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Microworld Simulation in Childcare Social Work: Investigating Risk, Blame and Performance Management

ABSTRACT
The authors are currently engaged in a study of error and blame in local authority children's services funded under the ESRC, Public Services Programme. The study focuses on the impact of various forms of ICT-enabled performance management on day to day practice and involves the development of a computer based interactive simulation of decision-making loci. Thus, this paper thus engages with the conference themes in two ways:

- It examines the impact of ICT based systems of recording, audit and surveillance on everyday practice, including HCI
- It uses ICTs to simulate and gather data about the practical reasoning employed by social workers when making decisions in a high risk, high blame environment.

Simulations have a long standing place in the science of decision-making. Here we deploy the simulation to a different end - as a generative device for stimulating human behaviour in order to study its properties. In particular, we are concerned with the *post hoc* reasoning whereby emergent errors are rationalised. If errors are hard to observe in the "blooming, buzzing confusion" of real work, it is nonetheless possible to contrive errors within a designed 'reality'. Computer-based simulations, known as "micro-worlds", have been extensively used in technical domains, such as industrial process control, ship's bridge operation, or fire-fighting and increasingly in medicine. They enable the performance of human decision-makers to be studied in ecologically realistic but controllable conditions, where independent variables can be manipulated and their impact observed. In this paper, we describe in detail the methods we developed to design and populate the micro-world with material derived from

our ethnographic work**.** We will also present findings from the ethnographic and experimental phases of the project to address issues of intelligence and accountability and how these interact with the pressing problematics of 'the day job' in child welfare.

BACKGROUND

As a result of high profile inquiries into the non-accidental deaths of children known to public service organizations in the UK, children's social care services have been widely blamed for deficiencies in their policies, procedures and practices (e.g. Laming, 2003). One response to these inquiries has been New Labour's modernization agenda, which sets in place key indicators of performance in relation to child welfare. Children's services departments have been subject to a range of measures designed to manage risks and reduce costs, including systems of regulation, proceduralization and metrics (e.g. Chief Secretary to the Treasury 2003), all justified using the rhetoric of child welfare. The re-configuration of professional work into formalized "business processes" and an evangelical faith in the power of ICT to enable radical organisational change are also defining, and mutually reinforcing themes of the modernisation agenda (Peckover *et al,* 2008a; 2008b). The language is often egregiously overblown:

> Twenty First Century Government is enabled by technology – policy is inspired by it, business change is delivered by it … Moreover modern governments with serious transformational intent see technology as a strategic asset and not just a tactical tool. So this strategy's vision is about better using technology to deliver public services and policy outcomes that have an impact on citizens' daily lives: through greater choice and personalisation, delivering better public services, such as health, education and pensions; benefiting communities by reducing burdens on front line staff … (*Transformational Government: enabled by technology,* Cabinet Office, 2005*)*

E-government, once modernisation's talisman, is seemingly passé; t-government's the thing! The quote is worth dwelling on; as we shall see, the reality of this brave new world is somewhat out of joint with the rhetoric. The translation of professional practice into a range of standardised procedures, protocols, templates and timescales, all co-dependently mediated by ICT, aims both to produce an audit trail against which key performance targets may be measured, and to reduce variability and hence 'error' in human performance. But these systems also create new demands for institutional actors and it is far from clear how safety will be enhanced by the enthusiasm for standardisation and command-and-control management. In fact, one might reasonably predict the opposite. Despite the immediacy of 'error management' in the everyday work of children's services, to date research offers few insights about how, *in practice*, workers *interact* with these 'support' systems and how they impact decision-making and professional judgement. A number of commentators have argued that the systems may have a range of unintended malign consequences, including 'latent conditions' for error that are not well understood (Reason, 2000).

The present study has involved the development of a computer-based interactive simulation of decision-making loci, informed by detailed ethnographic fieldwork. Simulations have a long standing place in the science of decision-making. Computer-based simulations, known as "micro-worlds", have been extensively used in technical domains, such as industrial process control, ship's bridge operation, or fire-fighting (e.g. Hockey, Sauer and Wastell, 2007). They enable the performance of human decision-makers to be studied in ecologically realistic but controllable conditions, where independent variables (such as task complexity or external stress levels) can be manipulated and their impact observed. Here we describe the

development of a similar miniature world for social work. The design concept is straightforward enough. A portfolio of synthetic cases has been developed, based on our ethnographic analyses of genuine incidents. These cases are characterised by an extended history, involving problematic diagnostic information arriving from multiple agencies and unexpected twists and turns as the narrative unfolds.

In this paper, we focus particularly on the methods we have used to generate 'realistic' case material to populate the simulation. The paper first describes the ethnographic phase of the work and provides a summary of some of the main findings which informed the development of the microworld. We then describe how the microworld was programmed and populated. We then describe the way in which we have used the simulation to date and present some preliminary quantitative and qualitative data.

THE ETHNOGRAPHIC PHASE

A multi-method ethnographic study has been undertaken with fieldwork taking place from early 2007 to date, in five UK children's services directorates.

- A London borough (Metroville)
- A large county council in the North of England (Northshire)
- A metropolitan borough in the North of England (Westford)
- A unitary authority in the North of England (Seaton)
- A Welsh rural authority (Valleytown)

The ethnographies have involved various levels of engagement across the sites, with access often affected by the authorities' local pre-occupations, such as preparing for onerous external quality audits (Join Area Reviews- JARs), undertaking reorganizations, or implementing new ICTs and software.

Members of the research team have undertaken participant and non-participant observation of management and practice, in key decision making loci, such as the duty desk, the social work 'referral and assessment' teams, strategy and review meetings, interactions between team leaders and social workers, middle and senior managers. Interviews and focus groups have taken place exploring the ways in which practitioners and managers negotiate the systems and protocols, respond to referrals, make decisions about priorities and interventions and so forth. Documentary analysis of electronic case records and paper files has also been undertaken.

Before discussing the methods involved in the design of the microworld cases we should give readers unfamiliar with UK child and family social work practices a brief summary of some salient findings. This synopsis is necessarily brief and selective simply serving to contextualize the simulation.

