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# Finding synergy between oral and visual narratives on memorable and meaningful tourism experiences

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## Abstract

Personal technologies are widely used to capture the memorable and meaningful experiences travellers have during their journeys. These digital footprints serve as memorabilia for travellers to share and reminisce about these special experiences. This study showcases an exploratory study of the creation of a travel diary from the traveller's digital footprints to facilitate the expression of and reminiscences about memorable and meaningful moments. In this study, 15 participants were asked to share their memorable and meaningful travel experiences and were then instructed to use their photos and a set of prototyping tools to create a paper-based visual diary of their experiences. The goal of this study was to examine the process of creating a visual diary to understand the differences in how these experiences are recounted and the ways they are expressed. We used a Labovian approach to compare and contrast the participants' oral narratives and visual diaries. As in comics studies, the visual diaries are analysed with respect to their spatio-temporal dimensions and the recurring patterns in these two narrative forms are discussed. Based on the results, recommendations are made regarding the future design of travel diary platforms.

**Keywords:** travel diary, memorable and meaningful tourism experience, co-creation, prototyping, oral and visual narrative, traveller wellbeing.

## **1. Introduction**

Travel is a highly experiential human activity in which emotion and active engagement contribute significantly to the creation of memorable and meaningful travel experiences (MMEs). These experiences can be considered to be vivid and explicit autobiographical memories that arise from remarkable individual life events characterized by high emotional involvement and frequent rehearsal (Talarico & Rubin, 2003). Travel journeys allow travellers to put aside their daily routines and immerse themselves in the world of the extraordinary. Travellers often use smartphones and other personal devices to capture these experiences, which yield digital footprints, and then share them via various social media platforms (Wang, Park, & Fesenmaier, 2011). Digital images and videos are the primary digital footprints that travellers deliberately create to capture their MMEs. While these footprints can be shared instantly via social media platforms, they also serve as personal memorabilia for savouring these delightful and remarkable life moments. Apart from sharing their digital footprints through social media, other savouring activities such as diary keeping (Jose, Lim, & Bryant, 2012) can enhance people's degrees of happiness and thereby promote individual wellbeing (Hiemstra, 2001), including personal development and self-expression, problem solving, stress reduction, and critical thinking.

Despite the abundance of platforms that allow travellers to publish their digital footprints, surprisingly little research has been conducted on how these platforms might help travellers to narrate their MMEs. Although exploring the potential for conceptualising these platforms requires a human-centred (ethnographic) approach (Tussyadiah, 2014), in this study, we opted for the creation of paper-based diaries and then observed how participants narrated their MMEs using their digital footprints. We published the initial results in a separate paper (Wan, 2019), which highlights the key differences between visual and oral narratives of the same MMEs, explores the approaches individuals currently use to manage their digital footprints, and discusses participants' views and feedback regarding their diary creation. In this paper, we extend our initial findings by comparing and contrasting the two narrative forms, with an emphasis on the addition of visual elements to the digital footprints to enrich the storytelling. Given the current prevalence for sharing visual content, the outcomes of this study can inspire the design of future digital platforms.

## **2. Literature review**

Narratives and storytelling are effective ways for capturing travellers' experiences from an idiosyncratic perspective (Moscardo, 2017). Despite the vividness and high emotional involvement of flashbulb memories (Brown & Kulik, 1977), these memories are not especially accurate (Talarico & Rubin, 2003). Therefore, digital footprints can play a role in substantiating their narratives. However, to date, there has been scant research on how these footprints can be used to create travel diaries that promote reminiscing of MMEs (Pudliner, 2007).

The term 'digital footprint' refers to the trail of data that travellers create either passively or actively over the course of their journeys (Önder, Koerbitz, & Hubmann-Haidvogel, 2016). Passive digital footprints comprise data that is created without the travellers' knowledge, for example, GPS, record of Internet activities, etc. Active digital footprints, on the other hand, comprise data created deliberately by the travellers over the course of their journeys, for example, photos, videos, and online social interactions. These footprints are considered as one of the major sources of user-generated content in social online platforms and review sites. Current tourism studies reported in the literature have mostly investigated how this content is used by travellers to share their remarkable moments with their communities (Kim & Fesenmaier, 2015; Wang et al., 2011), identify potential business opportunities (Akehurst, 2009) and identify traveller behaviours and motivations (Girardin, Blat, Calabrese, Dal Fiore, & Ratti, 2008; Tussyadiah, Park, & Fesenmaier, 2011). A recent study found that tourists prefer using visual content over text-based storytelling (Munar & Jacobsen, 2014). As yet, however, very few studies have explored how this user-generated content might encourage travellers to create visual narratives of their experiences, despite the fact that sharing these experiences on social media platforms has become common practice. Furthermore, these visual narratives can serve as memorabilia for savouring past experiences and even foster personal reflection and introspection. A body of literature in positive psychology (Kurtz, 2018) reports that savouring one's past can foster individual well-being. Hence, helping people to savour their MMEs could prolong their sense of happiness long after their journeys have ended. Thus, more than a simple recording of these experiences, the travel diary should encourage positive reminiscences of MMEs in various ways: by the active involvement in capturing them (e.g., taking a photo of a remarkable experience), by editing the

digital footprints collected (e.g., creating a story of that experience), by sharing the story (e.g., share fleeting moments via social media platforms) and by reviewing the diary over time (e.g., savouring the experience through the digital memorabilia). Arguably, the travel diary has the potential to support these types of savouring activities and thereby promote the flourishing of travellers.

Given the potential of using a travel diary to support travellers' abilities to share and reminisce about their MMEs, facilitating the creation of their comprehensive travel diaries is essential for unleashing their potential to do so. This study explores how travellers create personal narratives of their MMEs with the digital footprints they generated during their travels. The diary created by the traveller then becomes an item of memorabilia that aggregates the remarkable experiences to share and savour at some later date. In so doing, the oral narrative can be used as a reference for comparison with the visual content.

The goal of this study is to understand the difference between how MMEs are recounted and the ways they are expressed through the creation of a visual diary. The results can be used to inform future designs of travel diary platforms. Figure 1 illustrates how MMEs occur during more general tourism experiences. MMEs are the micro-moments that hold particular significance to travellers. These strong emotionally charged moments are often captured by personal devices that comprise digital footprints. Oral narratives also provide important information for comprehensive storytelling. As such, a visual narrative that combines oral narrative and digital footprints may be the best way to recount MMEs.

The following sections describe the steps taken during this study. The methodology section includes a literature review of two approaches to narration, oral and visual, and the creation of the paper prototype inspired by existing social media platforms for this user study. The data analysis section compares oral and visual narratives using the methods described in the previous section. Lastly, we discuss our findings and offer insights with respect to design technologies that can support visitors in their creation of effective travel diaries.

