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**The Virtual Memory Landscape:  
The Impact of Information Technology on Collective Memory and  
Commemoration in Southern Africa**

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# **The Virtual Memory Landscape: The Impact of Information Technology on Collective Memory and Commemoration in Southern Africa**

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## **Abstract**

The paper considers the impact of new digital technologies and the internet on the process of commemorating the past and memorializing the dead in Southern Africa, with some comparative reference to the developed world context. The theoretical framework is inspired by Wulf Kansteiner's (2002) contention that collective memory is the result of the interaction between three overlapping elements - the media of memory, the makers and the users of memory. It is argued that internet-based commemoration represents the third successive and concurrent phase in the culture of collective remembrance in Southern Africa, following pre-colonial indigenous or vernacular memory practices and colonial forms of 'institutionalized' memory sites. Web-based commemoration is represented as a potentially new form of vernacular memory practice which collapses Kansteiner's groups of makers and users of memory. Selected case studies, mostly from South Africa, will be critically examined and their openness as a democratic space for negotiating the memory of the past assessed. The paper maintains that new technologies, although currently still in their infancy, are bound to have an increasingly profound influence on commemoration and the formation and transfer of collective memory in Southern Africa.

## **Introduction**

In 1897, Luca Jantjie, courageous resistance leader and one of the unsung heroes of the 19<sup>th</sup> century anti-colonial struggle in Southern Africa, was killed in his final encounter with British forces in the Langeberg near Kimberley.<sup>1</sup> He was subsequently beheaded by Capt. James Samuel Searle of the Cape Town Highlanders (Shillington 2011). In 2008, Searle's great-grandson, Michael Searle, wrote in a Luca Jantjie blog space "My family carries the guilt of what was a ghastly and inexcusable act" (Luca Jantjie blog 2008). Two years later, Tumo Dikare Jantjie, great great grandson of Luca Jantjie, responded in the same blog, extending kind words of forgiveness on behalf of his family and exonerating Searle and his family from responsibility for the atrocity (Luca Jantjie blog 2010). As opposed to a letter exchanged between two families, this message posted in a virtual space invites anyone in the world (with access to the

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<sup>1</sup> A shortened version of this paper was originally presented at the mini-conference on Luka Jantjie, organized by the McGregor Museum in Kimberley 14-16 September 2011.

internet) to remember Luca Jantjie and share this deeply personal and emotional testimonial of reconciliation extended across time and space.

In the Southern African region, commemoration or collectively organized forms of preserving the memory of the past can be described in three temporally successive, yet co-existing phases. The historically eldest and most locally rooted phase refers to indigenous memory practices, i.e. the multifarious vernacular, oral or performance based rituals and customs of collective remembrance that are still practiced today by traditionalists and rural communities in southern Africa. This is the realm of what Pierre Nora (1989) called 'living memory' as opposed to its institutionalization in the form of memory sites or '*lieux de memoire*'. Marking the second phase, European models of collective remembrance such as museums, monuments, memorials, statues, archives and other tangible types of *lieux de memoire* were introduced in Southern Africa through colonialism, supplementing and to some extent displacing vernacular memory practices.

Today, at the beginning of the 21<sup>st</sup> century, we are witnessing the emergence of the 3<sup>rd</sup> phase: online commemoration and digital forms of memorialisation reliant on electronic media and the internet. Currently still a very marginal phenomenon in the technologically underdeveloped context of Southern Africa, online commemoration is likely to increase dramatically in significance, especially as it attracts the younger generation. Online forms of commemoration and memorialisation will never replace commemorative monuments and other tangible memory sites of the real world, just as these colonial markers never entirely replaced the pre-colonial forms of commemoration. Nevertheless, they will become a powerful supplement, as tangible memory sites and practices are increasingly being equipped with on-line extensions and new types of *lieux de memoire*, existing exclusively in cyberspace are slowly emerging. In due course, Southern African societies are likely to follow prevailing trends in the developed world, where many people have discovered the internet as a boundless commemorative space that not only allows memories of the past to be stored, shared and debated, but also healing and reconciliation to take place, sometimes more effectively than in the real world.

This paper discusses what can be considered a new frontier in the field of collective memory, the impact of information technology and specifically the internet on commemoration and collective memory formation in the Southern African context, with special reference to South African examples.