TAKING REFERRALS AND ASSESSING RISK: THE FRONT DOOR

During our work in all of the five sites, we observed that workers at the front-door in the 'referral and assessment teams' faced particularly acute challenges arising out of the competing imperatives to safeguard children and support families whilst at the same time

minimising the possibilities of error and blame for failing to meet performance targets. These were particularly pressing in relation to timescales for the completion of an 'Initial Assessment'. Practices at the 'front-door' of children's services, were reconfigured in England and Wales following the implementation of The Framework for the Assessment of Children in Need and their Families (DoH, 2000). This defined the initial statutory response to a 'contact' or 'referral' as a distinct stage in the assessment process, meaning that assessment must be undertaken in specific temporal frames. The Framework introduced performance timescales: within 1 day of a referral being received, agencies are now required to make a decision about what response is required and within 7 days an initial assessment must be complete. Moreover the dominance of ICTs means that child welfare workers are constrained by a number of 'e-pathways' so that work cannot be done unless there is an electronic system to monitor and direct it. The workers thus have to decide which e-pathway to deploy very soon after they receive information from referring agencies. This intersects with the more conventional form of case categorization. They must resolve both the question 'what type of case is this?' and 'what e-pathway should I deploy'? The question of course is 'which constrains which'?

There are four 'disposals' available at this stage:

1. Log the case as a contact but do not accept the case as a referral
2. Accept the case as as referral and undertake an initial assessment
3. Accept the case as a referral and undertake a core assessment
4. Accept the case and undertake a section 47 investigation (Children Act 1989) because the child appreas to be at immediate risk of significant harm

Given that an initial decision about the status of the case must be taken within 24 hours, this had created a number of 'workarounds' in some of our sites where categories like 'passed to team' had evolved to enable more information to be sought before commiting a decision to the system. Similarly in relation to initial assessment, we noted in some of our sites that the intial assessment was 'signed off' as complete after the child had been seen, with information from key professionals that came in 'late' missing the all important 7 day timescale. Where initial assessment identifies the need for a 'core assessment' , which is a much more detailed report about the child's development, their parents' circumstances and wider family and community support, this must be completed on an electronic template within 35 days. All forms are standardised nationally. The introduction of the integrated children's system (ICS) now means that the processes are all electronically configured, creating new and consequential demands (Bell et al, 2007).

Where there are child protection (section 47) concerns,[1] a series of procedures stipulate the organisation of multi-agency meetings, creating a 'child protection plan' and a timetable of visiting. The aggregation of these targets and timetables results in the comparison and publication of performance indicators for particular teams, sectors and local authorities. These performance indicators are scrutinised at all levels – by team managers, senior local authority staff, local politicians and national government audit. Managing and responding to some 300 referrals[2] that on average face initial assessment teams every month (DCSF,

[1] Note, there are also procedures, timescales and audit trails for child in need referrals, but these are often not key reportable PIs

[2] 'referrals' will comprise a mix of contacts and referrals, with contacts not necessarily leading to initial assessment. Aggregated statistics such as those produce for annual performance reviews of local authorities cannot capture the full range of activity operating at the front door.

2007) is a complex activity that is not well understood. Given, that performance requirements may in themselves create further loci for error and blame, it is important to interrogate the contemporary world of the front-door in its performance context.

In all but one of the initial assessment teams[3] included in the study, the teams received far more contacts or referrals than their capacity could accept. The relatively recent requirement placed on the police to notify the local authority with regard to all police logged domestic violence incidents, irrespective of severity, was widely reported as contributing to this increase. Such notifications together with requests for information threatened to overwhelm systems that at the same time received requests for urgent help for children and families. In this context rapid decisions were required to identify the relevant from the non-relevant, the high from the low priority, all within timescales and to ensure that the system did not become 'log-jammed'. The problem of volume was compounded by the problem of scant information that frequently constituted the referral

The work is crucially affected by the management of accountabilities by other professionals situated in different times and spaces from the social services department. That is, professionals are packaging their referrals so as to show they have done all that can be expected within their own professional role and also to construct the case as an 'ideal' case to receive a service from the social work teams. Thus, cases are often 'talked up' by the referrer. This takes place in a context where there has been a considerable retrenchment of services so that social services now only able to offer a service for children and families that meet strict 'eligibility criteria'. Figure 2 (taken from fieldwork notes during a Monday morning observation session) provides an example of the types and number of cases that are referred to one team in our Welsh site.

The first point of filtering depends on converting fewer incoming referrals and contacts to 'accepted' or local authority generated referrals. A referral may be made by an outside agency "I want to make a referral", but unless it is ratified as a referral by a senior practioner and allocated to a worker for initial assessment, it is not considered as such. We observed that the teams had a well established repertoire of deflection strategies at this first point that included: a) strategic deferment – send the referral back to the referrer to ask for more information and b) signposting - deflect the case to a more 'appropriate' agency. In the areas where the CAF was well embedded, agencies could consider whether a CAF had been completed and also whether it had been completed properly.

In order to do undertake filtering, without carrying out an assessment and in the context of often very brief information, a number of decision-making resources were required to 'fill the gaps'. As Clarke (2007) writes, in conditions of time and resource constraints, rigorous and systematic analysis cannot be done, instead workers rely on 'working assumptions based on past experience, rules of thumb, cursory investigation, unchecked report, routine procedures, prejudice or mere guess work' (p62). The following table shows the referrals greeting one team manager in Valleytown on a Monday morning.

[3] We noted one team where referrals were reported as less than 50 per month whereas Seaton has one of the highest referral rates in the country.

1	Police referral following w/e call out. 3 children witnessed domestic violence. Mother taken to hospital with fractured nose. Father arrested.
2	Sexual abuse, and child assaulted by mother
3	Information that child is having contact with offender who has convictions for sexual assault.
4	Young child (3) shot himself with airgun whilst in care of father over weekend. Parents separated. Child in hospital
5	Extra-familial assault
6	Referral from police following domestic violence call out. Children in household.
7	Fight between step-father and young person
8	Behaviour issues with a teenager. Police called by parents
9	Out of area child placed in 'Erewhon' area. Older half-brother has alleged that he was assaulted by this foster carer when he was living there.
10	Police referral. Called to argument between a mother and her sibling. Baby present. No assaults or damage reported. Baby not involved
11	Referral from police following call-out to a domestic violence incident. Ex-partner attacked a woman who has young children.
12	Father with alcohol and mental health issues. Police referral
13	Catering worker at school hit a child in the dinner queue
14	Child with severe head lice. Non-engagement with services
15	Referral from probation. Substance misuser in relationship with woman with three young children
16	Allegation of physical assault by father to 14year old son
17	Notification from police they need to interview a minor who witnessed an extra familial assault.
18	14 year old boy with learning difficulties and past history of abuse from his father. Now concerns about his mothers parenting
19	Children in care of their mother. Father has a Residence Order but children and mother have moved away. Allegations from father about their care and role of new boyfriend (using alcohol, abusive attitude)
20	Telephone call from mother saying she needed help with the baby as she couldn't cope

Figure 2: 'Monday Morning' in Valleytown.

