Frameworks for the sharing of memory in a digital world

WORKING DRAFT

Darren Stephens

(Student ID: 200035158)

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1   Introduction

In this document I identify the key areas of considering the use of digital technologies to mediate memory on both an individual, but more importantly, a collective scale. To do this we must first investigate the mechanisms of individual memory, and briefly note some important milestones in our understanding of how this works. Then we must contextualise individual memory within the scope of collective memory and note that they are not, in fact, separate at all.

Following this we must note the importance of physical objects and the existence of archives in the preservation of memories, most particularly in the cultural dimension. The importance of such archive will lead us to a discussion of the relationship between physical and virtual objects, existing in the digital realm as their use within the contexts of communication and memory.

I will establish the connections between of all of these themes to show that there exists a problem domain worthy of investigation; I will then go on to propose the general theme of work and initial timescales for its completion. At this point is also probably useful to point out the relative shortness of the technology section in this document (Section 5). This is entirely deliberate: much of the discussion about technology and other technical considerations have been left out at this stage as it is more important to consider this in detail during a more detailed literature review. Such a review should also include a discussion of the contextualisation and transferability of software engineering and computer science skills in a project which is more focused on the area of digital humanities. These were the areas I thought more worthy of exposition here.

The starting point for this work has centred on implementation for a specific project: the Malta Music Memory Project, also known as the M3P. Currently, the project is being

maintained as a wiki, using the Wikimedia Foundation's Mediawiki software. It has become clear that the current project has a number of limitations related to its ability to capture accurately, or in sufficient quantity, the memories and experiences of those who members of communities connected to music and other media in Malta. In order to be able to grapple with the technical issues sufficiently, the project will require further investigation of a number of technology features and platforms, as well as some of the theoretical underpinnings of our desire to record and preserve these memories for future recall and analysis.

2   Pan Narrans: The Storytelling Ape

For almost as long as the human race has existed it has told stories. Whether spoken around the dying embers of a evening camp fire, or painted on a cave wall, the need to tell stories is one of the defining qualities of the human species. Even the collective chants of religion are ways to preserve memories and to pass the past to future generations of the faithful. From the earliest societies role of the storyteller has been a key one (Sugiyama, 2001); the success of contemporary novelists and dramatists in should at least serve to remind us of this. Where the culture was mostly oral, the storyteller also acted as a repository of a group's memory, passing down stories to the storytellers to come after them. In this way, these men (and they usually were men) held the lore and the legends of the tribe. There were very likely parallel stories and storytellers that were kept entirely amongst women. Some societies preserve this even today.

The first major change to this came with the introduction of writing. Writing, for the first time, allowed people to selectively *forget*, or at least to displace memory to somewhere

else: a medium. For the first time memory, or rather its encapsulation within some medium, became, not an innate characteristic of people, but a *prosthetic*, "extension of ourselves" as far as Marshall McLuhan (McLuhan, 1965, p 7) was concerned; the introduction of a new technology, with new forms, structures and incipient conventions for its use, change forever our perception of the world around us. Indeed, we may need to consider the medium for the sharing of content separately from the content itself.

Thus, the introduction of the technology of writing forever altered the way that people interacted with memory: the gatekeepers of memory changed from being those whose memory could record those events to those who could encode memories onto and decode them from media. In classical civilisations, these people, the *archons*, became the scribes and the priests: the gatekeepers of memory. This is a point touched upon by Derrida in his lecture Archive Fever (Derrida, 1996), where he describes archives as a prosthetic construction of human society. Derrida talks about the archive not just as a physical object, but also as the collection of objects within and those who protected it. As we have just seen, McLuhan's interpretation of the connective and immersive role of media dovetails into this picture of the relationship between a medium, its content and its users remarkably smoothly. The roles of mediation and curation are thus inescapably entwined with the process of the archival of media and objects. In those earliest tribal civilisations, the gatekeepers were physical vessels for the preservation of memory. This relationship between memory and the existence of archives and media is one also touched upon by Nora (Nora, 1989). Whatever reservations Nora or others may have about their existence, such physical archives were important components in the functioning of early tribal societies and perhaps, as Sugiyama reminds us, even had an evolutionary impetus for being so.

The skill of reading became (slightly) more widely adopted in Western Europe after the invention of the movable type printing press in the early 15th century, though reading

was still the preserve mostly of the wealthy or privileged. The gatekeepers of knowledge and memory still held a powerful position, and still preserved those privileges in a fairly narrow section of society. These people were now not necessarily the writers, but the publishers and disseminators of written material . This position of primacy and power has continued until now, when the new gatekeepers are becoming those who control the networks and access to it.

