Trails of Walking - Ways of Talking: The Museum Experience Through Social Meaning Mapping

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Abstract. This paper discusses the digital method Social Meaning Mapping (SMM) and its affordances for capturing aspects of the museum visit. SMM, embedded in the Visitracker tablet-app, enables the annotation of visitors' movement and interactions in a particular gallery room post-visit. During a researcher-led session, visitors handle the tablet and annotate their experience on its screen while sharing their thoughts aloud. Both visitors' annotations and their voices are being recorded through the app. Each SMM can be accessed through Visitracker's portal as a video which re-creates visitors' 'trails of walking' (what they mark) and their 'ways of talking' (what they say) in synchronization. In this paper, we draw upon data collected at the Austrian Gallery Belvedere in Vienna to argue that SMM created by visitors can complement tracking and timing (T&T) data that researchers collect, allowing for a more holistic understanding of the museum experience. The analysis shows that SMM captures visitors' experiences in a multimodal way, both visual and verbal, enabling them to foreground aspects of their personal experience, spatial practices, co-experience and social realms of their visit.

Keywords: Informal Learning, Visitor Studies, Multimodal data, Collaborative Mapping

1   Introduction

Museum professionals and researchers have been conducting tracking and timing studies (T&T) since the early 1930s in order to understand the behavior of museum visitors and inform the design of existing and future exhibitions. In T&T studies, unobtrusive observations of visitors are carried out, with their movement, dwell time and other behavioral data being timed and tracked on printed copies of the museum's floor plan [1-4].

Over the past four decades, varied information and mobile sensing technologies such as Global Positioning System (GPS), Radio Frequency Identification (RFID), iBeacon and Bluetooth were incorporated in audience research methodologies. These technologies can track visitors as they move through an exhibition or site without the active involvement of a researcher [5-6]. More recently, with Bring your Own Device

approaches (BYOD), devices such as visitors' mobile phones can be used for the delivery of applications offered by museums that also allow for the collection of data on visitors' movement and interaction with the exhibits. Others have also utilized mobile eye tracking technologies in the museum to assess detailed accounts of visitors' viewing patterns [7-9]. While we acknowledge that knowing precisely where visitors are and what they look at is useful when designing exhibitions and interpretive resources, it does not tell us a lot about who our visitors are and how they subjectively responded to the displayed collections and why.

In order to learn more about the specifics of each museum visit from visitors' perspective, a tablet-based app called Visitracker was designed [10]. The app allows the data collection through three methods: T&T, survey and Social Meaning Mapping (SMM). SMM uses a digital copy of the floor plan along with a paint toolbox, which visitors use to recount their experience in the room verbally and visually by marking it on the digital floor plan [11]. The app records both the visual markings drawn on the screen and visitors' conversations unfolding during this activity.

In this paper, we draw upon data collected at the Austrian Gallery Belvedere in Vienna (N=152) to argue that SMM provides us with a way of capturing aspects of their experience that complement the data researchers collect through T&T. In what follows, we outline the theoretical underpinnings of the SMM method and its affordances and discuss its use through a collaborative study conducted in late 2018. Through a representative case from our dataset, we exemplify the four layers of information that became visible and audible during SMM – the individual experience, spatial practices, co-experience and social realms. These layers render visible and audible more diverse aspects of the museum, offering new multimodal insights into the visualization of the museum visit and enriching existing research methodologies.