### **Impact of new media technologies on heritage and commemoration**

On a recent visit to Maputo, I was curious to see the Praça dos Heróis, the Mozambican Heroes' Square, where the nation's most revered martyrs of the war of independence against Portuguese colonial rule are commemorated. Surrounded by a grassy area, the star-shaped monument is located inside a very large traffic circle on the outskirts of the city near the airport. While South Africa's equivalent, Freedom Park, and virtually all other public memorials in South Africa are conceptualized as merely symbolic sites, the Mozambican Heroes acre, like its counterpart at Harare,

contains the remains of the actual bodies of the post-colonial nation's freedom fighters. They are laid to rest in white marble sarcophagi lined up along the walls around an eternal flame, while a uniformed, armed guard of honour stands watch at the entrance.

The site in the middle of a traffic circle differs markedly from Freedom Park's serene location on top of Salvokop Hill, where much effort has been made to remove the 'shrine of the nation' from the hustle and bustle of everyday life and create an aura of sacredness. Freedom Park – like all other memory sites in South Africa – is keen to attract visitors, especially international tourists. An impressive website allows the virtual traveller to explore the site and receive updated information; a CD-ROM about the Wall of Names allows remote family members to find the name of a deceased loved-one; an array of glossy brochures and regular updates on radio and television keep the park in the public eye.

The Mozambican Heroes Square, in comparison, cannot be visited. There is no website, and in my experience, no brochures or any other type of visitor information appear to be available for the interested tourist. Travel information and selected blogs on the internet warn the interested tourist that one can even be fined for merely approaching the monument. Only on 3 February, the country's Independence Day, when official commemorative functions are staged here, is the public invited to take a look. The site is to be understood as sacred burial ground, a true place of honour and respect, not a museum and tourist attraction. One might be reminded of traditional African burial customs of chiefs and important leaders, whose grave sites were extruded from the realm of daily life activities and became societal taboo zones, not to be visited without prior permission and undergoing appropriate rituals. Does the absence of a website and tourist publicity material possibly enhance the sacredness of the site or the preciousness of the personal visitor experience?

Through a local taxi driver in Maputo, I negotiated access to the heroes square with an officer from the nearby Department of Agriculture, but this did not include permission to step inside. In fact, it was only with some trepidation that I was allowed to take a photo of the entrance from about 20 metres away. Once back home, I was hence rather shocked to come across a video on YouTube, placed there by Mozambican journalist Erik Charas, director of the on-line magazine *Jornal@Verdade*, who had been inside the monument with a video camera, carefully and systematically documenting every detail, and placing it on the internet for anyone to see (Charas undated).

Is this video a violation of the code of conduct that the government tries so hard to enforce around their national shrine? Does it diminish the authenticity or 'magic' of the place, the sense of honour and sanctity exuded by the monument? Or does it in fact enhance the status and aura of the memorial by making it known to the world and allow anyone to pay tribute to Mozambique's liberation heroes? How many people, including Mozambicans, have seen the YouTube video and to what extent do people generally visit memory sites online? How has the rapid development of modern Information and Communication Technology (ICT) or new media technologies

affected our commemoration of the past and memorialization of the dead and to what extent do these technologies impact on the formation and transfer of collective memory, specifically in the Southern African context?

### **Commemoration and the internet**

Although still in its infancy in Southern Africa, the impact of ICTs on heritage and commemoration forcefully manifests itself around the world. The use of 3D and 4D scanning and virtual reality applications is increasingly used in cultural heritage conservation to provide remote access or enhance the visitor experience. GPS and GIS technologies are vital instruments in the management, conservation, planning and development of memory sites; Google Earth and Streetview invite the prospective traveller to explore visitor amenities around memory sites; Twitter allows us to follow our favourite museums; touch screens have become standard equipment in many museums; live video streaming of commemorative events encourages larger, even international audiences to take part in locally organized commemorations. Blogging and social media provide new avenues for posting personal contributions, sharing memories and experiences; e-mail is widely used to distribute death notices and share commemorative notices. The internet is full of online memorials, e-shrines, web museums, cyber monuments, internet memorial halls and virtual cemeteries.