One of the key features of most modern writing about the Internet (and more specifically the web) as a communications and publishing medium is the concentration on the idea of the network as a collaborative and distributed environment. There are a number of authors and ideas that converge on this particular idea, from Eric Raymond's referring to what he describes as "Linus' Law", concerning the efficacy of larger groups in parallelised debugging scenarios Raymond (2011)., to Zittrain's discussion of the Internet as a generative medium (Zittrain, 2008). Rheingold (2003) too talks about the ability of "crowd sourcing" to sometimes produce highly synergistic systems and processes utilising this distributed profile of users and systems. This synergy is illustrated using Reed's Law (Reed, 2001), which talks about how the utility of a network scales exponentially (approximately $O(n^2)$ with the number of users). There are critics of both this and Metcalfe's Law (from which it derives), who dispute the degree of increased utility, such as Briscoe, Odiyzko & Tilly (2006), who propose that, while the utility *does* increase, it does so at a rate closer to $O(n \log n)$. What is clear, however, is that increased numbers *do* have a positive effect.

The power of the network lowers the barriers to publication and the disincentives to prevent most publication have made it easier than ever before in human history for people to share "content" with each other. And what is this content? *Memory.* For what else is memory but the story of us that we tell to ourselves and to others? Given that I have

chosen to involve Derrida in this discussion, one must ask the questions: who is writing that story, and for whom? These are not trivial questions, but ones that I hope to have framed by the end of this document. To this end, the work here is divided into three main sections, though there are significant overlaps between them, as we shall see in the coming sections.

3   A Short History of Memory

3.1   Memory

Before even beginning to think of the mechanics of creating a memory framework, we must first consider the question whose answers (there will be more than one)will significantly determine the potential directions of my research: *what is memory?* As we shall see, this question does not have a single, definitive answer. Worse still, some of the perspectives on memory in the literature throw up some awkward contradictions that are difficult to reconcile. We must even consider that there are significant differences and tensions between memory as an individual experience and memory as an expression of collective identity or culture.

3.1.1   Individual Memory

The problem of memory has existed within philosophy almost as long as the discipline itself has existed. Plato first laid out the idea of a mechanistic representation of memory in the dialogue with Theaetetus, where sensory experience is encoded, then stored for later retrieval:

"Imagine that there exists in the mind of man a block of wax, which is of different sizes in different men; harder, moister and having more or less purity in one than another... and that when we with to remember anything which we have seen or heard, or thought in our own minds, we hold the wax to the perception and thoughts, and in that material received the impression of them as from the seal of a ring; and that we remember and know what is imprinted as long as the image lasts; but when the image is effaced or cannot be taken then we forget and do not know." (Plato, 1892, p 254).

This is essentially Plato's first model of memory, and one which he rejects later in favour of others, including the model of ideal forms, which is innately encoded.. It is however, a model john Locke returns to for his formulation of the idea of *tablula rasa* in his work An Essay Concerning Human Understanding (Locke, 1689)[1].
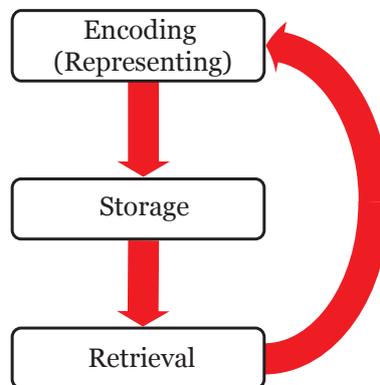

Figure 1: First Platonic Model of Memory

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[1]This is best illustrated by the title of Book I itself: NEITHER PRINCIPLES NOR IDEAS ARE INNATE

One of the major problems with the Platonic model of memory is one related to Platonism itself: Plato's view of the world is based on a notion of *ideals*, which our sensory apparatus cannot perceive, but can only provide analogues. Plato's view of memory is also essentially passive, which makes no allowance for the *subjectivity* of memory or the influence of externality upon it. The first systematic study of this issue didn't really happen until the latter half of the 19th century and the work of Hermann Ebbinghaus, whose work (Ebbinghaus, 1885) described his experiments in individual memory and suggested a difference between short and long term memory. Even this model was still, in essence, rather passive in the sense that most of the drivers of memory were seen as external to the actor, and not generated within, and inherently mechanistic.

Within a decade of Ebbighaus's work being published, Bergsson (1896), introduced a number of new ideas about the role, function and action of memory. Begrsson's interpretation of memory was highly individual, making the proposition that the formation of memory was a creative act, where sensory input was acted upon and interpreted. This was the introduction of the idea of memory as a *performative* phenomenon. Jose Van Dijck also (van Dijck, 2007, p. 7) comments on this move. It is also tangentially interesting that a move away from a mechanistic model of memory happened at around the same time that relativism became a key feature in other disciplines, notably in physics with the work of Lorentz, and Einstein's publications in his *annus mirabilis* of 1905. All of these things contributed to a turn away from the previously Netwonian, mechanical view of processes to a more "organic" perspective.

