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"My Little Penguin Has Come Back to Life": Chinese Nitizens' Digital Memory and Narrative Practice of Tencent Pets Game

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Abstract

As the world's largest online virtual pet community, Tencent pets had accompanied numerous Chinese netizens, particularly the younger generations. It was not only their earliest "Internet memories", but also became an integrated part of their personal life experiences, even influencing their understanding of social life. Through textual statistics, thematic analysis, and discourse analysis of 7,623 posts from Chinese BBS, this study identifies three narrative paths of memory—"mourning", "nostalgia", and "resistance"—which have formed around Tencent pets. People do not perceive Tencent pets merely as a "technical object", but rather as a form of real "life". Writing memories about Tencent pets also serves as a form of resistance against the passage of time and the fading of one's own life course. This study contributes to a further understanding of China's digital gaming culture, as well as enriches research on media memory and Internet history.

Keywords

Tencent Pets; Digital Memory; Media Memory; Pet Game; Virtual Pet; Digital Culture; Internet History; Memory Studies; Game Studies

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«Мой маленький пингвин ожил»: цифровая память и нарративные практики китайских пользователей в игре Tencent Pets

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Аннотация

Tencent Pets, крупнейшее в мире онлайн-сообщество виртуальных питомцев, сопровождало многих китайских пользователей интернета, особенно молодежь. Эта игра стала для них не только первым «интернет-воспоминанием», но и важной частью личного опыта, повлияв на их восприятие социальной жизни. На основе анализа текста, тематического анализа и дискурсивного анализа 7 623 постов с китайских форумов исследование выделяет три типа нарратива памяти — «скорбь», «ностальгия» и «сопротивление» — которые сложились вокруг Tencent Pets. Пользователи воспринимают Tencent Pets не просто как «технический объект», а как форму настоящей «жизни». Письменные воспоминания об этой игре также становятся способом сопротивления времени и увядания собственной жизненной истории. Это исследование углубляет понимание китайской цифровой игровой культуры и вносит вклад в изучение медиапамяти и истории интернета.

Ключевые слова

Tencent Pets; цифровая память; медиапамять; игра с питомцами; виртуальный питомец; цифровая культура; история интернета; исследования памяти; игровые исследования

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Introduction

Online software is an important form of Internet application, but just like websites, it is not a permanent technical form; some will inevitably close down and disappear for various reasons (Wu & Yang, 2018). For example, data shows that the number of mobile applications available in the Chinese market has declined annually since 2018, decreasing from 4.52 million in 2018 to 2.60 million in 2023: a reduction of 42.5% (CNNIC, 2023). This figure only counts mobile applications, and if the shift in user behavior from PC to mobile is considered, the number of disappearing online software platforms is likely even greater, which constitutes a remarkable social phenomenon. Among the numerous vanished online software, Tencent pets, developed by the Chinese tech giant Tencent, is particularly notable. This is not only because the penguin character in Tencent pets formed the foundation of Tencent Group's visual identity system, but also because it once held substantial influence for its 13 years' operation – accompanying a generation of users through virtual pet-raising game experiences. Even after its shutdown, many fond memories of Tencent pets persist across the Chinese Internet.

Tencent pets reached its peak before 2010. In July 2006, one year after its launch, Tencent pets had achieved a record of 1 million concurrent users, becoming the world's largest online virtual pet community (SigiL, 2018). In March 2007, the total user scale reached 1 billion, whereas the total number of Internet users in China at the same time (June 2007) was just 162 million (SigiL, 2018). In other words, more than a half of Chinese Internet users had played Tencent pets. However, as the Internet underwent the mobile transition, many online games, including Tencent pets, struggled to maintain their user bases, leading to a steady decline in the numbers of players. In 2018, after years of operation, Tencent officially discontinued Tencent pets game. On the day the shut down was announced, the search index of "Tencent pets" spiked, and it quickly became a trending topic on social media. Numerous articles and posts reminiscing about Tencent pets, as well as the tweets and reports from major Chinese official media, began circulating across the Internet.

