

It's just my history, isn't it?: Understanding Smart Journaling Practices

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ABSTRACT

Smart journals are both an emerging class of lifelogging applications and novel digital possessions, which are used to create and curate a personal record of one's life. Through an in-depth interview study of analogue and digital journaling practices, and by drawing on a wide range of research around 'technologies of memory', we address fundamental questions about how people manage and value digital records of the past. Appreciating journaling as deeply idiographic, we map a broad range of user practices and motivations and use this understanding to ground four design considerations: recognizing the motivation to *account for one's life*; supporting the *authoring of a unique perspective* and finding a place for *passive tracking as a chronicle*. Finally, we argue that smart journals signal a maturing orientation to issues of digital archiving.

Author Keywords

Lifelogging; Memory; Smart Journals; Quantified Self;

ACM Classification Keywords

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

INTRODUCTION

Since the invention of writing, record keeping, both public and private, has been a fundamental human endeavor. Keeping a written record of *personal life* – a diary or journal is one of the earliest personal 'technologies of memory' [23]. The possibilities for diary keeping have advanced with digital technology. Though early web-based diaries shared much in common with blogging, numerous applications (apps) have since emerged, across platforms and devices, on the premise of enhanced journaling to create a record of one's life (Fig. 1). These afford functionality that goes well beyond a written diary.

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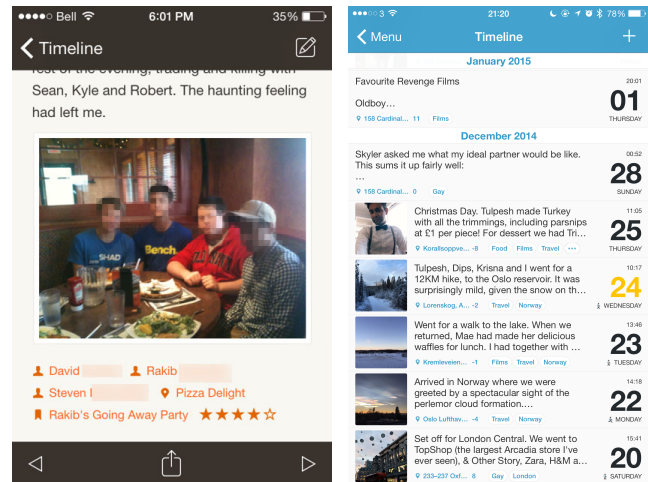


Fig. 1: Screenshots of journal apps 'Momento' and 'DayOne'.

'Smart journals'¹ (examples are collected on a *Pinterest board*²), are **networked** – affording cloud storage, the sharing of journal content, and the drawing of content from other online services; particularly social media (e.g. *Facebook*, *Twitter*), but also self-tracking apps (e.g. *Moves*, *Fitbit*). As such, they support the seamless integration and curation of **multiple media**, especially photos, alongside written records. For each entry, contextual **metadata** can be created (e.g. timestamps, user-generated tags, GPS location and weather). This supports sophisticated search and organization of journal content. Finally, smart journals are **autonomous**, in two ways. They push the boundaries of authorship through the automatic import and generation of journal content from, for example, smartphone camera rolls and social media posts. These can then be later annotated or edited by the user. They may also push interaction with historical journal entries, based on context such as 'a year ago today' or revisiting a previous location.

This networked and near-automatic integration of a range of media promises total capture that "*makes remembering effortless*" (*Heyday*). Metadata and cloud storage bring organisation and order, to ensure that "*moments become*

¹ Diaries and journals are synonymous. We make an entirely semantic distinction between traditional written *diaries* and digital smart *journals*.

² <https://www.pinterest.com/smartjournal/smart-journal-apps/>

treasures” (Flava). The promise of automation is simply that “keeping a diary has never been so easy” (Momento).

By themselves, few of these features are especially remarkable – such technology is replete in HCI literature [28]. The marketing language repeats many familiar tropes and promises of lifelogging. Yet while lifelogging as practiced by enthusiasts like Gordon Bell [16] remains somewhat niche, smart journals are a lightweight, affordable, and increasingly widespread consumer product. By seamlessly incorporating multiple lifelogging practices, we contend that smart journals are a key contemporary technology of memory. However, the emergence of these smart journals (market leader DayOne was founded in 2011) is largely unstudied, with the exception of Rettberg’s autoethnographic reflections [49]. Furthermore, diary keeping as a practice – one of the oldest means of ‘lifelogging’ – has rarely been subject to any dedicated study within the field. This is despite the frequent use of ‘diary studies’ as an HCI method [8].

These apps provide a crucible for two complimentary lines of inquiry in existing memory research. Smart journals are a manifestation of a personal archive, akin to the Memex [7], and speak to the longstanding *technological* challenges of capture, storage and retrieval (e.g., [16,20,22]). Smart journals also surface the *social and everyday experiences of remembering*. This research concerns interactions with existing records; burgeoning ‘digital possessions’ (e.g. [34,37,41,43]) and personal data acquired through a life lived online. Smart journals are clearly sites for curation [19,60], legacy [5,18,29], and storytelling through historical digital archives [21,56,57]. In response, this paper reports on an in-depth interview study we have conducted with five lifelong diary-keepers (to gain a grounding of what people already do) and 11 users of different smart journaling apps. We propose three main contributions to this body of work:

- 1) Through a study of journaling *as a practice* across different systems, we critically reexamine lifelogging: *what do people want to record about their lives, and why do they record at all?* We seek to extend discussion beyond previous research grounded in particular systems, or psychological theory.
- 2) We present smart journals as *novel digital possessions*, tools mediating personal archives through a coalescence of different media and connected services. This addresses key on-going debates about the curation, authorship and crafting of meaningful records from existing digital content.
- 3) We distinguish the affordances of digital journaling tools, and identify the value of passive and automated aspects of smart journals, to further inquire about the implications of a ‘Quantified Past’.