Around fifty years after Ebbinghaus, in 1932, Frederick Bartlett's book Remembering (Bartlett, 1932) acknowledged some of Bergsson's ideas and challenged some of Ebbinghaus's assumptions about memory. He suggested a more complex relationship between memory and sensory data inputs. Bartlett believed that people's efforts to impose mean-

ing and structure on what they observe affects the memory of the event or thing observed. This model was rather more complex as it made the process of memory a more active one. Indeed, feedback mechanisms play a key part in this model of memory. and it is a consideration we can return to later when we think about feedback and reinforcement mechanisms such as "liking" and "sharing" in social networks.

Atkinson and Shiffrin proposed the Multistore Model in 1968. Their contention was that memory is compartmentalised as short, long and sensory memory. In their initial 2 stage model, sensory memory was not present (an extended version is shown in figure 2). While this model went further than the more simplistic ideas of storage and retrieval it did not satisfactorily resolve issues such as the bleed between long and short-term memory and the mechanisms of "forgetting". This original model in turn is now thought of as being somewhat outdated within the area of psychology, being challenged by models such as the *Levels of Processing* model of Craik & Lockhart (1972), for example. It does, however, appear to be the foundation for many further additions to it that form a more comprehensive coverage of memory models. These are surveyed in brief by Franklin, Baars, Ramamurthy *et al.* (2005).

For the purposes of this document, the interesting part to note is the autobiographical function of memory. For us, these provide the cues for uncovering both individual memory as applied to notions of identity, as well as its relationship with the collective, which will be discussed next.

3.1.2 Collective Memory

It is easy to think perhaps of the notion of collective memory being formed merely as an aggregation of many, smaller individual ones. However, this would be a mistake,
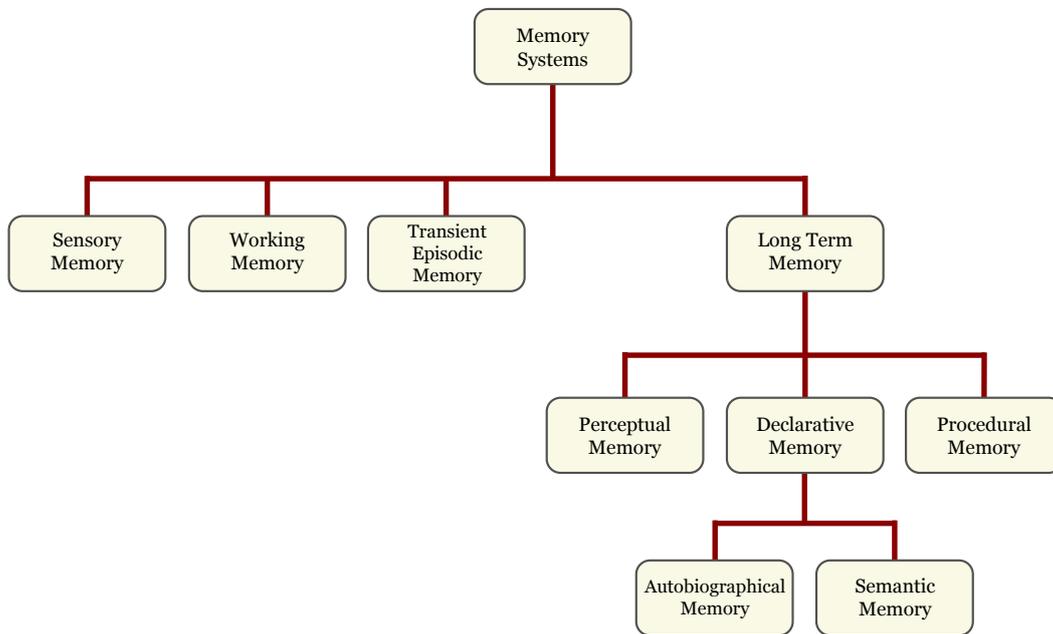
Figure 2: Extensions to the Atkinson and Shiffrin Model of Memory, from Franklin, Baars, Ramamurthy *et al.* (2005)

because it does not take account of the interactions between individuals or groups, nor even between people and media. As with the move to individual memory as being essentially mutable and in flux, many of the same concerns affect the action of collective, cultural memory. These effects are described by Assmann & Czaplicka (1995), as:

"...a collective concept for all knowledge that directs behavior in experience in the interactive framework of a society and one that obtains through generations in repeated societal practice and initiation."

They place cultural memory in a continuum of other types of memory, all the way from the individual to collective social and political memory (Assmann, A, 2006), all of which are heavily interlinked and interdependent upon one another for reinforcement. However, both of the Assmanns also tie this importance to the existence of media that informs it, and forms pointers that allow expression and sharing of such memory. The importance of media in this context, and also the form of the medium itself, then connect back to McLuhan's notions of media as prosthesis.