Previous studies have conceptualized websites as integral parts of Internet history, with their disappearance likened to the "missing pages" in the broader history of the Internet (Wu & Yang, 2018). In that sense, online software, as a crucial component of the Internet's application layer, should also be considered as "innegligible page" in the "big book" of Internet history. In the practice of collective memory, the disappeared online software, like online games, become valuable resources for understanding the history of Internet and human beings ourselves. Moreover, prior research on media memory has provided limited insights into the intersection of online games and digital memory. This study aims to address this gap by not only contributing to the field of digital memory research, but also enriching our understanding of media and cultural memory. Taking Tencent Pets

game as a case study, this research employs web crawlers to collect data, and uses textual statistics, thematic analysis and discourse analysis to investigate how people construct digital memories about the disappeared online games through memory narrative practice.

Literature Review

Digital Memory

Digital memory has emerged as a significant research topic in recent years. Influenced by actor-network theory (ANT), researchers no longer regard memory as an object that exists within an individual, but as an outcome of the interaction between humans and non-humans and the practices that regulate the interactions (Guggenheim, 2009; Brown & Hoskins, 2010; Van Dijck, 2011). Therefore, to better understand digital memory, researchers should consider not only the memories that reside in people's minds but also the materials and technologies that carry these memories in the real world (Hoskins, 2011).

Digital memory based on digital technology brings two new characteristics: connectivity and flexibility. Connectivity emphasizes the impact of technology on the storage and dissemination of memory (Smit, Heinrich, & Broersma, 2017). In particular, information and communication technologies (ICTs), such as the Internet, have profoundly shaped people's memories, especially in what is termed the "mass self-communication" stage of the Internet, where digital memory transcends the traditional dichotomy between private/personal memory and public/collective memory (Reading, 2009). This dynamic creates a temporal feature of "continuous present" or "immediate past" (Schwarz, 2014). Flexibility refers to the variability of digital memory, which is inherently unstable and not necessarily more reliable than non-digital memory. For example, digital photos are easier to modify and less likely to leave traces than printed photos, which can affect people's internal expressions of their past (Van Dijck, 2007). A notable example is the London subway bombing, where digital memory of the event was reconstructed through editing, adding, deleting, and resetting the corresponding Wikipedia entry (Pentzold, 2009).

Previous research has focused on two intertwined yet distinct emotional processes that shape how individuals and communities' practice of digital memory: mourning and nostalgia. Mourning, according to Freud's theory (1917), involves a gradual detachment from the lost object, allowing the bereaved person to eventually reinvest in new relationships and activities. And nostalgia is often defined as a more complex emotional response involving both a longing for the past and a reinterpretation of it. It is characterized by a mix of positive affect and melancholic yearning, reflecting both satisfaction with the memory of an idealized past and the sadness of its irretrievability (Boym, 2001) Both mourning and nostalgia take on unique forms in digital contexts. As discussed by Andrew Hoskins (2011) in "Memory, Media, and Metaphor," digital media create "connective memories" that

blend private and public realms, allowing mourning and nostalgic expressions to occur on social media platforms, forums, and virtual communities. In this sense, mourning and nostalgia become collaborative processes where collective memories are built, shared, and negotiated.

However, many questions remain regarding digital memory, particularly in the context of the Internet and online games. Further research is needed to understand how individuals integrate personal narratives of memory into public participation through digital technologies (Foster, 2014; Han, 2015).

Virtual Pets

Virtual pets, also known as digital pets or artificial pets, is a digital information system that simulates the relationship between humans and real pets through human-machine interaction (Chesney, Kanoh, & Lawson, 2010). Virtual pets come in various forms, ranging from physical devices such as Tamagotchi and Sony's pet dog "Aibo", to those existing purely as online software and applications, like Tencent pets and "My Talking Tom". Previous research has demonstrated that virtual pets can evoke emotional and cognitive responses similar to real pets (Chesney & Lawson, 2007), and undertake the role of "introducing modern technology to children" (Bloch & Lemish, 1999). This emotional attachment explains why, as these children grow up, they continue to remember their virtual pets and recount these memories through digital technologies.