We use these insights to introduce several design considerations for the development of future lifelogging systems, services to manage digital possessions, and the role of passive self-tracking as a technology of memory.

RELATED WORK

Herein, we describe extant literature concerning diary keeping, before showing how a study of smart journals responds to questions of lifelogging and digital possessions.

Diaries and autobiographical writing

There is a range of work in the humanities addressing diaries [26,27,35]. These books describe and deconstruct notable diaries and autobiographical writings throughout history, addressing matters of style and the great personal significance of diary keeping. Critically, they also demonstrate a tremendous breadth in form: from online confessions to mundane chronicles, journeys of self-discovery to creative mumbblings. Furthermore, neither of these works attempt to zealously define or categorize diaries, journals or logs – they respect autobiographical writing as a highly idiographic practice. Rather, Mallon [35] proposes that the terms ‘diary’ and ‘journal’ are “*hopelessly muddled*”. However, whilst there is clearly much to learn about the genre as a whole from analyzing historic diaries, we can only speculate about these authors’ practices, motivations and aspirations.

On autobiographical writing, Van Dijck [12] discusses ‘writing the self’ as mediating memory, and constructing “*continuity between past and present while keeping an eye on the future*” (pp57). However, like much other recent work, she largely focuses upon blogging rather than journaling. Whilst blogging, or ‘web logging’, is often autobiographical, the practice has evolved considerably, and is now predominantly a means of publishing with an audience in mind. This seems distinct from the more personal diary or smart journal. Following up earlier work on web-based diaries [54], Sorapure remarks that many web based diary services have been discontinued, and describes the need for research to understand contemporary autobiographical writing [55]. Much other research on blogging, while related, concerns specific issues (e.g., Al-Ani et al. [1] on blogging during conflict). To our knowledge, while diaries have been primary historical sources, and subject to astute reflections of other authors [12,27,35] there is little empirical work that has addressed *diary-keepers themselves*, to understand the experience, practice and personal significance of this personal record.

Lifelogging

There is a long history in HCI of studying systems that record and echo people’s lives (see [28] for an excellent review). Frequently these are interventionist – interesting and novel systems such as SenseCam [22] are given to participants ‘in-the-wild’ for an activity or period of time. Many interventions concerned developing technology to give historical digital media a form and place in the home [40,48]. These studies either concern the technology itself, use the technology to develop psychological theory [25], or as a catalyst for further philosophical discussion (e.g. [21,33]). HCI research has sought to offer nuanced critiques of lifelogging – recognizing the value in technology that supports reflection and reminiscence [45] while arguing for

design “*beyond total capture*” [51]. Much of this work draws on autobiographical memory theory [10,25], to argue for synergy between human and machine [28]. However, such work may risk fetishizing new technology and modes of capture, whilst the ongoing and everyday nature and practice of lifelogging remains understudied.

As such, we identify strongly with research considering existing practices of archiving objects [17,29,47], photos [30], records and collections [59]. These studies of existing practice have been valuable as a counterpoint to the challenges of lifelogging with a particular system or technology. They represent a ‘turn to practice’ in HCI [31] and have provided wide-ranging, human-centered inspiration and reconsideration of the basic goals, aims and principles for the design of lifelogging systems. Most notably, Petrelli et al. [46] worked with families to produce time capsules “*to investigate the way people compose long-term mnemonic representations of their lives.*” The study of this simple practice, delivered remarkable insights about the great range of records people seek to keep and why.

However, remarkably, diaries and journals have so far, to our knowledge, not been studied in this way. Cordeiro et al. studied food journals [11], with an exclusively present focus on healthy eating. While the consumer market for automatic cameras is increasingly developed, this remains a niche lifelogging activity. By contrast, smart journal apps seem to proliferate. Arguably, research towards ‘total capture’ is not representative of more established lifelogging practices such as journaling, cutting across a range of digital and analogue technologies. Indeed, like self-tracking tools in the Quantified Self (QS) movement, smart journals incorporate passively generated contextual data, raising questions of what a record or lifelog should be. ‘Personal Informatics’ tools [32] create remarkably detailed, quantitative records of daily life, from step counts to heart rates and home energy use. We are only beginning to contemplate (e.g., [13]) the long-term meaning and value of such records, described as a ‘Quantified Past’ [14]. Exemplified by Felton’s ‘Annual Reports’ [15] of his year in data, these tools are part of the vanguard of modern lifelogging. Smart journals are an intriguing example of services that leverage them in *remembering*.

Digital possessions

It is helpful to contemplate smart journals as both digital possessions themselves, and a window on to other sites of digital ownership. The turn to practice underlines much research into how people manage their digital possessions, and the legacy of digital traces and data created through a life lived online – the future of looking back [2]. This research is grounded in anthropological work on material possessions and temporality (e.g., [3,36,52]) towards the design of systems to meaningfully interact with historical content on social media [19,50], email [58] and large photographic archives [30], over long periods of time [42,44]. Supporting thoughtful curation, and the active

construction of personal narratives, is recognized as a fundamental challenge in making meaning from these burgeoning digital possessions [19,34,59,60]. Gulotta et al. [19] have investigated the potential role of ‘Curatorial Agents’ – services to blend and represent personal digital content in novel ways, for legacy or reminiscence. Thiry et al. [56] investigated the use of timelines as a framework for curation, finding a delicate balance to structure reflection, without limiting an author’s voice. These works highlight the shared agency between system and user in crafting these archives – a fundamental concern as personalization and personal agents (e.g. Cortana, Siri) pervade online services.