Foot *et al* (2005:2) define web-based memorialization as “an emerging set of social practices mediated by computer networks, through which digital objects, structures, and spaces of commemoration are produced”. Although the culture-shifting role of the internet has affected the developed world to a much more profound degree, even in developing countries such as those of southern Africa, mobile phone technology, routinely equipped with camera, video and audio recording functions, is now widely available, even among poor populations. An increasing number of users are sharing material via Bluetooth or accessing the internet via mobile phone (Kreutzer 2009).<sup>2</sup>

Academic scholars, heritage practitioners and policy makers debate the benefits and challenges that these new technologies present for conservation and heritage interpretation (e.g. Al-Qawasmi *et al* 2008). An expanding body of literature on web memorialisation and online spaces of commemoration contributes to the development of theoretical concepts to critically analyse and assess the significance of this new cultural practice of remembrance. Many of these academic contributions have been engendered by what is probably the world’s most extensive and significant online memory site, namely the September 11 Digital Archive<sup>3</sup> and the thousands of commemorative websites and online memorials that have sprung up since the World

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<sup>2</sup> Based on World Bank statistics for the year 2009, Mozambique had the lowest rate of internet usage in the SADC region, with only 2.7% of the population, followed by Namibia with 5.9%, Botswana 6.2% and South Africa 9%. Zimbabwe had the highest rate with 11.4% of the population being able to access the internet (World Bank undated).

<sup>3</sup> “The September 11 Digital Archive uses electronic media to collect, preserve, and present the history of September 11, 2001 and its aftermath. The Archive contains more than 150,000 digital items, a tally that includes more than 40,000 emails and other electronic communications, more than 40,000 first-hand stories, and more than 15,000 digital images. In September 2003, the Library of Congress accepted the Archive into its collections, an event that both ensured the Archive's long-term preservation and marked the library's first major digital acquisition.” (September 11 Digital Archive undated).

Trade Centre bombings in 2001. While many of these sites memorialize individual victims, in their entirety they also constitute a form of collective commemoration attempting to come to terms with, not only individual loss, but loss of a sense of national identity and meaning (Haskins 2007, Walker 2007, Foot *et al* 2005).

In the real world, a clear hierarchal order differentiates the grave stone in a cemetery commemorating an ‘ordinary’ person from an official memorial in the public domain commemorating an ‘extraordinary’ person. Such boundaries and their associated creation of elite victims are blurred in the virtual world, where any individual can be commemorated as a hero in his/her own right. In October 2009, the social network Facebook explained that users can have the profile of deceased friends memorialized (Kelly 2009; Topping 2009). This prevents anyone from logging into the account, while still allowing friends and family to visit and post comments in remembrance. The new measure sparked an angry debate in the Facebook blog, in which many users, mostly from the United States, complained bitterly that the memorialisation results in the ‘freezing’ of the deceased’s profile and involves the sudden disappearance of all his or her postings, pictures, videos, and other material.<sup>4</sup> Many users blamed Facebook for robbing them of precious memories of their loved one.<sup>5</sup> Reading through the over 100 comments suggests that it is common practice for close friends or relatives of the deceased, who had been entrusted with the password, to keep the Facebook account active, sometimes for years. People described this ongoing connection with the dead as comforting and contributing to their personal healing.

Evangeline Thompson from Portland, Oregon, for instance, describes her brother’s Facebook page as “this little place, like a shrine, to come visit him. A place that was like a scrapbook of memories, a place where I could mourn openly and without shame ...” (Thompson 2010?). Another user, identified as Tyler Lyons (2010), explains that his father is buried far away from where he lives and that his Facebook page is “as close as a gravestone” to him. Another person pleaded with the company, “Let our loved ones live on .... It is part of the grieving process.” (Powell 2010). However, realizing the drawbacks associated with the memorialisation of a profile and the ethical and legal problems associated with keeping a deceased person’s account active, an increasing number of people establish memorials outside Facebook, creating vast virtual cemeteries.

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<sup>4</sup> It appears that any profile can be memorialized based on the request of any of the deceased’s approved friends or family members and many users suggested that a better system must be put in place to ensure that profiles are not memorialized against the will of those close to the deceased. People were also upset that the disappearance of material associated with the memorialisation occurs without warning. In a few cases, users had managed to get the account briefly re-instated to allow them to download all the material. Another major concern was how the memorialisation of a profile affects the status of the relationship between the deceased and the living as listed by the system.

<sup>5</sup> One person (identified as Jake MacLean) put it this way: “Before the internet we looked at old letters and photos physically, but with the internet age, all this is done on the computer, with you deleting everything without or permission, it is like YOU ARE ROBBING AND ERASING our relatives memories FOREVER! (sic). Posted on The Facebook Blog on 2 June 2010(?).