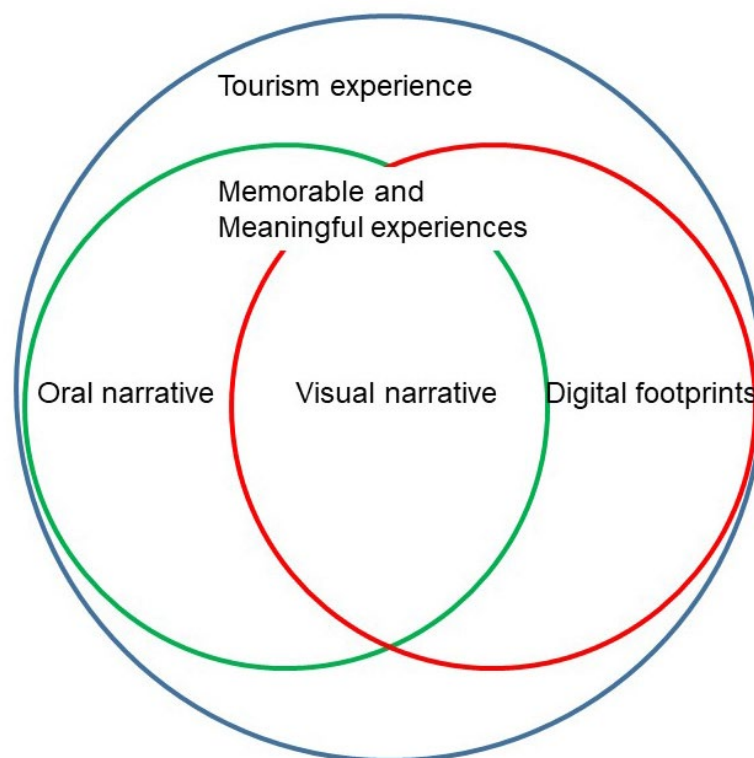


Figure 1. Visual narrative as an ideal medium for recounting MMEs

### 3. Methodology

#### 3.1 Understanding the oral narrative structures of MMEs

The diary creation process can be understood as a process of co-creation in which the study participants created their own travel journals using the paper prototype tool provided by the research

team. As such, the paper prototype is regarded as a generative tool that enables participants to create a visual narrative in which the quality of expression goes beyond the verbal (Sanders & Stappers, 2008). Before creating their journals, participants were invited to talk about their experiences. These oral narrative sessions not only allowed participants to refresh their stories, but also allowed the research team to collect the participants' oral narratives for future analysis.

Narrative analysis has been used in a number of tourism studies to capture tourism experiences through storytelling (Mura & Sharif, 2017). The most popular of these are holistic and categorical analysis (Lieblich, Tuval-Mashiach, & Zilber, 1998) and structural narrative analysis (Labov & Waletzky, 1967). Since the goal of this study is to examine the difference between oral and visual narratives of the same experience, we adopted the Labovian narrative analysis (Labov & Waletzky, 1967), which is a structural narrative model that consists of six storytelling elements:

- **Abstract:** a summary of the story;
- **Orientation:** the context of the story: time, place, behavioural situation and people involved;
- **Complicating action:** sequence of actions regarding what happened. As the core story component, a story may consist of multiple complication sections;
- **Evaluation:** elaboration and explanation of why the narrative is worth telling;
- **Resolution:** the way the story ends;
- **Coda:** narrator returns to the present time of the narration by indicating that the story has ended.

MMEs are a matter of subjective interpretation and the evaluation of what was felt and perceived, which Labov & Waletzky (1967) regarded as the most important element in a narrative. They further distinguished three types of evaluation: external evaluation, embedded evaluation and action evaluation. External evaluation is overt, whereby the narrator stands outside the action. Embedded evaluation refers to a narrator who describes his/her feelings while preserving the dramatic continuity of the story, and action evaluation is when a narrator reports actions that reveal the emotions experienced. In this study, the Labovian approach was used to effectively identify important narratives in a transcript, reveal the specific structure of individual narratives (Riessman, 2005), and facilitate a comparison of the oral narrative and visual diary of a particular event.

### 3.2 Understanding the visual narrative structures of MMEs

Current social media platforms provide rich visual content that allows users to freely express their emotions, which has resulted in greater audience engagement (Stieglitz & Dang-Xuan, 2013). In addition to the use of Labovian analysis, visual diaries can further be examined as static visual narratives, much like comics and sequential art (Eisner, 1985; McCloud, 1993; Pratt, 2009). Visual diaries are comparable to comics because they are created to narrate stories and events that travellers deem worthy of sharing. Furthermore, the structure of both types of narratives are based on visual elements that are composed of sequential arrangements of different panels (i.e., images and drawings). Lastly, words, visual effects, speech bubbles and other graphical elements provide auxiliary narrative information (Pimenta & Poovaiah, 2010). A viewer makes sense of this narrative via the words and visual effects of a pictorial, then moves from one panel to the next, which is often referred to as art in time and space (Pimenta & Poovaiah, 2010). McCloud (1993) recognised six transitions and seven word–image relationships that govern the comprehensiveness of comics. Below, we provide a brief overview of and examples illustrating types of transitions (Figure 2) and word–image relationships (Figure 3):

- **Moment-to-moment:** Panels are used to display a fraction of the moment in which an action has taken place, as shown in Figure 2a.
- **Action-to-action:** Panels are used to display a series of actions while the characters and situation remain the same across panels, as shown in Figure 2b.
- **Subject-to-subject:** Panels involve a change of view or different objects in a scene. These panels require that the viewer build a mental picture of the story based on the element(s) in the panels (Fig. 2c).
- **Scene-to-scene:** Panels show notable changes in the element(s) used with respect to time, space and subject. More imagination is required on the part of the viewer to appreciate the story, as shown in Figure 2d.
- **Aspect-to-aspect:** This transition (Fig. 2e) is used to create a sense of place regarding the narrative, with the panels showing different aspects of a place, idea or mood.

- **Non-sequitur:** This transition (Fig. 2f) shows no apparent logical relationship between the panels.



Figure 2. Six types of transitions defined by McCloud (1993)

In addition to transitions, a narrator can use other visual and textual elements, such as drawings, text, speech balloons, text boxes and other graphical treatments, to enrich the storytelling in each panel. McCloud (1993) identified seven ways text and images (including photos and other graphical treatments) in comics can be used in combination:

- **Word-specific:** Words play the most crucial role in conveying the panel's message, whereas the image makes only a minimum contribution, as shown in Figure 3a.
- **Picture-specific:** Images and other visual elements are the most crucial part of the panel's message. Words do little more than add a soundtrack to the visual narrative, as shown in Figure 3b.
- **Duo-specific:** Both the textual and visual elements play a major role in communicating the message being conveyed within a panel, as shown in Figure 3c.
- **Additive:** The use of words and visual effects amplify and elaborate on an image or vice versa (Fig. 3d).
- **Parallel:** Words and images are treated separately and are independent of each other, as shown in Figure 3e.
- **Montage:** Words are treated as a part of the visual elements in a panel (Fig. 3f).
- **Inter-dependent:** Words and pictures go hand in hand to convey an idea or a message that neither could communicate alone (Fig. 3g).