Smart journals are consumer products that contain just such tensions – with different highly developed structures, and sometimes a considerable degree of agency in authoring the journal. They may also combine multiple media and link disparate archives. Whether people desire such a centralized archive remains a matter of debate. Investigating the way people archive on the web, Lindley et al. [34] found that ‘*place matters*’ – nevertheless, there is frequent appeal to the potential of the careful merging of different personal data. Smart journals offer a new way to create and interact with existing disparate archives, based on an historical human practice, and are a distinctive digital possession.

Taken together, this related work indicates that a study of smart journals is well placed to shed light on a number of live concerns in the field. While our study is open ended and exploratory, some key questions we seek to address are:

- 1) What are the practices and motivations for keeping a journal – and how do these relate to lifelogging practices?
- 2) What are the particular affordances of smart journals, as a technology of memory?
- 3) How do smart journals leverage existing digital possessions and self-tracking towards valued remembering?
- 4) How do smart journals support the curation of digital possessions, and overcome a shared agency in authorship?

METHOD

We set out to understand both the pragmatic practices and motivations of keeping a smart journal, through in-depth interviews with users of smart journal apps. While pursuing this enquiry, we were mindful of the long history of autobiographical writing, seeing a continuum from hand-written paper diaries to journal apps on a smartphone, with varying media and automation. The oldest smart journals are only around 5 years old, and we were interested in the long-term perspective of those who kept a lifelong record. As such, while the focus of the study is on smart journals as a contemporary lifelogging technology, we also sought to speak to traditional diarists (Figure 2). Rather than comparative, we saw these interviews as offering another lens on the practices and motivations smart journaling, many of whom (7/11) had kept paper diaries when younger.



Figure 2: Andrew's detailed daily diaries at home

The first author conducted 16 semi-structured interviews (11 smart journalers/5 diary-keepers), averaging around one hour long, (shortest 30 min, longest 80 min). 13/16 of these took place over *Skype*; two others conducted as home visits; one on campus. We asked participants about their practices: what and how they kept a journal; when they would create entries; when they would look back; what media and different features they used. We then asked about their motivations for journaling: how they had started and why; what they most enjoyed; and why they would look back at past entries. After this, we invited participants to look back in their journal, and pick out poignant or interesting examples from their journal. This gave flavor and grounding to the practices and motivations expressed, and fostered reflection during the interview. The interview ended reflecting on journaling generally, comparison with other records, and future intentions for journaling. After the interview, participants were asked to provide representative screenshots of their journals. Participants were given a £10 Amazon voucher for their time.

Participant recruitment

Participants (Table 1) were recruited primarily through social media and word of mouth. As part of our early investigations we developed a large list of different smart journal apps of interest, based on their popularity, and range of features. We used Twitter especially to engage with user communities of a number of these apps, and invited them to visit a website for our study, with a short survey of demographic details and journaling history. We sought a heterogeneous sample. Following expressions of interest, 11 users of six different smart journal apps were interviewed. The inputs and features for each of these apps

Name (Age)	App(s) Used	Usage (years)
<i>Smart Journalers</i>		
Tyler (20)	Momento	3
Alexis (21)	Day One , Memoir	2
Martin (27)	Day One , Momento	5
Shona (28)	Day One ,	1
Anil (30)	Momento , Day One ,	5
Ness (33)	HeyDay , Day One , Momento	1.5 / 5
Aaron (36)	Day One , Momento	5
Jorge (38)	Grid Diary	2 months
Karen (38)	Day One	6 months
Michelle (45)	Narrato	8 months
Lisa (48)	Day One , Momento	2
<i>Diarists</i>		
Emily (25)	Infrequent journal	19
Laura (46)	Daily diaries	33
Audrey (66)	Travel journal	47
Andrew (68)	Daily agenda/diary	40
Diane (72)	Daily agenda/diary	50

Table 1: List of participants, their ages, the apps they used (primary app(s) in bold) and the duration of use in years.

are shown in Table 2 below. All five diarists were contacted by word of mouth. Most participants lived in the UK (11/16), were long-term users and early-adopters. We spoke to more Day One users than any other single app, (though it is a market leader). Many had transitioned apps, and some used two apps together. Participants also discussed other note-taking, self-tracking and photography apps but the interview focused on the primary journaling app(s) in bold. Only Michelle no longer kept a journal. Most critically, participants shared a range of backgrounds, life-stages and events: from students to professionals to retirees; new parents and homeowners; and immigrants to travellers.