2 Social Meaning Mapping

Similar to T&T methods, SMM uses the image of the museum floor plan to record aspects of the museum visit. Whereas T&T takes place while visitors are in the room, SMM is used after the visit. During a researcher-led session, visitors in groups up to four are prompted to handle the tablet themselves and use this spatial representation along with a paint toolbox to share their movement ('trails of walking') and their own reflections as they recount their embodied experience in the museum space ('ways of talking') (Figure 1a). The app records both visitors' trails of walking and ways of talking. The process of map making is rendered in the format of a video which allows its synchronized re-creation (Figure 1b). By visualizing visitors' 'trails of walking' along with their 'ways of talking', each video functions as a representation of visitors' embodied experience in the specific room [12].
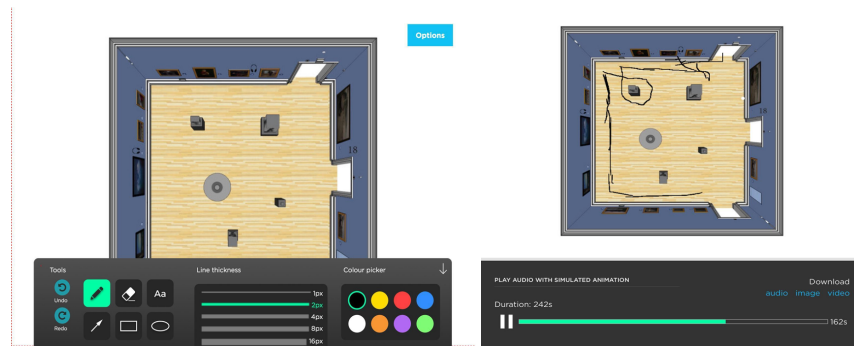
Figure 1. (a) the SMM interface; (b) The SMM video on the Visitracker portal.

Similar to the narrative inquiry method [13], SMM draws upon audiovisual narration to capture aspects of visitors' personal (what the individual experiences) as well as social experiences (the individual interacting with others). As visitors collaborate during map making on the digital representation of the room, they are prompted to reimagine themselves in the room and share, re-create, negotiate and co-construct with their co-visitors and the researcher their experience in this room ('trails of walking'). While doing so, they also reflect on the personal and social memories of 'being' in the specific room ('ways of talking').

SMM was designed as a research method that is responsive to visitors' own agendas and experiences [14-15]. By drawing upon visual data (both the digital floor plan and the drawing activity), SMM empowers visitors' agency in the shaping of their experience and facilitates their reflections without depending heavily on language. At the same time, as the floor plan depicts not only the room but also the artworks on display, it allows visitors to refer to these by marking them out, without requiring them to recall the names of the artists and the artworks.

Asking visitors to offer their input during SMM acknowledges their agency in meaning making and transforms them from map users into map-makers [12]. As visitors map their own experience on the official design of the museum (the floor plan and the collection), their engagement with SMM can be seen as a form of 'counter mapping' [16]; that is, making and sharing maps that rewrite official versions and offer spatial form of counter narrative that entails very personal versions of embodiment of the lived space. While being made, this counter mapping is also being shared with their co-visitors and the researcher [17], allowing the latter to return to features of the map and prompt visitors to expand on their 'trails of walking' and 'ways of talking'.

3   The Belvedere Visitracker study

The Belvedere Visitracker study builds upon a pilot study conducted in 2017 at the National Museum of Art, Architecture and Design in Oslo, Norway, in which SMM was used for the first time. The objective of this pilot study was to test SMM and pro-

vide first insights into which aspects of the museum visit are rendered visible and audible when using this method. Aspects of visitors' personal context in relation to the physical context were marked visually and elaborated verbally, while aspects of their social context were rendered visible through their 'trails of walking'. Visitors tended to mark one trail of walking and finish each other's sentences when their visit was perceived as a joint social experience by them [11]. As the sample was small (9 groups of visitors), studies with a larger and more diverse sample were needed.