The first web cemeteries were apparently established in 1995 (Roberts 2006; Chang and Sofka 2006).<sup>6</sup> They involved very simple procedures for submission of material via e-mail with few restrictions on length and content; most of these online memorials were free of charge or very reasonably priced. Today, providing the service for online memorial tributes to the dead has become a thriving commercial enterprise in the developed world. Yet, psychologists and other experts have testified to the benefits of such web memorials beyond those of the real world: they are easily accessible anytime, provide space for emotional expression, personalization, the sharing of stories, and the establishment of a community of mourners beyond those generated by physical forms of commemoration (Roberts 2006).

### **South African examples of web-based commemoration**

Needless to say, in developing countries, the virtual memory landscape is still rather slow in emerging, but I want to consider a few examples from South Africa. Between 2006 and 2008, *The Sunday Times* celebrated the centenary of its foundation in 1906 by sponsoring an unique heritage project (Marschall 2010a). With the motto ‘Today’s news, tomorrow’s history – a century of stories’, the Sunday Times installed about 30 artistically designed, small scale memorials throughout the country in the very places where the events had happened. Most innovatively, the *Sunday Times* Heritage Project (STHP) is accompanied by a website, which has been developed into an on-line historical archive in conjunction with South African History Online.<sup>7</sup> In addition to a beautifully photographed visual representation of each memorial, the website features contextual information on the history of the commemorated person or event, sound-bites, video clips, excerpts from the *Sunday Times* itself, as well as information on the artist and the process of making the memorial. Attractive and entertaining in its design, the website entices on-line visitors to navigate their way around and learn more about the event, its context and significance. But the website is also meant to be a serious educational tool for teachers, containing resources suitable for school projects and even concrete lesson plans. To what extent this resource is actually used in the classroom, especially considering that not even all teachers have internet access, is of course a different question.

According to project director, Charlotte Bauer, the *Sunday Times* anticipated that most memorials would far more likely be visited on-line than in situ (personal e-mail communication 2009). To some extent the two modes of visitation attract different audiences: Ignoring international visitors (both in-situ and on-line), the demographic patterns of inner cities and townships where most memorials are located are dominated by black and overwhelmingly working class people, whereas access to internet facilities is racially mixed, but still predominantly white and middle class<sup>8</sup>. In

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<sup>6</sup> According to Chang and Sofka (2006), the oldest virtual cemetery appears to be the World Wide Cemetery at [www.cemetery.org](http://www.cemetery.org), founded by Michael Kibbee of Canada.

<sup>7</sup> In 2008 SAHA published a glossy well-illustrated, popularly written book with historical background information and reproductions of archival material and photographs about each of the *Sunday Times* memorials (Segal and Holden 2008).

<sup>8</sup> According to the 2008 All Media Products Survey (AMPS), only 9.5 % of South Africans access the internet monthly, of which 4.6% are black, 12% Coloured, 19.9% Indian and 33.7% White (IT Agent Blog 2009). However, Kreutzer (2009) points out that South Africa’s ‘digital divide’ is in the process of closing up, as many,

general, the average on-line audience has a higher level of education and is likely to be more interested in matters of history, art, and heritage.

Increasingly content published on the internet is interactive, changing media representation from a “one-way broadcast to being about a sharing, user-generated content and citizen journalism” (Cinman in *The Sunday Independent* 2009:25). Despite its innovative character, the STHP website is still structured as a ‘one-way broadcast’ in the tradition of the printed newspaper. The fact that there is no interactive feature inviting readers to comment on the memorials, or on the historical details of the story and no opportunity for uploading additional information or sharing experiences, for instance among teachers, unfortunately represents a lost opportunity.<sup>9</sup> Nevertheless, the website allows for a far more complex and multifarious reading of the memorials.

In addition, the website preserves the memorials in their everlasting beauty, while the tangible markers in their real urban spaces are deteriorating fast. Internationally, the internet is increasingly utilized to preserve physical memorials from degradation and desecration. Where historical cemeteries are falling into a state of neglect, conservationists are transferring the relevant information into electronic databases and virtual cemeteries (Veale 2004:8).<sup>10</sup> In the case of the STHP, a few memorials have actually been removed or disappeared from their accustomed places in the real world, but they can still be visited online.

