# Imagining the Cool-ag: Or, Freedom Considered Harmful

Anonymised

## ABSTRACT

This short paper makes an argument about our lack of comfort, as researchers, in developing a science, and a technology, for enacting control over behavior. We present a design fiction about a smart prison, in which behavior change is facilitated via always-on IoT-facilitated monitoring. This fiction may be read simultaneously as a constructive application of behavioural science to an appropriate context, and as a dystopian attack on personal freedom. We argue that the implementation of ubicomp systems that are intended to facilitate behavior change (i.e., almost all ubicomp systems), will inevitably lead to questions of control and personal freedom. We draw parallels to the reaction of society to the field of behavioural psychology, which has an expressed goal of gaining prediction and control over behavior. Ultimately, if we are to realise the potential of ubicomp to change society positively, we need to be comfortable with enacting control, or in other words, taking responsibility.

## CCS CONCEPTS

• **Human-centered computing** → **Ubiquitous and mobile computing**; • **Applied computing** → *Law, social and behavioral sciences.*

## KEYWORDS

ubicomp, design fiction, behavioural psychology, freedom

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## 1 CRUELTOWN - THE "COOL-AG" OF THE FUTURE

"There's this place called CruelTown. It is a vision of scientists, engineers and "other researchers" at HB (Human Behaviour) labs. It's a vision of a world where everybody and everything is connected wirelessly through the world wide web. People, places and even objects have websites. Beacons beam out their web addresses. People are connected to a wide variety of smart, wireless information appliances that know who you are, where you are, and what's going on around you. And it all comes together to provide a service that people need:" Punishment and Rehabilitation.


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Here at HB Labs[1], we have very recently developed the technology capable of enacting perfect behavioural control. We have developed wearable, pervasive, cloud-based, internet of things technologies capable of measuring peoples' precise location inside and outside of buildings, their heart rate, temperature, sleep quality, and relationship quality. We have the ability to remotely turn on and off peoples heating and lights, to lock and unlock their doors, to disable their cars, to change the language on their devices, and control access to social media and information more generally. More importantly, we have found exactly the context in which full behavioural control can and should be achieved: state incarceration.

CruelTown is a gated society, organized and controlled along the principles of behavior modification [2, 4, 6], facilitated by IoT measurement devices, and designed to teach offenders appropriate social behaviours. It takes the guesswork out of the rehabilitation function of incarceration. Inmates can be released when appropriate behavior has become stable and predictable - and never before.

**Figure 1: Examples of disorienting CruelTown Architecture [HP Labs]**

### 1.1 How does it work?

Upon incarceration, the prisoner is processed, chipped and shipped to the Cruel Town complex, the architecture of which closely resembles a disorientating early-1990s office park complex (see fig 1.). The prisoner is given a smart watch and communication device, and introduced to "Marcy". Marcy is an overseeing artificial agent that

[1]Note: The following should be read alongside the video that accompanies Hewlett Packard Labs' Cooltown concept - a classic work of Design Fiction produced in 2000-2001. See (https://www.youtube.com/watch?v=U2AkkuIVV-I&t=12s).

sets personalised short- and long-term goals for behavior change, and monitors behavior with respect to those goals, and delivers reinforcement and punishment using nearby IoT devices.


**Figure 2: Powerful "service awards" help keep occupants motivated. [HP Labs]**

## 1.2 CruelTown values you!

Reinforcement is a critical component of behavioural modification techniques. Inmates gain access to items that they value, such as heat and food, in exchange for demonstrating appropriate behavior. Reinforcement techniques include both negative reinforcement, such as a temporary peace from the demands of Marcy, and positive reinforcement in the case of "illustrious service awards". These awards are issued to inmates based on achieving behavioural goals while inside cruel town (see Fig. 2). Service awards function like tokens in other behavior modification contexts, with the exception that they are delivered from every piece of technology encountered.

**Figure 3: Extreme punishments, such as destruction of personal property can be effective mechanisms for change. [HP Labs]**

## 1.3 Punishment

Of course, like any other prison solution, CruelTown must also punish undesirable behavior (see Fig 3.). Cruel Town can take action to ensure that less desirable behavior, when observed, does not occur again. Marcy has a wide range of abilities in delivering punishment. Through controlling locks on bedrooms and bathrooms, manipulating heat and light while sleeping, denying access to the ubiquitous vending machines - the only source of nourishment in Cruel Town - Marcy can deliver personalized punishment plans to convince even the most ardent of criminal to change their ways. For example, one prisoner may be required to sit through a long meandering powerpoint presentation on a glaring transparent screen (Fig. 1; bottom). For other prisoners, social punishments can work better. For example, Carruthers and Brown (Fig 1; top), must endure humiliating personal development evaluation meetings together.

## 1.4 Daily life in CruelTown

Like other gated communities, CruelTown has a full schedule of organized events taking place every day. Attendance is mandatory, and through these events, prisoners are placed in increasingly complex social situations, through which their behaviour can be monitored and improved. These events can range from basic level cleaning duty, through to potentially conflict-inducing activities such as preparing group presentations.

**Figure 4: Special unit for young offenders. [HP Labs]**

### 1.5 "I'm very proud of you, you are doing such a great job"

One of the great challenges of corrective systems is handling young offenders. Juveniles are not yet habituated to the horrors of modern open plan office architectures, and as a result, methods for management of behaviour of adult inmates in Cruel Town proper is often not appropriate. Instead, a special wing of Cruel Town is dedicated to more domestic settings where children can be isolated totally from the rest of the prison population, instead only interacting with Marcy through computer terminals and refrigerators.