In designing the Belvedere Visitracker study, we wished to include a larger sample of visitors and explore the specific research question of how visitors in groups of two experienced the recently redisplayed collection in the Secession room at the Upper Belvedere in Vienna, Austria. The room, located on the first floor, showcases 13 paintings and three sculptures from around 1900, which represent the artistic work of the avant-garde movement Secession formed by Austrian painters, graphic artists, sculptors and architects who opposed traditionalism in style and sought international exchange (Figure 2).
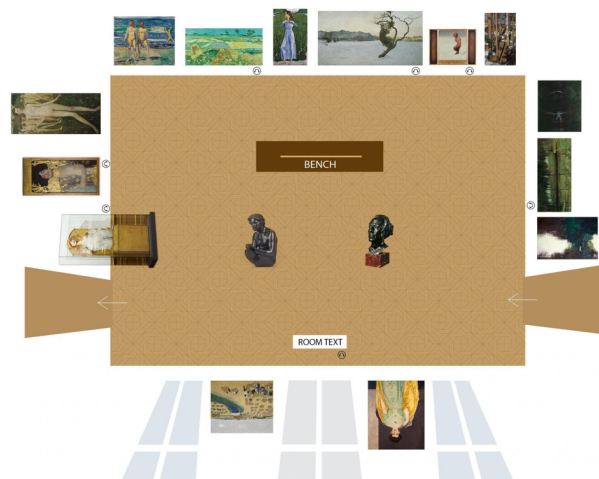
Figure 2. The Secession Room, Upper Belvedere.

3.1 Methods and Data collection

Data collection took place during a week (Monday-Sunday) in late September 2018. Each of the five team members carried a tablet with the Visitracker app installed on it, a university identification card, a clipboard with a pen and consent forms in English and German. Each researcher approached visitors in dyads at the museum staircase and, after introducing herself, the project's objectives and the data collection stages, invited them to participate in the study. If the visitors agreed and were older than 18 years, they were handed the consent form to read and sign.

We recruited 76 pairs of visitors (N= 152); 21 female, 8 male and forty-seven pairs of mixed gender. Based on the data collected through the survey in stage 2, our

sample consisted of thirty-one nationalities, with almost all visitors (97%) coming to Vienna as part of a trip and visiting the Belvedere for the first time (90%), revealing that our sample consisted mainly of international tourists. This demographic complies with the dataset collected through the museum's ticketing system in 2018, allowing us to conclude that our sample was representative of the visitors to the Upper Belvedere. Acknowledging the international background of our sample and the linguistic abilities of the research team, visitors were given the opportunity to speak during SMM in the following languages: English, German, Danish, Swedish, Italian, French, and Japanese. Using a language they felt comfortable communicating in aimed at empowering the inclusion of visitors' voices in our study. To our knowledge, this is a study among few using multiple languages in data collection.

The data collection occurred in three consecutive stages, with a different method used during each stage: (1) T&T at the Secession room, (2) a short survey consisting of twelve questions on visitors' sociodemographic background and visiting practices (i.e., gender, age, nationality, country of residence, frequency of visiting museums, reasons for visiting the Belvedere), and (3) a SMM created by each pair. Both stage 2 and 3 took place immediately after visitors exited the Secession room. A nearby room reserved for small events called Oktogon was used in stages 2 and 3, allowing visitors to sit comfortably and share their reflections in a more private setting (Figure 3). During the first two stages, the researchers registered the data whereas visitors handled the tablet on their own in the third stage. During SMM, they were only minimally instructed by the researcher on how to use the tool and prompted at times to elaborate. Once finished with their SMM, visitors were offered a thank-you card with the contact details of the two principal investigators, and a small gift donated by the museum. Upon visitors exiting Oktogon, each researcher filed a protocol reporting any issues encountered (i.e., technical, linguistic) and her own reflections on the general circulation in the room, the pair's interaction and other relevant information. Data collection for all three stages lasted approximately 25 minutes.
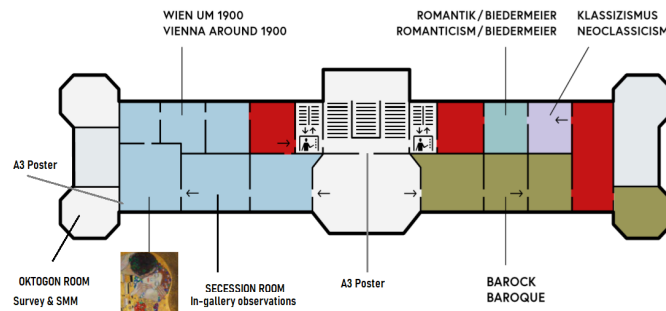

Figure 3. The first floor of the Upper Belvedere.