Soweto uprisings.com was developed in 2007 by Wits University fine art students, Ismail Farouk and Babak Fakhmzadeh, as part of a university research project (Soweto uprisings.com undated). This educational and commemorative on-line space is structured around routes - routes taken by the different groups of students on that fateful day of June 16 1976, routes taken by the police, the funeral route taken in remembrance of the dead (Avalon Memorial Route). Route animations are mapped onto Google Maps and equipped with points of interest symbols which expand into photos and brief explanatory notes. Viewers are invited to submit comments and identify further points of interest. A blog space, administered mostly by Farouk, contains a variety of images (hosted on Flickr), research articles, short videos by the artists and audio files containing interview material with survivors (e.g. Maki Lekaba) (Soweto uprisings.com:blog undated).

Contrary to the STHP website, the Soweto uprisings.com blog space provides a platform for publicly shared contributions, submitted moreover from anywhere in the

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especially young, South Africans, are using the relatively inexpensive mobile phone handsets as an internet platform, and moreover many people are accessing the internet through a friend’s phone.

<sup>9</sup> Only on the home page, readers are invited to provide feedback under the heading “Tell us what you think of our new website”. As the heading suggests, most of the 13 questions in this section relate to the website rather than to the heritage project, but question 9. “How does the *Sunday Times* site help us understand the past?” provides space for personal responses and critical comments, which are, unfortunately, not shared on-line.

<sup>10</sup> Foot *et al*, however, point out ... “Virtual memorials, to endure on the Web, require the maintenance of a domain registration and a server, regular backups on evolving storage media, and occasional migration between platforms” (2005:unpaginated).

world. One interesting comment was posted by Lekunutu Casalis ("Caster") Matima, a former student at Morris Isaacson, now based in New York. He writes about his personal experiences, but also to 'correct' some misconceptions about the seeds that led to the Soweto Uprisings.<sup>11</sup> Another article entitled "PAC Led Positive Action Campaign Route from Mofolo" prompted an excited response from someone identified as 'Mike' who writes, "WoW!!! that walk must have been fantastic...Im (sic) a 50yo (sic) white male now living in [the] US. I found this because I used to sell chickens at Mofolo Station 25 years ago... How ignorant I was, I wish I knew and understood the depth of your struggle at that time ..."<sup>12</sup>

Reading such responses and personal stories can provide a different perspective on the past, which expands the archive, sometimes contradicts dominant perceptions and contributes to the shaping of collective memory. If the Hector Pieterse museum extends and modifies the narrative of the Hector Pieterse memorial, the blog space at Soweto uprisings.com has the capacity to extend and modify even the diverse resources documented and archived in the museum. But beyond this archival function, interactive forms of information and communication technology such as blogs provide a new, participatory space of debate around commemoration, in which anyone can object and correct, mourn and pay tribute, share memories and negotiate the meaning of the past.

Of course, in reality this is still largely theoretical. The user-generated contributions quoted above are almost the only comments that could be found at Soweto uprisings.com when I last checked in August 2011. In comparison, Freedom Park's 'Discussion Forum', established in 2009 "to initiate dialogue with the nation" (van der Gryp 2009), contains some evidence of lively debate, for instance over the inclusion of Fidel Castro and Che Guevara in the nation's most important commemorative site. But closer examination reveals a paucity of comments in most other topic categories. More importantly, this forum is not exactly an open, democratic space of debate, but rather closely monitored and censored by the administrator to ensure that every posting is "factual and does not discriminate or infringe on anyone's beliefs or values" (van der Gryp 2009). In fact, the administrator points out more specifically that the Freedom Park is looking for "positive contribution" to the discussion forum.<sup>13</sup>

One might blame the Freedom Park Trust for such censorship, especially as the organization already has a reputation for its fear of criticism and defensive attitude.

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<sup>11</sup> "I feel that the modern day writers and revisionists are not honest about the seed that led to June 16, 1976. As early as 1971, we were already (sic) planting the seeds for our future struggle. ... The only reason I am writing this is to inform my countrymen and women that we have tons of unsung heroes in our midst and in the land of our brave Ancestors' spirits" (Matima cited in Soweto uprisings.com:blog undated).

<sup>12</sup> "...my heart has never healed, every time I come back to visit I feel so guilty, guilty that I was so dumb, guilty that I was afraid, guilty that I walked away...I would very much like to do the next walk with you...Please lets (sic) make this an annual event..." ('Mike' cited in Soweto uprisings.com:blog undated).

