Control And Freedom: Designing For Autonomy

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Abstract

Autonomy is important for individuals, for social groups, and for society. This paper proposes ways of designing for autonomous experiences in software environments. Machine autonomy allows data capture, automated categorisation, and hierarchical ordering, human autonomy means authorial control and the freedom to choose how we wish to use a system. Design principles can help establish an operating standard for practice in this research context. Systems that feature; the ability to make meaningful selections, permit output across media types, and the construction of coherent stories about what we do in software environments all imply a level of personal and social autonomy.

Author Keywords

Interfaces; display; materiality; data environments, digital objects; physical interactions.

ACM Classification Keywords

H.5.m. Information interfaces and presentation

Introduction

The notion of autonomy in the context of HCI research has commonly been explored from the perspective of machine independence [1]. There continues to be a determined strand of computer science dedicated to the design of software systems, robotic machines, and artificial intelligence able to operate free from human interference [2]. The question of human autonomy from machines is rarely posed. This paper describes a view of autonomy through the lens of life-story and self-experience in software environments. We will also give examples of theoretical and practical work.

The social and psychological purpose of autonomy is examined in many diverse research fields. A positive link between personal autonomy and wellbeing is seen in [4]. The ability to make moral decisions freely and without restraint is important in jurisprudence [5]. Political philosophy sees autonomy as fundamental to a functioning state [6], while psychologists have considered the development of personal autonomy to be 'The main feature of the final level of moral development' [7].

These may seem at first glance to be unconnected to modern software systems but many similar principles are at work. Rules, social settings, consensual obedience, and authority are all important for the efficient functioning of software environments. Design strategies for the improvement of autonomy in software environments include those that give control to people over system requirements, those that allow people to re-order or re-configure system settings, and those elicited in co-creation settings. We argue here for authorial control over the many online, automatic logging functions (such as browser history, or location stamping) through the mechanism of personal narratives and story making.

Background

Self-efficacy, independence, and self regulation can all come about through self-knowledge. Self-knowledge would seem to be an initial condition for the kind of reflective decision making that leads to self regulation. There are many existing technologies that facilitate this in an operationalised manner. Fitbit measures steps taken, Zeo measures sleep phases, Withings measures weight. Taken together the resulting data is claimed to aid goal setting and behaviour change. What we argue for here is a narratively driven engagement with technology, not dependent on the passive capture of quantitative data but on the autonomous ability to construct meaningful accounts of life.

Theorists of Narrativity consider a narrative view of life to be an 'inescapable requirement of human agency' [8]. We construct our identities through a personal life story and this story *construes* the self [9]. This psychological tradition sees a narrative accounting of life as intrinsic to human experience. 'One must be in possession of a full and explicit narrative of ones life to develop fully as a person' [10]. Life is understood as an intrinsically continuous unfolding narrative experience. While there are challenges to this view they are ones of degree rather than substance. i.e. That life is not experienced universally as a diachronic account but can also be episodic for some people. Life can lack a unifying narrative structure but can feature moments of more or less temporally organised events.

People must have a degree of autonomy in order to

construct life narratives that reflect experience and can be communicated. They need access to cognitive tools to understand and order experiences. People also need opportunity for reflection in order for the nature of events to become clear, and an organising principle for the ensuing narrative structure. Life is increasingly lived out online - it is where we make friends, meet life partners, apply for jobs, and receive diagnoses - and narrative organising principles have become subservient to software mechanisms. Computer software often orders information chronologically by default, such as an email inbox, blog roll, or browser history list. The construction of personal narratives is subverted by the industrial distribution of interfaces via global connectivity. Experience is flattened, everyone sees the same design of Facebook timeline. Our proposition is that the simple listing of information in temporal sequence is insufficient for narrative construction - it does not afford enough autonomy. There must also be what Strawson [11] calls 'form-giving' and what McCarthy and Wright call 'deliberate framing' [12]. We must choose the narrative frame through which we view events, not merely observe them as trivial occurrences, in order to have meaningful autonomy.

Design and Autonomy

Designs intended explicitly for narrative experiences include; computer games, virtual museums, and interactive documentaries. Designing games means designing for immersion in the game world. Leading the player as protagonist through a rule-bound system towards a definite end requires thinking narratively. What will happen when I open this door? Where do I go next? How does this gun work? Can all be explicitly narrative questions for the games designer in that behaviours must be consistent and must contribute to the overall aims of the game. These games can involve a more or less believable world with newtonian physics (Grand Theft Auto) [53] or they can be cartoon-like representations (Angry Birds) [54]. Both contain progression through time, through levels of achievement, and through a virtual landscape.