3.2. Data analysis

The dataset was accessed through Visitracker's online portal. We first transcribed the audio recorded for each SMM and, when in a different language, translated it into English. Although we could not identify our participants from the data collected, visitors often called each other by their names during the SMM. All such instances were altered to preserve anonymity. We then created a multimodal transcript for each SMM, with visitors' talk on the left side and screenshots from the accompanying marking activity on the right side. We chose to transcribe each SMM in such a way to illustrate *how* visitors communicated *and* represented meaning through their talk and sign making activities on the digital canvas [18].

We conducted inductive analysis, coding themes emerging from the dataset following Grounded Theory [19] and systematically marking their occurrence with the help of the NVivo 12 qualitative data analysis software. Codes such 'previous experience', 'previous knowledge', 'resource used', 'personal relevance' emerged from the analysis. To narrow down our themes, we grouped these codes into four thematic units that have been also foregrounded in previous research on visitors' experiences in museums. These thematic units are both grounded in the data as well as theoretically driven.

1. **Individual experience**: instances in which visitors refer to their individual perspectives on and expectations of their museum visit – what Doering & Pekarik [20] refer to as 'entrance narratives'. Here, we coded instances in which visitors referred to their personal expectations, experiences, emotions and memories related to the artworks.
2. **spatial practices**, including references to visitors' ways of experiencing the space, their engagement with it and their navigation in it, including visiting practices [21-22].
3. **co-experience**: instances when visitors referred to interactions they shared and performed with a member of their own group [23-24] and
4. **social realms**: instances when visitors referred to interactions in relation to other groups of people and visiting conditions [23, 25-26].
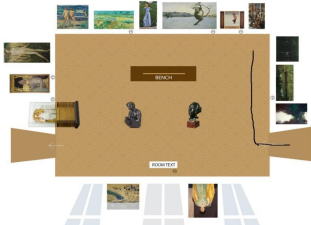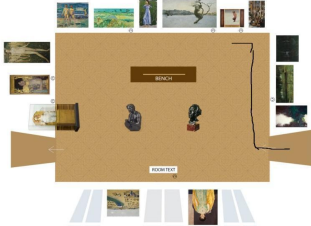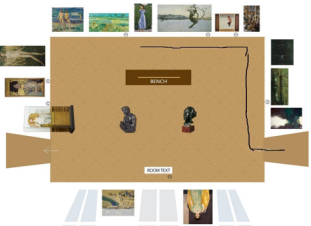
This methodological approach acknowledges the concept of "theoretical sensitivity" in Grounded Theory, for which the prior knowledge of the researcher is consciously used in the empirical exploration of the material [19].
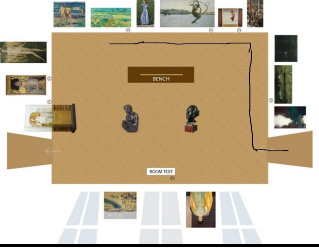
4   Trails of walking - Ways of talking: A case study

In this section, we exemplify how these themes are grounded in our data by drawing upon one case study (nr. 69) involving a pair of female visitors (W and Wb) (Table 1). Based on the T&T data collected during stage 1, they spent fifteen minutes in the gallery room and their visit was highly collaborative, with both visitors staying in close proximity and interacting with each other. During the survey in stage 2, they mentioned that one of them was living in Prague and the other one was doing an internship in Vienna, which was an opportunity for them to meet there and visit, among others, the Upper

Belvedere. They also mentioned that they often travel together and that they like to visit museums and other cultural institutions. Their experience of visiting museums became foregrounded also during the SMM in stage 3 when referring for example to their en-counter with Mona Lisa (turns-in-talk 54-60).