Their work builds upon earlier foundations laid first by the psychologist Carl Jung (Jung, 1991, p 43), and the sociologist Halbwachs (1992). Jung's picture of collective memory was driven by the idea that the human nervous system and its construction is an innate driver of collective human experience, as such collectivism is hard-wired into the human animal. We are therefore, by nature and design (however one interprets that), essentially a tribal and collective beast. Halbwachs, a sociologist, believed that collective memory was mutable (which also reconnects us to the idea of feedback mechanisms), though the major criticism of Halbwach's view was that this mutability was mostly imposed by externality, such as culture, and not from within We could see Jung and Halbwachs sitting at opposite ends of a spectrum, marked by Jung's internally focused mechanics and by Halbwachs' externally controlled effects.

This is the point where the both Jan and Aleida Assmann differ from some earlier interpretations. They both make collective memory distinct from more narrow cultural memory, as described by Jung or Halbwachs, Such a mechanism is deep-rooted and permanent, being used as a mechanism for passing cultural identity and customs between generations. This introduction of the personal as a feature of collective memory reconnects back to autobiographical memory as a source of identity. In this way, the discussion places collective memory firmly into the communicative arena, and so it can

then be assimilated into a wider discussion of identity as being performative, and thus a part of wider interpretation in communication theory. This discussion is beyond the scope of this document but should form a part of the fuller review of literature in the coming months.

Though Derrida described the archive as prosthetic, it is essentially subjective and is entirely dependent upon those compiling and curating the archive. We cannot hope for an objective collection of memory, being as it is, a subjective human experience, but what we should aim for is a more direct form of memory, written and curated by those who experienced it directly, as opposed to an externally mediated and externally curated form. Collectivism also introduces some other issues which need to be noted. Dawkins, for example, talks about the the propagation of 'memes' - ideas, behaviour or styles spreading from person to person within a culture. Dawkins' own definition talks about a meme as being:

> "a noun that conveys the idea of a unit of cultural transmission, or a unit of imitation."
>
> (Dawkins, 1989, p 192)

These quotes essentially show the beginning of mapping memories as atomic objects. Individual quanta in some arbitrary sea of experience. It is an idea we will return to a little later when we revisit technology. We find confirmation of this commonly in social media, with the use of 'like' and 'share' buttons in Facebook, the '+1' in Google's social products and the concept of the retweet in Twitter, among other well-known "internet memes". Importantly, while those these may feel like transient events, they are not: *they leave trails*. And these trails can be recorded, analysed and, most importably of all, *preserved*.

Jose Van Dijck adds the following definition of personal cultural memory:

> "acts and products of remembering in which individuals engage to make
> sense of their lives in relation to the lives of others and to their surroundings,
> situating themselves sin time and place".
>
> van Dijck (2007, p 6)

Note here the use of the word *products*. This definition places personal cultural memory, collective memory and personal memory firmly into the realms of media, and of digital media in particular, which are easily able to record and disseminate such products effectively instantaneously. Combining this with current social media networks enables people to create complex networks and collections of both personal and collective memory that can be stored and shared with other individuals and groups of the sharer's choosing. Van Dijck goes on to say that this cultural memory is:

> "an act of negotiation or struggle to define individuality and collectivity"
>
> (van Dijck, 2007, p 12)

This resulting nexus of individual and collective memory is complex and interwoven, and for many marginal cultures or cultural subgroups who may not otherwise be easily able to document their memories, we can then say that being able to archive that collective memory is an important cultural and historical imperative. As well as the example of M3P in Malta that we have already mentioned, Jez Collins (Collins, 2012) talks about the emergence of archives and memories curated not by institutions but by individuals and groups in his work describing the music and associated culture of the Birmingham music scene, In this work, Collins talks about a relatively recent and vibrant youth subculture in Birmingham, particularly in the late 1970s and early 1980s, and his efforts to

record and curate the experiences of those who took part in it, first hand. Part of this involved capturing participants memories and experiences via the use of blogging tools and forums. While such outlets have a high degree of immediacy, and can be used relatively easily by many, their products in media are not particularly amenable to longer term storage and preservation: they are in danger of being lost again because there is neither a systematic framework, nor a clear methodology for doing so in the digital context.

4   The Democratisation of Memory

In many ways, the idea of generative communities of practice and interest-forming organic and evolving systems and communities has much in common with the area of work explored by Gibbons, Limoges, Nowotny *et al.* (1984, p 17--46). Here, the authors talked about the ways in which the knowledge industries produce what might be loosely described as "knowledge", and how the mechanics of epistemology was changing in modern economies and societies. This was codified in the classification of what they called "Mode 1" and "Mode 2" methods of knowledge production.

- **Mode 1** production is essentially traditional: investigator led, focussed on single discipline boundaries and more traditionally managed.

- **Mode 2** production, Gibbons argued, moved more across disciplinary boundaries, had more participants from outside the traditional academic conclaves, managed in a less hierarchical way.