In this study, image–word relationships were considered to be a combination of the photo selected (or the hand-drawn character when no photo was available) and its visual treatment, such as words, visual effects, tags, speech balloons, emoticons etc., as created by the participants in their diaries. In some cases, participants used drawings instead of photos when no photos were available.





Figure 3. Seven types of image–word combinations, as defined by McCloud (1993)

Current information and communication technologies, such as social media platforms and applications, provide a variety of ways for users to create visually rich narratives in terms of transitions (e.g., by creating a series of panels with photos) and textual and visual elements (e.g., by incorporating emotions, text and visual effects into the narrative). In this study, we collected and integrated components that could help participants create visual diaries using a paper prototyping tool.

### 3.3 Developing the paper prototype

For the paper prototype, the researchers conducted a comparative analysis of current digital diary platforms to generate a list of features that would help participants to create a travel diary. Using a paper prototype allows participants to express themselves freely without any technical constraints or usability issues. The prototype referenced three categories of online diaries and social media platforms. Table 1 lists key features that allow users to create, express, share and explore stories on these platforms. These three categories are the digital diary, photocollage, and social media platforms, each of which have strengths in supporting storytelling. In general, digital diary platforms support users to create narratives that include different types of data (e.g., images, text, audio, and meta-information). These platforms also provide a variety of ways for users to explore the narratives they have created. Photocollage platforms, on the other hand, mostly focus on the creation of visual content. These platforms provide features that allow users to create visually compelling narratives by their use of filters, graphical stickers and creative layouts. Lastly, social media platforms provide different ways for users to share their narratives with others. The following paragraphs highlight the key features used in the paper prototype.

The first consists of digital diaries (Fig. 4, upper left), including the applications Journi (<https://www.journiapp.com/>) and Day One (<https://dayoneapp.com/>). Diary features, such as reminders, counters and connections with other platforms, encourage users to develop a journaling habit as well as to savour the diaries they have created. These platforms have also developed themes that specifically target tourism. For instance, they have features that allow users to enter flight information and collect stamps from each country they visited. When these applications are installed in personal devices, they aggregate other potentially valuable data for the diary, for example, weather information, distance travelled, itinerary and the like.

Table 1. Key features identified in the three categories of digital diary platforms

Features	Digital diary (Journi and Day one)	Photocollage	Social media (Facebook and Instagram)
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		(Collageable and Instamag)	
<b>1. Create stories</b>			
Photo(s)/Video(s)	✓	✓	✓
Text	✓		✓
Location/Meta-information	✓		✓
Audio	✓		
Activities	✓		✓
Theme/Template	✓	✓	
<b>2. Expression enhancement</b>			
Image effects/Filters		✓	✓
Stickers/Emoticons	✓	✓	✓
Text on image		✓	
Layout		✓	
<b>3. Social sharing</b>			
Subscription			✓
Like			✓
Comment			✓
Share	✓	✓	✓
Invite friends	✓		✓
Tags			✓
<b>4. Explore saved stories</b>			
Map	✓		
Calendar	✓		
Timeline	✓		✓
Photo album	✓	✓	✓
Tags/Keywords	✓		✓
Analytics	✓		

The second category consists of applications that allow users to create narratives using visual content, and photographic images in particular (Fig. 4, upper middle). Applications in this category include Collageable (<http://filterra.net/>) and Instamag (<https://fotoable.com/>). These applications enrich the traveller's visual storytelling by offering features that allow users to co-create with their photos via artistic filters, grids, thematic templates and the like. Here, the term co-creation refers to the "enactment of interactional creation across interactive-system environments (afforded by interactive platforms), entailing ageing engagements and structuring organizations" (Ramaswamy & Ozcan, 2018). Once created, the collage can then be used in a journal or shared on a social media platform.

The third category includes social media platforms (Fig. 4, upper right) such as Facebook (<https://www.facebook.com/>) and Instagram (<https://www.instagram.com/>). While these platforms include features that focus on online social interactions, such as the Like button, emoticons, and comments, they also allow users to express themselves both visually and textually.

The final diary prototyping tool (Fig. 4, bottom) contained the key features derived from these three categories, comprising a collection of elements that could facilitate the creation and expression of visual narratives. For instance, elements such as activity badges, location pins and arrows could be used by participants to construct their visual narratives. Emoticons, visual effects and sound effect bubbles enabled them to express their feelings and thoughts about their experiences. Although the paper prototype did not include time-based media such as audio or video, this prototype was flexible enough for participant to incorporate their photos, add relevant text and then superpose these elements in their storytelling. The participants could also create their own elements where necessary.

A guide was provided to help participants compose their narratives, with the stated goal being "compose a diary that will help you to savour this remarkable experience over time". This guide also outlined steps to be taken to enable participants to make the best use of the prototype components, including: 1. Layout and composition: provided ideas for creating a sequence of panels. We suggested that participants create a narrative that would serve as personal memorabilia as well as a way to communicate their MMEs to others. As such, the focus would be on the sequence of events or particular point of interest. 2. Content and features: creating speech balloons, text descriptions and activity badges; 3. effect and tone of voice: incorporating visual and sound effects, emoticons, and other expressions; 4. tagging and sharing: inviting friends, creating tags and annotations. Lastly, sets of stationery were provided to ensure that the participants were able to freely express themselves using both text and images. Overall, the final prototyping tool was designed to facilitate diary creation in three ways: 1. aggregating and guiding the structure of the narrative, 2. enriching the visual storytelling and 3. encouraging self-expression.

