

## Imaginary design workbooks

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# Imaginary Design Workbooks: Constructive Criticism and Practical Provocations

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## ABSTRACT

This paper reports design strategies for critical and experimental work that remains constructive. We describe a design workshop that explored the “home hub” space through “imaginary design workbooks”. These feature ambiguous images and annotations written in an invented language to suggest a design space without specifying any particular idea. Many of the concepts and narratives which emerged from the workshop focused on extreme situations: some thoughtful, some dystopian, some even mythic. One of the workshop ideas was then developed with a senior social worker who works with young offenders. A “digital social worker” concept was explored and critiqued simultaneously. We draw on Foucault’s history of surveillance to “defamiliarise” both the home hub technology and the current youth justice system. We argue that the dichotomy between “constructive” and “critical” design is false because design is never neutral.

## Author Keywords

Design fiction, domestic technology, surveillance, privacy

## ACM Classification Keywords

H.5.m. Information interfaces and presentation

## CONSTRUCTIVE VS CRITICAL DESIGN?

From a certain point of view design is a very practical business that mainly requires precision and clarity. Like engineering and architecture it is ultimately concerned with construction and in this respect it is much more of a science than an art. But design is also linked to messy Humanities based practices like criticism and even fiction. Critical design can function like an essay to highlight some aspect

of our lives that we might not otherwise notice [14,15,13]. Design Fiction describes products and services which do not exist to reflect on the social and political impacts of new and emerging technologies [3,7,26,27,38,39,41]. Construction and criticism can sometimes appear to be polar opposites. Indeed, the title of a recent paper by Forlizzi et al calls for a divorce between these types of design [16]. This paper argues that the dichotomy between criticism and construction is a false one.

The idea of criticism as a primarily negative or destructive act has long been rejected in the field of STS (socio-technical studies). In 2004 Bruno Latour wrote:

*“The critic is not the one who debunks, but the one who assembles. The critic is not the one who lifts the rugs from under the feet of the naïve believers, but the one who offers the participants arenas in which to gather.”* [25].

We take the design of voice activated “home hubs” as an example of a domain where critical thinking is essential to any kind of constructive work. The paper reports findings from a design workshop at Mozilla which aimed to explore the home hub technology space. The workshop was built around “imaginary design workbooks” - collage based documents made up of images, sketches and invented diagrams, signs and symbols. Participants used these workbooks as a resource to create narratives around potential technologies. The narratives were often dark and dystopian reflecting contemporary concerns with the possible abuses of technological power.

Voice activated home hub technology affords unprecedented invasions of privacy. The potential for new forms of surveillance are such that they might transform the home into a cell of a penal colony. Taking a Foucaultian perspective on the development of prisons we consider how home hubs might be developed in the context of non-custodial sentences for young offenders. The paper concludes with imaginary design workbook pages sketching the notion of a “digital social worker”. We argue that design in these contexts is inherently political and for this reason any constructive design work must also be critical.



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## DESIGN IN THE POST PRIVACY AGE

In 2010 Mark Zuckerberg declared that privacy was no longer a social norm:

"People have really gotten comfortable not only sharing more information and different kinds, but more openly and with more people," he said. "That social norm is just something that has evolved over time." [23].

Clearly, this is a self-interested statement from the CEO of a company that is leading the way in demolishing our previous notions of what was and was not "public" information. But it would be difficult to argue that social norms have not changed following the mass adoption of smart devices. The phones we carry today are literally our fingerprints: they log where we go, what we read, what we buy, and the questions we ask. As a condition of use apps can access our cameras, microphones and contacts as well as installing spyware in return for as little as a flashlight.

In addition to the devices we carry, there are now networked technologies in the home such as Alexa and Google Hub. These voice activated devices allow users to perform speech based internet searches, stream music and radio, as well as place shopping orders, get weather forecasts and so on. Although manufactures insist that the listening mode of such devices is only activated when a user gives a "wake word" like "Alexa" or "OK Google" they are technically capable of listening all the time and indeed must do so in order to detect the wake word [44]. Police in Arkansas recently demanded that Amazon turn over recordings made in the home of a murder suspect [34]. The surrounding publicity raised questions for many customers about what was and was not being recorded.

### Mozilla Workshop

In the summer of 2017 Jofish Kaye invited Mark Blythe to run a design fiction workshop at the biannual *All Hands* meeting of Mozilla. Figure 1 shows a forward-looking and deliberately provocative figure for discussion at that meeting:

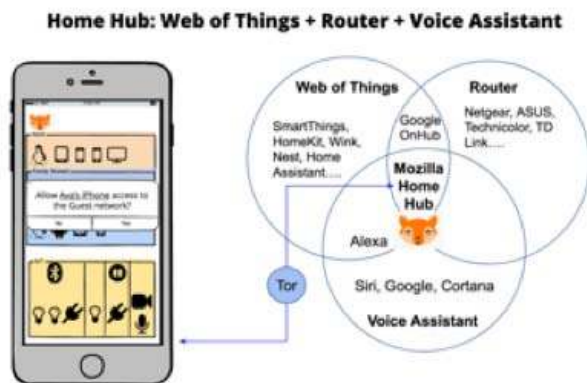


Figure 1 Home Hub. Mozilla All Hands Meeting 2017

There are any number of ways in which router, voice assistant and web of things technologies might be configured to produce novel functionalities and services. Jofish wanted a workshop that would explore this space in as imaginative and creative a way as possible. Design fiction is increasingly recognized as a useful tool for thinking about new and emerging technologies, not merely in terms of technological possibility but also potential social impact (e.g. 1,7,8,9,24,27,35,39,40). We designed the workshop around an "imaginary design workbook".