Indeed, looking at the development of many open source projects, Eric Raymond noticed many of these features in action (Raymond, 2011). Critiques of the model usually do not challenge its ability to model communities of practice of interest, but that it is only a restatement of earlier principles of "scientific method" and practice that have been common since the Renaissance. What is clear is that many contemporary authors, such as Tapscott & Williams (2006) and Surowiecki (2005) are enthusiastic advocates of the collective production of knowledge. Such "crowd-sourced" knowledge production is not without criticism, for example from Muganda, Asmelash & Mlay (2012) (albeit in a fairly constrained context) and Woods (2009), on the grounds of "groupthink" mentality or simply of product quality.

Looking at the development of the Mediawiki platform, for example, and its social and cultural norms over the decade of its existence, it appears that many of the values held up by Gibbons and by Raymond as laudable appear in the ethos of the Wiki community. The Mediawiki platform, which provides the base upon which Wikipedia and an assortment of other related projects are based, is an Open Source project[2]. Much of the development of the Mediawiki project, and its other associated offshoots, is done in this distributed, mode 2, way. In the same way, the content within the Wikipedia project is mostly (though not exclusively) based on a Creative Commons Share Alike Licence, which allows alteration and dissemination of derived content, provided such work is correctly attributed (Creative Commons, 2012). What is noticeable, however, is that the models for self-organisation within the Mediawiki community do fall broadly in line with the way that Raymond had observed the most successful of projects tend to do: a hierarchy does emerge over time, but this hierarchy is generally founded on meritocracy: those whose contributions are measurably greater or seen as having more worth are accorded greater status.

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[2]specifically, under the terms of the GNU Public Licence(GPL) v2 (Free Software Foundation, 2012)

However, even a casual observer of a number of projects of this "mode 2" type, such as The Internet Archive[3] or Wikimedia Commons[4] cannot help but notice the relative lack of interaction with other sources of so-called "crowd-sourced" media and content: more specifically the social media networks that increasing numbers of users in the developed world interact with on a regular basis, such as Twitter, Google+ or Facebook. While projects exist to, for example, provide better semantic content creation and discovery for the wiki environment (tools which may help in social media network interaction as a result of better metadata availability and discovery (SMW Project, 2012). They represent a walled garden of sorts: one with *glass walls*, where people are free, even encouraged, to look within, but there are significant obstacles preventing many users from playing a more active part in their development. These obstacles may be, at least in part, technical in nature, but may also have a more subtle aspect relating to levels of cultural literacy on the part of some potential participants.

The notion of a "walled garden" is certainly not new, and has caused tensions between the Wikimedia model and more traditional forms of gatekeeping, such as the Encyclopedia Britannica (Holberg, D and Wales, J, 2006). Models of curation of content, like the Wikimedia Commons, differ from more traditional media archives, such as the BBC, for example, where rights management and potential monetisation of resources for rights owners are significant issues; or for current academic journal publishing. This tension can now be seen in the wider community with the rise of movements supporting open access to materials, such as the Budapest Open Access Initiative (BOAI, 2002). This family of Open Access (OA) proponents includes organisations like the Berlin Declaration (2003), originating from the Max Planck Institute and the Howard Hughes Medical Institute's Bethseda Statement (2003).

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[3]http://www.archive.org/
[4]http://commons.wikimedia.org/

The "Mode 2" construct finds some resonance with the post-strucuralist perspective by removing gatekeepers from the production of memory and helping to move that production, not to curators and mediators of content, but to the actors and participants themselves, and possibly in a more contemporaneous and immediate fashion. At the same time this introduces elements of electivity and performance, as actors choose which memories or artefacts they will or will not share A more complex task then comes afterwards: filtering, interpreting and analysing the memories produced to try to discern meanings and patterns, should they exist.

The curation of memory is moving from mode 1 to mode 2 production - digitisation and the availably of max media an the means of easy and inexpensive production there is a democratisation of memory (Rheingold, 2012, Ch 3), no longer necessarily under the control of those whose job was to create and maintain what Derrida described as the *arkheion*. This provides significant challenges for those who wish to curate memory.

Much effort in curation is focused on the preservation of the past, but an emergent challenge is that of might be called the preservation of the present. Here, events are recorded at a time close to when they occurred and may seem to be ephemeral. There is little clue at this point whether events are "meaningful" in a longer term view. Generally curation relies on reaching some consensus about which events have significance and then collecting materials to support that. In collecting present material the issue then becomes one of mining the data to create a graph of importance.

It is at this point that we should also, like, Garde-Hansen, Hoskins & Reading (2009), begin to make a distinction between the personal and the public, differentiating between personal digital archives and the communal - moving from the world of Facebook, with

content shared with closed groups of friends or acquaintances, to a shared, communal experience in a more public repository. Indeed, much of the media captured by social networking exists within some kind of spectrum between the entirely personal and the entirely public. One might say that the difference between them is an arbitrary one, chosen by the originator or disseminator of the content. This control over the dissemination of memory leads us into another key feature of the digital technologies in relation to memory: the ease with which personal memories can be made common or shared. However, we may also observe that, though social networking is ostensibly about sharing, in many ways it is a solipsistic experience, and a form of self-broadcast, or self-multicast) than the more shared, communal experience of a more generalised type of repository.