Research on virtual pets began relatively late, coinciding with their emergence in the late 1990s. Studies have since explored a wide range of virtual pets, for example, the single-player pet games like "Petz", as well as more socially integrated experience like Tamagotchi, Furby, Nintendo Dogs, Neopets, Sony Dog Aibo, Pokémon Go, and "My Talking Tom". Researchers have focused on various topics like the virtual pet industry (Bylieva, Almazova, & Lobatyuk, 2019), and the interaction between users and virtual pets (Lin, Faas, & Brady, 2017). A recent study on Tencent software and media memory analyzed user expressions related to Tencent pets (Wu & He, 2021), but did not adequately address the unique characteristics of Tencent pets due to their "pet attributes". Despite being "the world's largest online virtual pet community," Tencent pets has received limited scholarly attention, which indicates the value and originality of this research.

Addressing the gaps in internet history, digital memory and virtual pets games, this study aims to answer the following questions:

1. How do Chinese netizens express their memories about their Tencent pets?
2. Why do Chinese netizens recollect their memories of Tencent pets?
3. What social and cultural implications does this kind of narrative practice of digital memory reflect?

Methods

This study initially aimed to analyze all user-produced memorial content about Tencent pets on the Chinese Internet. However, due to the consideration of sample availability and feasibility of analysis, the research focus was narrowed to include all discussion texts on the Baidu BBS – Tencent pets Forum, including all the themed posts and their corresponding replies. There are three main reasons for this choice: First, according to data released previously, Baidu BBS is China's largest social community platform (CNNIC, 2017), as well as one of the most active online platforms for the younger generations growing up with Tencent Pets game, with over 90% of users under 34 years old (36Kr, 2015). Second, compared to more private platforms like Wechat, Baidu BBS is more accessible for analyzing personal narratives and collective memory. Third, the Baidu BBS – Tencent pets Forum remains active, with hundreds of posts about Tencent pets appearing daily, which facilitates the study of the dynamic process of digital memory construction.

Data Collection

Data were collected using a Python-based web crawler tool to gather all the content from the Baidu BBS – Tencent pets Forum (up to May 1, 2024). After filtering out empty posts, invalid entries containing only links, characters, or emojis, and selecting users' profile page to make sure it is not a robot user, a total of 7623 discussion texts (236,251 words) from Chinese netizens were finally obtained. Notably, due to Baidu BBS's anti-crawling regulations, only 10,000 posts could be retrieved, resulting in the first text being dated July 16, 2021. Although the time span is relatively short, all the texts were produced after the shutdown of Tencent pets, aligning with the research aims of this paper.

Data Analysis

Given the large volume of data, this study initially conducted word frequency analysis using a natural language processing (NLP) tool. After removing single words and terms with unclear meanings, high-frequency keywords occurring more than six times were extracted, resulting in 633 high-frequency words. These keywords were then categorized by part of speech and ranked in descending order based on frequency. Building on the word frequency analysis, the study also employed thematic textual coding to classify the major topics from these online posts, and representative posts with the most corresponding replies were selected for in-depth discourse analysis.

Although the above process captures only a portion of the digital memories associated with the disappeared online game such as Tencent pets, this paper does not aim to reconstruct the history of all vanished online software, applications and games. Instead, it seeks to explore the narratives of memory related to their disappearance, as well as the interplay between personal life histories and digital memory, and the underlying social and cultural implications.