A key observation across our sites was the paucity of information recorded on the initial assessment record. In one of our sites (Northshire) we examined more than 60 records of individual children; the scant information provided at initial assessment, together with the difficulties we encountered in piecing together the fragments of narrative included in other ICS windows, made it very difficult to glean a picture of the child and his/her family (Bell et al 2007). Whilst the assessment framework states that recording can be kept brief at this initial stage, unfortunately the IA record does not invite brevity, comprising at the time of our study a four page document and inviting the completion of numerous themed boxes.. We found that practitioners were so put off by the detail requested, that the middle of the form was generally ommitted altogether.

Researcher: *So what about the middle of the document, because everyone seems to miss this out?*
Social worker: *What middle document?*
Researcher: *You know, practitioners are concerned with the referral and the outcome on the back, but what about those pages in between about the child?*

Social worker *(laughing) To me well… yes, there* **is** *a page about the child, I would always put in something, depending on what the child is like…I would always put something in , but in IA you wouldn't…this is* **initial** *assessment*,

In our discussions with workers we noticed that new verbs appear to have been created across out sites, where, despite the geographical spread of the authorities, all referred to 'front and backing' or 'back to backing' assessment forms. Another common idiom was the use of "outcome" as a verb, as in the following two excerpts:

Social worker: *My manager said to me "why haven't you finished that yet?" some of mine weren't being outcomed on time, and I said well the health visitor hasn't called me back…*

Social worker: *I'm thinking I'm not even that comfortable with a cp plan, and that's my name on that and you can't actually record on the system anywhere, that I disagree with my manager, it wouldn't' be outcomed but* ***PS****, the social worker doesn't agree*

We have noted hat referral rates mean there is significant attrition at the initial assessment stage, with many referrals receiving 'no further action' (they are NFA'ed), but as the referrals are instigated by other members of the multi-diciplinary networks, referrers frequently re-refer the same case many times. Subsequent decisions are thus 'infomed' by the previously partially completed I.A.s. All this has been simulated in our microworld.

NEGOTIATING THE TEMPORAL ZONES IN CONTEMPORARY CHILDREN'S SERVICES

We have noted that the assessment period is graded into temporal slices depending on the initial categorization of the case. The referral and assessment teams, however, only deal with short-term engagement. Following a core assessment, or a child protection case conference in the case of a section 47 inquiry, the case must either be closed or referred to a longer term team, or another agency via a number of processes such as network meetings. These are usually based on geographical areas within a borough and are variously called 'family support', 'children in need'. Thus a decision- node has been created in which arguments must be assembled to 'make the case' for further involvement from children's services. The longer term teams face their own workload pressures and they are similarly constrained by the demands of the various ICTs. Thus, they too are making strategic decisions about priorities

The particular demands that face the longer-term teams again arise from the competing demands of resource, performance and risk imperatives. In cases of children subject to child protection plans, workers are required to put together tight packages of support to ensure the management of risks but support must also be time-limited. Cases that are not 'resolved' within twelve months, either by way of initiation of care proceedings or case closure are deemed examples of poor practice, given that the performance system counts the number of children who are subject to child protection plans in consecutive years (31st March). Local Authorities who can count a high number of this category group (sometimes referred to as re-registrations) render themselves liable to increased Ofsted scrutiny. Of course families with long-standing difficulties such as parental ill health, many of whom will have difficulty in engaging with plans, do not easily fit into the performance framework. These families run the risk of forfeiting their children on the basis of their limited ability for change/non-engagement, which is not necessarily an indicator of increased risk or harm:

Social worker: she didn't turn up for appointments, if any appointments were made at the family centre, she didn't turn up for them, so really, really intense work had gone into that family, but she still didn't make the required improvements, she was still missing health appointments for the children ... and it's like she was being told for over 12 months, this is what you need to do and she still wasn't doing it (social worker explaining the reason for instigating care proceedings).

The performance culture demands that clear plans are drawn up for families and that workers also monitor those plans by way of statutory visits, core groups and reviews, again all recorded on and counted by the system. This together with the endless production of reports for case conference and courts ultimately takes the worker away from face-to-face work with families, where, arguably, positive change might take place

Social Worker: All this child protection plan is doing is recognising that these children are at risk of significant harm, that's all; we're not working with them

Social worker: For the majority of families on my case load that are on the child protection register, I'm just managing to make the minimum statutory visits- that's the minimum, but I know fellow workers who can't even manage that…we are so busy

Longer-term teams vary in terms of their exact configuration, but the varied routes that cases can take in these teams, mean that workers will encounter a myriad of procedures along the way. Courts demand increased clarity of plans for children and evidencing of social work 'support', but even the simple passing over of a case from one team to another brings not insignificant information demands. Thus, in this world of competing case trajectories with associated performance requirements practice is susceptible to error of one form or another

Social worker**: There is so much procedure, I don't know how to get from here to there, because there are now 20 different routes, procedures for permanence panel, for adoption panel, it is absolutely bewildering and there is always someone waiting to hang you out to dry because you have not thought about that, there is a culture of covering your back…you always think by the grace of God**

Other local authorities are less strict in the nature of their long-term commitment to families.