Analysis

All interviews were transcribed in full and subjected to an Interpretive Phenomenological Analysis (IPA) [53], an approach guiding an open-ended, inductive and idiographic engagement with the data, and focusing on experience – in this case sense-making around the practices of journaling. The strength of IPA is in generating in-depth understanding about the expressed experiences of individual participants, within a small and often diverse sample. Analysis began by attending to each participant's experiential account of their practices and the particularities of journaling. Then, looking with a more *interpretive lens* across the sample, we undertook inductive coding to identify similarity, difference, and thematic areas of interest. This analytic

	Writing			Media		Data Input						Features		
	Diary	Annotation	Questions	Photos	Video	Location	Social Media	Activity	Weather	Mood	Music	Search	Tagging	Automated
DayOne	✓			✓	✓	✓		✓	✓		✓	✓		
Momento	✓	✓		✓	✓	✓	✓	✓				✓	✓	✓
Grid Diary	✓		✓	✓				✓	✓	✓		✓		
Narrato	✓			✓	✓	✓	✓	✓	✓	✓				
HeyDay		✓		✓	✓	✓	✓		✓			✓	✓	✓
Memoir		✓		✓	✓	✓	✓					✓	✓	✓

Table 2: Input sources (writing, media and data) and notable features for six smart journal apps used by participants in our study.

process is reflected in the reported findings, to follow. We first provide a rich description of four diverse exemplars of diary and journal keeping, and thematically describe the multitude of overlapping practices we observed in our participants. We then build on these with an interpretation of four core motivations for journaling, and taking all these together, seek to translate our findings into productive design considerations.

FOUR EXEMPLARS

We first present four exemplars from our participants' accounts. We have chosen these to emphasize the individuality of journaling, and ground the wide range of practices and motivations we will subsequently introduce.

Diane, 72, (Diary)

Diane has kept a diary in simple agenda-style books for nearly 50 years. Inspired by an older friend, her diary is multi-purpose – as well as a note of what has happened, it acts as a planner, and contains phone numbers and bank details. She uses it to organize her everyday life, but in so doing organizes her past. Her entries are only a few lines long, and in older diaries some days have been missed. She sees these as very simple, everyday records – there is very little personal sentiment – but they're "so handy". She refers to them frequently to provide an account of what and particularly *when* things happened. In her words – "just things" – such as health issues, hanging out flower baskets, or a relative's death. Her diary is mostly scribbled notes, but includes scores from playing bridge, and old records of her sons' successful days in amateur golf. She moved house 25 years ago, and threw many of her earliest diaries away, which she greatly regrets – at the time they seemed like junk, of little interest to anyone but her. Now, while still central to organizing her daily affairs, they also give great pleasure, with simple questions turning into flights of fancy.

"I'm amazed when I look back, at some of the things that I read, I'll say fancy, fancy that, shout to him [her husband], I don't think he's all that interested."

Tyler, 20, (Momento)

Tyler went on a memorable high school camp aged 15.

"And suddenly, like I remembered the people and I remembered the feelings, but I couldn't tell you what we did, the places that we went."

On his next trip in 2010, he committed to keep a journal, and has done so faithfully ever since, using Momento exclusively since 2012. Combining long, well written entries, a small number of photographs synced from Flickr, and occasional social media posts, Tyler is proud of his journal. Journaling for him is a virtue as well as a pleasure. Fundamentally, it gives him a sense of perspective on his life as he is maturing and experiencing new things during college. It is an account of, and testament to, life well lived.

"It just seems like all we have is memories, and if you can't remember it... it's like it didn't happen."

Tyler makes extensive use of tagging in Momento, to mark people and events (e.g. finishing a book), creating a highly indexed, and searchable record. This is key to the very social and public use of his journal – to settle discussion, reminisce together and "actually have the info."

"I like pulling out my phone when people ask questions. 'When did we do this?' 'When did we meet?' 'When did we go to... What's the last time we saw a movie?'"

Tyler enjoys writing; creatively and with humor. Photos and other data are all secondary, but "flesh it out like, this is an actual day, not like, a piece of writing that I did."

Ness, 33, (HeyDay & Day One)

Ness is a new mother, who began using Day One to journal four years ago. However, since the birth of her daughter, and the launch of a photo and GPS-driven journaling app 'HeyDay', she now uses both apps separately. Motivated in part by the premature death of her own mother, HeyDay has become a solution to chronicling daily life and events of being a new parent. It is visually attractive, creating montages of photos each day, capturing her location, and is manageable to upkeep and annotate on a daily basis.

"I'm building it for my daughter, and for her to learn a little bit about the stuff that I'm forgetting on a daily basis, I'm forgetting the milestones and what we were doing as a family. So it's a way that I can help remember for her when she asks those crazy questions."

Day One – once a record of "this is what I did this day, and this is how I'm feeling about something" – is now exclusively for her personal reflections, written around once a week. Her Day One journal rarely includes photos anymore, is much more "freeform" and has been "stripped of any kind of structure", present in HeyDay. Ness has two different motivations to journal – to record her family's life, and express personal feelings. So distinct, she even initially transferred 'what-I-did-today' entries out of Day One into HeyDay. Day One is only rarely looked back upon, and is private. HeyDay is a regular point of reference, shared in-situ with family and friends, and a legacy for her daughter.

Shona, 28, (Day One)

Shona has used Day One for 18 months, and represents a quite common usage of the app. Though the app reminds her to journal, she does not write everyday – she opens the app "when I've got something that I want to say".

"When I started it, I wanted to use it as a way of not just writing, 'Today I did this.' [...] It's usually things that have bothered me or something really nice I want to remember."

She enjoys writing, and will write long entries in a "stream of thoughts", often during her commute home. These give her own perspective on events – for example a 'behind-the-scenes' reflection on her sister's wedding or frustrations buying a new house. These are quite separate from visual records in Instagram and Evernote, where it's difficult to visually record negative events. She reflects occasionally,

though often with a clear purpose. Fundamentally, she journals what she does not want to forget, and imagines she will use and learn from this record in her future.

PRACTICES OF JOURNALING AND DIARY-KEEPING

Keeping a journal or diary is a distinctly individual practice. Our study reveals widely varying means and motivations; some participants journaled after more than one fashion; no two of our participants were the same. It is also an evolving practice for most – as their lives change. We set out firstly to describe the range of overlapping and diverse practices we encountered through our participants.