<sup>13</sup> "New articles will be posted bi-weekly, which will allow the public time to engage with us about the articles and to verify and conduct their own research on the subject matter. The Freedom Park is committing itself to ensure that the articles posted are factual and does not discriminate or infringe on anyone's beliefs or values. The Freedom Park is looking forward to your positive contribution to this discussion forum." (van der Gryp 2009).

However, what happens when blogs are not administered and anyone – protected by the anonymity of a pseudonym – can write whatever s/he likes, is illustrated by the following recent example. On 26 April 2011, one day before Freedom Day, an article appeared in the *Times Live* on-line, prompted by the debate around Julius Malema's singing of a particular 'struggle song'. A short article, written by Susan Tucker (2011) and entitled "Build a monument to all our struggles", triggered 44 comments in the newspaper's blog space. Only a small fraction of them engaged meaningfully with the issue under discussion, while the majority either wallowed in meaningless banter completely unrelated to the article or descended into racist ranting and foul language. Interestingly, when I recently checked the site again (on 2 August 2011), I found that all comments had been removed and a new debating space had been established, equipped with the warning for commentators: "Please stick to the subject matter".

### **Virtual commemorative spaces and collective memory**

In post-apartheid South Africa, as elsewhere in Southern Africa, the government constitutes a powerful force in forging and disseminating a shared collective memory of the past through educational initiatives such as the new national history curriculum, through public holidays, the renaming of streets and cities, and through substantial investment in the heritage sector. This includes the installation of new monuments, memorials, museums, and heritage sites. Although the government is not a monolithic force and does not always speak with one voice, much effort has been spent on promoting the emergence of a national history focused on the notion of struggle and resistance in the interest of reconciliation and nation-building. Yet, officially endorsed interpretations of the past as represented in commemorative functions and mnemonic markers are not always shared by communities and individuals. Counter memorials and alternative commemorative ceremonies; protest and vandalism; but also simple apathy and silent disagreement can be interpreted as indications of frictions, controversies, indifference or lack of ownership (Marschall 2010b).

The international scholarly literature tends to be focused on the visual, textual and symbolic 'messages' of monuments and memorials and the obvious or implicit intentions of those who install them. How individual viewers receive these messages, i.e. how they interpret these commemorative markers and what meanings they attach to the past, is one of the most under-researched and methodologically problematic areas within the emergent field of memory studies (Kansteiner 2002). Far more attention should be paid to the ways in which the officially intended meaning of memory sites is appropriated, modulated, counter-acted and sometimes lastingly changed through the individual and collective acts of ordinary people, the 'subaltern', and even tourists. What individuals and communities do around memorials, whether they use or abuse them, whether they respect or reject them, venerate or vandalize them, all impacts on the meaning of these markers and contributes to the formation and transfer of collective memory. New media technologies not only provide innovative ways of interacting with physical memory sites, but they have in fact led to the emergence of a completely new space in which commemoration takes place, a virtual space that can complement and extend the memory sites of the real world, but also render them more complex and even contradictory.

Scholars disagree on how collective memory should best be defined, how it is shaped and maintained, and how it should be conceptualized in relation to other categories of memory, notably individual memory. For the purposes of this paper, I want to draw on Wulf Kansteiner's (2002) contention that collective memory is the result of the interaction between three overlapping elements, namely the media of memory, the makers and the users of memory. The media of memory refers broadly speaking to the intellectual and cultural traditions that frame our representation of the past and more specifically to the multifarious visual objects and discursive strategies of representing memory, for instance the visual, performative and narrative elements of commemoration. The makers of memory are those who selectively adopt and manipulate the media of memory and traditions of representation, i.e. those who initiate and organize collective forms of remembrance; those who design and install memory markers; those who produce and arrange commemorative practices and hence actively produce discourses about the past. The users of memory are the viewers, the visitors, the consumers, the participants, the audience, the public; those who use, ignore, or transform the media of memory for their own needs and interests.

What does this mean more specifically in the Southern African context? Collective memory manifests itself in tangible and intangible forms, but is ultimately always dependent on mediation and representation. As different media of memory become available, practices of individual and collective remembrance inevitably change, which in turn impacts on collective memory formation, as different media and practices provide new focal points and perspectives on the interpretation of the past, enable previously silenced voices to be heard and potentially dissonant memories to filter into collective narratives. One might think, for instance, of the groundbreaking impact that the invention of photography had on the preservation and sharing of memories or how the colonial introduction of monuments and museums changed the focus, purpose and audience of commemoration in southern Africa.