Team manager: if a case come upstairs (from the duty team) the minimum we would expect to be involved is 3 to 6 months, more likely 6 months and we have a built-in review system now with the Integrated Children's System. When a case is handed over we will review within 3 months and thereafter every 6 months with a network meeting with parents and professionals present. But we do tend to hold on to cases for a longer term. Up to a year is common, longer in child protection case certainly. We wouldn't close a child protection case if the child had been removed from the register or is no longer the subject of child protection plans, we wouldn't close that case within 3 months, to make sure that the plan has been sufficient to make long lasting chances

In fact a review of 54 children which were currently open to a team in one of our sites (Metroville) showed that 75 per cent has been open for over a year. In contrast to the other local authorities, the team manager thought that few cases passed from the long term team to be 'looked after:

Team manager: they do a very thorough assessment in the duty team and they can tell from very early on if there is a likelihood of the child being removed. If this is the case, it is passed to the Looked after children's team.

In the same review, 16 children (30%) were currently on the CP register and a further 19 (35%) had previously been on the register. The other 35% appear to have been children in need. The team manager was clear that cases would be closed through agreement with parents and other professionals and a network meeting arranged. There was some incentive to manage a smooth closure since if a case was re-referred within three months, it was returned to the same team. However, whilst Metroville might be keeping open cases for a longer time, they still close down the child protection cases as quickly as other local authorities to comply with the performance indicators.

Our data demonstrate the various frames, orderings and institutional categorizations in use in our sites. The context is the morally laden domain of child welfare where constructions of risk are ubiquitous, yet must in some way be prioritised and accounted for against a range of criteria and to strict temporal scales. The need to ration and contain workload produces a range of rationalizations based on often tacit criteria, such as the presumed vulnerability of children at various ages and stages. Yet while this ordering takes place in bounded space of the office, case-talk of a more florid nature is brought back into the office by social workers returning from home visits and always threatens the current version. It is our contention that:

> the resources of common sense should not be treated as givens, whose unproblematic existence provides the resources for everyday thinking. Instead, the contents of common sense and their historical nature should be treated as topics for rhetorical study, for it can be assumed that, as people use common sense, they are using resources that have a contingent history (Billig and Sabucedo, 1994: 126).

This brings us to our micro-world simulation through which we hope to study the contents of social workers' and managers' mundane reasoning in this complex, high risk, high blame, moral domain. By simulating something of the complexities, tensions and pressures of this professional world in the tractable, measurable space of the laboratory we hope to follow the injunction of Billig and Sabucedo (1994) to elicit and interrogate this "common sense", to treat its contents and its historical nature as topics for our rhetorical study. At this point we will describe in more detail how the microworld and case material were produced.

MAKING THE MICROWORLD

Based on the findings from the ethnography, a micro-world simulation has been developed, based on design principles adapted from Sauer et al. (2000). It has been developed using Visual Basic Express, and runs under Windows XP or Vista. The micro-world has been dubbed BRIGIT, an acronym loosely drawn from the title of the research grant. In a sense, the micro-world resembles the sort of electronic database system, the Electronic Social Care Record (ESCR) as it is often called, that are steadily replacing traditional paper records. But there are three important differences which have been built in to serve our research requirements. First, detailed patterns of interaction with the electronic record can be measured, e.g. the length of time an "initial assessment" or referral document was inspected, whether an email from the health visitor was read at all, or simply ignored. The second difference is that information about resources (e.g. foster parent placements) and

organisational performance targets can also be made available (or not) to be taken into account. Third, the temporal dimension can also be controlled; i.e. cases can be presented in a dynamic, structured chronology with only certain subsets of information available at any point. This enables contingencies and outcomes to be manipulated, enabling post hoc "errors" to be inserted in the simulated experience. Subjects are also placed under varying degrees of time pressure, by limiting the amount of time available for reading the case. This finite "time budget" also provides a methodology for assessing the relative importance of different sources of information by putting a premium on the allocation of viewing time.

One may imagine a structured scenario for instance with a number of phases, rather like a play with several Acts: Act One, for example, could relate to the first month after the original referral and all the documentation that has been assembled at this point; Act Two "fast forwards" the action on to a year later, following another critical event perhaps reflecting an erroneous judgement in the original decision, and so on. The simulation thus works its way through the various phases in each case. During each phase, experimental participants have access to all the documentation in the record at this point in time and every interaction with the database is recorded for subsequent analysis. Once they have made sense of the documentation in each phase, they are set a problem to solve, typically involving a decision about what to do with a case involving a degree of conflict between child welfare and the use of resources. They are asked to record their appraisal and the reasoning underlying this decision. Some of these scenarios embody errors in the sense of developments that were not accurately appraised or reported by other professionals at the end of the foregoing phase. By asking users to comment on these errors, why they were made, how they arose and so on, we are able to gauge characteristic patterns of moral reasoning and accounting, particularly attributions of blame and exoneration, including the impact of externalities such as performance targets and scarce resources.

Although laboratory experiments are normally associated with a positivist epistemology, we have adapted these methods to incorporate an interpretivist approach, focusing on the narrativization by subjects when confronted with their 'errors' in the simulated task. That is, decisions are reviewed with participants, enabling patterns of attribution and causal accounting to be explored. Decision rationales are triangulated against the original behavioural data, including patterns of information sampling. The integration and valorisation of information from disparate sources is of particular interest, given the importance of multi-agency collaboration in the emergent child safeguarding agenda.

The cases themselves are composed of multi-agency records, written by different hypothetical professionals, each element being available in a different window. Important clues regarding risk are embedded in this "hyper-text" and access to the different sources of information is automatically monitored, enabling measurement of the ordering and duration of access. Figure 1 shows an example screen shot for one of our electronic cases. The top "third" provides a list of original documents (all in PDF format) pertaining to the case: referrals, letters, assessments, notes of meeting. There are 17 such documents available at this point (phase 4 of the case). The rest of the screen provides a interface to the so-called "running record"; this is a chronological set of contemporaneous entries describing notable events in the evolution of the case, e.g. brief details of phone calls, the production of key documents such as Initial Assessments. There are 52 such entries in the present case, and the user is currently viewing the 7th one. The entry indicates that an Initial Assessment has been completed. The user can view this either by clicking the "Adobe Reader" or selecting the document from the list of documents. It will be noted at the top of the screen that only 9 minutes and 44 seconds remains available to inspect the documentation during this phase.

Users are also provided with a Notepad, allowing them to cut-and-paste material from the running record or the original documentation.