Part of this comes from the human desire, mentioned earlier, to tell stories and share memory with others, whether for selfish or altruistic reasons. As a gateway technology, van Dijck (2007, p 15) talks about the relationship between memory and the digital technologies we carry with us on a day-to-day basis. The very personal and prosthetic nature of these devices leads us to treat them like extensions of our own memory, and for the social networks to provide analogues of more traditional social sharing mechanisms. Digital devices and media are being used being used to externalise personal memory, and also to mediate in the creation of collective memory.

This relative lack of obstacles, and the ease of being able to share, can lead us, as Jenkins, Clinton, Purushotma *et al.* (2006) describes, into a more participatory "New Media Culture". In such cultures we should find lower barriers to entry, more loose mentorship and ownership of artefacts and resources. It also allows for a culture where not all are *forced* to contribute, but feel free to do so (Jenkins, Clinton, Purushotma *et al.*, 2006, p 7). It's a wider vision shared by the likes of Howard Rheingold, as we shall see

shortly. However, Jenkins does sound a warning note: that to enjoy the fruits of such a culture, we must first ensure that its participants have the required skills and literacies in place to be able to allow them to make full use of its benefits. This brings us to a significant barrier: *media literacies*. Many potential users of projects like M3P have articulated a relative lack of comfort with these new cultural rules of engagement, and the technologies used to facilitate them. More generally, it may be a particular issue in cultures where the traditional norms have been more hierarchical, and possibly patriarchal. Such an investigation might be an important part of the wider literature review as understanding the nature of engagement with a participatory model, and how such a model might work, would form a key part of a framework. In the specific example of the M3P project in Malta, while some participants have described difficulties with engaging the user interfaces of the existing Wiki, clearly these issues do not seem apply to social media networks like Facebook, with over half of all Maltese accessing Facebook (and over four-fifths of the online population) (Socialbakers, 2012). This suggests fairly strongly that this is a channel for engagement that should be explored.

5 Technology and Memory

We have seen how one might consider the social media networking technologies, combined with digital hardware, particularly mobile devices, which are essentially personal and prosthetic in a way we see less with other types of computing platform). This prosthetic nature of technology has allowed us to externalise our memory and our cognition in a way that would be recognisable from the works and arguments of Derrida, McLuhan or even Englebart (1963, 1995), *inter alia*) who have all, in their various ways, talked about the externalisation and augmentation of human intellect. The ability to

'outsource' one's memory to a digital device is not without its risks, however. The neuroscientist and physiologist, Susan Greenfield, has put forward ideas that our mental capacity and brain function is being adversely affected by our interactions with social networking technologies (Biddle, 2009). This is highly contentious and has met with some vehement criticism (Goldacre, 2011), particularly from those claiming that she is yet to produce any appreciable experimental evidence to support her hypothesis.

5.1 "We're All Each Other's Filter"

If we are willing to put aside, for the time being, the negative impacts of the technologies concerned, we may wish to look at the technological end of the participatory model discussed by Jenkins, as well as by Howard Rheingold (Rheingold, 2012), who discusses the modern collision between technology and memory. He pays a great deal of attention to the social role played by modern networking technologies and also spends a time discussing the idea that a social network can act as a large scale content filter.

To begin to consider how to curate such systems we first need to explore how information collected can most sensibly be stored, retrieved and synthesised. One such model is an atomic one. It is an idea that Robert Scoble introduces:

> "A tweet is an atom. A photo on Flickr is an atom. A conversation item on Google Buzz is an atom. A Facebook status message is an atom. A YouTube video is an atom. Thousands of these atoms flow across our screens in tools like Seesmic, Google Reader, Tweetdeck, Tweetie, Simply Tweet, Twitroid, etc. A curator is an information chemist. He or she mixes atoms together in a way to build an info-molecule. Then adds value to that molecule."
> Scoble (2010)

Such clustering around concepts or objects in some defined "phase space"[5] for memory is becoming an increasingly common model. The recent redesign and relaunch of the Friends Reunited [6] project completely changed their model of interaction, moving instead towards a system where events or objects were defined atomically and users of the service were invited to attach their own memories to those objects, creating a cluster of annotated objects within this memory phase space. The BBC's Memoryshare project[7] also does this to some degree.

Both Scoble and Rhiengold assert that this atomic way of organising objects in the phase space helps to facilitate what Scoble calls "real time curation": allowing these atoms to be bundled, and otherwise reorganised. But to do this effectively requires that we allow this content to be interacted with by others, who may comment upon it, express an opinion about it or even add to it. This kind of model works well in the Wikipedia context, for example, for those who choose to participate within the system, where content can evolve. And, as we have seen in Twitter and Facebook (to name but two examples), it can be a very powerful mechanism indeed.