### IMAGINARY DESIGN WORKBOOKS

In "Magic Machine" workshops participants create devices from cardboard, plastic cups, straws and other lo fi materials in order to articulate desires and fears around new technology. [3,4]. The workshops begin with the Arthur C Clarke quote about any sufficiently advanced technology being indistinguishable from magic (ibid). This allows participants to imagine possibilities without feeling constrained by whatever is currently technologically plausible. We wanted to capture something of this spirit in our thinking about the home hub space. While planning the Mozilla workshop the first and second author were working on a paper based on a fictional writer called Valdis Ozuls who wrote prescient design fiction in the 1940s [9]. Following this we thought it might be interesting to create an imaginary designer. At first we thought this might be someone working in an unfamiliar country or society. Perhaps their designs could have been stolen in an act of industrial espionage. The ethics of this scenario were problematic however and the idea developed into a found object. The "found object" device is such a staple of post modern literature that Umberto Eco's *Name of the Rose* begins with a preface entitled "Naturally, a manuscript." This describes how the author finds a fourteenth century book, which he purports to then translate. Here we imagined that we had found a design workbook.

Design workbooks are documents used to record initial concepts, sketches and inspirational materials [21]. The first author suggested that we might find the workbook of a Chinese designer. He sent crude line drawings of a chameleon like hub to the second author who transformed this idea into a much more elaborate and imaginative final form [9].

Enrique was inspired by *The Codex Seraphinianus* (Figure 2), an encyclopedia depicting an imaginary world created by its author Luigi Serafini [35]. The illustrations in the codex are surreal creations which suggest biotechnologies and hybrid creatures, part mechanical and part organic. It is written in an invented language and features many diagrams and instructions that are impenetrable yet suggest a kind of logic. The symbols and text imply taxonomies and meaning without ever specifying anything. Such material is open to multiple interpretations in ways useful for design [20]. Serafini intended to elicit a similar experience to that of

children reading books they cannot understand which they know hold meaning for adults [45].

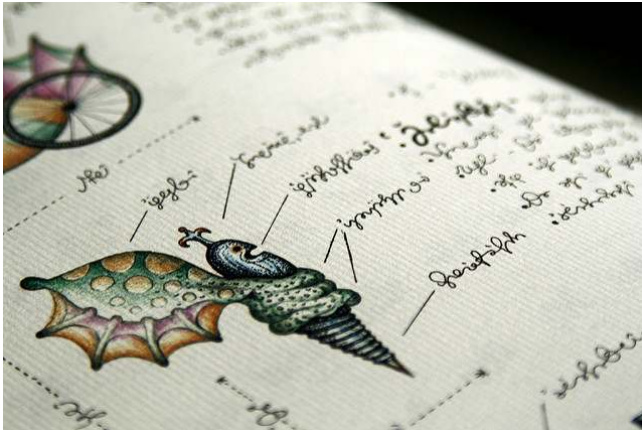


Figure 2. codex 3. Jack Lyons. CC BY-NC-ND 2.0 Photograph of page from Codex Seraphinianus

This inspired the second author in making an “imaginary design workbook” that would explore the home hub space. He created the books through collage, gluing images, sketches and diagrams into the pages of a blank notebook and adding watercolor and other effects like metallic masking tape with symbols written onto it. The document was then scanned, and twenty five copies were printed and bound for the workshop.

**Bookonon: Imaginary Workbook Examples**

The imaginary workbook, “Bookonon” was divided into three sections each containing around ten pages. The first section featured hybrid creatures of the kind depicted in Codex Seraphinianus (figure 3).

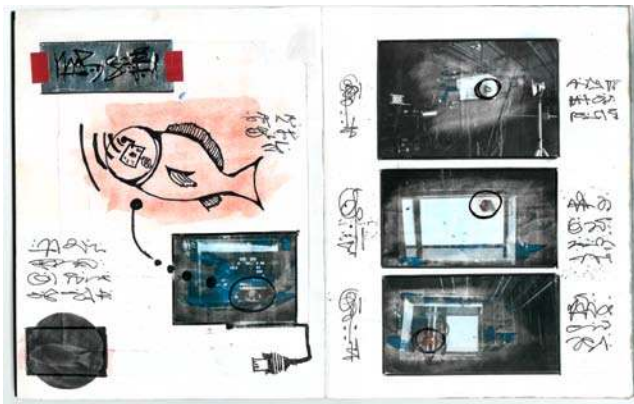


Figure 3: Bookonon Section One Example

The second section featured more obviously mechanical devices which often implied physical augmentation of some kind (Figure 4).