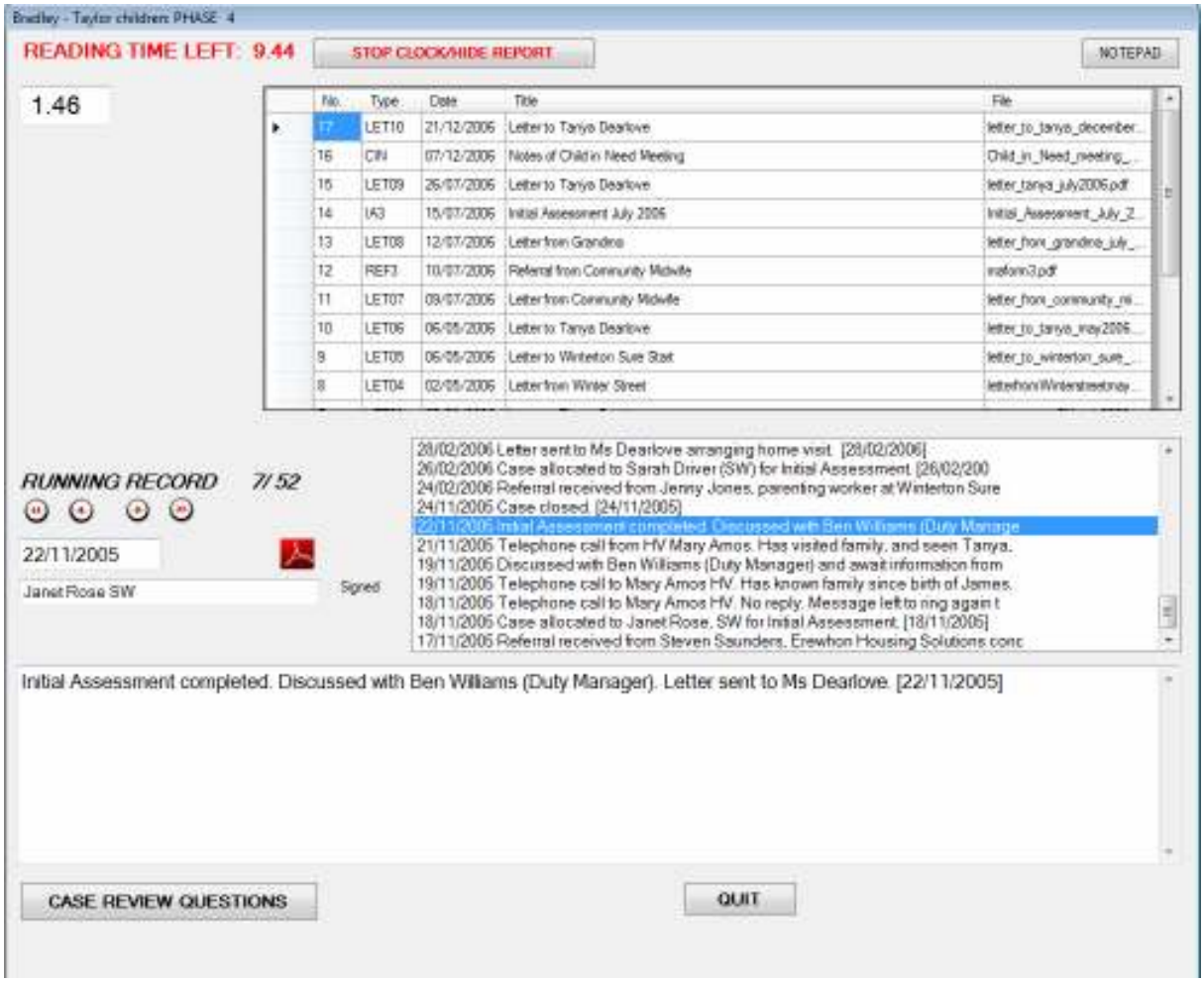

Figure 1: Screen shot of the main screen of Brigit.

At the time of writing, BRIGIT is close to the end of its development, and a number of test sessions have been run to test the software and to finalise its design. Three e-cases have been developed, and several more are under construction. Experimental session are typically two hours in length, including 30 minutes of training followed by a single test case. The aim in the coming months will be to "test" a small set of participants at each site (5 to 8). Note that the micro-world will be developed as a generic tool, able to be populated with different samples of cases. It will be made available as a teaching tool for professional development, education and research tool.

POPULATING BRIGIT

The generation of case material for the microworld simulation involved a number of design activities that throughout were informed by the fieldwork phase of the study. The first stage involved inventing a fictional local authority (named 'Erewhon') and designing local customised documentation, such as templates for initial assessments, referral forms,

letterheads etc. As the cases were generated a 'glossary' of services, agencies and workers for Erewhon was developed. This glossary was originally intended as a resource for participants within the simulation, but its value in terms of ensuring fictional credibility was increasingly realised as the case material and the multi-agency cast of characters and services grew.

The original intention was to develop approximately 10-12 cases for the microworld during the course of the ESRC study and at an early stage the team agreed the types of cases that would be developed. This included for example cases featuring upon neglect, domestic violence, substance misuse and/or mental health issues, an older adolescent, child with disabilities, parental request for local authority accommodation for child/young person, and incidents leading to swift decisions to institute care proceedings and/or child protection case conference arrangements. Other ideas to be incorporated into the case materials included cases involving a 'pre-birth assessment', self harm, difficulties in engaging parents/carers, and diversity issues. Establishing the list of potential cases was informed by the fieldwork and drew upon the types of incidents and some of the problematics of decision making observed within the fieldwork sites. As the project developed the list of potential cases was continually revised, informed both by the fieldwork and realisation of the time effort involved in creating case material. The development process involved further refining ideas for the cases, building a thumbnail sketch for each drawing upon and often combining ideas and themes from the original list and from the fieldwork data. In this way the cases were grounded in the fieldwork data, although each reflected a composite of ideas, materials and issues from across the fieldwork sites.