5.2   Technologies to be explored during the project

In the case of the M3P, we have already mentioned that the existing configuration for the project works with the Mediawiki platform. Initial moves to expand this, and to add connections and information from a social media source, *viz* Facebook), have already started. However, at this point, the mechanism is only a prototype and is limited in

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[5]In Mathematics and Physics, a Phase Space can be though of as a nominal space where all possible states of a given system can be represented, i.e. the set of all possible outcomes or states, and that any subset of that system can be shown as being items or events within that space

[6]http://www.friendsreunited.co.uk/

[7]http://www.bbc.co.uk/dna/memoryshare/home

scope, only being able to import data in in some retracted cases. Implementation aims include widening the range of contexts from and into which social media network data can be routed. In order to achieve this, it ail be necessary to further understand the operation and implementation of the APIs[8] of all of the major platforms with which the project will engage.

The following technologies and their programming interfaces will need to be more deeply explored:

- **Mediawiki**

  Mediawiki is the principal engine used to power the Wikipedia project. However, the software is available under open source licence for developers to install, configure and extend under the terms of version 2 of the GNU General Public License. As a maturing piece of software it is complex, with an architecture that will require further work to understand more fill, particularly if it is to be done by writing extension modules to the software.

- **Facebook**

  In addition to Mediawiki, Facebook must also be explored. Already, together with collaboration with the University of Glasgow as part of the SPRUCE [9] (Sant, 2012), a basic Mediawiki Extension exists that allows user information to be extracted and added to an authenticated M3P user's personal page at the site when thy log in using the Facebook login extension for Mediawiki. This code makes use of custom software provided by Facebook in the Javascript language, linked to its Open-Graph API.(Facebook, 2012). It is likely that this code will have to be further ex-

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[8]Application Programming Interface

[9] The JISC SPRUCE (Sustainable Preservation Using Community Engagement) Project http://wiki. opf-labs.org/display/SPR/Home

tended during the project to allow for generalised movement of content form Facebook into the Mediawiki realm, and also possibly into other content management and repository systems. Moving things from the realm of Facebook to Mediawiki only satisfies the need to move the instant into short-to-medium term memory. We then may need to consider, at least in principle, how this medium term memory is moved to a more permanent, long-term form of storage.

It may also be necessary, at a later point, to consider that placing these items into the context of the wiki database alone may not be enough, and that longer term storage and archival may be necessary. for this reason, currently we also include the following as a potential investigation area.

- **Fedora**

  Fedora is a software solution used for implementing digital repositories of many different types of artefact., licensed under the Apache 2.0 Licence scheme [10] . According to the project website:

  > "Fedora (Flexible Extensible Digital Object Repository Architecture) was originally developed by researchers at Cornell University as an architecture for storing, managing, and accessing digital content in the form of digital objects inspired by the Kahn and Wilensky Framework. Fedora defines a set of abstractions for expressing digital objects, asserting relationships among digital objects, and linking 'behaviors' (i.e., services) to digital objects."

  Again, we see the idea of objects linked within some arbitrary phase space as a key feature of the archive process and underpinning.

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[10]Licence available at https://www.apache.org/licenses/LICENSE-2.0

6 Aims, Objectives and Scope

In the original proposal for this project, a rough model (figure 3) was produced to show a potential model for creating the framework for this project. This diagram was a representation of an initial plan, drawn from a discussion at the 2011 M3P Inaugural Conference in Valletta, Malta (M3P Foundation, 2011)
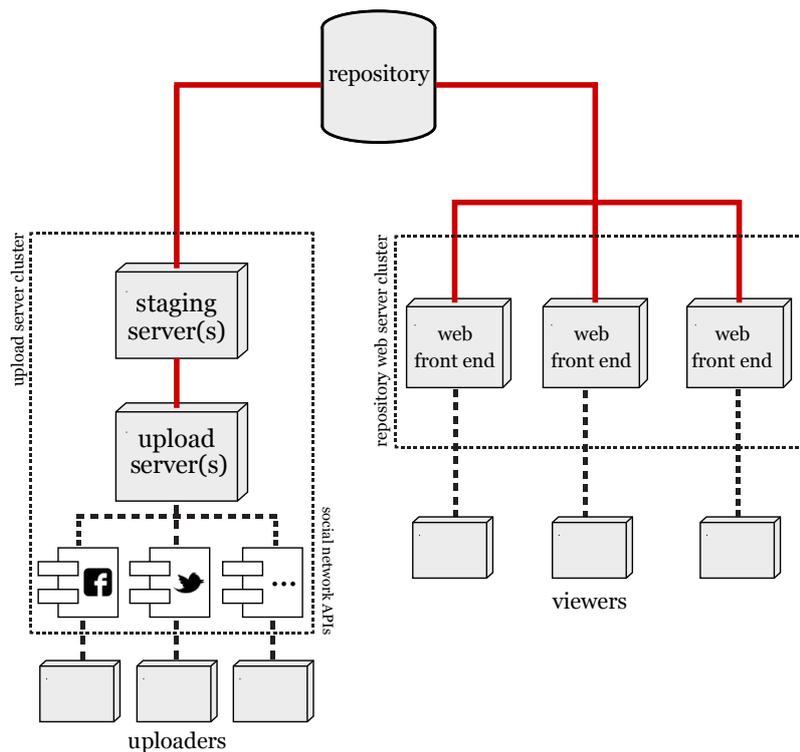

