
Changing Perspectives of Time in HCI

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Abstract

The aim of this workshop is to unpack different ways of thinking about time, drawing a distinction between time as experienced, and time as counted by a ticking clock or measured by a computer algorithm. The concept of time is often taken for granted within HCI, yet highlighting the assumptions that underpin it could provide a resource for research and innovation. In this extended abstract, we illustrate how this is so.

Author Keywords

Time; visualization;nowness; recency; history; trace; commodity; perception; clock; timeline; experience.

ACM Classification Keywords

H.5.m [Information interfaces and presentation (e.g., HCI)]: Miscellaneous.

Introduction

Within HCI, time is treated in various ways. It can be quantified and measured, indicating speed, efficiency, or delay. Alternatively, it can be positioned as an experiential aspect of everyday life, with recent efforts in HCI focusing on how we might design slow technologies [4], or design for the busyness [10] that is inherent to modern life. We believe it timely, at a conference with the theme of *changing perspectives*, to take a wider view of these different ways of conceptualising time.

Specifically, our aim in this workshop is to unpack different ways of thinking about time, drawing distinctions between *clock* or *computer* time, and a more *human* or *experiential* view. This effort draws on recent attempts within HCI to utilise different 'types' of time in research and design. For example, Harper et al. employ Bergson's distinction between *temps* and *durée* [7], *temps* referring to the objective measure and passing of time; *durée* to its experiential aspect; and Martin and Holtzman [13] draw on the ancient Greek concepts of *Chronos*, or time as a linear sequence of events, and

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Kairos, which refers to the idea that the only time that is important is *now*. These attempts to explicitly address different types of time speak to something that we are all aware of: time as experienced can be quite different to that of time as counted by a ticking clock or underpinned by a computer algorithm.

It is not our aim to prioritise one or another way of thinking about time. Rather, we hope to initiate a discussion about how thinking about time in different ways, or acknowledging the assumptions that underpin our use of the word, can be used to inspire and frame the design of innovative technologies. In this extended abstract, we outline some examples to illustrate how this might be so. Our purpose here is to exemplify, rather than delineate, topics that workshop participants may be interested in. We view time as an emerging concern for HCI, and anticipate tackling issues that go beyond those illustrated here in the workshop itself.

Representing Time

As an illustration, we unpack a topic that is often taken for granted: how to represent, or depict, time. Time can be understood as a central mechanism for how we make sense of the world (e.g. [5], [9]), and systems that present information by time have been designed as ways of supporting navigation, exploration and comprehension (e.g. [2]). The timeline is often an obvious choice in these endeavours, yet it draws on a number of assumptions, in which time is positioned as linear and progressive. This can be contrasted with research that indicates that, when it comes to personal content especially, the timeline metaphor can introduce a disjoint between the representation of data and what it means to users. For example, wearers of SenseCam, a lifelogging camera, will find that a half hour commute is

weighted more or less equally to half an hour spent with friends when they come to look back at a timeline of images. However, for the users, the latter may be much more salient in memory [6]. Work on the crafting of timelines about the past has also highlighted this disjoint. Participants in a recent study reported that the format drew attention to gaps, which corresponded to 'uneventful' parts of life, or painful memories [17]. It made salient what users wished to hide.

This research suggests two immediate opportunities. The first is to explore how disjoints between representations of time, and time as remembered, open up a design space, for example by facilitating reflection on personal experience [11][15][18]. The second is to investigate the use of other metaphors for representing time. These might include emphasising its rhythmical, repetitive and stable qualities (e.g. [1]), or attempting to design a clearer analogue to human experience. In work in progress that will be presented at the workshop, some of the organizers are using the recency of text messages as a cue to present them as more or less salient in an interface, with those that are likely to be more vividly remembered appearing as more palpable. The aim here is to offer an alternative to the unambiguous, linear and discrete structure that is often used to organise digital content, and which can compete with the user's perception, or recollection, of his or her experiences. Such representations also open up wider questions, relating to issues such as responsibility. Information logged over years, or even decades, may present a record to which a user has a different recollection, but to which they may be held accountable.

A third design opportunity relating to representations of time includes how to depict the passing of time and

how to organise calendars and schedules. Innovations here include Kairoscope, a scheduling system developed by Martin and Holtzman [13], which draws upon a human perspective of time. Kairoscope emphasizes malleability rather than specificity, assigning precise times to appointments only as they approach, and alerting users to advancing events through an interface that looks like a pie-chart, which gradually changes from green to red. The aim is to remove the need for the user to think about *when* things will happen, and instead simply rest assured that they *will*. More generally, Martin and Holtzman raise the question of how we might design interfaces that position time as a series of events rather than as numbers on the clock, and what implications this has for how time is experienced.

Further Topics

The above is intended as an illustration of how unpacking a concept that is often taken for granted can open up a space for innovation in design. In the workshop we aim to extend this, broadening our discussion beyond representations of time to other aspects of it. Possibilities include:

Time as now in search: Search engines tend to emphasise what is relevant *now*. Yet the content that they deliver is shaped by the history of a user's own actions, as well as those of the wider user group (the so-called filter bubble [14]). Making visible the way the past is brought to bear on the present may enable a richer understanding of content that is delivered, in a way that resonates with the highlighting of *wear* [8] in electronic documents.

Time as fleeting in social media: Recent work by Harper et al. [7] has highlighted how social networks are asso-

ciated with ephemerality, it being problematic when content surfaces *out of time* (e.g. when photos are posted to a Facebook stream much later than the event). Understanding the tempo of such technologies, and what it means when this is altered through shifts in design (such as the recent introduction of Facebook Timelines, which emphasises permanence rather than ephemerality), could reveal implications for design.

Time as a commodity: Critiques of time as a commodity are familiar; Marx argued that its positioning as an abstract, decontextualized value was key to enabling the exchange of work for money (see e.g. [1]), and Loy [12] argues that to treat time as a commodity is to be caught up in a delusion, which makes us hurry up in order to have the time to slow down. Yet, the extreme commodification of time can also offer inspiration for design. For example, time dollars [3] enable people to exchange services based purely on the time they require, with no differentiation by skill.

Time as speeding up in everyday life: As a final example, we finish with the old idea that technology is speeding up everyday life (the steamship, railway and telegraph first made the phrase "the annihilation of time and space" common in the mid-19th century [16]). This view continues to motivate discussion, but researchers in HCI have recently highlighted how simply slowing down may not be the answer. Designing to support the experience of busyness, a moral value that is central to positive self-identity (in the USA, at least) presents an interesting challenge [10].

As stated above, these topics are intended to open up a space for discussion, rather than restrict it. Further possibilities still might include time as an organising

principle in daily life, or how types of time are socially constructed (e.g. family time, night time).

Workshop Goals

As already stated, the overall aim of this workshop is to unpack different ways of thinking about time, which are often taken for granted, and to highlight this as a resource in HCI research and technology innovation. As this is an emerging area, we anticipate designing the workshop around the submissions that we receive. Yet we do hope to address two related goals. These are:

- To initiate a discussion about different types of time, including firming up a vocabulary relating to the concept. Researchers have drawn on Bergson's distinction between *temps* and *durée* [7] and the ancient Greek terms of *Chronos* and *Kairos* [13]; we hope to build on these initial efforts.
- To establish a community that is interested in the topic of researching and designing around the concept of time, by providing a vehicle for it to meet and then continue to interact online.

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