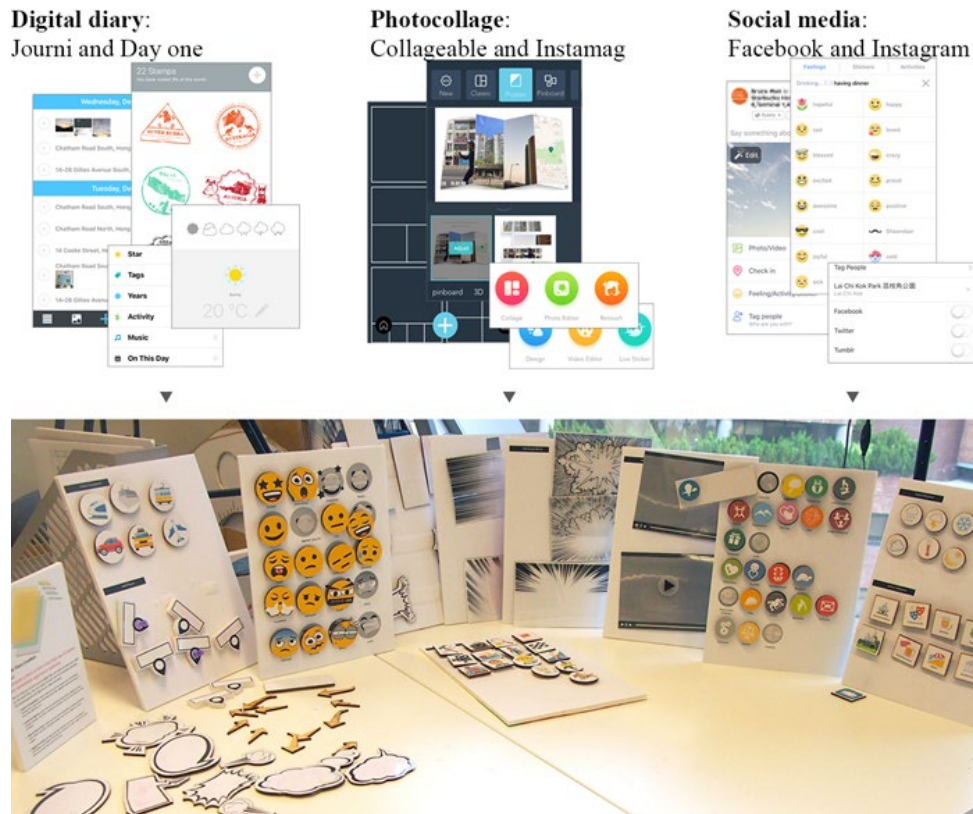


Figure 4. Paper prototyping tool.

#### 4. Participant recruitment and data collection

Data collection was conducted in three steps: participant recruitment, collection of MMEs, and the creation of travel diaries. A purposive sampling method was selected since, to be suitable, participants must have had travel experiences that were particularly memorable and meaningful to them. Furthermore, the participants were expected to provide photos, souvenirs, and other digital footprints they had created that relate to their experiences. Participants were recruited through poster announcements around a university campus and social media platforms. A total of 19 individuals (12 female and 7 males) responded to the recruitment request but only 15 ultimately participated in this study. Of the four disqualified participants, two could provide no digital footprints of their MMEs and two did not attend the journal creation workshop. The final study comprised 15 individuals (11 female and 4 male), with an age range of 18–54 years, all of whom were Chinese. Although gender bias may exist, the focus of the study was on exploring differences in the recounting of oral and visual experiences. Table 2 lists the demographics, nature of the tourism activity and MMEs of the participants. MMEs can occur during any tourism journey, from vacations to family trips and from cultural tourism to voluntourism and Christian mission trip. However, some common themes can be identified in MMEs, such as learning new things, self-realisation, experiencing human kindness and developing new and strengthening existing friendships.

Table 2. Participants' demographic profiles, tourism activities and memorable and meaningful experiences.

ID	Pseudonym	Gender	Age group	Education	Profession	Nature of tourism	MMEs
P1	Amada	F	45-54	Postgraduate	Teacher	Nature and cultural tourism	Learning and exploring tea culture
P2	Charles	M	35-45	Postgraduate	Instructor	Family trip	Indulging in railfanning
P3	Dorothy	F	35-44	Undergraduate	Merchandiser	Vacation	Solving problems with her travel companion
P4	Frances	F	35-44	Postgraduate	Food and nutrition researcher	Christian mission trip	Experiencing human kindness and hospitality



P5	Joan	F	35-44	Postgraduate	Office assistant	Cultural tourism	Learning by visiting ancient site
P6	Jackie	F	18-24	Undergraduate	Student	Cultural exchange programme	Experiencing human kindness
P7	Janet	F	35-44	Postgraduate	Marketing executive	Cultural tourism	Discovering cultural differences
P8	John	M	24-34	Undergraduate	Office assistant	Cultural tourism	Self-realisation
P9	Kelly	F	25-34	Undergraduate	Lab assistant	Graduation trip	Starting a long-lasting friendship
P10	Karen	F	25-34	Postgraduate	Conservationist	Voluntourism	Self-realisation
P11	Laura	F	25-34	Postgraduate	Student	Cultural tourism	Visiting a favourite place
P12	Nathan	M	25-34	Diploma	Sport trainer	Vacation	First solo journey, gaining autonomy and sense of achievement
P13	Peggy	F	25-34	Postgraduate	Programme officer	Trekking	Experiencing caring friendship
P14	Shirley	F	25-34	Postgraduate	Artist	Cultural tourism	Meeting new friend and learning traditional art
P15	Tony	M	25-34	Undergraduate	Business Administrator	Vacation	Self-realisation

The oral narrations of MMEs were collected via phone interviews and content was targeted that focused on anecdotes relating to their experiences during their travel journeys. Interviews were conducted in the native language of the participants. At the end of their interviews, participants were asked to send 8-10 representative digital footprints of their experiences to the research team. They were then invited to join a one-on-one workshop for the purpose of diary creation. The research team transcribed the stories and printed the digital footprints prior to each workshop session.

The workshops were conducted in three steps: First, participants were invited to confirm the content of the transcript that had been obtained from the phone interviews conducted prior to the workshop. In the second step, the paper prototyping tool was introduced to the participants and, after a briefing session, a research team member assisted the participants to create their diaries with reference to their oral narratives. To facilitate the analysis, the diaries were created on A3-size blank paper as the canvas. Participants were invited to create a travel diary that highlighted their MMEs using the digital footprints they had generated during their journeys such that the diary would facilitate their reminiscences of these moments. Participants were free to create their choices of visual elements on the canvas, such as drawing directly on it, arranging preprinted footprints, incorporating dialogue balloons, adding visual effects and the like. Participants were also invited to think aloud during the diary creation process and verbalise whatever thoughts crossed their minds. The footprints mainly comprised photographs that had been printed prior to the diary creation workshop. Each workshop lasted for 60–90 minutes and the process was video recorded for later review by the research team, if needed (Fig. 5). Members of the research team played two roles: facilitators who assisted and encouraged participants to create their diaries and observers who collected data from the workshop and conducted post-workshop interviews.



Figure 5. Some components of the workshop (left) and a workshop participant in action (right).

## 5. Data analysis

The initial results of this study were published in a previous paper (Wan, 2019), in which three recurring patterns were identified in the oral and visual narratives. First, the oral narratives were found to be more articulated and comprehensive, and contained major Labovian storytelling elements, including abstracts, orientation, results and coda. However, only a limited number of passages in the oral narratives were identified in the visual narrative, and the absence of these narrative components may diminish the comprehensiveness of a story. In contrast, the visual diaries created by the study participants were collages of their remarkable experiences that featured interplays between the digital footprints, words, emoticons and other visual effects. The visual narratives were mostly focused on complicated actions and evaluations in which emotions and visual effects contributed significantly to the story highlights and turning points. Lastly, participants were highly engaged in their visual storytelling and willing to create new visual components to better convey their stories. These new components included characters, objects and environments essential to the narrative but that had not been captured in the digital footprints of their journeys.