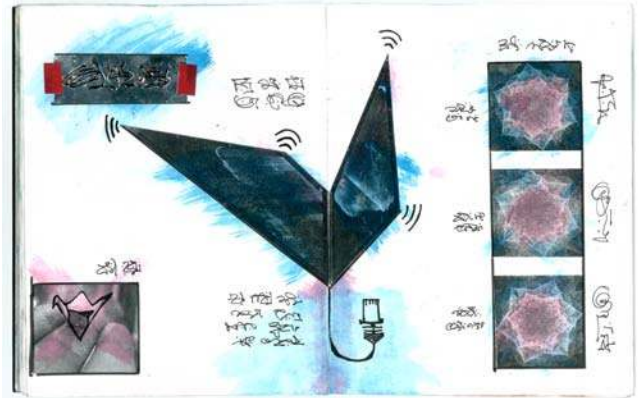


Figure 4: Bookonon Section Two Example

The final section drew on insect like or cell based imagery to create this kind of layout (Figure 5):

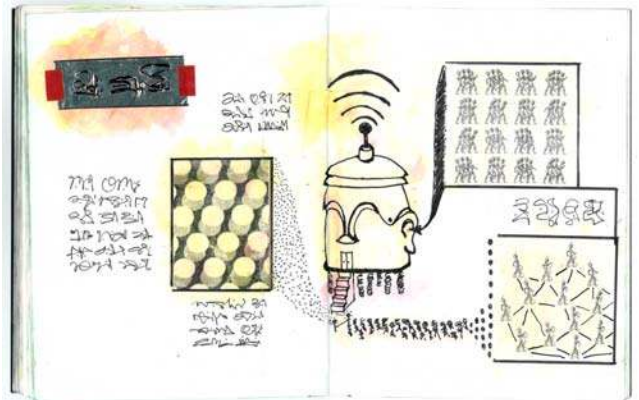


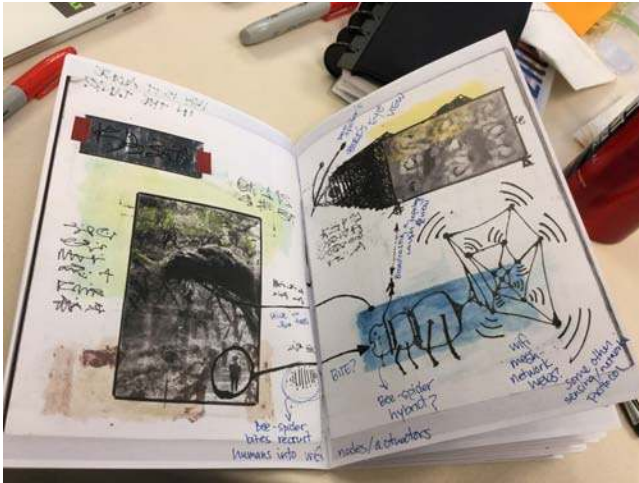
Figure 5: Bookonon Section three Example

The original notebook was multi textured with various materials including photographs, sketches, aluminum foil and supposed writing. The scanned workshop booklet was flat but was perhaps all the more strange for that. Copies of the booklet were given out to the workshop participants and the morning session began with this preamble:

*“What if we found a designer’s notebook in a non place, like an airport? We know nothing about them, not even where they live or what language they speak, the notebook is written in an invented language. Could we make any sense of it?”* [Workshop Notes]

The participants were then invited to choose a sketch and annotate it, attempting to make some kind of sense of what was being depicted. The participants found the books very engaging and the activity generated a lot of good-humored

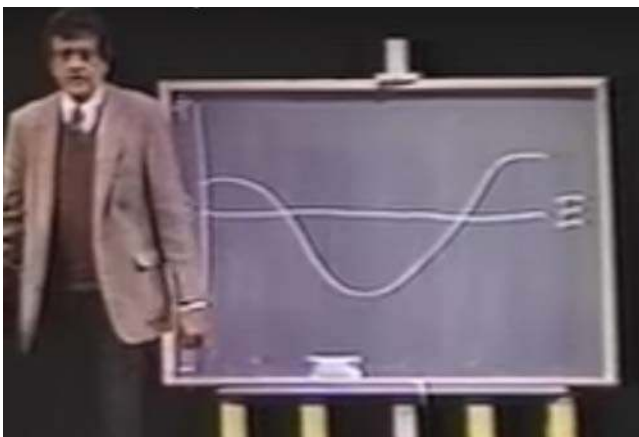
discussion.



**Figure 7: “Translated” Imaginary Workbook**

The annotation in the bottom right hand corner of the workbooks in figure 5, says “wifi mesh network web” and “some other sensing /network protocol”. The session generated many concepts some plausible, some wild and fantastic.

Following this we participants asked the participants to create narratives around the imaginary devices based on Kurt Vonnegut’s story shapes e.g. “man in a hole” where a man (though it needn’t be a man) gets out of a hole (though it needn’t be a hole) [43].



