proved to be especially productive because it made the confines of adequacy on both sides visible.

This also forcefully underscores the importance of co-locating designers and ethnographers on the same design teams, providing some significant practical additions to Bannon’s stated preference to incorporate ethnographers in this way because it would “allow their perspective to be brought to bear at all stages of the design process, as well as allow them to develop an understanding of the perspectives of their technical colleagues” (Bannon, 2000: 240).

⁶ Observably, the selection of the appropriate level of detail for a design document is a key competence in the designer’s practice.

4) Towards 'Adequacy':

In this paper we have closely analysed the work around three corpuses of design diagrams to throw light on their important features when used as formulations of ethnographic work. The aim is to contribute to the understanding of design resources in the ongoing work of ethnographically-based design within multidisciplinary design teams. This is not being put forward as yet another model for the pre-construction and export of ethnographic materials. Indeed, in many instances it may well be found to nub quite closely with what designers and ethnographers may already be found to do in their meetings. Instead we have sought to explicate the *organisational* features of this exercise. The reason for doing this is that such features may be supported or thwarted in a multitude of different ways and it is evident that for successful cross-fertilisation between ethnography and design it is important that these features be supported.

In summary, then, let us recapitulate the organisational features we have uncovered by stating them as observations and warnings that others working towards similar ends may examine, seek to apply or further refine:

- Observations of Form
 - *Economy* – The representation has to be appropriate for its presentational use, whether screen-based or on paper. Rather than attempting to represent the wealth of ethnographic material and the richness of data, it should instead stand as an interface through which the data can be articulated. The best practice of interface design should hold here, with an aim to maximise simplicity.
 - *Appropriate Format* – There will be a ready to hand repertoire of formats recognisable to a given subset designers. To build on top of an appropriate format gives a structure for the organisation of materials which will be intelligible at a glance and enables designers to harness pre-existing competencies for use of the diagram within their design work.

Observations about use

- *Ordering & Logic of Practice* – While the overall form of the representation may be intelligible, attention must be paid to how the representation is delivered – its appropriate 'logic of presentation'. It takes the specifically ordered work of presentation (what was referred to earlier as a "flourish") to make visible what the diagram 'means' and to make the argument that it represents fully explicated for the current audience.
- *Indexicality* – A successful representation should work as a stage (situating device) for various kinds of situated collaborative work:

It thus should have internal features that can be pointed out, pointed to, gestured over and explicated in a variety of ways, both in terms of occasioning particular ethnographic accounts and/or recollections for debriefing, but also to create local organisations of the ethnographic data to help build a locally coherent collective and purposeful understanding of the space under study). While this seems to point to a graphical form mostly suited to collocated work, it may then occasion the creation of a local lexicon of terms, ideal for (telephone and email-based) distance collaboration.

- *Mnemonicity* – By putting a number of relevant pointers in one place, the representation can act as a resource for a member of the design team, for calling to mind instances from the fieldwork.
- Observations about embeddedness
 - *Iconicity* – By having a representation of the ethnographic findings as a whole one provides a physical resource and support for talking about the ethnography in multiple settings, in which the ethnography is embedded in a larger practice of work (the multidisciplinary team). The existence (and creation) of this iconic representation can serve as a resource for project/team identity.
 - *Sequentiality & Organisational Accountability* – By the fact of its existence, the representation can serve to show that certain kinds of work and collaboration have been done. Furthermore the representation has to be evolved and presented at the appropriate place within the project cycle so that it can be appropriately used and referred to. Button and Sharrock (1998:84) discuss the use of a ‘problem wheel’ as one such device adopted by software engineers to make their ongoing work organizationally accountable. However, there is clearly room for further research into the characteristics of such devices and the specific ways in which they might work as resources within design.
 - *Integration* – By including devices or terminology within the representation that are felt to belong to an organisation or discipline, the representation can be seen to provide common resources for those right across a multidisciplinary/multi-organisational project. Furthermore this allows a specialised entry point for each party, to allow them their own handle on the representation.
- Warnings
 - *Reductivity* – The danger of a representation that stands as a proxy for a whole body of ethnographic work (iconicity) is that it may be seen to replace the diversity and irreducibility of the fieldwork observations. Given the possibility that there are organisational drivers to find “exportable” insights out of the specific work, a conscious effort has to be made to resist the reduction of fieldwork data and insights into a generic theory of the domain.
 - *Constraint* (of future thinking): A further danger is that the local groupings and categorisations within the representation may come

to have too great a significance and become constraints on further interrogation of the fieldwork and thinking about the design space.

- Strategies for coping with the above negative observations.
There may be multiple strategies for avoiding the dangers we have pointed to - ones that occur to us are:
 - *Chang* – engendering a lack of attachment to a particular phase of the representation by continual editing and change,
 - *Instantiation* – the deliberate bringing-up of “difficult” instances that cut across the local categorisation
 - *Open-endedness / Incompleteness* – the deliberate avoidance of once-and-for-all formulations that are presumed to ‘explain’ the domain for all purposes
 - *Self-insufficiency* – Making sure that the representation is not self-sufficient, but instead requires either a locally gathered competence with it or an accompanying explanation (the deliberate promotion of in situ relevancing and the permanent incorporation of ethnographers within design teams).

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