In this paper, we provide a more detailed analysis by comparing and contrasting oral and visual storytelling. We then analyse the participants' visual narratives with respect to their spatio-temporal dimensions. First, the structure and content of the oral narratives (i.e., interviews) were compared with those of the visual diaries created by the participants (i.e., during the diary creation workshop). This analysis consisted of two parts. First, using the six basic Labovian storytelling components as an effective framework, we compared the oral and visual narratives of the participants. Second, the structure and content of the visual diaries were analysed with respect to their spatio-temporal dimensions, as in comics studies. In the following sections, these findings are discussed and representative examples are provided.

### 5.1 Comparison of oral narratives and visual diaries in Labovian terms

Tables 3 and 4 showcase the diaries created by two participants. These diaries were selected because their contents and elements were used in different ways to support their visual storytelling. Labovian structural analysis was utilized as a framework for comparing the oral and visual narratives. Each table has three columns, in which the left column shows excerpts from the interview with this participant, with the sequence of the narrative following that of the interview. The right column showcases the visual diary of this narrative, as created by the participant. The middle column compares the oral narrative with the visual diary in the Labovian terms presented in section 3.1 (i.e., abstract, orientation, complicating action, three types of evaluation, result, and coda) with a short explanation of each excerpt. It is worth mentioning that the specific set of digital footprints available to participants might have constrained how the visual diary is composed. To facilitate comparison, the researchers numbered each excerpt and highlighted the passages that appeared in the visual diary if available. Since not all the excerpts were included in the visual diary, some numbers may be missing. Similarly, new experiences recorded in the visual diary are highlighted in alphabetical order if similar passages are not found in the oral narrative. Lastly, we discuss nuanced differences between the oral and visual narratives.

The first diary was created by a participant, Karen, who took a voluntourism journey in the Amazon rainforest and shared with us her discovery of the 'glass frog' and how it changed her life orientation (Table 3). The content of her oral narrative included most of the Labovian storytelling elements except for the abstract. Her visual narrative, however, only contained some of the oral

narrative elements. For instance, the resolution (excerpt no. 6 in Table 3) and evaluation and coda (excerpt no. 7 in Table 3) were missing in the visual narrative. Interestingly, both excerpts are highly important elements in her oral narrative in which she described how that trip completely changed her worldview and was responsible for her participation in environmental projects since that time. The discovery of the glass frog was identified as an important event in both the oral and visual narratives, which described the same experience but contained somewhat different content. For instance, even though both narratives included orientation (excerpt no. 2 in Table 3), the visual panel shows the web page of the association with which Karen is affiliated and a map of South America. Her oral narrative complements the storytelling with more information about her duties as a surveyor of the secondary forest. In contrast, the visual narrative contains only very limited information of this experience. Another example is her expression of emotion in the narratives. In Karen's visual narrative (excerpt no. 3 in Table 3), she superposed multiple emoticons onto the photo of the study group in the jungle, which suggests a highly emotional moment. However, her oral narrative was simply informative with little emotional expression. Lastly, Karen's visual narrative disclosed a new experience that she had not mentioned in her oral narrative. She included a group picture that shows her 'jungle sister' she encountered during the trip (pictorial 'a' in Table 3). The content of this visual narrative suggests that creating a new friendship had also been a valuable aspect of her journey. Karen also seemed to enjoy the diary creation process, as she drew a background with leaves and raindrops (pictorial 'b' in Table 3) illustrating her impression of her sojourn in the tropical rainforest.

Table 3. Karen's travel diary

Karen's travel diary – voluntourism journey in Amazon rainforest		The visual diary
Excerpts of interview (Karen)	Comparison of oral narrative and visual diary	
I was staying as a volunteer in the Amazon rainforest for 9 months in 2014. I chose this location because it seemed exotic to me.	<b>[Orientation]</b> Karen provided an introduction and background to her experience. She included the date of the trip and a map in her diary.	
The field work involved the investigation of the conservation value of the secondary forest. As such, my duty was to sample the flora and fauna of the forest, such as butterflies, frogs, birds, and other mammals (e.g., monkey).	<b>[Orientation]</b> Karen further elaborated on her role as a volunteer. However, this part was not elaborated upon in the diary.	
One of the memorable experiences was when I was leading a small group of volunteers venturing into the forest at night to survey reptiles such as snakes and frogs.	<b>[Complicating action]</b> The remarkable experience occurred when she was leading a study group in the jungle. She expressed her excitement with multiple emoticons.	
We found a glass frog! This is a species of frog in which you can see the pulsing heart through its transparent abdomen.	<b>[Complicating action &amp; Evaluation (action)]</b> Transition from actions to the evaluation of the event: finding a glass frog was surprising to her.	
This frog reminded me of the fragility of life... I now feel the need to make an effort to prevent their extinction.	<b>[External evaluation]</b> Karen explained how the encounter with the frog triggered her inner calling to help with environmental preservation. However, she did not further elaborate upon this in her diary.	
This trip completely changed my worldview, and I have participated in environmental conservation projects ever since.	<b>[Resolution]</b> The experience has had an enduring impact on her life. Although this may be the most important part of her trip, she did not develop the story in her diary.	
My encounter with the glass frogs was a revelation. Ever since, I have felt the need to contribute more to the conservation and protection of our environment. This is an expression of love.	<b>[Evaluation &amp; coda]</b> Karen further emphasized that her experience with the glass frog changed her life orientation. She further connected her life orientation to her personal values.	

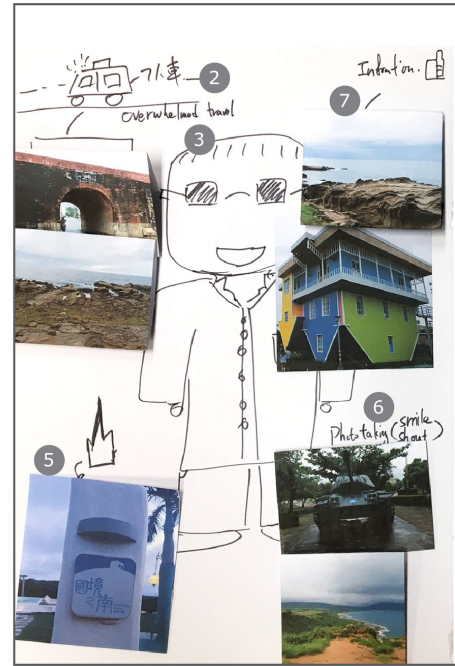
The second diary was created by Tony who had mixed feelings about an over-enthusiastic tourist guide (Table 4) when he visited Tainan (in the south of Taiwan) with his travel companions. Similar to Karen's case, his oral narrative covered most of the Labovian storytelling elements except for the coda. His visual narrative, however, showed only limited content as compared with his oral narrative. For instance, only a brief orientation was included in the visual diary (excerpts no. 1 and 2 in Table 4). Tony's visual narrative also provided very limited information with respect to complicating action. For example, Tony talked about how the tourist guide urged him to visit different scenic spots although he preferred a more relaxed journey (excerpt no. 4 in Table 4). This conflict can be understood as a complicating action and evaluation that was not included in the visual narrative. In fact, the visual narrative mostly contained pictures taken in various scenic spots. Having taken no picture of the tourist guide, Tony drew the tourist guide at the centre of the canvas. Above the photo panels, he also created a few elements (words and drawing) that enrich the narrative. In terms of structure, Tony's visual narrative does not follow the temporal-sequential order of his oral narrative. Instead, a hand-drawn tourist guide occupied the centre of the canvas, surrounded by a radial arrangement of photos of the scenic spots he had visited.