Table 1. Transcript of case study nr. 69

Turn-in-talk	Ways of talking	Trails of walking
01	W: So, went around and we were discussing	
02	Wb: That we liked, that one [Early Spring]	
03	W: Yeah, we liked this one, I didn't know. I wasn't familiar with the artist. This one is kind of sad [Lost]	
04	Wb: Yeah, that one we thought it was really sad	
05	W: I mean he is pretty lonely (Wb and W laugh)	
06	Wb: We thought that this was beautiful [Emotion] but it was really beautiful	
07	W: This one also, I liked the way, it wasn't familiar	
08	I: Familiar?	

09	W: No, I wasn't familiar with the artist either but it's nice, I like the style and then of course, Van Gogh [Plain of Auvers] we were talking about	
10	Wb: We were talking about him. Never seen this one of course, about his life also (both laugh) I was kind of Oh yeah, I always forget that he killed himself (all laugh)	
11	I: Were you able to tell from that painting? Probably not	
12	W: No, probably not. Although it is kind of little sad cause it is, I mean it's lonely	
13	Wb: Yeah, it is compared to the other one	
14	W: It's lonely, cause it is, it is pretty but you are looking into the field and there is no one there. It is little bit	
15	Wb: Yeah, because it was one of the last ones, no? it was, yeah	
16	W: It said, yeah, his last one. And then, we went here we were discussing	
17	Wb: That was fun that one	
18	I: About?	
19	W: No, we were talking about yeah. We were trying to figure out where the actual Scream was, and there is four of them	

	apparently. I didn't remember that either	
20	Wb: So, we opened Google for that (both laugh)	
21	I: Oh yeah you opened	
22	W: Yeah, we were googling things on our phone, and we didn't really look at this one [Adolescentia] cause we went straight to the Klimt [Judith]	
23	Wb: Yeah, we stopped there for a while	
24	W: We were looking and reading and	
25	Wb: Yeah, we commented how you can see the difference from the ones in the previous room and then this one	
26	I: In the room you walked in before	
27	Wb: Yes, they were	
28	W: The ones we saw earlier on, some early works yeah and I mean his style has changed	
[…]	[….] [transcript continued]	
51	I: I was going to ask you if it felt different the impression from the photograph or a reproduction when you see the original thing	
52	W: Yeah, I mean I am pretty sure I have seen this in a photograph before	
53	Wb: Yeah, in person that one looks super real	

54	W: It was very nice, and you know that gold kind of shimmers in the light, and it looks nice, it is a lot more impressive in person, yeah. I mean they already look good in the photos but when you see them in person (laughs) We were saying it is not like the Mona Lisa, when you go and you are disappointed (laughs)	
55	I: Were you disappointed by the Mona Lisa?	
56	W: Yeah, I mean everyone is disappointed and then also you are getting pushed by a hundred other tourists	
57	Wb: Yeah, it is like the situation	
58	W: Taking photos, it is not a good situation, yeah	
59	I: The environment kind of shapes the way you look at and enjoy art	
60	W: If there are too many people, too crowded, so here is perfect cause there is not too many, it is quieter	

5   Findings

The pair engaged with SMM for five and half minutes. From the transcript, we see that W is leading both the marking of the 'trail of walking' and the sharing of her 'ways of talking'. Nonetheless, W used the pronoun 'we' in 35 instances and thus, signaling that she is depicting and discussing their collective experience of the room. In the rest of instances in which the personal pronoun "I" was used by W, these reflected upon her prior knowledge – what she knew about the artists, personal evaluation of the artworks, and expectations on the exhibition visit, and not the experience on site. During the whole duration of their SMM, Wb also contributed with her own comments, either elaborating upon or prompting the reflections shared by W further.