Findings

Word Statistics

Based on the research methods mentioned above, all high-frequency keywords obtained in this study were divided into nouns (n=204), verbs (n=160), adjectives and adverbs (n=66), and other main types according to different parts of speech. Words without substantive meaning, such as onomatopoeia and quantifiers, were not included in the frequency statistics. Details are as follows:

Among the most frequent nouns, "pet" (n=1710), "penguin" (n=590) and "game" (n=298) reflect people's cognition of the attributes and images of "Tencent pets". Terms such as "now" (n=686), "already" (n=228), "before" (n=217) and "last" (n=172) reflect the temporalities of digital memory. Furthermore, words like "activities" (n=236), "community" (n=223) and "friends" (n=119) reflect the social function of Tencent pets, where social interaction and participation provided the foundation for the collective memory writing practice.

The most frequent verbs, such as "know" (n=527) and "find" (n=181), describe actions when people discovered that "Tencent pets" was shut down; Negative expressions like "never" (n=475), "can't" (n=272), and "no" (n=131) convey users' disapproval of the shutdown. The recurrence of interrogative terms such as "where" (n=263), "whether" (n=156), "how" (n=89), and "how to" (n=86) reflects a collective sense of confusion and powerlessness. Additionally, words such as "hope" (n=135), "grow" (n=132), "remember" (n=103), and "stay" (n=100) convey personal responses to irreversible loss of their Tencent virtual pets.

Among adjectives and adverbs, "been" (n=329) and "always" (n=252) are the words with the highest frequency, showing the continuity of memory related to Tencent pets. Terms such as "suddenly" (n=100), "unexpectedly" (n=60) and "actually" (n=31) express the users' dismay and disappointment at the shutdown of Tencent pets game. And words like "permanent" (n=65) and "forever" (n=36) are expressions about time, implying a sense of lingering sadness and nostalgia over its disappearance.

Thematic and Discourse Analysis

As widely used methods in qualitative research, thematic analysis is primarily employed to identify, analyze, and report patterns within data (Braun & Clarke, 2006), while discourse analysis focuses on how language is used to construct meaning, identity, power dynamics, and relationships in a given cultural or social environment (Van Dijk, 1993; Fairclough, 1995). Based on word frequency analysis, the researcher classifies the themes and analyzes the language discourse from the collected dataset through manual coding. In general, the narrative texts of Chinese netizens regarding Tencent pets can be grouped into three major themes: Mourning (remembering the Tencent Pets), nostalgia (memories of childhood and youth), and resistance (Hopes and actions for the return of the pet game).

Table 1. Textual Themes and High Frequency Words

Textual Themes		High Frequency Words
Theme 1	Mourning	previous; we; thanks; wish; stay; goodbye; accompany
Theme 2	Nostalgia	time; ten years; youth; miss; look back; good old days
Theme 3	Resistance	geek; tech person; update; again; back online; APP

Mourning: Remembering the Tencent Pets

First of all, Chinese netizens have published tremendous posts mourning the disappearance of Tencent Pets. Some of the posts were detailed and filled with personal memories, such as:

> Finally, the day has come. Today—September 15, 2018, Tencent pets is going to cease operations... I checked and found out it was launched on June 6, 2005. It feels like it's been a long time, but in reality, it's only been 13 years. I still remember on August 15 last year, out of boredom, I logged the game. I hadn't checked it for several years before that. At that time, I found out that a month later would be my Tencent pet's 10th birthday, which reminded me that my pet was born on September 26, 2007, when I adopted it by cracking the eggshell. So, I specially set a reminder on my phone calendar. Then, on September 26 last year, I specially logged in to Tencent pets to awake my penguin. I fed it, bathed it, and played with it, celebrating its 10th birthday. I just didn't expect that its 11th birthday would never come... From the sixth grade of elementary school to junior high school, it was the happiest time raising my Tencent pets. Whenever I had the chance to log in to the game, I would play with my pet, feed it, clean it, and let it grow, learn, and work... I even had my mom help me keep it running at her office... To be honest, the only online game I spent money on as a child was Tencent pets, mainly to buy Soul-Reviving Pills, the virtual medicine. At that time, Tencent pets were really fragile little lives...
>
> –– User (Ferry terrible)