What people record: Chronicles to personal expression

What participants sought to record ranged from **chronicling** quite mundane accounts – what-I-did, where-I-was and who-I-was-with – to deep **personal expression** of thoughts and feelings. Most participants had developed a sense of what was important for them to record – meeting people, sharing meals and visiting new places were common. None expressed any specific rules about what they would or would not record, often emphasizing a “*natural filter*”. Some however did regularly record specific activities such as bridge or golf scores, books read or money spent.

Relatedly, participants spoke of an urge to record smaller everyday pleasures. Though often mundane, they were felt to be important to record precisely because they are often forgotten or overlooked, and in the knowledge that these might be pleasing or amusing to look back on. A common aim (prevalent in Mallon’s descriptions) was to record one’s **unique perspective** or impression of everyday life – “*It’s just my history, isn’t it? I’m not bothered that it’s not terribly interesting.*” (Laura, Diary)

For some this meant recording more thoughts and feelings, and not a ‘today I did this’ type of diary. However this was quite a personal choice – others rarely recorded any emotion or feeling. Their diaries were not “*philosophical*” (Anil), even during extreme moments such as a partner’s serious illness – “*It’s just because it’s a record of things. It’s no really got a feeling no.*” (Diane, Diary)

By contrast, many described expressing thoughts and feelings in their journal as therapeutic. They aimed to record (exclusively by writing) as a means to vent frustrations, or resolve emotions. These interior and subjective thoughts could be related to the events of the day but were often a wide-ranging stream of consciousness. As such, we reveal a strong distinction between daily, quick and often passive ‘what-I-did-today’ journals, and more infrequent, expressive and reflective ones.

Temporalities: When people journal and look back

Journaling daily, and ‘as and when’

It is a misconception that journals need be kept daily – around half the sample kept a journal **as and when** they could or they felt the need to. Those committed to chronicling the everyday wrote **daily**, or at least passively tracked their day with a smart journal. Generally people

recorded their journal at the end of the day, though some took any time they were alone, such as commuting home or during children’s swimming lessons. Those with automated journals described regular ‘data cleaning’ to regulate and curate this content. Journaling as-and-when was largely influenced by the need to meet time pressures, but it was also a deliberate choice to focus on key events when feeling that the day-to-day could often be too trivial or mundane to warrant a daily record. However when entries were made, usually a few times a month, they would often be longer, and more thoughtful.

Looking back – present and future Use

Some participants looked back on a daily or weekly basis, while others would very rarely, if ever, look back. One participant Michelle no longer even had access to a journal she had kept in Narrato (the only participant no longer journaling). Triggers to look back were generally to answer or settle something specific; a desire to reminisce; or driven by apps presenting history from ‘a year ago’ or revisiting somewhere. Inquiries frequently focused upon everyday concerns and about placing events in time – when did we buy that car? When did we first meet? How much did that holiday cost? These were some of the most social uses of a diary; Tyler even described, “*settling bets*” referring to his records of what he and his friends had been up to. Reminiscence might be provoked socially, through a sense of boredom and escape from the present, perhaps evoking a nostalgic mood. Aaron, who had especially extensive records, described looking through his archives as an “*adventure*”, which always yielded something new. It was initially surprising that some of our participants rarely looked back. All experienced immediate meaning from writing a diary, either as therapy, or a satisfaction and virtue in recording. But they envisaged a much longer-term **future use** for their records. The catharsis of writing the journal sometimes left little desire to reflect too soon.

How people record and combine different media

Authoring and curating words and photos

Written words and photos were the dominant media in journals; they drove narratives and in smart journals complimented each other well. People could be more expressive in longer writing, but also carefully chose their best or representative photos to include. HeyDay was particularly photo-driven, syncing to one’s camera roll and creating a montage for each day. In this case, written text was more of an annotation. Similarly, Karen used Day One exclusively on holidays with her partner; short entries along with photos served as “*a quick way of looking through the highlights*”. However, there are clearly many other photo and writing practices alongside journaling. Rather than photos, diarists included postcards (Audrey), personal letters (Laura), or ephemera like concert tickets or sweet wrappers (Emily). Other photo collections, physical or digital, were entirely separate. Journaling was often distinguished as being “*for myself*” in contrast to blogging or posting on social media that has another audience.

Occasionally photos were taken specifically for the journal, for example of food, but usually photos were chosen from the many photos people take and store daily. Journaling is therefore both an *authored* and *curatorial* process. Interestingly though, no participants described deleting any entries, and later editing was limited to spelling errors.

There was a striking lack of video recording – despite many apps supporting this. Aaron, a QS enthusiast and innovative journaler described video journals or “*captain’s logs*” from 2008 as the “*most fun thing to go and review*”. However, for him, the on-the-spot nature of the video camera and an implicit awareness of an audience tended towards performance rather than emotive reflection.

Data as context and authenticity

Automatically imported social media content seemed more interesting as a historical artifact in itself - how one used to use Facebook – but was rarely an accurate record of one’s everyday life, as many reflected how sanitized and curated it was. Likewise, no participants saw data, such as location, weather, music listening or step counts, as the prime means of remembering. However, this imported content was described as another layer to help them relive an experience. Others felt contextualization enhanced the authenticity of a journal entry – making it seem more real.