**Figure 6: Kurt Vonnegut, Man in a Hole Story shape. [43]**

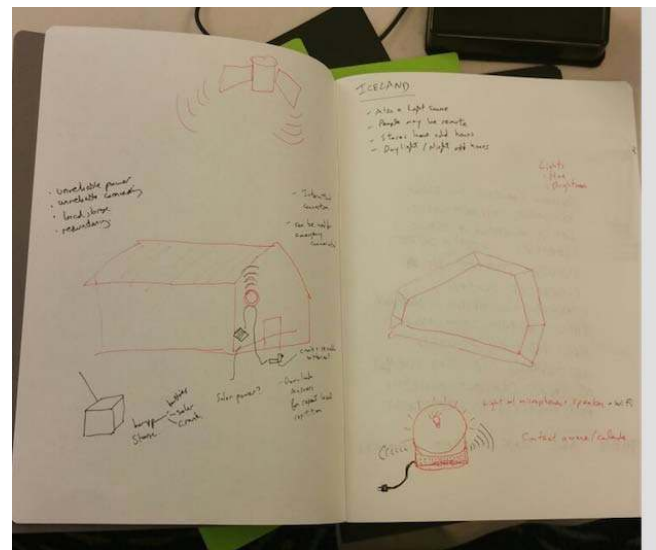
The participants annotated pages from the workbook in pairs and then shared back to the group by telling a story that followed the “man in a hole” shape.

The stories that were improvised were often somewhat apocalyptic – reestablishing networks after some catastrophic event, finding ways to communicate in private under a totalitarian regime. Other ideas were more mundane: how could something configured like a pet help to identify and manage emotions; raised voices with no laughter, for example, might cue a change in lighting or music. Or a system might use insight from Gottman’s

“Love lab” work in psychology to inform algorithms that would encourage positive romantic relationships or positive parenting [22].

Many of the ideas were concerned with alternative or hacked networks, sometimes making use of wildlife or insects or hybrid pets depending on the images that the participants were responding to. One quietly spoken engineer surprised everyone with a beautifully improvised first person account of the frustration a young man experiences in his networked driverless car. He hacks the vehicle in order to take control and ride the freeway for the first time. The engineer’s performance received much applause.

In the afternoon session the participants were invited to create their own imaginary workbooks based in countries other than the one they lived in, such as North Korea or the Congo. They were also asked to create workbooks for alternate timelines, such as a homehub network for a 1980s Soviet Union state. They created their own symbols which were then interpreted by other participants.



**Figure 8: Participant Workbook**

Participants come to workshops like this with a variety of backgrounds and aptitudes which shape how they engage with the material. The workshop was made up of engineers and coders but also people with a very strong background in concept design and future casting. For instance, the fourth author, Miriam Lueck Avery is director of strategic foresight in the Emerging Technologies group at Mozilla. Prior to this she was a research director at the Institute of the Future, so she is used to synthesizing technology scenarios with diverse problem sets.

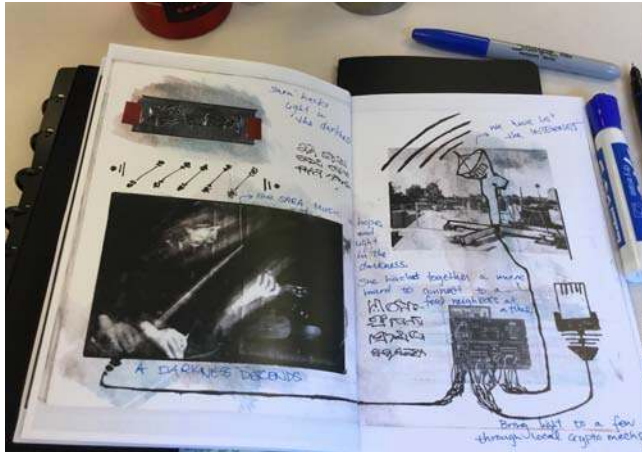


Figure 9: Miriam's Synesthesia Machine Workbook Page

The text in the middle reads: "For Sara music is hope and light in the darkness. She hacks together a [illegible] board to connect to a few neighbors at a time".

After the workshop Miriam worked one of her workbook ideas into a short story. This story is called *Andrew and the Synesthesia Machine* and begins with someone who asks questions: why don't the pipes in his building work, why isn't there clean water, he becomes an activist and gets answers. The narrator introduces him to a student at a university working on an experimental prototype.

*"She had built something that might change everything. We went to visit her in the lab. The second prototype box was black and shiny and the size of an apple. The first prototype covered the bench. A cord snaked between a microphone stand, a Lexan box lined with mirrors and screens, a synthesizer, and several laptops. [...]"*

*Andrew had so many questions. The student had many answers. The microphone listened. The lexan box and synthesizer hummed to life. Images swirled in the box. Ghostly fingers seemed to depress the keys. Soon the room came alive with noise and light.*

*The questions and answers had become explainer videos, set to custom music. [...]. It took voices, and turned it into videos. It took videos, and turned it into music. It took music, and turned it into text. It took text, and turned it into smells. She called it the Synesthesia Machine. [...]"*

*Then, one of the other labs pinged back. The student stopped. That had never happened before! Their output system uses viruses. They infect, and persuade. Like that virus that rats get, which makes them more likely to be eaten by cats. The two projects could work together! [...]"*

A system is developed but it is potentially dangerous.