The next stage in the design process involved the establishment of an overall story for each case. Just like writing a novel, it was necessary to create names and details for the characters, locations and services involved in each case, and as the story unfolds ensure a realistic chronological element both in terms of the time line for events and actions as well as the maintenance of appropriate age characteristics for the children and young people featured within each case. This process of storyboarding was important as it laid the foundations for a credible fiction for each case, although the level of detail required was initially underestimated. The next stage involved the translation of this story from a generic account to one that was constructed from the perspective of the social work record(s). Whilst this again is a novelistic device, as many stories are told from one particular viewpoint (Anderson 2005; Cox 2005), it also reflects a consistent issue in child welfare work where agencies often have only a partial view of the case (Munro 2004:180) Achieving this in the microworld cases was quite challenging, and again the authorial processes involved in this developed with experience. Constructing the story in this way however provided opportunities to incorporate a number of features, such as 'errors', resource constraints and performance management imperatives, into the case materials. Once the outline story of events as captured by the social work records had been completed, this was used as the basis for the 'running record'/'case notes' used within the case simulation.

Once the design and narrative plan for each case was established it was necessary to write the details of the case including completing the running record and all the documentation such as assessments, letters and referral forms. Each case was created in a single Word document, commencing with the 'running record' and followed in chronological order by the rest of the case documentation. Whilst this generated a large file, it enabled amendments to be made as the authoring was taking place. It also ensured all the materials that were being developed were held together and avoided possible version control and file naming problems that may have arisen if each document was initially created as a separate file.

Writing the details for each case was a lengthy process which necessitated considerable re-reading and double checking of materials for accuracy and coherence. It also required an engagement with the language and writing practices of professionals (Hall 1997; Hall et al, 2006). Here examples from the data, which were fully anonymised and often slightly altered, proved invaluable to ensure the resultant case materials displayed a degree of authenticity and most importantly were written in styles that reflect professional talk and writing.

Despite being grounded in the data, the actual cases were fictions and this also had implications for the process of writing the case details. The fictional nature meant it was necessary to imagine the case, the characters and events, and to continually engage and focus upon this as the detail of the case was completed. The 'imaginary' nature of the case also offered opportunities for additional fictional (artistic) license such as elaborating on events, characters, contexts or history, although the ramifications for making such amendments resonated throughout the case and usually resulted in considerable extra work. Throughout this process it was important therefore to ensure the overall story of the case, the professional decision making and the overall case materials maintained a high degree of accuracy and credibility.

The potential and future applications of the microworld, both in research and pedagogical terms, were increasingly realised as the project developed. This impacted upon the design of the cases, such as incorporating across the cases some common dates to enable its potential application for both 'testing' and learning about case allocation/prioritisation to be fully realised. Again this required a careful checking as even a simple realignment or alteration of dates within a case had implications across the case materials. Once the case was written it was necessary to prepare the material in a format that would enable uploading into BRIGIT. This involved sub-dividing the case material which was originally generated as one large word file, into a number of separate word files for each document, letter, referral form, assessment form, report etc. Apart from the 'running record', all of these files need to be named using an accurate and specific format to facilitate uploading into BRIGIT. As these file names appear in the document list in BRIGIT it is important their titles make sense to the microworld user. At this point the word files are converted into Adobe pdfs, and these are transported into the microworld using a specifically formatted 'file list' that can be read by the BRIGIT software. The final stage involves converting the 'running record' into a text file, again following a specific format to ensure compatability with the BRIGIT software.

PRELIMINARY FINDINGS

As noted, BRIGIT monitors all interactions between the users and the simulated case records. A range of outputs are produced, including a spreadsheet showing the nature and time of each interaction (see figure 3). From this raw data, we can compute (using standard Excel functionality) for instance which documents are looked at longest as well as examining the strategies which users following in navigating their way through the documentation. This user for instance tended to inspect all the original documents first before scanning through the running record to make sure she had missed nothing (the case is the same as that illustrated in figure 1, the "Bradley-Taylor" case) . Such reliance on original documents was typical of more senior staff in the cohort of pilot subjects. The sample is admittedly on the small side, but the observation serves to illustrate the sort of generalisations that could emerge from the research.

24	Opening maform1.pdf	154
178	Showing log entry 1	13
191	Starting review for phase 1	16
207	Ending review for phase 1	6
213	Opening InitialAssessmentJordan25October2005	144
357	Opening InitialAssessmentJordan25October2005	40
397	Showing log entry 2	4
401	Showing log entry 3	3
404	Showing log entry 4	9
413	Showing log entry 5	4
417	Showing log entry 6	2
419	Showing log entry 5	4
423	Showing log entry 6	112

a)

DOCUMENT	TOTAL VIEW TIME
Opening InitialAssessmentFebruary2006.pdf	292
Opening Child_in_Need_meeting_dec_2006.pdf	289
Opening Initial_Assessment_July_2006.pdf	249
Opening InitialAssessmentJordan25October2005 Part 1	167
Opening maform1.pdf	154
Opening maform2.pdf	135
Showing log entry 6	131

b)

Figure 3. a) An excerpt from the running protocol for one of the pilot users. The first entry indicates that the document "maform1.pdf" was opened 16 seconds into the session and viewed for 154 seconds. b) shows the summary analysis for this user, indicating the Initial Assessment done in Feb 2006 was the most heavily used document (viewed for nearly 5 minutes in total).

As well as this quantitative data, BRIGIT also captures qualitative sense-making and professional judgement, via the case reviews. Figure 4 shows the Question posed at the end of the phase 4 (the final phase) for the same case and pilot user as above.

Reflecting back on this case, what are your views on the decision-making and professional activities. What organisational factors do you think may have impacted on this process? Please draw on similar scenarios that have occurred in your Authority to illustrate your points.

ANSWER: Decision making based on incomplete information on IAs and no enquiry further into case. For e.g. what do we actually know about parents and their history. Issues such as drug taking alcohol use etc not explored. Rent arrears continued to increase - was this an indicator of lack of budgeting or on money being spent elsewhere?

Professional activity was lacking on the part of the SW. Lack of enquiry into background. Not listening to mother - she repeatedly asked for help and demonstrated some ability to engage with professionals (e.g. housing and sure start) but social work involvement seemed to be done to her rather than engaging her. Dad (s) were missing from the assessment totally other than a couple of brief comments about who they were and one about being a care leaver. If SWs in this case were inexperienced then supervision and case discussion was needed to guide them on info gathering and particularly on analysis of info. Also SW or manager should have taken responsibility for ensuring plan was clear, involved parents and all professionals involved knew who was doing what, when, for how long and what intended purpose for involvement was and finally what were outcomes of intervention. For et throughout there were comments regarding rent arrears but no measurement of how this was being tackled and what progress/lack of progress in terms of reducing rent arrears was being made.