“It helps kind of flesh it out like, this is an actual day, not like a... piece of writing that I did. So this is no longer a short story or exercise in writing, this is now an event that happened.” (Tyler, Momento)

Passive and automatic journaling

Passively journaling required frequent ‘data cleaning’ on a daily or weekly basis. This would be to eliminate repetition from different data streams, correct any errors (e.g. automated check-ins), and be selective about the photos included. Passive tracking acted as something of a baseline, which could be achieved with little effort. Participants pursued synergistic approaches [28], aware of the limitations of their automatic journal, and important events would be written about at greater length. Three participants (*Anil, Ness and Aaron*) went so far to use Day One separately from their automated journals to write longer, more reflective and personal entries. Alexis had tried a number of smart journal apps, and while seeing the appeal, struggled with their automation, which cluttered his journal and sought too strongly to “*determine what a memory is*”.

Who: social and private journals

A further misconception of journals would be to consider them as solely private affairs. Journal entries were shared in response to questions, to achieve a settled account of the past, or to reminisce together and contrast each other’s memories of an event. Entries were shared in person, as with Karen sharing her travel journal in Day One, or at a distance, sending screenshots or exported PDF files. Some participants related their journal keeping to a wider social role or interest as the family archivist and imagined their

children at least cursorily reading their journal after they passed on. Laura and Ness felt a degree of responsibility to establish who they and their families were – and recognized how future generations can become interested in what seems trivial and mundane, through their experience with older family records. Privacy was often quite implicit – no one expected others to read their diaries, and journal apps were password protected. However, most felt that what they wrote was quite mundane and uninteresting to anyone else; privacy was rarely an explicit concern except for the most cathartic and emotional writing - and even this might be shared many years hence.

Particular affordances of smart journals

It is worth reflecting briefly on how smart journals are distinctive from written diaries, as a technology and in practice. Most significantly, they support the seamless integration of photos with a journal, and benefit from a tradition of snapshot photography whereby people regularly capture the everyday [9]. None of the diary-keepers we spoke to included photos with their diaries – visual and written records were kept separate. Curiously the ability to import from a smartphone ‘camera roll’ even supported the retrospective creation of journal entries – adding memorable photos to the journal, annotating with what could be remembered about that day or event.

Secondly, as digital content, smart journals have strong search functions. Along with tagging functions that can index entries around categories (e.g. people, a place, food, etc.), this makes navigating and *checking* one’s journal far more expedient. Diary keepers journaled chronologically, and may have separate books for each year, but little structured organisation beyond this. Given that smart journals are more ‘to-hand’ – on a ubiquitous smart phone – this referential search and power (and contextual reminders) makes them easier to reference, especially socially.

Finally, smart journals are clearly distinctive in the way they passively record – whether by importing context, such as location or weather, or content from social media or camera feeds. While the relevance and value of passive tracking varied, it is strongly tailored to practices of *chronicling*, and motivations to account for one’s life.

MOTIVATIONS FOR JOURNALING

Going beyond the practices of journaling, our study evidently speaks to lifelogging more generally, and the motivations people have to record their lives. In our analysis we identified four principal motivations for journaling: *accounting* for one’s life; pleasure in *reminiscence*; the *experience of writing* and recording itself, and creating a *legacy*. For some participants these motivations were quite distinct; others journaled for multiple (and sometimes changing) reasons.

Accounting for one’s life as lived

Records, especially those kept of everyday events, allow people to account for their lives. Participants described this

in different ways: being able to “keep track” (Ness); “actually having the info” (Tyler) to settle discussions; or simply “I like to know what I was doing” (Anil).

Such accounts are often valued for their present and practical use – in maintaining routines, learning from past experiences (e.g., house buying), medical histories (e.g., tracking hay fever symptoms), and recognizing change (e.g. the cost of holidays, fitness). However, for those who kept such records, there appeared to be a more fundamental value in knowing one’s past – who I was, where I went, what I did. In the old and young, such records can give a sense and appreciation for a life well lived.

“It’s not all my imagination, they actually did happen, because the strange thing about life is... it goes past very fast! It’s really scary!” (Andrew, Diary).

Participants with these motivations valued detailed chronicles of everyday life, which could be very concise, especially if supported by other media in the journal. For this reason, smart journals are clearly well suited to these motivations – easing daily recording, and supporting organization and search of one’s journal.

Pleasure in reminiscence

Some people derive great pleasure from reminiscing about the past, and journals obviously provide a means to do that. While there is a clear satisfaction to be gained from the accounts we mention above, the most ‘fun’ and emotive records were those that revealed a *unique perspective* or observation. More than an account, people sought to record so that they could relive positive experiences and emotionally connect to them, as *their* experiences. For this reason, the aesthetics of such records were important – writing tended to be more expressive and narrative, and photos were carefully and actively chosen.

I think when you look through Momento, I don’t think you can really get a really good feel as to what you did that day or how you felt. Because the entries are not particularly personable. (Anil, Momento & Day One)

The value of personal authorship and investment in one’s journal seems of significance here. Thiry et al. and Petrelli et al. [46,56] both make similar claims about creativity and making as key for mementos to be personally meaningful.

Some of those motivated by pleasure like Aaron, explored different media in their journaling. He described his video logs as those that give him the most pure pleasure, but alongside extensive family records, including letters and Dictaphone recordings, he feels a sense of “adventure” in exploring the past through different records, which he often browses without a particular intention or target. His vast records, supplemented by a wearable camera (Narrative Clip) support this sense of exploration. Others said they take pleasure in surprise, and remembering things entirely forgotten; in Mallon’s words, “an antidote to the familiar”.