*Last week, some rogue government agents deployed a similar technology in the Philippines, and things got dark. (Many were arrested, and others died). But we could use it for good. It must be used for good."*

The protagonists use the machines at a gathering of rich and powerful people:

*"Two thousand people, people of power, were breathing my special air.*

*The lights dimmed slightly before the schedule indicated they should. The images and voices and music started flashing across the screens. They also flashed across the tables. Moods and smells flooded the room. Smells of sewage and sadness joined my spikey persuasion viruses in the nostrils of the powerful. Strange music keened overhead, abstract but unforgettable.*

*A low murmur of reaction soon mounted to a roar. It started as a roar of confusion. The pitch then changed to consternation. Finally, outrage."*

Miriam's story encapsulates many of the concerns and possibilities that were discussed during the day: fragmented communities, an increasingly authoritarian state, broadening divisions in society, the potential for technological developments to be used not for "good" as the protagonist of Miriam's story insists, but rather political and social domination.

Although much of the workshop was playful many serious issues were discussed. It was very clear that while this kind of voice activated home technology had the potential to improve lives it also had some worrying implications.

#### AFTER THE WORKSHOP

Feedback on the workshop was extremely positive: it had been very stimulating for organizers and participants alike. This kind of stimulation and debate is sometimes framed as a goal in itself but it can also be characterized as a weakness: such activities are just discursive, maybe interesting but ultimately of no practical value. This kind of work is not useful, practical or constructive, it is just social critique that might be accomplished better with an essay. But both the academic and industrial partners pursued the ideas after the workshop and developed them further.

#### The Digital Social Worker

After the workshop the material was discussed with the fifth author Rob McCabe, a senior social worker for Birmingham City and Council. Many of the workshop ideas began to coalesce around the complex-needs of the families that he works with on a daily basis. The use of extreme characters and situations has long been recognized as being of practical use in design. In 2000 Djajadiningrat et al considered technology for "extreme" users like a polyamorous woman or the Pope and demonstrated how these extremes can help to widen or narrow the design space [12].

Rob recently authored a report on a school that served some of the most troubled children in the city. A cohort of seventy five children cost the city approximately seven million pounds in fees to institutes for young offenders

[29]. There was a very high rate of recidivism amongst this group with one prosecution making repeat offences more likely. Rob is currently spearheading the Birmingham Pathfinder Project: ‘Different Perspectives-Shared Authority’. School age pupils who have Social Emotional Mental Health (SEMH) difficulties in Birmingham are amongst the most deprived children in the City. Their lives are often characterized by severe multiple disadvantage, such as being born into families where there is an entrenched culture of violence and experiences of multiple traumatic episodes. Family profiles can feature a spectrum of Adverse Childhood Experiences (ACES), including domestic abuse, substance misuse, criminality, bereavement, family breakdown, sexually harmful behavior, self-harm and mental health issues.

Rob is leading a multi-agency “Pathfinder” which offers a new kind of intensive and relational support, wrapped around by a multi-agency team, dedicated to the most troubled pupils and their families. The pathfinder aims to reach families that need help earlier and more quickly through staff who have a shared understanding of multiple and complex needs of their clients. The aim of the project is to achieve positive and longer-term relationships to create more capacity in families for sustained change. By demonstrating a more ACE informed collaborative or ‘co-resolve’ approach to building stronger families the pathfinder is attempting to re-imagine the ‘statutory service-client’ relationship. A Parent’s Forum is underway and aims to shift family awareness from ‘what’s wrong with my child?’ to ‘what’s happened to my family?’

Working with Rob we developed a number of scenarios around a complex needs family. “Jessica” is a single Mother who lives with her fifteen year old son Jack. Jack has committed multiple violent offences and often physically intimidates his Mother. The scenarios revolved around “Winnie” a workshop inspired home hub type device with always on speech recognition and access to various home sensors, links to the school as well as the pathfinding social work team. Some fifteen or so one line scenarios were written, for example:

*Winnie informs the school that Jack only spent two hours in bed last night.*

*Winnie messages Jessica to say that Jack has taken six lagers from the fridge.*

*Winnie registers raised voices and changes the lighting and music.*

*A mirror logs Jack’s red face as stressed cueing a path finder phone call.*

*Winnie registers Jack’s speed typing text messages and infers agitation, it logs a call from Jack’s father with raised voices, Winnie suggests that Jack engage with his anger management programme.*

*Winnie registers an argument between Jessica and Jack. Jessica employs an agreed “safe phrase” and Winnie places a call to the police.*

In these scenarios Jack has been sentenced for an offence and given choice between Young Offenders Institute and living with Winnie.

Enrique developed further imaginary workbook pages around the idea of a Digital Social Worker:



Figure 10: Digital Social Worker

The sketch in figure 8 features the kind of cut and pasted magazine pictures typically used in a design “mood board”. It suggests the digital social worker as an agent in the service of better statistics. There are data plots pointing at smiles when the numbers go up and hands that bubble up from executive performance awards.



Figure 11: Digital Social Worker 2

The second sketch (figure 11) free associates around ideas of a family pet. There is a very unthreatening puppy but the idea of a dog also conveys the notion of a guardian. Again

this kind of layout is typical of mood boards in early concept development.

The boundary between provocation and proposal is thin. We wondered what the imaginary workbook would look like if it became real. Enrique turned the imaginary language into English for the spread below.