Other agencies did not seem to be taking up the responsibility of case management and planning if they remained concerned for the children. I have mixed experience of other agencies / professionals taking responsibility when there is no SW allocated to a case. In some cases I have worked with professionals who have been very pro-active in supporting the family and very clear in their planning, intervention and review of intervention. Equally I have worked with professionals who see their role ending when the case is referred. The former is always the more successful in terms of supporting families.

Key organisational factor would probably have been capacity to work with a case which may not have been as concerning as other cases open to the team. I have worked in teams where we have not been able to allocate cases where children are subject to safeguarding plans due to lack of social work capacity (skills and space on case load). In such cases children who are deemed child in need will be unlikely to get an allocated SW.

Figure 4

CONCLUSIONS

The data from our ethnographic work demonstrate the various frames, orderings and institutional categorizations in use in children's services departments in local authorities in England and Wales. The context is the morally laden domain of child welfare where

constructions of risk are ubiquitous, yet must in some way be prioritised and accounted for against a range of criteria and concurrently assigned to an "electronic pathway". The need to ration and contain workload produces a range of expedient adaptations based on often tacit criteria, such as the presumed vulnerability of children at various ages and stages.

We have described how we have designed, populated and deployed a simulation known as BRIGIT to support our research into these "hard to reach" issues, aiming to use it as a generative device for stimulating realistic human behaviour in order to study its properties. In particular, we will be concerned with the principles that govern information sampling, the valorisation of one institutional information source over another, the cognitive biases that mould the sense-making process, and the moral and technical heuristics which are invoked to justify decisions. Our attention will focus on the *post hoc* reasoning whereby emergent errors are rationalised.

If errors are hard to observe in the "blooming, buzzing confusion" of real work, one recourse is to contrive them within an 'artificial reality'. Micro-world simulations enable the creation of such scenarios, as we have illustrated above. Our preliminary studies have confirmed the dramaturgical power of well-designed microworlds (in terms of case content and of the artefact itself) to engage users and to elicit realistic interaction. All our pilot users have affirmed the realism of the case material, and commented favourably on the usability and face validity of the software. As well as varying the intrinsic parameters of decision-making (e.g. task complexity), BRIGIT will also allow external variables to be manipulated, especially relevant stressors such as time pressure (Wastell et al., 2003). Monday morning in Valleytown graphically shows something of the stress levels caused by workload and time constraints that routinely impinge upon hard-pressed social work staff, and of the degradations in decision quality, and therefore the likelihood of error, as crude heuristics take over from careful, critical analysis.

Where stress is acute and error highly consequential, well-designed ICT systems are paramount. Yet the contrary would seem the norm in many safety critical domains that involve health and social care professionals working with people. We noted in our opening remarks that ICT is integral to the modernisation agenda in public services, archly hinting at the disconnection between policy hyperbole and the reality of the workplace. Atrocity stories about ICT failures are nothing new; the debris-trail of spectacular miscarriages goes back to the much-bruited fiasco of the London Ambulance System (Wastell and Newman, 1993), and far beyond that. The tribulations of the current NHS computerisation mega-project ("Connecting for Health") show that the lessons of history have not been learned, seeming to doom their endless repetition. The misfortunes of ICT in social care have a saddeningly familiar ring. The following quote from a front-line social worker in one of our sites sums up the realities of life for the benighted end-users of these design monstrosities.

> **Social Worker:** And when you say, like you say you are spending 60, 70% of your time just like this on a computer, you think, 'I'm sure I didn't go to college for this'…. So basically I sat for nearly five hours in front of the computer just dragging and dropping documents and moving them around. And then you know I'd try and open one and it disappeared and you know. I was constantly in the information room, swearing. (laughter)…. There's something, some kind of scam going. Do you know what I mean? My step-brother he's a computer architect and I told him about this system and he just said, well essentially he said it's a banking system and he just said it's rubbish.

Not only was this system frustrating for users, it also flopped abysmally as a management tool. Its performance as a not-so-ready source of audit information to service the performance indicators provided particularly delicious irony. When the number of Initial Assessments completed within the statutory period was assayed, the system returned a figure of 37%! Was "performance" really so dismal? Fortunately not so. Staff, so wary of the frequent system crashes, had simply learned to work around the software and prepare their reports elsewhere. Far from a "simple push of a button", a massive operation was therefore required, trawling through hundreds of cases, in order to retrieve the missing management information. Technical teething troubles? Subversive staff rattling the bars of the iron cage? Incompetent design? Mercenary salesman? You pays your money…. But what stands out is the monumental and tragic waste of professional time for all concerned.

Unquestioned faith in the power of standardised procedures enacted by ICT to improve efficiency and effectiveness, and all-importantly to abate errors, seems well-ensconced the prevailing philosophy of administration. Technology is the new magic. But where is the evidence or the reasoned argument for this fetishization of formality and of the machine? On the contrary there would seem good grounds for caution and pessimism. One of us wrote (Derniame et al., 1999) nearly ten tears ago of the failure of an attempt to introduce work-flow technology to automate the relatively simple processes of a computer help-desk in an organisation known pseudonymously as "Orchid Systems":

> processes were seen as formally expressible sequences of routine, recurrent activities that take inputs and produce outputs in a largely mechanical way… This suggests workers follow procedures akin to the way a computer executes a formal algorithm. The study in Orchid acutely shows up the naiveté of this view and confirms the findings of other ethnographic studies[4] in revealing that even routine work, which appears on the surface to be mundane and procedural, involves a considerable amount of extemporisation and problem-solving which is rendered invisible in formal process models. This hidden work has been referred to as *articulation.*

The principles of effective design praxis are not the carefully-guarded secret knowledge of an hermitic priesthood, they are well known; the need to take a socio-technical approach is paramount, focused squarely on supporting users rather than automating processes (e.g. Wastell and Newman, 1996; Wastell et al., 2007. Though more honoured in the breach, impressive results can be achieved when these simple precepts are followed. Following such a user-centred approach, for instance, the Manchester ambulance service, in their computer project, managed to accomplish the virtuous circle of reducing stress *and* improving service response time, in stark contrast to the LAS disaster mentioned above (Wastell and Newman, 1996) where a mechanistic "task and technology" approach predominated.