A comparison of the two visual diaries shows some differences in their uses of visual elements, especially concerning the emoticons, dialogue boxes and visual effects used, with Tony's visual diary being less emotionally expressive than Karen's. As a result, the absence of these elements limits the viewer's appreciation of his journey. We suggest that Tony may not be familiar with producing a visual narrative and was therefore not able to fully express himself with the range of visual elements available to him. By contrast, Karen used emoticons and dialog boxes extensively to communicate her MMEs. Emoticons and speech balloons can enable better expression in a visual narrative by providing visual cues regarding the emotional aspects and peak moments that were most memorable and meaningful to the narrator.

Table 4. Tony's travel diary  
Tony's travel diary - a trip to the south of taiwan  
Excerpts of interview (Tony)

Excerpts of interview (Tony)	Comparison of oral narrative and visual diary
The story happened last year (2016) when I was traveling with three other friends to Tainan (in the south of Taiwan).	1 <b>[Orientation]</b> Tony provided an introduction and background of his trip. However, this part was not elaborated upon in the diary.
Since this was our first visit to Tainan, we decided to hire a car with a guide (driver) who could bring us to visit various places.	2 <b>[Orientation]</b> He further described the background as the abstract element of the experience. Without any photo of the driver, he decided to draw a picture of him.
The experience was remarkable because of our cultural differences. We felt overwhelmed by the hospitality of the driver!	3 <b>[Abstract]</b> This abstract provided a snapshot of the experience and explained why the story was worth telling. He decided to put the driver at the center of the diary with the title "overwhelmed travel".
During the journey, he kept introducing us to different scenic spots, whereas we had expected a more relaxed journey.	4 <b>[Complicating action &amp; Evaluation (external)]</b> The experience began with moments of unexpected frustration. He did not document this aspect in his diary.
The driver seemed to have a strong emotional attachment to mountains. He repeatedly urged us to visit a mountain that was a special landmark of the region. He was very disappointed when he realized that the mountain was covered in fog that day.	5 <b>[Complicating action]</b> Tony further elaborated upon the experience he had with the driver. The photo at bottom-left is one of the places the driver took him to have a view of the mountain.
His reaction was funny to me because I had never seen someone behave like that. We were also frustrated when he urged us to take touristic photos...	6 <b>[Evaluation (external)]</b> The driver exhibited other odd behaviors which he found confusing. Again, he did not explicitly mention this in the diary.
Ultimately, we found our driver to be funny! Despite his over-enthusiasm, he made good suggestions by bringing us to a museum on that rainy day. This trip allowed me to reflect on what type of tourist I wanted to be.	7 <b>[Evaluation &amp; resolution]</b> Tony appreciated the driver's good intention despite the odd experiences. His appreciation was expressed with the "thumbs-up" icon. The trip helped him to reflect on his own identity as a tourist, but he did not mention this in the diary.

The visual diary



## 5.2 Analysing the spatio-temporal dimensions of visual narratives

Participants are likely more proficient at providing oral narratives because people engage in oral communication on a daily basis. However, the pervasiveness of personal technologies and social media has encouraged people to narrate and share their stories with photos and emoticons. The structure of visual narratives can be understood as having a spatio-temporal relationship (Pimenta & Poovaiah, 2010), as in comics (McCloud, 1993) in which the narratives are composed of sequences of panels (i.e., photos and drawings) with other graphical elements such as words, visual effects and speech bubbles used to tell the story. The temporal dimension refers to the transition between panels, although there was no obvious progression between panels in some of the visual diaries. In the methodology section, we identified six types of transitions found in comics studies. The spatial dimension, on the other hand, refers to the use of visual and textual elements in each panel. In the following analyses, we discuss how these two dimensions are presented in the visual narratives created by the study participants. Figure 6 shows an example of how the components in a visual diary were identified in terms of their temporal and spatial dimensions. We conducted a structural analysis of each visual diary, and Table 5 summarises the transitions and image-word combinations used in the visual diaries of this study.