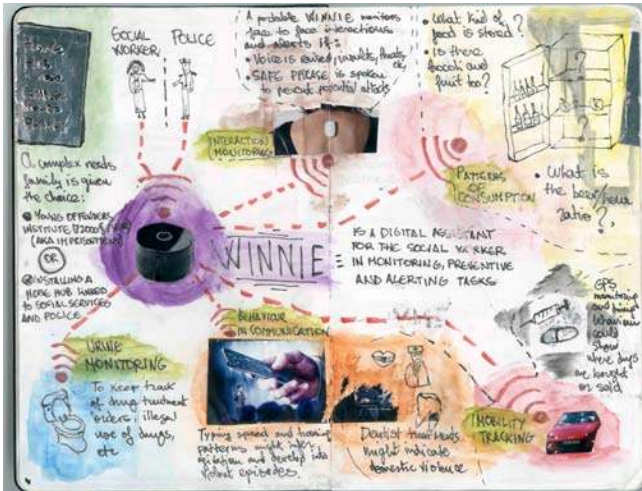


Figure 12: Imaginary to Real Workbook

“Winnie” is pictured here as a realistic home hub like Alexa. The device is linked to social services and the police and framed as an alternative to imprisonment in a young offender’s institute. In the bottom left of figure 12 is a sketch of a toilet illustrating urine monitoring to check for drug intake. Communication devices are monitored, text messages and speed of typing infer agitation, the device is linked to the fridge showing patterns of consumption and there is a wearable monitor pictured with a photograph in the centre suggesting a system involving a “safe phrase” to be spoken by the mother or carer to trigger police intervention. Another iteration of the idea supports activities like meditation:

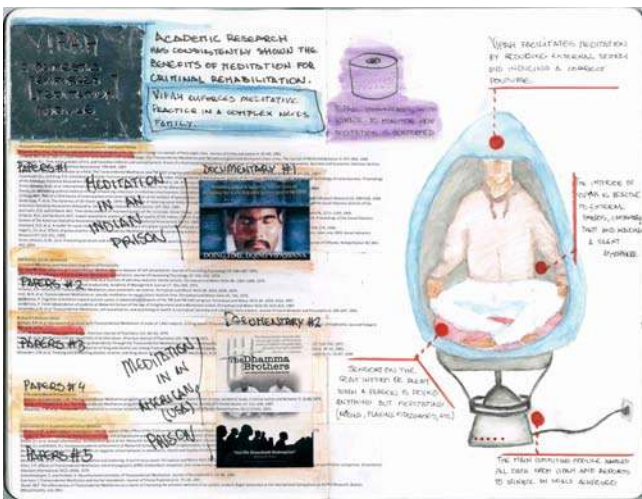


Figure 13: Vipah

The page includes scrapbook style references to academic studies on the benefits of meditation for criminal rehabilitation. Elizabeth Buie also considers this kind of application of application in her thesis [11]. Here the chair-pod reduces external stimuli and helps posture and the seat indicates whether it is actually being used for meditation or something else like playing video games. The idea of “enforced meditation” is something of a paradox and could be described as surreal. Indeed the surrealist filmmaker David Lynch promotes transcendental meditation through his foundation and provides a long bibliography of studies which show the benefits of meditation in prison e.g [1, 2].

These discussions took place outside of the setting of the original workshop. But discussions about always-on voice systems continued at Mozilla as well. In order to engage with immediate ethical concerns about always on voice recognition, an artist was commissioned to create a friendly representation of the system:



Figure 14 Foxy image by Heather James Knight.

The cute characters in figure 14 were seen as far less threatening and sinister and facilitated discussions in Mozilla around commercial applications. The figure was modified below to represent the digital social worker idea:





**Figure 15 Digital Social Worker Modification.**

The image is perhaps less friendly but remains largely unthreatening and underplays the more disturbing aspects of the idea by keeping things cute.

The digital social worker idea might be dismissed as “solutionist” a quick technological fix for a complex social and political problem [30]. But it is imagined in the context of the pathfinder project with multi agency wrap around support. McCabe shared the design (and a draft of this paper) with senior social work colleagues. We were expecting responses expressing interest but serious reservations about ethics. But reactions were much more positive than we expected and Rob’s colleagues were very excited by the possible applications of such a system. Much like ankle tags [36], a home hub could be part of a disciplinary system which is not unproblematic, but may be preferable to incarceration.

Clearly this is a provocation but it is not simply a critique of existing technology. And in order to mitigate against solutionism we developed further narrative based design fiction.

### IMAGES VS NARRATIVE

Images can be powerful ways to illustrate design concepts and explore ideas. Clearly there are advantages to images over text in terms of leaving room for interpretation and ambiguity. But narrative complicates fiction by introducing the element of time [33]. One of the differences between a standard HCI scenario and a design fiction is the inclusion of conflict – the basis of any drama [6]. Annotating the imaginary workbooks generated many concepts but the story shapes allowed for the construction of narrative. The addition of narrative very often led straight to the possibility of abuse – in Miriam’s story for example, the technology is deployed by rogue agents in the Philippines and things get “dark” before anything positive happens.