As well as generating scientific knowledge about human behaviour, microworlds such as BRIGIT have obvious potential in a design context, as a way of involving users in the design process and eliciting relevant generic design knowledge regarding particular classes of artefact (Wastell, 1997). Using the microworld approach, for example, Wastell et al (2008) have demonstrated that users strongly prefer predictive decision aids for the management of domestic heating systems, rather than instructional support. An emergent aim of our work, not at all anticipated at the outset, will be to improve the design of software systems in social work, aiming at "convivial tools" which are pleasurable to use and help practitioners to do

[4] The implicit argument for ethnography as a design tool is well worth noting *en passant*. The use of ethnographic methods for exploring such "articulation work" is integral to the SPRINT design methodology developed by one of us for application in the public sector, see Wastell et al (2007).

their real work, We intend, albeit in a limited way, to experiment with different support tools and methods of presenting information, and to study patterns of interaction from a design perspective. Users have been debriefed at the end of the prototyping sessions and have provided useful feedback for enhancing the design of BRIGIT[5] as well offering general ideas for the sorts of tools that would genuinely help their practice. Fittingly, let us leave the last word to our users, ending with a sample of fruitful ideas that emerged from one participant:

> Telephone recordings would be useful – often it's how people sound – are they bitter, how serious are they…The ability to group things together such as referrals to see if there are trends… a "flicking through" facility to help find important documents, like psychological reports done four years ago.

REFERENCES

Anderson L. (ed). (2005). Creative Writing. London: Routledge.

Bell, M , Shaw, I., Sinclair, I., Sloper, P. and Rafferty J (2007) An evaluation of the practice, process and consequences of the ICS in councils with social services responsibilities. Report for DfES.

Atkinson, P. 1990, *The Ethnographic Imagination,* London: Routledge.

Billig, M. and Sabucedo, J.M. 1994, 'Rhetorical and ideological dimensions of common sense', in J. Siegfried (ed), *The Status of Common Sense in Psychology,* Norwood, New Jersey: Ablex Publishing Corporation.

Chief Secretary to the Treasury (2003) Every Child Matters, Cmnd 5860, The Stationary Office, London.

Clarke, C. (2007) Professional Responsibility, Misconduct and Practical Reason, Ethics and Social Welfare, 1:1, 56-75

Cox A. (2005). Writing Short Stories. London: Routledge.

Department for Children, Schools and Families (DCSF) (2007) Referrals, assessments and children and young people who are the subject of a child protection plan or are on child protection registers, England, year ending 31 March 2007. http://dcsf.gov.uk/rsgateway/DB/SFR/s000742/index.shtml (accessed, 1 May, 2008)

Department of Health, 2000, *Framework for Assessment of Children and Need and their Families,* Stationery Office.

Derniame, J-C, Wastell, D. and Baba, A. (1999). *Software Process: principles, methodology and technology*. Lecture Notes in Computer Science, 1500, Springer Verlag.

Ferguson, H. (2004*) Protecting Children in Time: Child Abuse, Child Protection and the Consequences of Modernity*, Palgrave/Macmillan, Basingstoke.

Gubrium, J.F. 1989, 'Local cultures and service policy', in J.F. Gubrium and D. Silverman (eds) *The Politics of Field Research,* London: Sage.

Haidt, J. 2001 The emotional dog and its rational tail: a social intuitionit approach to moral judgement, *Psychological Review,* 108, 4: 814-834.

Hall, C. (1997) *Social Work as Narrative: Storytelling and persuasion in professional texts*, Aldershot, Ashgate.

Hall, C., Slembrouck, S. and Sarangi, S. (2006) *Language Practices in Social Work: Categorisation and accountability in child welfare*, London: Routledge

[5] Not only of the design of BRIGIT but of the experiment itself, e.g. the idea of separate time budgets for each phase of the experiment, in order to reflect the varying levels of time pressure of real-world work.

Hockey, G.R.J., Sauer, J. and Wastell, D.G. (2007). Adaptability of Training in Simulated Process Control: Comparison of Knowledge- and Rule-based Guidance under Task Changes and Environmental Stress, *Human Factors*, 49, 158-174.

Illich, I. (1973). Tools for conviviality. New York, Basic Books.

Munro, E (2004) 'State Regulation of Parenting', *Political Quarterly* 75(2) 180-184

Peckover, S., Hall, C. and White, S. (2008) From policy to practice: the implementation and negotiation of technologies in everyday child welfare, *Children & Society*.[Online Early Access doi:10.1111/j.1099-0860.2008.00143.x]

Peckover, S., White, S. and Hall, C. (2008) Making and Managing Electronic Children: e-Assessment in Child Welfare, *Information, Communication and Society.* 11:3, 375 – 394

Reason, J. (2000). Human error: models and management. *BMJ,* 320, 768-770/

Sauer, J., Wastell, D. and Hockey, G. (2000) A conceptual framework for designing microworlds for complex work domains: a case study of the Cabin Air Management System. *Computers and Human Behaviour*, 16, 45-58.

Wastell, D.G. (1997). Human-machine dynamics in complex information systems: the "microworld" paradigm as a heuristic tool for developing theory and exploring design issues. *Information Systems Journal*, 6, 245-260.

Wastell, D.G. and Newman, M. (1996). Information systems development in the ambulance service: a tale of two cities. *Accounting, Management and Information Technology*, 6, 283-300.

Wastell, D.G., McMaster, T. and Kawalek, P. (2007). The rise of the Phoenix: methodological innovation as a discourse of renewal. *Journal of Information Technology, 22, 59-68*

Wastell, D.G. and Sauer, J. (2008). Homeward bound: ecological design of domestic *information systems. In Leon, G and Kautz, K. (Eds)* Open IT-based innovation. Springer.

White, S. (1998) 'Examining the Artfulness of Risk Talk', in A. Jokinen, K. Juhila and T. Poso, *Constructing Social Work Practices,* Aldershot: Ashgate.