While traditional African memory practices are often intertwined with religious rituals and woven into the complex cultural fabric that cements societal cohesion within communities, monuments, museums and other forms of institutionalized commemorative media are far more deliberately and self-consciously established, sometimes in top-down fashion and detached from that cultural fabric and its embedded memory culture. They are purpose-built vehicles for the formation of group identity or national collective memory, promoting an internationally homogenized, Western culture of collective remembrance. Some individuals, especially the political elite in southern Africa, have embraced this commemorative culture and promote it vigorously, for others it remains alien. I would argue that Kansteiner's dichotomized conceptualization of makers and users of memory applies mostly to these types of officially sanctioned forms of commemoration. To articulate it more poignantly, in the southern African context, it was the museum and the monument that separated the users from the makers.

In indigenous, vernacular forms of commemoration, such as song, story-telling, rituals and commemorative gatherings, the groups of users and producers of memory are far more intertwined and overlapping, potentially swapping roles and changing places. This means that ordinary people, even the marginalized and powerless, can become makers of collective memory and actively contribute to the formation of dominant memory discourses. Moving from the traditional African to the contemporary international context, vernacular commemoration can refer more comprehensively to a wide range of informal, spontaneous, unofficial, often ephemeral modes of collective remembrance, including so-called 'spontaneous shrines' erected at sites of sudden death or great tragedy. Such forms of vernacular commemoration have gained great international currency in recent years, popularized by the media. They may be initiated by individuals or small groups, but subsequently often draw large numbers of active participants who contribute to the formation and growth of the commemorative structure (Santino 2006). In this dynamic process, the distinction between the groups of users and makers of memory collapses.

I argue that on-line practices of remembering the past can be understood as a new mode of vernacular commemoration, where the users and producers of memory merge, where the traditional hierarchy between author-text-audience is levelled, and the ideological closure of real world commemorative markers is opened up (Haskins 2007:406). This might still take some time in Southern Africa, but once a society has widespread access to information technology, every ordinary person can actively initiate the memorialisation of a community hero, promote the annual commemoration of an important event, or utilize on-line commemorative spaces to 'correct' the interpretation of the past presented in official memory sites. All these activities can empower individuals to shape collective memory in ways that moreover potentially reach far greater audiences than the monuments of the real world.

Having said this, however, Foot *et al* (2005) found in their analysis of web-based 9-11 memorials, that online memory structures often display the same characteristics as their offline counterparts, including "imposed uniformity of expression, limitations on what can be said, and the sort of fixity that accompanies officially planned memorials" (ibid 2005:unpaginated). It is important to know who initiates and drives the production of a virtual commemorative space and what their agenda, resources, and societal roles are. With respect to the South African examples discussed above, it is clearly evident that most of these on-line commemorative spaces are just as much officially sanctioned and tightly controlled as those in the real world. Where there are exceptions, perhaps Soweto uprisings.com, the invitation to authorial agency, production of content, 'democracy in action' (Senie 2006), has not really been taken up.

Foot *et al* (2005) then proceeded to develop a useful conceptual model distinguishing seven categories or dimensions of web-based memorialisation that allows for a more systematic analysis of this new commemorative phenomenon and its relationship to

the conventional memory structures of the real world.<sup>14</sup> Their findings or conclusions have since been echoed by other scholars, namely that in internet based forms of commemoration, the distinctions between the official and the vernacular, as well as private and public, individual and collective remembrance, are more difficult to sustain and may no longer be useful analytical categories (Haskins 2007; Foot *et al* 2005; Walker 2007). So what – in the final analysis – is the impact of information technology on the realm of commemoration in the southern African context?

## **Conclusion**

I want to get back to the YouTube video of the Mozambican Heroes Square and the question about its influence on the public reception and sacred character of site. Walter Benjamin (1936) famously argued that mechanical reproduction destroys the aura of a work of art, or one might say, by extension, any unique cultural product. Yet experience shows that excessive reproduction can also enhance the aura of a work of art, notably by increasing its status and prestige. Perhaps we are talking about a different type of aura in each case. We might then conclude that the YouTube video both destroys and contributes something to the Mozambican Heroes Square. This ambivalence, I argue, characterizes more broadly the impact of new technologies on commemoration and collective memory.

