The Quantified Past as PIM: Remembering a Data-Driven Life

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Abstract
In this position paper we describe current work to investigate a 'quantified past' – the record created through a 'data-driven life' and long-term interaction with personal informatics systems. These represent an increasingly prevalent form of personal information, which present novel opportunities and challenges in the way that they represent the past. We highlight two studies: one of long-term users of personal informatics systems; a second of smart journaling applications. In so doing we describe six characteristics of a quantified past, question the role of passive tracking in keeping a journal, and consider curation across a range of media.

Author Keywords
Personal Data; Quantified Self; Remembering; Curation

ACM Classification Keywords
H.5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous;

Introduction
At the forefront of amassing stores of personal information are applications and devices collecting 'personal informatics' [5] data. The 'data-driven life' [12] measures and accounts for many prosaic matters of daily life: one's location and activity; consumption of

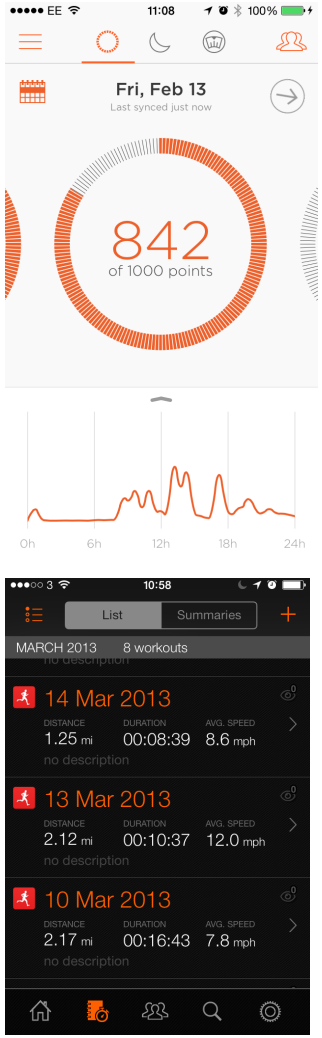

Figure 1: Screenshots of personal informatics data from the 'Misfit Shine' activity tracker and a running app.

food, drink, energy and media; biometric and environmental data; sleep, fertility and mood. Users of these technologies are presented as empowered-by and responsible-for collecting, reflecting, acting and managing these many streams of data – to live a healthier, happier and more sustainable life.

Personal informatics is an increasingly mature field within the CHI community – there have been six consecutive CHI workshops on the topic (see personalinformatics.org). However, much of this research is present-focused; personal informatics systems are often studied as a form of technological intervention towards behaviour change or health monitoring (e.g. [3–6]. Less work has addressed the *consequence and meaning* of personal informatics data *over the long-term* and the course of one's life. Furthermore, it is only recently that a more critical and nuanced view of the *lived experience* of a data-driven life has emerged [9,11]. That is, beyond developing novel technologies and models of user interaction, a concern for how the collection and management of these new forms of personal information are "*enmeshed with everyday life*" [9].

A Quantified Past

Our work extends the premise of 'lived informatics' to investigate the long-term – indeed lifelong – experience of interacting with personal informatics. Specifically, we position this data, collected by and about people, as a 'digital possession' [7] with significant personal and historical value. As such, we are interested in the *experience of remembering* one's life through these records, which we have termed *the quantified past* [2]. In the rest of this position paper, we wish to briefly introduce two studies we have undertaken to determine the characteristics of a quantified past; and the meaning of such records in the context of smart mobile journaling applications. Finally we highlight their relevance to, and hence our interest in, this workshop.

Characteristics of a Quantified Past

In our first study, we conducted interviews with 15 long-term users of personal informatics tools about the records they had accumulated [2]. These were records (e.g. Fig.1) of running, cycling, food intake, music listening, expenditure and activity, amongst others. Recording participants narratives of their past through their particular data we have identified six distinctive, characteristics of this 'quantified past'. Only briefly shown here, these are not exclusive, nor intended to be categorical, but rather a means of distinguishing remarkable qualities and features of these records.

Passive and 3rd Party

Many of the devices and apps that contribute to a quantified past work passively, are always on in the background and require minimal user input. As such, the record is achieved largely by a third party – often as a by-product of everyday use. Contrast with point-and-shoot cameras, journals, or treasured souvenirs, where what is recorded is usually deliberately chosen, framed and directed by a group or individual.

Ego-Centric

It is remarkable the extent to which data recorded is ego-centric – about one's own body, family or immediate private environments. Data by default is taken as a 'selfie' and in many cases is interwoven in an individualistic culture about personal responsibility and self-improvement.

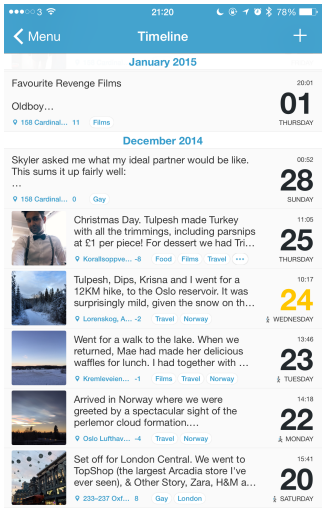

Fig 2: Screenshot of journal entries in the DayOne app.

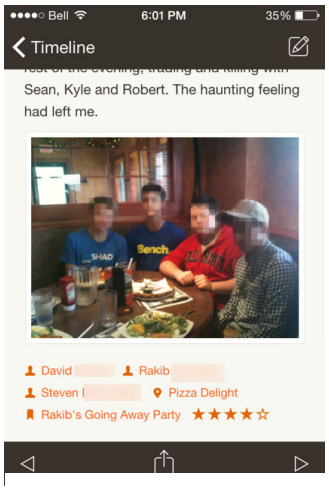

Fig 3: Screenshot of a journal entry in the Momento app.