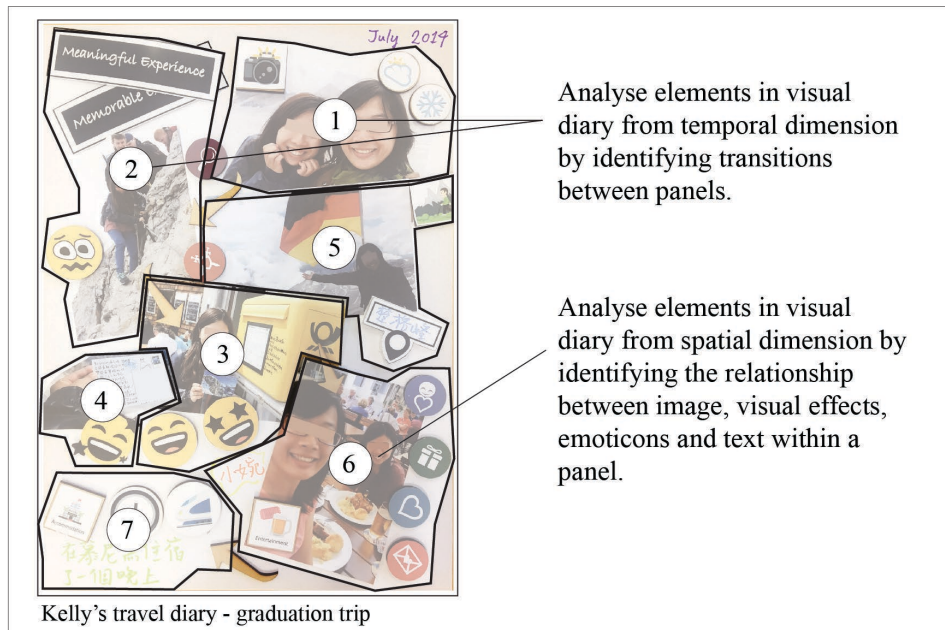


Figure 6. Identifying spatial and temporal dimensions in visual diaries

Table 5: Analyses of visual diaries with respect to spatio-temporal dimensions

ID	Pseudonym	No. of panels	Types of transition between panels (Temporal relationship)*						Image-word combination within each panel (Spatial relationship)**						
			1	2	3	4	5	6	A	B	C	D	E	F	G
P1	Amada	9	0	3	0	5	0	0	4	3	0	1	0	0	1
P2	Charles	6	0	0	0	5	0	0	0	2	0	4	0	0	0
P3	Dorothy	6	0	0	0	5	0	0	0	1	0	3	0	0	2
P4	Frances	10	0	0	0	4	4	0	0	3	0	3	0	0	4
P5	Joan	5	0	0	0	0	4	0	0	1	0	1	0	0	3
P6	Jackie	7	0	0	0	0	6	0	0	0	0	0	0	0	7
P7	Janet	6	0	0	2	3	0	0	0	0	0	0	0	0	6
P8	John	7	0	0	0	5	1	0	0	3	0	0	0	0	4
P9	Kelly	7	0	1	0	3	1	0	1	2	2	1	0	0	1
P10	Karen	5	0	0	0	0	4	0	0	0	1	3	0	0	1
P11	Laura	8	0	0	0	2	5	0	0	3	0	2	0	0	3
P12	Nathan	6	0	0	0	2	3	0	0	0	0	3	0	0	3
P13	Peggy	6	0	0	1	4	0	0	0	0	0	3	0	0	3
P14	Shirley	5	0	0	0	4	0	0	0	1	0	2	0	0	2
P15	Tony	8	0	0	0	3	4	0	0	4	0	0	3	0	1
	<b>Total</b>	<b>101</b>	<b>0</b>	<b>4</b>	<b>3</b>	<b>51</b>	<b>26</b>	<b>0</b>	<b>5</b>	<b>23</b>	<b>3</b>	<b>26</b>	<b>3</b>	<b>0</b>	<b>41</b>

\*Types of transition between panels:

1. Moment-to-moment, 2. action-to-action, 3. subject-to-subject, 4. scene-to-scene, 5. aspect-to-aspect, 6. non-sequitur.

\*\*Types of image-word relationships within a panel:

A. Word-specific, B. picture-specific, C. duo-specific, D. additive, E. parallel, F. montage, G. inter-dependent.

Regarding the transition between panels, McCloud (1993) identified action-to-action, subject-to-subject, and scene-to-scene as the three most common transitions among popular European and American comics, with more than 65% of transition attributed to action-to-action, which is probably because comics are presented as a series of connected events (pp.75-76). Compared with moment-to-moment transitions, which require many panels to show a short sequence of actions, these three transition types are considered to be the most concise and efficient ways of storytelling. However, McCloud also found the more abstract types of transitions, i.e., aspect-to-aspect and non-sequitur, to be more prevalent in experimental comics. In this study, scene-to-scene and aspect-to-aspect transitions were found to be the most common in the visual diaries. Of the transitions identified, scene-to-scene transitions accounted for 51%, whereas aspect-to-aspect transitions accounted for 26% (Table 5). The predominance of these two transitions is likely attributable to the fact that participants selected representative pictures from different moments of their journeys to aggregate these moments into their MMEs. For example, Frances's visual narrative comprises a series of different moments (i.e., scenes) of her journey when she visited Kaohsiung (South of Taiwan) on a missionary trip (Fig 7a). Her diary includes the church she had visited and a few group photos among other photos. Joan's diary, on the other hand, contains various images of the Wat Mahathat, an ancient historical site located in



Ayutthaya, central Thailand (Fig. 7b). Her diary created a sense of place with aspect-to-aspect transitions using several pictures taken at the same place. Less common transitions are also found in other diaries. For instance, Peggy used subject-to-subject transitions to show her moment of victory in reaching the top of Mt. Fuji (Fig. 7c). Lastly, Kelly used an action-to-action transition in her diary, in which the first image shows the front of a postcard and the second the back of the postcard (Fig. 7d).



Figure 7. Understanding visual narratives through the temporal dimension

The predominance of scene-to-scene and aspect-to-aspect transitions in the participants' visual narratives may present challenges to viewers' appreciation of their stories because these transitions require active involvement to interpret the messages being conveyed. Adding words, speech balloons, visual effects and other graphical elements provides more information in the panels and thus facilitates viewer appreciation of the stories (McCloud, 1993).

Among the seven types of image–word combination recognised by McCloud (1993), in this study, we found that participants often included panels that show additive (26%) and inter-dependent (41%) word–image combinations (Table 5). For instance, Charles highlighted the peak experience he had when he encountered one of his favourite trains on a family trip to Japan (Fig. 8a). As an additive combination, the radial visual effect transformed an ordinary train photo into the expression of an extraordinary moment. In some cases, participants made hand-drawn characters when no picture had been taken of the individuals who had been a part of their MMEs. For instance, Jackie expressed her gratitude to the locals who had helped her during her cultural exchange programme (Fig. 8b). The inter-dependent photo–visual treatment combination can be found in many participants' diaries, which they used to help communicate trip highlights and peak moments. Nathan shared his experience of getting lost in a train station during his Japan tour by putting a speech balloon on the top of the photo (Fig. 8c). The additive image–word combination is another common way to strengthen a message. For example, Kelly, who was afraid of heights, added a fearful face emoji on a photo showing her passing one of the mountain checkpoints (Fig. 8d). This emoji emphasizes the fear she experienced, which was not fully captured in the photo.

In addition, participants used other image–word combinations to communicate their stories. For example, Amanda only used word panels (i.e., word-specific combination) to communicate the art of tea brewing she had learnt during her trip to Alishan, an indigenous mountain township in Taiwan (Fig. 8e). Karen, on the other hand, used a duo-specific panel in which she annotated 'Jungle sisters' and drew a heart on a photo taken with her colleagues during her voluntourism journey (Fig. 8f). Their good friendships were communicated through the photo, the words and heart-shaped symbol.

The spatial dimension is important to visual narration because it makes the storytelling more comprehensive. Adding words, speech balloons, visual effects, emoticons and other graphical elements allows participants to express emotions, indicate tone of voice, and provide other information that cannot be ascertained in photos. MMEs are especially idiosyncratic, emotionally rich and highly consequential (Brown & Kulik, 1977), and approaching visual narratives from the comics perspective allows researchers to better examine visual travel diaries and obtain cues for the design of a digital platform that will facilitate diary creation.