> I logged into Tencent pets on September 9th. I hadn't come back to see it for a long time, and then I saw that it would officially close on September 15th. Goodbye to the 13 years of fate. I remember when I started using a computer and connected to the Internet in 2007, that's when I started playing Tencent pets. My neighbor's little sister was playing with an electronic pet Tamagotchi, a black-and-white one composed of square grids. I had just registered for Tencent not long ago, and then my pet was actually set up by a classmate. Instead of 3D, the Tencent pets were still flat, and the content was not that complicated at that time. Basically, whenever I turned on the computer, I would definitely release the pet first, and then I would let it study hard and work to be able to play more shifts. I left the computer on all night, and I went to sleep, but when I got up in the morning, the pet had died. At that time, I was really at a loss. Therefore, I spent money for the first time to buy Tencent points, and I ran to the computer city across the street in my slippers to buy the points card, which started me on the road of spending money. It should be said that Tencent pets was the game that I spent the most money on. In the game, I mostly raise penguins, not pigs or bears. I haven't spent a penny on other games...
>
> –– User (27SAKURA)

From the two posts mentioned above, it is evident that Tencent pets are not merely viewed as a cold "technical object" in people's memories, but rather, similar to real pets, possess 'life'. They require careful care and companionship, thus fostering a sense of intimacy and becoming integral to the personal lives and memories of netizens. The two posts received 49 and 32 replies, respectively, indicating that these personalized narratives of memories resonated with many individuals. Some other netizens also paid tribute to Tencent pets in a ritualistic way, which is also a "tradition" of Baidu BBS forum. For instance, "The first layer of posts is dedicated to the memory of the past pets" (23 replies), "Here opens a memorial post to commemorate the past, with the penguin pet" (130 replies), and "The next layer of posts is pictures of our lost Tencent pets" (40 replies), and so on. This ritualized form of memory reflects the special feelings of people towards Tencent pets. After its disappearance, people participated in this interactive digital ceremony, contributing narrative fragments to construct collective memories about Tencent pets.

It is quite interesting that in some posts, people used the first-person terms like "you" or anthropomorphic labels such as "son" and "daughter" to refer to their Tencent pets, and called themselves "mom" or "dad". For example:

> Thank you for accompanying me for nine years. Although you have gone to another world now, I will always remember you, remember your lovely appearance playing on the desktop. May you be happy forever in the other place, and I hope you will always think of me.
>
> –– User (ID5201314com)

> As always, I dare not say goodbye, leaving enough food and daily necessities for you, may you live well in the distance, and no longer think of me, this irresponsible owner. Thank you for more than ten years of companionship. As the saying goes "the green mountains stand, and the green water flows", if there is fate, we will meet each other again.
>
> –– User (Cute little)

> Oh silly son, you are about to be slaughtered and still jumping in the lower right corner of the screen, hurry up and run... [Crying] You've been with me for 13 years, I can't bear it. Recently, I'll give you more to eat, but there's nothing I can do, your mother can't stop Tencent the butcher... Leave a "portrait of the deceased" and farewell!! I cannot say a word anymore!
>
> –– User (Qi Qi 131)

This anthropomorphism is even more pronounced in some other posts, where netizens used special verbs to emphasize the "subjectivity" of Tencent pets, affirming their "right to live" like real pets. Examples include: "In this forum, it is very painful to see pets being killed!" (1129 replies), "As long as my computer is not turned off, it won't go away" (21 replies), "I hope the little penguin won't be

lonely" (20 replies), "I can't accept it. Just you, my little penguin, I'm sorry!" (10 replies), and so on.