Removed from past-as-remembered
Running is not experienced nor remembered as a graph of speed over time, but as scenery flashing by, jumping a fence, pain in one's chest. Good or bad sleep is not experienced in percentage terms. Personal informatics can present a more formal, definitive and unnaturally precise version of the past than the past that people flexibly and reconstructively remember.

Quantitative & Objective
Predominantly quantitative in nature, personal informatics, like much 'data', often gains the appearance of objectivity. Self- tracking tools employ quite a definite tone – rarely erring on the side of caution, or present any uncertainty. It is '9,773 steps' rather than 'around 10000'. They propose to record and measure definitively, exactly and accurately.

Abstraction, reduction & commensuration
One's days and activities are presented in necessarily reduced and abstract forms to support comparison and subsequently actionable insights. Daily summaries, graphs, averages and records all work to package and present data in manageable and motivational forms. These 'punctualise' the past in particular ways – create unusual modes of comparison and further detach the record from remembered and lived experience.

Amorphous
Self-tracking data, rendered from for example accelerometer data, is potentially very amorphous, subject to many possible transformations. Our data doubles [10] can be cast as many different graphs, charts and infographics. Though many representations emphasise motivation or monitoring, alternatives might be employed to support remembering.

These characteristics provide a foundation to understand and design different experiences and interactions with historical data. They give us some sense of the material and phenomena we are working with. However, by studying a deliberate record-keeping practice – *contemporary digital journaling* – we can begin to understand the potential role and meaning of a quantified past in remembering one's life.

Understanding Smart Journals

Smart journals describe an array of applications based on the premise of keeping a daily record of one's life. Beyond the traditional written diary or journal: they are *networked*, supporting sharing and the import of content from other apps; allow the integration of *multiple media,* including personal informatics data; create contextual and searchable *metadata* for each entry; and crucially are partially *automated* in generating and pushing journal content. From a further interview study [1] with 16 users of different smart journal apps (e.g. DayOne (Fig. 2), Momento (Fig. 3), Heyday) we wish to reflect on two particular findings. First, the role of passive tracking, and as such data, in this record; and second the role of curation in bringing together different digital possessions 'under one roof'.

Passive tracking as journaling
Networked to numerous other apps, many smart journals could automatically and passively make entries or generated annotative metadata such as location, weather, activity and social media posts. In the context of the often quite determined records kept by users of these apps, passive tracking was for many a useful baseline, but, rarely especially meaningful or evocative by itself. It often required "*data cleaning*" and many were wary of cluttering or applications that sought too

Biography

Chris Elsden is a 3rd year PhD student at Open Lab, Newcastle University. Working closely with his co-authors and supervisors David Kirk and Abigail Durrant, his research mostly concerns fieldwork about the experiences of living a 'data-driven life' – especially how data mediates remembering.

Though he has a background in sociology, his research is strongly focused towards identifying opportunities and considerations for the design of personal informatics and 'technologies of memory'. His work tends to reveal more complicated everyday relationships with technology, particularly data, and argue for design, which is commensurate with existing valued human practices.

This position paper is a summary of his thesis work thus far, and draws closely on his published work in the *HCI* journal [2] and this year at CHI 2016 [1].

strongly to *"determine what a memory is".* Yet, most developed a good synergy between active and passive tracking that worked for them and their record. Besides providing further means to organize and index one's journal, passive tracking had two main values. First, providing further *context* to more evocative central content such as a photo or written entry. A form of metadata; *"another layer"* that might help them remember more clearly. Second, as providing *authenticity* to an account – helping situate the memory in reality.

"It helps kind of flesh it out like, this is an actual day, not like a… piece of writing that I did."

In this respect, rather than a lead narrator, this data, is often a sort of digital 'ephemera' – *"representing today"* [8] – which acts as a further witness. Rather than evoking reminiscence, this authenticity was especially valued by those who journaled to keep track of their life, and drew comfort from a settled record of the past.

Curation as Authorship

All journals required selectivity about what was to be included – whether determining what to write about, which photos looked best, or which data should accompany an entry. Principally, we saw people making many nuanced and daily decisions about how they draw upon a flow of media and data to construct their record. As one's personal content expands, possessing an entirely comprehensive archive feels increasingly out of reach. Instead, value is located in expedient access and organization of content, which will be later of use – or in crafting meaningful, and tractable collections.

Curation was most valued as a means of authoring of a *unique perspective*. This demands selectivity to craft meaning from vast digital records to help people *"make their own history"* [8]. An evident design challenge is to support this, while simultaneously making curation less effortful. 'Curation-through-use' [13] is encouraged, but we should also consider how 'data cleaning' and curating passively generated content might be made more personally rewarding. By example, the HeyDay app is especially effective at encouraging engagement and self-expression with passively generated photos – presenting them as attractive and then easily edited montages for each day. Turning to data, how might we similarly seek to design interactions supporting the curation of different aggregations and (temporal) resolutions on the data, towards valued remembering?

Conclusions and Workshop Aims

The theme of managing long-term personal information is present throughout our ongoing work, and we hope the ideas we briefly surface here offer a valuable contribution for dialogue during the workshop.

In particular, we wish to present personal informatics and 'data' as meaningful, personal, digital possessions. These can go beyond simply identifying long-term trends and offer new and fundamental ways to remember and represent one's life.

We also seek to foster and gain at the workshop a broader understanding of theories and practices of curation of long-term digital possessions and personal data, across a range of contexts.

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