## 2 DISCUSSION

Recent years have seen widespread recognition of the ability of ubiquitous, pervasive technologies such as smart phones, IoT devices, and "big data" analytic practices to; 1) monitor ongoing human behaviour, and 2) take action based on the data collected in a way that materially affects a person's life. We have seen many prototype examples of these practices in HCI research in supporting healthier exercise habits [1] encouraging environmental decision-making [11] and influencing mood [5].

Recent years have also seen much speculation over potential future implications of these data capture and analysis practices; with many TV shows, films and academic papers dedicated to forecasting dystopian futures in which humans are removed from decision making power by the tools that were initially designed to help them (e.g. [7]). Concerned ubicomp researchers invariably discuss the problems inherent in pervasive monitoring technology by citing Foucault [3], who used the Panopticon - a design innovation intended to help prison guards to monitor behaviour and enforce prison rules - as a metaphor for how control is enforced in modern societies. Essentially, the argument is that ubicomp technology facilitates the prison-like control of the state over peoples behaviour.

People are undoubtedly wise to be critical of technology capable of monitoring and exerting control over their behaviour in a way that is difficult to speak with, react against, or even understand. However, often the argument against such technology revolves primarily around notions of personal freedom; technology that reduces our freedom to make choices as an individual is inherently bad, instead we need technology that improves our ability to make choices. Hence, we get "recommender systems," and "decision support systems" that give illusions of choice and self-determination, rather than systems that explicitly take decisions and exert overt behavioural control. We argue, following Skinner in his seminal work on the politics of behavioural science Beyond Freedom and Dignity [9], that personal freedom is not necessarily an inherent good, nor is the loss of control over your behaviour to institutional intervention necessarily bad. There are many situations we encounter every day where personal freedoms are ignored or overruled for societal good. Behavioural control is already exerted upon us at all times, by systems we struggle to understand (i..e, complex social systems, bureaucratic systems, even our own biological functions).

We argue that systems that help us to monitor, analyse and control human behaviour in an accurate and precise manner have a lot of very practical applications, under appropriate supervision and scrutiny and in appropriate contexts. The "CruelTown" smart prison can be read as invasive and dehumanising, and many people will read it that way. At the same time, it can be read as "more humane than existing prisons", by ensuring the prison functions not only as a site of randomised punishment, but also as a feasible and effective site of rehabilitation-related functions. In other words, by removing personal freedoms and increasing technocratic behavioural control, we improve the chances of prisoners in leading fulfilling lives after release from prison. There are many other examples where such improved control of behaviour would be advantageous to both society and the individual, and for which we could have written a sales pitch like the CruelTown one above, including probation procedures, formal education, and social care.

### 2.1 Control is Good!

Importantly, the argument over whether we should even have a technology capable of monitoring and controlling behaviour is one very familiar to behavioural scientists [10]. The ultimate goal of behavioral science is to understand the processes through which our behavior is shaped by our experiences and our environment. Through advancing our knowledge of behavioral science we get closer to causal explanations for behavior. Specifically, we develop a set of tools and principles that we can apply in order to make our behaviours, and the behaviours of others, more or less likely to occur. In other words, we advance our ability to both predict, but also control human behavior.

Since the publication of B.F. Skinner's utopian novel Walden Two in 1948 [8], behavioral scientists have often suggested that societies would be better organized, fairer, more ecologically friendly, and happier if they were organized according to the principles of behavioral science. Walden Two describes a utopian community whose members live together bound by a strict set of rules defining how tasks are completed and rewards granted in such a way to encourage positive behavior change and maximize motivation. For example, working less desirable jobs earns more "labourcredits," which means those workers get more free time for leisure. Walden Two acts as an argument for how the principles of behavioral psychology can be used to help people become better motivated, productive, and healthy.

Attempts have been made previously to run utopian communities according to the principles of behaviour analysis. However,

very few of these have sustained for a longer term. People are typically, and understandably, uncomfortable with the notion that their own behaviour is being controlled directly by others. Moreover, we have never had technology capable of the pervasive and precise monitoring, measurement, and analysis of behavior necessary to enact perfect behavioural control. Given the latter problem is now solved, thanks to decades of technology-focused work by Ubicomp researchers, we argue that ubicomp researchers, possessing technology capable of prediction and control over behaviour, must now deal with the former. We must deal with the types of questions and criticisms that have dogged behavioural psychologists for the past 50 years. Specifically,if we are to possess a technology and a science of behaviour change, one that works, does anyone want to (consciously, knowingly) use it?

One of the main challenges in implementing any effective system for shaping and changing behaviour (focused on anything from recycling behaviours, to water usage, to public transport utlisation, exercise and healthy eating) is the tendency to over-value personal freedom. While personal freedom is an undoubted 'good,' one that has been denied to the majority of humans throughout our history, and thus deserves celebration where it can be achieved, it is undoubtedly often in competition with other, more public goods. In some respects, we must overcome our fetishisation of personal freedom if we want to ensure that technology serves public goods, rather than solely private ones (for a full length discussion of behaviour control as a public good, see [9]).

The problem is not that we have developed a technology that is capable of monitoring human behaviour, measuring, processing and analysing those data, and taking action in ways that materially affect individuals and society. As Skinner [9] argued, we should not be afraid that we have developed a science and technology capable of pervasive and effective behavioural control - this is a huge positive in many ways. The problem is that we have not yet developed appropriate methods for ensuring that technology is applied in the public interests, open to democratic public scrutiny and objection. In other words, the problem is that the prison guard in the Panopticon is no longer a state employee that we can sack.

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