Nostalgia: Memories of Childhood and Youth

In addition to mourning Tencent pets, the digital memories of Chinese netizens also reflect on childhood and youth, as well as laments for the passage of time:

> Farewell to my little penguin, 2009--2018, it's also a goodbye to my childhood and youth. Suddenly, I realized that I am 21 years old this year, no longer young and carefree.
>
> -- User (hszqunli14)

> In 2008, I played with pets during the Olympics. Later, I met "cool" on this forum who helped run the server. I joined Baidu BBS, got mixed up with many fans and titles, and finally reached level 219. There are many items that have gone with my penguin. I played with my virtual pets in college all day and night. I have never thought that the penguin pet game would be shut down. I feel it's hard to say goodbye. Fortunately, I recorded a video before the server was closed and posted it on Bilibili.com. I watch it again and again, remembering those times and my past youth.
>
> -- User (Aqiong cc0)

These posts above indicates that people's memories of Tencent pets have extend beyond the pets themselves. Tencent pets have become a medium through which people reflect on their personal life histories. When the game disappeared, it brought up other related memories, particularly for the younger generations who were Tencent pets players in their childhood. In addition, Tencent pets was designed with certain social characteristics – players needed to complete various tasks such as feeding, cleaning, working, studying, playing interactive games, traveling, and competing in the virtual world of the game. And at certain levels, there were features like "marriage" and "laying eggs," which require cooperation with friends or strangers. Therefore, to some extent, the game can also be seen as early exposure to concepts of love and intimate relationship for the Chinese young players. Some people even related in-game marriages to real-life relationships:

> In junior high school, I played Tencent pets game with a girl, and we were husband and wife in the game. At that time, I probably didn't understand what love was, maybe it was just a deep liking. Now, I'm about to graduate from college, and I'm still reminiscing. When I saw that penguin pets were going away, my heart suddenly ached. I typed a lot of words in the input box and deleted them, not knowing where to start. I lit a cigarette and said goodbye to my youth.
>
> -- User (LGD quanjia)

> I used to think that after I got married in the future, I would marry my wife's Tencent penguin, and we'd have a bunch of penguin babies (I guess many friends thought like

> this too). But I can't wait for my own marriage, and the penguin is going to disappearing. There are only four days left before it's closed. I'd better find a penguin girl to marry my penguin boy while there's still time. I hope there is a young lady who will say yes.
>
> –– User (Kakarot)

Except for the personalized narrative of memories, some netizens directly pointed out that Tencent pets represented the lost youth of a generation. Its removal signified the end of an identity. For example, posts like "In memory of the lost youth of our post-80s and post-90s generations", recalling their experience of raising Tencent pets, had received 82 replies. Another post titled "memory to youth," reviewed the development history of Tencent pets in detail, with a long picture and text explanation. In the narration of these two posts, the disappeared Tencent pets, along with the lost youth, are gone forever. The vanishing history of Tencent pets corresponds to the personal growth or even the aging process, and this temporality is consistent for all users of Tencent pets, thus triggering a collective resonance about "aging." It is in such a digital memory narrative process that involves multiple participants that Tencent pets have become the intersection of personal and collective histories.

Resistance: Hopes and actions for the Return of Tencent Pets

Finally, in the texts collected in this study, there is also a concentrated emergence of content expressing hopes for the return of Tencent pets. This is an extension from the earlier themes of mourning and nostalgia, containing people's dissatisfaction and resistance to the disappearance of the game. A representative post – and also the one with the most replies in the entire Tencent pets Forum – was titled "In the future, no matter how long, I will wait for you here" (1953 replies). This post used a discourse of timeless to challenge and dissolve the fact of disappearance, thus evoking collective emotions. Some other posts such as "Does anyone have the heart to jointly appeal and strongly demand Tencent to restore our pets? Anyone who wants to join the petition?" (187 replies) adopted a more radical discourse of resistance, recounting old memories, while initiating a new process of memory-making.

In addition, these digital memories have also become the basis for some netizens to take actual "restoration actions." For example, some people wrote that they replicated the image of Tencent pets based on their memory and posted their production process in the forum, which inspired others to imitate. Another netizen named "Breeze" claimed that they would make a standalone version of Tencent pets by themselves, regardless of Tencent pets' offline. This post received 158 replies. Others also shared with stories and scenes of Tencent pets from their memories, combing personal narratives into collective actions and collaborations of writing digital memories.