Figure 3: A high level architecture for a repository for social media networks - initial thoughts

As we might now agree, this model seems somewhat naive and simplistic, calling on, as it does, a mostly Platonic model of memory. However, using this kind pattern language, as described by both Alexander (1977) and Gabriel (1996), to frame the discussion of encapsulating memory may help us to gain an insight into a more nuanced design framework

at some later point. Already, some work has been done in collaboration with research partners to develop some of the initial tools to demonstrate that, as seen in part 5.

A participatory research approach would allow for further investigation as to how this simple model of archival and preservation could be improved to allow long term storage and retrieval of such material, though this final (Fedora-based) stage may not be able be implemented within the scope of this project.

The plan of action for the extent of the project will depend to some extent on the results of investigations to be done within the next 6 months or so. However, at this point the initial estimates are laid out in Appendix 7

7 Summary and Conclusion

After reading and investigation following the original research proposal, it has become clear that there is significant cross-over between a number of different strands, all of which make this project worthy of further investigation:

- the prosthetic effects of digital technology, as discussed by McLuhan, Derrida and Englebart, amongst others. All of them talk about the use of technology (of a sort) as a prosthesis for memory, though Derrida does this more abstractly than both McLuhan and Englebart's specifically networked and digital vision. All of these things place the importance of the digital archive at the forefront of contemporary concerns about the preservation and assertion of individual and collective memory and identity.

- The ability to easily disseminate content in ways never possible using social media technologies

- The dynamics of individual and collective memory in a socially networked context

- The existence of minority and subcultural groups whose memory would otherwise be lost

- The cultural issues surrounding the preservation of the memory of social groups or subgroups that might otherwise be lost

I believe that most of these goals are achievable within the scope of a PhD research project. It may not be possible to fully capture data using some of the long term storage systems discussed, though this has yet to be considered fully, and may even be a viable project in its own right.

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APPENDICES

Appendix A: Plan of Work

Given the advice I have received from various sources, the broad timescale for work, part-time, is as follows:

1. **MPhil to PhD upgrade**

   The deadline for consideration of upgrade to PhD level is scheduled to take place around *June 2013*, preferably a little earlier if at all possible. This period will be used to refine a more focused literature review and more precisely define the proposed research question for upgrade consideration. The review will need to consider whether the project is able to include long term storage options as part of its scope, and to identify more precisely the methodology to be used during data acquisition stages of the research.

   Projected start : -
   Projected end : June 2013

2. Once the research question has been more firmly decided upon, it will be necessary to perform an analysis of the project problem domain to determine specific requirements of particular stakeholder groups in a number of spaces, both in the wider wiki community, and more locally within the M3P user community. Part of this may have to begin before the completion of the first phase, partly in order to better inform the foundation of methodology and research question formation

   Projected start : Spring 2013
   Projected end : April 2014

3. At this point, the captured requirements will be used to provide an initial design of the framework design phase. This is the point where a design may also have to be made about a methodology for implementing and testing for tools derived from (and used to test) the framework. If an agile method is chosen, then development and refinement of the framework will continue in small *implement-test-refine* cycles until analysis of captured data can begin.

   Projected start : April 2014

   Projected end : March 2015

4. Prototype framework component implementations ready for deployment full user testing, deployment and data collection, \`'in the wild''. This section may, if agile methods are used for development, be considered as a continuation of the previous one, and not separate. It will run in largely in parallel with other tasks. It is assumed, using contemporary software engineering process methodology, that an ongoing cycle of *build-test-refine* development would be appropriate for a user-centred project such as this . This section, in combination with the previous, may allow for some slack time along the project's critical path for contingency planning purposes.

   Projected start : April 2014

   Projected end : March-June 2015

5. Once data collection is complete, analysis and evaluation of results of the implementation cycle and any data collected as a result will require collation and analysis. This may involve some degree of human intervention (for which ethical clearance may need to be considered), as well as a degree of automated testing, for which conditions would be defined partly during requirements capture.

Projected start : April 2014

Projected end : Jan-March 2016

6. Conclusions and completion of write up. This section appears small, but it is anticipated that a substantial amount of writing will take place in parallel with other project activities.

Projected start : April 2014

Projected end : June 2016