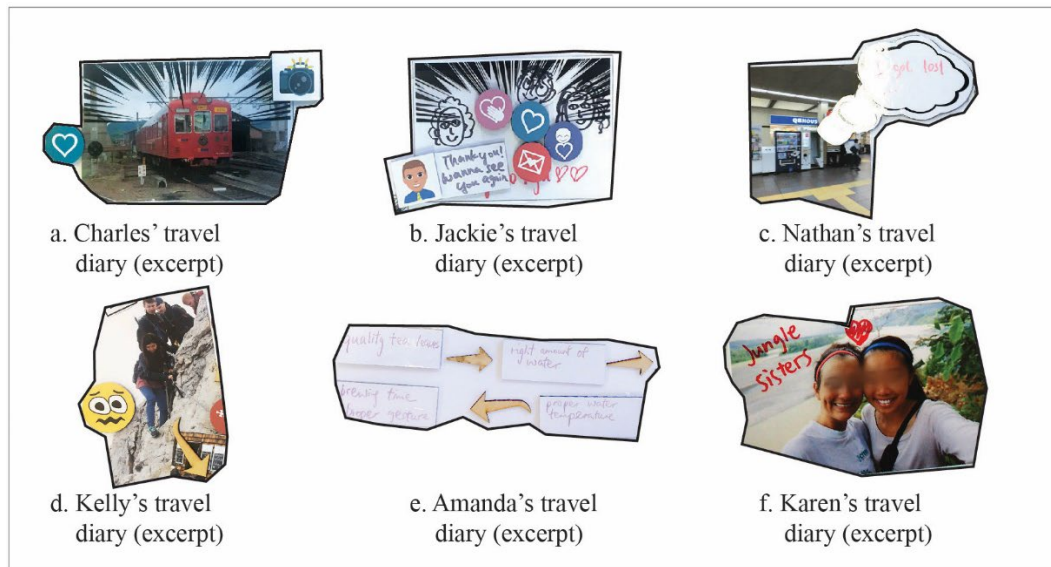


Figure 8. Understanding visual narratives through the spatial dimension.

## 6. Discussion

In this study, we explored how individuals convey remarkable travel experiences through the creation of visual diaries as compared with oral narratives. Our results provide insights for conceptualizing personal technologies that support travellers in capturing and reminiscing about their remarkable moments. Studies (Jose et al., 2012) have suggested that reminiscing about these experiences can increase personal wellbeing. Studies of tourism (Wang et al., 2011) have also found personal technology to often be used to take photos and create digital memorabilia for sharing on various social network platforms (e.g., Facebook, Instagram) or traveller review sites (e.g., TripAdvisor). More often than not, these platforms show only fragments of the travel experience, and the memorabilia are created primarily for social sharing of the on-going travel experience rather than reminiscing. Furthermore, technology-mediated experience is becoming more prevalent in tourism innovation. Not only can it enrich the traveller's experience, it can also provide helpful recommendations for travellers. Facilitating the creation of visual travel diaries can help to generate other layers of information, such as the emotions, personal preferences and the implicit psychological needs associated with MMEs, which can provide insights for future recommendations. Therefore, this study explores how travellers reconstruct their experiences using the digital footprints they had created. First, we compared the oral and visual narratives of MMEs provided by participant, then we analysed the visual elements the participants used in (re)creating their stories.

The participants' visual diaries generally focused on specific moments in which the attention of the observer is primarily drawn to the photos, whereas greater elaboration and detail could be shared in the oral narratives. However, visual narratives seem to be more effective in conveying an overall appreciation (or impression) of the remarkable experiences encountered by the travellers. The visual diary also allows users to annotate their photos and thus to transform these images to create visual compositions that enrich their narrative. Moreover, when photos were unavailable, some participants opted to create corresponding visual content (e.g., characters, drawings, and diagrams) to enrich their narratives. However, a few components were missing in these visual diaries, including the abstract, orientation, result and coda elements, as compared with the oral narratives. Whereas the abstract and orientation elements provide information to help people appreciate the context of a diary, the result and coda elements provide anchors by describing how the experiences had changed the lives of the narrators. Nevertheless, the visual diary may contain episodes that were not included in oral narrative, and can serve as memorabilia for travellers to reminisce about their treasured experiences. Table 6 summarises the differences between these two types of narratives.

Table 6. Difference between oral and visual narratives

	Oral narrative	Visual narrative
Structure	Well-structured and articulated	Less structured and articulated
	Complete: Includes most of the storytelling elements	Incomplete: Often missing narrative elements essential for understanding meaning (e.g., abstract, orientation, resolution, and coda).

<b>Content</b>	Can provide a holistic understanding of travellers' journeys and the choices they made (e.g., explain their motivations and values), thus enabling them to connect the dots of their lives.	More focused on the journey highlights and peak moments. More expressive of emotion (i.e., using emoticons), tone of voice (i.e., using dialogue bubbles), and visual effects.
	Based on their memories, although may not be particularly accurate.	Based on digital footprints (more accurate). More generative (i.e., re-creation of visual elements based on their sense-making).

In our visual narrative analyses, we identified four predominant ways the study participants had constructed their visual narratives. To communicate a sequence of events that had occurred over time, participants often used scene-to-scene and aspect-to-aspect transitions in their visual storytelling. However, these two transition types demand greater mental effort by viewers to fully appreciate the story. Participants also used additive and inter-dependent word–image combinations in each panel to enrich their visual narratives.

Based on these findings, we suggest that future diary designs narrow the gap between oral and visual narratives to facilitate the comprehensive expression of people's personal stories. We suggest that the design of the travel diary platform address the following: first, that templates be designed to guide people in structuring their narratives. Visual narratives can be structured in different ways, such as following a sequential order, highlighting specific point of interest, or focusing on complicated actions. The diary platform can offer different templates to guide people in structuring their narratives as they wish. Second, we suggest that contextual suggestions be provided towards ensuring that the narrative is more complete and comprehensive. Since abstract, orientation, and coda features are often missing in visual narratives, diaries should be designed to guide people to provide contextual information. For instance, the platform could provide information about the tourist spot based on the metadata of travellers' footprint, and prompt users to input the names of people in their photos. Third, the diary should provide tourism-specific elements that facilitate storytelling and emotional expression. In this study, participants were highly engaged in expressing themselves, so the creation of new elements such as tourism-associated badges, emoticons and other visual elements could enrich their storytelling. We also suggest that advanced technologies can play a role in reminiscences about tourism experiences by developing features related to these three aspects, i.e., by proposing customized templates, incorporating visual analytics, and integrating unique visual elements.

Furthermore, our initial findings (Wan, 2019) revealed that creating a visual diary is not yet a common practice despite its potential benefits to human well-being. As such, future diary designs must incorporate features and components that are effective in guiding and motivating users to create visual diaries. For instance, adopting a Labovian narrative model can help travellers to construct articulated visual narratives that incorporate abstract, orientation, evaluation and resolution elements. Furthermore, diary designs should inspire and guide users to share information and generate emotionally rich narratives using different types of transitions and image–word combinations.

With the widespread adoption of personal devices, digital footprints have become the primary memorabilia used to capture the remarkable experiences of travellers in their journeys. A travel diary can encourage people to “connect the dots” of their lives and better appreciate their special moments. We consider the visual diary to be a medium for self-expression, self-reflection, self-development and celebration.

## 7. Limitations

Since MMEs are idiosyncratic and co-creation workshops are very time-consuming, this study was restricted with respect to sample size. Moreover, the digital footprints in this study included only active digital footprints (i.e., photos and maps). Future studies may incorporate passive digital footprints and the development of interactive prototypes that could strengthen travellers' abilities to share and reminisce about their memorable and meaningful journeys.

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