Conclusions and Discussions

This research is an exploratory work on how people remember the passing of online software – pet games. Although there are studies of digital memories about disappeared websites, little academic attention has been given to discontinued software. The case selection of this paper also involves special considerations. The reason for choosing Tencent pets is that it was one of the most popular online games among the Chinese young generations, and was deeply integrated into their lives. Known as "digital natives", they are deeply immersed in current digital culture. Researching their digital memory of Tencent pets can provide insights into the history of the Chinese Internet, as well as the broader history of the Chinese society

Returning to the initial question – how and why do people write memories of their Tencent pets after they disappear? This study reveals that memory narratives about Tencent pets focus on three main themes: Mourning (remembering the Tencent pets), nostalgia (memories of childhood and youth), and resistance (Hopes for the returning of the pet game). A strong correlation exists between the first two themes, as many Chinese netizens express their memories of youth through recalling their Tencent pets. These virtual pets accompanied their growth, and represented the "digital technology" they encountered early in life. Therefore, the disappearance of Tencent pets also symbolizes the disappearance of an identity or a period of time. Missing their pets also means missing that period of time and the past. Thus, "hopes and actions for the return of Tencent Pets" can also be recognized as people's imagination of returning to youth, as if retaining Tencent pets could suspend time. If one cannot keep it, then writing down the memories of Tencent pets becomes a form of resistance against the aging and passing of one's own life.

This research also finds that the Chinese netizens did not regard Tencent pets as a lifeless "technical object." In the virtual world of the game, those virtual pets – such as penguins, pigs, and bears, were seen as real animals, and people developed emotional attachments to them: They treated these virtual pets like real pets, feeding them, bathing them, and playing with them. To some extent, they even viewed these pets as their own children, sending them to school and work in the game, witnessing their weddings, and taking care of their offspring. Furthermore, the Chinese netizens also interacted with others through these pets, which highlights the significance of pets and animals in the human-machine interactions.

From a socio-cultural perspective, these digital memory narratives also offer a glimpse into many other online software and games that have disappeared in China. The Chinese netizens completed personal memory narratives through technological intermediaries and collectively wrote memories through interaction and collaboration in cyberspace, adding a vivid footnote to the history of China's Internet development. "China's Internet is not a linear development progress but has ruptures and absences, reflecting a intricate process" (Wu & Yang, 2018).

The digital writing practices of Chinese netizens serve as a manual "supplement" and "filling" for these "missing pages" of the Chinese Internet history.

In general, the theoretical value of this study, based on the case analysis of Tencent Pets, lies in uncovering three distinctive characteristics of digital memory practices related to disappeared online software and games. First, there is mourning and nostalgia for the software and games themselves. Due to the highly digital nature of these platforms, the act of writing memories is inherently collective, making digital memory practices almost an inevitable choice. Second, as previous research has shown, the process of digital memory could be inherently unstable and unnecessarily more reliable than non-digital memory. However, due to the visual characteristics and settings of pet games, digital memories of them tend to be more stable and facilitate a consensus about collective memories. This stability finally leads to hopes and actions beyond mourning and nostalgia, prompting a degree of resistance – such as the effort to rebuild the game and begin a new process of digital memory-making. Lastly, unlike previous studies that describe games as a "site of memory" (Caselli, 2021), this research finds that in games like Tencent Pets, which simulate the relationship between real pets and human social life, similar emotions as real human-pet relationship were seen in these digital memories, as well as emotions on their own life course and experience. This emotional depth exceeds the conceptual framework of a "site of memory", and necessitates new theoretical perspectives, contributing to the broader understanding of virtual games, digital technologies and media memory.

The passing of online software and the memory narratives of netizens is a brand-new research topic. Future studies can continue to explore similar cases, and further discuss the deep interactive relationship between technological changes, individual life, and social culture from the perspectives of social history and media memory, using more qualitative research methods such as in-depth interviews and focus group.

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