Reflective experience of writing

Even if they rarely or never looked back upon their journal, some said the motivation for journaling is the very experience of writing, and the reflection this brings them. Many described the therapy and catharsis they have found in the moment of writing, a means to deal with emotions.

“My father was very ill and then died, so obviously I did a lot of writing about his diagnosis with cancer, and how we looked after him, and his death and his funeral [...] after he died, I went back and read quite a lot of it, and in a way, I found it quite comforting.” (Laura, Diary)

Others described a sense of focus through writing and regular reflection – “forcing me to think about the things that matter” (Jorge, GridDiary). In Jorge’s case, a question-based diary helped prompt his reflection. Writing a journal was frequently discussed in contrast with more public writing via a blog or on social media. Journaling was found to afford an alternative private outlet to write, either in a therapeutic or creative sense, and a sense of liberation in not writing for any audience but oneself.

“Because it was about more than just text, it was kind of a nice toy to play with, and I could write things privately for myself.” (Michelle, Narrato)

“Some of it is about locking down the elements of something that you might then subsequently tell somebody as a story.” (Lisa, Day One)

When the experience of writing is the principal motivation, participants were much less motivated to look back.

“I like the idea that in my old age I’ll look at it but I’m not looking at it now...I’m curious but I think it would be too cringy.” (Emily, Diary)

Legacy

Across all participants, divergent attitudes were expressed about the legacy of their journals. All apart from one took steps to look after and ensure the preservation of their journals – creating back-ups and storing them carefully. Those who had significant family archives said they had a clearer impression of the legacy they were creating – even if they kept their journal private. Others strongly doubted that anyone would be interested to read their journals – and saw it as an activity above all for their own interest. The preservation and organization of journals, especially for diary keepers was something for one’s “dotage”, a far off future, even for Audrey, herself retired.

Nevertheless, while there was this varying awareness of the possible extent to one’s legacy, it is not clear that this impacted how study participants actually journaled. Only Ness described concretely how she wanted to use HeyDay to curate highlights to share with her daughter as she grew up. A more common attitude was an urge to capture important experiences in the moment, and the possible but unarticulated need for them in the future. It was from this perspective, and in light of a developing record, that people

expressed pride and a sense of virtue in journaling as a good habit. None of our participants could be said to be creating a journal solely to leave a legacy. They were doing it primarily for *themselves*; because they wanted to account for their life; they enjoyed remembering their life or felt they benefited from writing and reflecting on their life.

DESIGN CONSIDERATIONS

Our findings show great diversity in practices and motivations for journaling. All our participants had clearly determined practices, which, for many, had evolved over time. The exemplars included above go some way to highlighting this individuality, and yet show the way their practices and motivations intersect. Clearly, no one size fits all with lifelogging technologies – similar to Sellen and Whittaker [51], we would argue that lifelogging tools should be designed for specific purposes – though we have highlighted a diversity in practice rather than psychological theory. We reflect on four specific design considerations.

Recognize opportunities to account for one's life

Previous research has associated the value of remembering one's life with wellbeing through reminiscence [6,25,45] or addressing the fallibilities of human memory [16]. In this research, we observed a particular lifelogging practice and motivation to *account for one's life* that falls somewhere in between. This is related to a style of journaling that tends toward chronicling, daily, with a focus on a somewhat objective record of events and 'what-I-did-today' – ahead of deep reflection or thoughts and feelings.

We found accounting to be closer to semantic than episodic memory. Settling accounts of the past, with the satisfaction of a record to refer to, and crucially, being able to place different life events in time. The challenge is to record authentically, in enough detail, that one can faithfully answer questions in the present, about the past. However, this is more than just externalizing one's memory; these accounts seemed more broadly tied to "*keeping track*" and to a sense of a life well lived. Here we find an epistemic concern with keeping a record of one's life – a reality check for 'did-it-happen'. Philosopher Henri Bergson [4] describes the past in terms such as a 'mass' and an 'indivisible flow'. As such, Middleton and Brown [39] introduce the notion of 'punctualisation' to express how certain events, objects and places become an anchor or conduit through which we can 'cut into' and experience the past. Accounting for one's life seems related to this notion, having a number of points through which one can grapple and access an elusive history that accumulates as one lives.

Smart journals do seem well positioned to serve making these accounts of everyday life. In part, because participants described how accounts often tended towards the more objective chronicling of what-I-do rather than who-I-am. They were distinctively to-be-referred-to and well supported by powerful search and tagging functions. Combined media, photos, text and data were described as layers; each validated the other. But no one depended

entirely upon passive tracking; everyone wrote their own account, with technology as a witness rather than narrator. No matter how smart, these journals would struggle to "*determine what a memory is*" (Alexis) or should be.

This perspective offers a key insight for interaction designers considering what it means to design an *interface to the record*. The past is evidently a complex place [21] – and for many, records are a concrete means to navigate it. Yet the status quo for many services to resurface and encounter the past is to simply evoke annual nostalgia (e.g. On This Day) in the hope of eliciting pleasant reminiscence. Clearly, this may fall short – instead provoking anger and grief in users [38]. How can design support means for people to account for their lives on a broader scale, or relate disparate but connected events? Timelines are the default approach, but we could imagine alternative orientations to the past. We focus on this motivation, as we feel it is not well represented in previous work. However, what should also be evident is that for some of our participants, accounts were not a primary interest. Many barely referred to their journal *at all*. To work with an assumption that people will frequently look back on their records – even carefully recorded – is clearly misguided. Yet for those who *do* reflect often, accounting is one primary motivation.