The notion of a digital social worker in the one line scenarios and sketches focused on the users and the technology. In order to consider the idea from alternative angles we made a design fiction that would focus on the

social context and the state. We further explored the digital social worker with a more developed narrative in order to mitigate against solutionism and consider the perils as well as the possibilities of this technology.

### Historical Design Fiction

The digital social worker idea was applied to the world of Valdis Ozuls a fictional writer named imagined as living through the Soviet Occupation of Latvia [9]. Ozuls is an academic historian but also writes, under various pseudonyms, many very prescient stories that more or less accurately predict some of today’s technologies. For example, in the 1940s he writes a story describing a President who sends thirty second audio clips to hand held devices that it is compulsory for citizens to carry (ibid). An Ozuls story written in the 1980s was set, like some of the imaginary workbooks, in the former Soviet Union:

*“He was able to understand his life only when it was almost at an end. Long after the state had fallen, when the city had a different name and the files had at last been made public, Maris Berzins browsed through his Winston database and felt as if he were meeting another self from forty years ago. It was an experience common to anyone exposed to their Winston data and known by scholars as the Proustian effect. Maris was surprised at how much of these data were absent from his own memories, forgotten, half remembered or actively distorted. He looked through the information with a mixture of fondness, surprise, embarrassment and shame. Unlike the files compiled by humans he could attribute none of this to error, here it all indisputably was”* (ibid)

Maris discovers that his case worker and future wife, Liga, had been intervening in their lives through Winston long before they met. She was remotely monitoring family life and trying to help: if the atmosphere was tense she changed the channel on the radio, if voices were raised she dimmed the lights and so on.

*“As he went deeper into the file Maris realized he had had to learn an entirely new version of his own life story. Incidents that he had thought were happy co-incidences had been carefully planned by Liga. Discovering that they liked the same music, literature and films were not the serendipitous accidents that they had seemed, she had been studying him. She had seduced and married him in order to perfect the measures and sensors that Winston would later use on the rest of the population”* (ibid)

Maris discovers that the officials who arrived one day to install the Winston programme in his home had been ordered to do so by Liga. She had joined their family in order to refine the design.

*“The initial publicity for the Winston programme had framed it as “positive surveillance”, the age of the state spying on its own citizens to prevent rebellion was over. This was not a punitive regime, it was rather a service: a Stasi Godmother. Winston would offer the best advice on*

childcare, supply parents with vital data about their children [.,]

There were some early successes and the deaths of some vulnerable children were prevented through early detection of neglect. But Winston's advice was not consistent, some days it advised parents to be strict other times to leave the kids alone. Sometimes the order was to replace butter with vegetable oil and sometimes the exact reverse. Then corrupt case workers began taking bribes so that Winston would give them more favorable reviews as parents". (ibid)

When Maris discovers that Liga had been the one who ordered the arrest of his first wife he closes the file and erases the data.

The Ozuls story draws on Timothy Garton Ash's account of reading his own secret Stasi file when it was released twenty years after he had lived in East Germany [18]. He called the effect Proustian after the famous episode in *Remembrance of Time Past* where the author vividly recalls visiting his grandmother as a child when he dips a madeleine biscuit in tea. Garton Ash's file was some 300 pages long but this was dwarfed by comparison to the files of some dissidents which were 40,000 pages long (ibid). The Proustian effect described is Ash's but the rest draws on other fictional accounts of life under the Stasi in the nineteen eighties such as the film *The Lives of Others*. Winnie becomes "Winston" as a reference to Orwell's protagonist in 1984.

This narrative based design fiction operates as a kind of thought experiment: what if current technology had existed during the 1980s in a country like Latvia under surveillance by the KGB (ibid). This move considers not just technological possibility but historical precedence: what has happened before when the state has taken an extreme interest in the home life of its citizens. It is as pessimistic as the design workbook images are optimistic.

But the criticism implied in the narrative (the dangers of surveillance, possible abuses of power) are not intended to simply curtail all development. This is impossible: these systems are not only being built, they are already in our homes. The fictions both positive and negative, work to indicate the shape of the design space. Winston is imagined as a system that would help deal with a troubled teen in a family with complex needs albeit in another time and place. However bizarre or totalitarian a system like Winston might seem it is no less bizarre than the current system of youth justice. Fictions whether text or image based can help "defamiliarise" or make strange [37] our present-day realities. Historical writing can have the same effect. Looking at the past prompts questions about the present. Nowhere is this clearer than in Michel Foucault's historical survey of the rise of the prison system.

#### DISCUSSION: DEFAMILIARISATION BY DESIGN

Foucault begins *Discipline and Punish* with a juxtaposition of two design artifacts: a death sentence and a timetable.

The death sentence orders that Damiens, a regicide, be publicly executed by "drawing and quartering". Foucault quotes extensively from an eye witness account so that the reader is confronted with exactly what this means. Each of the man's limbs are tied to a horse pulling in different directions.