Digital environments of memory represent new opportunities and different experiences for mourning the dead and honouring heroes; they provide expanded, democratic spaces around commemorative formations of the real world, and new ways of expressing and sharing memories that can contribute to personal healing and societal reconciliation. But online memorials and commemorative spaces can also destroy precisely what their offline counterparts are meant to achieve. As many scholars in the field of memory studies have pointed out, the purpose of officially sanctioned monuments, memorials and commemorative functions is to interpret the past and explain its significance for the present. This requires synthesizing diverse memories and condensing varied perspectives of complex past events into a unified, coherent narrative for the sake of reconciliation, nation-building, peace or social cohesion, especially in socio-political contexts of division and strife. A truly interactive, uncensored online memorial has the potential to annihilate the very purpose for which the real memorial was built by proliferating a confusing array of dissonant narratives, contradictory meanings, and offensive observations, some of which might even be invented or posted by persons assuming fictitious identities.

If the colonial media of memory were imposed on Southern African societies through the forces of political power, the new digital media of commemoration are promoted by the forces of globalization and commercial enterprise. Virtual commemoration, wherever in the world it is being practiced, creates a globalized ‘memory without borders’ (Assmann and Conraad 2010), which involves a level of homogenization and international standardization far greater than the memory markers introduced through

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<sup>14</sup> These dimension are 1) object/focus of commemoration; 2) co-production; 3) voice; 4) immediacy; 5) fixity; 6) intended audience; and 7) relational positioning of victims (Foot *et al* 2005).

colonialism. Yet, what these new media of memory have lost in local distinctiveness and cultural rootedness, they have perhaps gained in accessibility, at least in societies with advanced levels of technological development, and potential for customization or personalization to satisfy the specific needs of individuals and groups.

In the final analysis, of course, not only will access to information technology remain limited within Southern Africa for some time to come, but even in developed countries, many people do not visit memory spaces on the internet, perhaps because it is a lonely and dematerialized experience. What makes memorials in the real world meaningful for many visitors is precisely their tangible and lasting material nature; their physical connection with the location of the historic event; the social aspect of joining others in the process of mourning, celebrating or paying tribute; the visceral experience of being face to face with the symbolic marker and taking part in memory rituals. For many people, especially perhaps those of the older generation, visiting a photographic reproduction of a memorial in cyberspace; lighting a virtual candle; making a virtual rubbing of an engraved name; and share their personal memories online can never replace the experience of the 'real thing', the smell of the real candle, the ritual of placing a flower, the silent prayer, the sharing of memories with a real human being, or the pride someone might feel in the mere knowledge that a solid tangible marker has been erected in dedication to one's heroes.

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Virtual landscapes of memory. of ethnic tolerance associated with former socialist Yugoslavia has been denied. through the reality of war and the mobilizing ethno-nationalist rhetoric of the. Virtual landscapes of memory. included the prevention of warfare, elimination of militarism, the advancement of human. rights and the rights of peoples regardless of race, ethnic background, sex, religion or political.

Cache memory (aka CPU memory) is a storage unit for instructions of the programs frequently call upon during operation, for faster access. Secondary Storage (aka auxiliary storage) is the one which retains data until you either overwrite or delete it. So even when you turn off the device, all data is intact on this medium.

Computer storage types. Let's say you are working on a file it is said to be in the computer's memory. When you save it, a copy of it now resides on the computer's storage (say hard drive). When you close the file completely, the file now only resides on the secondary storage(hard drive) and is no longer in the memory, until you open it again.

Process is a program which is in running, plus the data structures needed to manage it. Address space is the set of valid addresses.

Process Management And Virtual Memory. Why Computer System Needs Virtual Memory ? How Virtual Memory Is Managed By The Operating System ?

Memory Unit. What Is Computer Memory ? The virtual memory is an important mechanism provided within the operating system to use some portion of the secondary memory ( Hard Disk also referred as disk memory ) as an extended RAM. The operating system makes use of this extended virtual RAM to efficiently manage the various processes simultaneously active in the main memory RAM. The operating system implementation of the virtual memory function consist of number of steps . These steps includes implementation on both hardware and software side. Virtual memory is a memory management technique that is implemented by using both hardware and software. It makes the application think it has a contiguous and available storage space or address space. However, in fact, virtual memory usually is divided into several physical memory fragments, and some of them are stored on the external disk storage which can be used to exchange data when needed. Currently, most operating systems use virtual memory, like the Windows family's "virtual memory", or the Linux "swap space". If you find the Windows 8/8.1 operating system gets stuck in the Windows logo page when starting it and you are unable to enter the system, you have to force shutdown and then restart it.