Support for authoring a unique perspective

What does become apparent, is that many participants, whatever their motive, valued the dedicated authoring of a unique perspective. Mallon describes the urge to write a travel journal as a desire to say "*this is what I, rather than the Nikon saw*". It is clear though, that the concept of authorship extends to the curation of existing personal content. Related literature has frequently highlighted the value of selectivity and curation [46,56,60] in crafting meaning from vast digital records. Encouraging curation is posited as a challenge for lifelogging; to help people "*make their own history*" [46]. Significantly, the act of authoring a smart journal engendered thoughtful curation among several participants. Some even journaled retrospectively by curating and annotating past photos. Journaling often required choosing the best photos to include. The act of writing expediently is a judgment about what should make the record. Using multiple journaling tools, for different aims and audiences, also shows that people have a strong sense of what content belongs where, and the coherence of their records. Many of those who journaled 'as and when', did so as they sought to be more exclusive about what was recorded, and avoid triviality. Beyond even how one writes, these choices all contribute to a unique aesthetic of each journal, making it more personable. Beyond an account, the pleasure in reminiscing often depends on recognizing the author and character as one's own – not that "*it could be anyone*". Perhaps this is why Aaron found his video logs the most "*fun*" – they are unmistakably his own likeness.

From a design perspective, there should clearly be a primacy of personally *authored* content. Passive content

should be secondary but where possible foster curatorial engagement. HeyDay is especially effective at encouraging engagement and self-expression with passively generated photos – turning them into attractive and easily edited montages for each day. We might consider how interaction with this sort of passive content could be more personally rewarding than just ‘data cleaning’ – to give people a sense of crafting and authoring their content, supporting various aggregations and (temporal) resolutions on the data.

New orientations to digital possessions

A crucial feature of smart journals is their networked position between a range of recording and publishing technologies. As a platform, for some of our participants, they appear a very comprehensive solution to dealing with rich and ever expanding media archives. Smart journals could be used, particularly socially, to orient and skip through different but related media, immediately and in-situ. Our study saw people making nuanced decisions about how they draw upon a flow of media, which they dip in and out of, whilst also choosing what to keep public and private. We see these as really sophisticated emergent practices that may indicate a *paradigm shift* in how people work with their media. The idea of an entirely comprehensive archive feels increasingly out of reach as what could be considered personal content expands. Instead, value is located in expedient access and organization of content, which will be later of use – or in crafting meaningful collections [59]. Smart journaling practices also demonstrate a maturity of social media use that challenges assumptions about publishing and sharing everything. Privacy is not dead; people are clearly increasingly particular about what they publish online [60,61]. Smart journals for many were an alternative venue for self-expression, serving the need to record life as lived in a more private and honest fashion. These are brief observations, yet they highlight constantly evolving orientations to digital possessions and the value of services that mediate our relationships with them.

Finding the place for passive tracking and chronicling

Part of the promise of using technology to record one’s life is the ability to passively chronicle the mundane and everyday in great detail. Participants were divided on whether such details could provide valued context to burnish and brighten a fuzzy memory, or represented triviality and clutter that detract from the whole. Participants did offer two values for passively recorded content (e.g. location, time stamps, weather, steps, social media), which was generally positioned as context to the central content (text and/or a photo). The first follows the common conception of more data, bringing more detail and ‘more’ or ‘better’ memory. Optimistically, the context is a means to sensitize oneself, or a further cue to a deeper experience of remembering. Despite this hope, no participants gave concrete examples of this, or displayed this as they reflected on entries during the interview. The second value was not that it helped to remember more clearly, but that it gave authenticity to the account – where

writing and photos were accompanied with another record, or helped situate the account in reality. In this respect, this digital ‘ephemera’ might fulfill the role of ‘*representing today*’ that Petrelli et al. [46] found in the preservation of credit card bills and newspaper articles. Social media accounts tended to be too censored and curated to meaningfully reflect daily habits. They were often limited to a history of one’s behavior and character in that particular media. While several of our participants (9/16) collected some quantitative data about themselves, this was, as yet, rarely integrated with their journal. Curiously Andrew had frequently recorded fitness data in his diary.

The place of passive tracking in recording one’s life is hence individual and unclear. We need to ask how quantitative and machine-written records of QS and IoT technology can be appropriated as a design material, in reference to the practices and motivations highlighted. How can data streams be made human-readable and what interfaces will this require? Reinserting human agency in this space will be a considerable area of future work.

CONCLUSIONS

Our aim in this research has been to address what it means to actively record one’s life. We have described the practices and motivations of journaling, in relation to traditional and contemporary technologies. Our intention has been to recast and ground earlier lifelogging work in terms of practice, and consider smart journals as means for creating and shaping personal archives. We highlight four primary motivations to journal and look back on one’s life: to *account* for one’s life; the pleasure in *reminiscence*; the *experience of writing* itself; and for *legacy*. While these recall some existing understandings and assumptions of why people record their lives, others – such as the desire to account for one’s life – in both a broad and a specific way, offer considerations for designing interactions and interfaces with historical content. Beyond this, we find that in this idiographic practice, people’s records have a unique aesthetic, and are valued for presenting a personally constructed and authored perspective. As smart journals combine multiple forms of media, we recognize curation as part of this authorship. This suggests an opportunity to give a strong sense of ownership and authorship of digital possessions, through encouraging curation. Finally, we question the place of passive tracking, proposing its value in affirming the authenticity and reality of other accounts. The technology and data serve as a welcome witness, rather than playing the lead role, in narrating one’s history.

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