Figure 16: Execution of Robert Francois Damiens

Following a detailed and harrowing description of this execution Foucault transcribes the rules for "The House of Young Prisoners in Paris". The times and manner in which they rise, make their beds and say their prayers are all minutely specified as are the ways in which they wash and eat. After listing their routine hour by hour Foucault observes that less than a century separates these two penal styles. The bloody spectacle of public torture is placed alongside the dry routine of the prison in order to render them both strange. How odd that men and women separated by only a few decades could consider either as aspects of the same abstract idea: justice. We cannot see either public torture or incarceration in quite the same way again.

We are often blind to our own historical moment. Whatever happens to be the norm for the era we live in is taken for granted: it is normal and ordinary. Although prison may seem to us quite unremarkable this is not how it would have seemed to our ancestors, nor is it likely to seem so to our descendants. Foucault continues the strategy of defamiliarisation in *Discipline and Punish* by focusing on the period before the prison sentence became the standard punishment for all crime. Reformers of the early nineteenth century considered many alternatives that might seem odd to us now. One of the most popular ideas was that punishment should fit the crime symbolically. Foucault quotes from the reformer, Vermeil:

"those who abuse public liberty will be deprived of their own; those who abuse the benefits of law and privileges of public office will be deprived of their civil rights; speculation and usury will be punished by fines; theft will be punished by confiscation; "vainglory" by humiliation;" (Vermeil, 68-145; cf. also Dufriche de Valze, 349 cited in Foucault)

For Le Peletier, violent criminals should be subject to physical pain, the lazy sentenced to labour and more ambiguously “he who has acted despicably will be subjected to infamy” (p.105) For these reformers one size did not fit all. Foucault lists a whole range of these “picturesque punishments”, they include imprisonment but it is only one strategy amongst many.

The idea that prison represents any kind of social justice is difficult to sustain in the face of the statistics on the over representation of ethnic minorities and the lower classes in world prison populations [29]. A recent report into the British criminal justice system found overt bias and discrimination: young black people are nine times more likely to be jailed than young white people [10]. Added to the social justice critique is the spiraling economic cost of prisons. Even journalists for right wing newspapers like Britain’s *Telegraph* describe the UK’s prison system as “completely and utterly broken” citing the famous statistic that it costs more to send someone to prison than it would to send them to Eton or Oxbridge [32].

### Beyond the Construction / Critique Dichotomy

Foucault once remarked that it had taken ten years to turn Sartre’s philosophy into a t-shirt but a matter of months to do that to him. His work is often invoked as a slogan like “knowledge is power” where power is a tool of oppression. But Foucault was always quick to point out that power can also be liberating. He was an enthusiastic frequenter of LA bathhouses and enjoyed S & M fetish games so he was very familiar with the liberating possibilities of willing consent in a power relationship [28].

The beginning of this discussion frames an execution and a timetable as design artifacts. This takes a broader view of design than is sometimes taken in HCI where it can be strongly or even exclusively linked to making something through craft or coding [13]. What constitutes “design” has been fought over across many disciplines including: product design, furniture making, service design, illustration, fashion, sound, film, animation and so on. Linguistic analysis of HCI papers indicates that the word “design” functions primarily as an honorific [7]. We have attempted to show that design in a post privacy space is inherently social and political. The terms and conditions of apps like Tinder are as much a part of the design as the swipe left or right interaction. The contract creates the space for selling data that underlies the business model without which the app does not function. Narrow artifact based definitions of design are simply inappropriate in this domain. Therefore design in this space must and should entail social and cultural critique.

The Digital Social Worker could be presented solely as an ironic provocation, a design for debate or a “questionable concept” [42]: this kind of provocation could be framed as a Swiftian “modest proposal” - let us abolish prison for young people by turning their homes into prisons. We might also present it as a critique of already existing

systems: the technology that you willingly adopt can be framed as a punishment for a crime. But we are not doing either of these things. Rather we are attempting to explore the potential and possibilities of already existing technology with a critical awareness of the abuses that such a system would be vulnerable to if it were developed. Understanding the historical precedents of states surveilling their citizens is crucial to both a critique of current consumer technology and also the ways in which it might be adapted to the needs of extreme users like vulnerable families. Critique and Construction should not be separated in contexts like these.

Ray Kurzweil described a fable about a Chinese emperor who promised to reward an inventor with anything he asked for. The inventor asks for rice, one grain on the first square of a chessboard, 2 on the next, then 4, 8, 16 and 32 with the doubling continuing until the 64<sup>th</sup> square. The Emperor agrees to this seemingly modest request but by square 21 there are a million grains, in the middle of the board there are 4 billion grains. Kurzweil related this story directly to the doubling of computing power described in Moore’s law and argued that in 2006 we reached the centre of the chessboard. After that point the math becomes dizzying moving through petabytes, tetrabytes and exobytes at a rate that strains our ability to conceive number [24]. We are living in an era with technology that would have been literally magical to any other generation and the magic is everywhere, in the landscape itself and far beyond the boundaries of any traditional discipline.

### CONCLUSION

This paper has argued that the dichotomy between constructive and critical thinking is false. In order to be constructive thinking must be critical. Home technologies that record the minutia of our lives are already with us. The question is not should these data be collected but how should they be used and regulated. In these kinds of “post privacy” spaces design must engage with political, ethical and legal issues. Indeed, it already does, the question is whether designers are prepared to acknowledge this and take responsibility or not.

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