Designing virtual museum environments involves thinking about trails through the museum collections and (where relevant) about how closely a virtual manifestation should reflect a physical institution. Leaving navigation through the content open but directed means balancing system rules and authorial intentions against visitor freedom. Narrative framing can help by providing the background against which meaning emerges. Interactive documentaries feature more obviously narrative constructions and usually a single story to tell, but many texts through which to do so. Interactions can reveal hidden voices, support in-depth exploration and augment the experience with multimodal content such as background sound effects, interactive maps, and voiceover narration.

Allowing for narrative construction does not necessarily afford autonomy however, some greater degree of authorship or agency is required. Machine intelligence allows for *capturing* relevant information, *contextualising* experience, and qualitative *categorisation*. Capturing consists of the automatic logging of time and place, the recording of owner, author, or device, and the passive saving of metadata. Capture is techno-centric, it does not need personal

intervention. For example, every Twitter status object automatically contains over 30 separate metadata entities, mostly identifying tags such as; how many followers a sender has, and the language selected. Capture is observational, it happens whether we want it to or not, it is also invisible. Contextualisation involves the exploitation of metadata to place interactions in a wider setting. For example, by correlating GPS data with email activity a contextualisation system can represent where you were when you sent an email. The meaning of that encounter between communication and location must be an approximation. Machine intelligence can cross-correlate a database and potentially provide a contextual framework but meaningful contextualisation must be done by people. The 'deliberate framing' of experience through individual and social cultural understanding is what gives autonomy to experience. Qualitative categorisation includes tagging, commenting, annotating, and voice memos; ways of adding an extra layer of information to a system or a representation. Typically, a software environment would allow a limited range of categories for adding this interpretive layer. YouTube permits comments, Wordpress permits tagging, Instagram adding location. The means for doing so are constrained in all these examples not least in terms of text fields and language support. Social content platforms also exploit this extra content layer for commercial gain through targeted advertising and data analysis for product development.

More convincing autonomy support in the design of technologies could be provided by *output modalities*, *rule making*, *selection*, and *sequencing*. The rules of a system dictate how it works and define its limits. For example, four users cannot be logged into the same LinkedIn account at the same time. Allowing people to set their own rules within a constrained ecosystem could result in opportunities for individual reflection, the sharing of uses for technology through diverse groups, and for surprise and invention. People can use a configuration of rules for the explicit purpose of narrative construction both of and through the technology. 'This is what I did with this platform and this is what it means to me.'

Computers never forget, personal data is stored and saved forever - available for instant recall without delay or decay. Because everything is selected so meaning is elusive. For example, the browser history list makes no representational distinction between a site visited for one second and one visited for an hour. The system is autonomous in this regard but the user is not. Systems that allowed for the authorial selection of relevant data, and a setting in which to construct meaning out if it, can provide a chance for self definition. Computer systems should allow for forgetting or the ability to fade out along a range of importance and relevance.

Database ordering is often ruthlessly chronological (browser history), alphabetical (folder hierarchies) or otherwise algorithmically derived (ranked search results). Computer objects, actions and operations are placed in rigid hierarchies. More holistic ordering of files, folders, or images, can represent more faithfully the way people create meaning for themselves by organising records according to people, emotions, and locations. Image based organisation can be an alternative to the text bias of computer arrangement mechanisms. Perhaps something could be learned here

from hand annotated maps, or the way people arrange photos in domestic spaces. Everyday life consists of a wide variety of material types; catching a train includes; digital display boards, paper tickets, printed schedules, touch screens, and metal signs. In contrast, computer systems tend towards reduction of modalities. For example, a photo taken with a smartphone is unlikely to take any other form or be viewed using any other device, despite the proliferation of low cost printing technology. People are constrained by proprietary systems and complex interoperability problems. The result is that digital media becomes a dominant form and material culture is impoverished. Authorial autonomy is reduced and people have fewer choices with which to construct personal stories.

Conclusion

This position paper has proposed an argument based on the need for autonomously constructed narrative accounts of life. We have also described some strategies for how the possibility for narrative construction can be designed into software environments and interactive systems. The moral, psychological, and political case for computer systems that permit autonomous authorship contains many other fruitful avenues of research. Our intention here has been to contribute to the discussion of an emerging field of enquiry with implications for the design of software environments that mediate life experience.

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