Similar to the findings of the 2017 pilot study [11], the highly collaborative experience of the Secession room was also manifested through the single trail line drawn for both visitors. In this particular example, the pair did not elaborate on their

'trail of walking' visually as much as they did verbally. Nonetheless, their 'trail of walking' (Figure 4a) was a very accurate representation of their movement in the room when contrasted to the movement map created through T&T (Figure 4b).
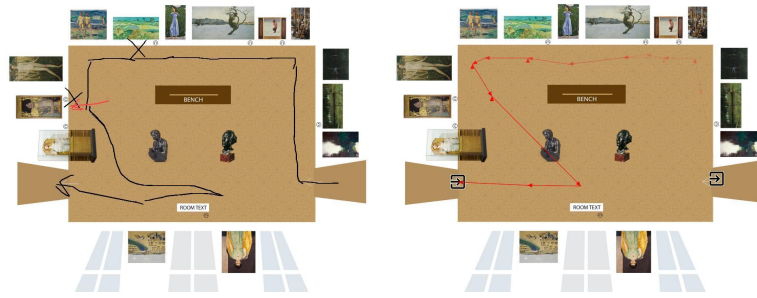

Figure 4. (a) The SMM created by the pair; (b) the movement map created through T&T.

In turn 03, W shared that she "liked this one, I didn't know. I wasn't familiar with the artist". A few lines below (turn 07), she mentioned again that she liked a painting of which she was not aware of the artist. This hints perhaps at her linking her likeness of an artwork to knowing the artist who created it. This interpretation is supported by other turns in which prior knowledge of the artist often informed the pair's interactions with the artworks ("of course, Van Gogh"). In the case of Munch's painting, it triggered the pair to wonder about another famous painting by him ("we were trying to figure out where the actual Scream was"), a question to which they found the answer by browsing the internet on their phones ("and there are four of them apparently. I didn't remember that either. We were googling things on our phone").

In the rest of the turns in talk, W described the artworks in terms of emotional attributions (i.e., "this one is kind of sad", "although it is kind of a little sad cause it is, I mean it's lonely"). At times, the museum's interpretational resources seemed to elicit the pair's prior knowledge. For example, the text accompanying van Gogh's artwork introduces the painting as 'an unusually wide landscape painted shortly before van Gogh's suicide', a piece of information that made the pair look closer, contrasting this information with the painting's visual characteristics. Both visitors elaborated on their embodied encounter with the painting by linking the label's suicide reference to the emotions the painting triggered in them ("it's lonely, cause it is it is pretty but you are looking into the field and there is no one there", turn 14; "yeah, because it was one of the last ones, no? it was, yeah", turn 15).

In designing SMM, we wished to use the tool to capture visitors' embodied experience in the specific room [12]. As it can be seen in the transcript, visitors mentioned several of the embodied practices they performed while in the room. These included (a) stopping at certain artworks ("yeah, we stopped there for a while", turn 23), (b) skipping artworks in order to explore others in depth ("and we didn't really look at this one [Adolescentia] cause we went straight to the Klimt [Judith]", turn 22), and (c) the combined activities of looking at art and reading labels ("we were looking and reading", turn 24).

Especially in turn 22, the visitor named the artist which is considered a part of visitors' personal and co-experience context. Upon looking at Klimt's painting, the pair shared that they discussed the differences between the painting in this room ("Judith") and the ones they encountered earlier during their museum visit ("we commented how you can see the difference from the ones in the previous room and then this one", turn 25). This comparison allowed the pair to conclude that "his style has changed" (turn 28). They also discussed the embodied experience of encountering the actual painting compared to looking at it in a photograph ("in person that one looks super real", turn 51) as their visit to the Secession room allowed them to notice "that gold kind of shimmers in the light, and it looks nice, it is a lot more impressive in person, yeah. I mean they already look good in the photos but when you see them in person" (turn 54).

Interestingly, the social realm of their visit came into play both imaginatively as well as on site when the pair started discussing their personal encounter with "Judith" at the Belvedere in comparison to the "Mona Lisa" at the Louvre ("we were saying it is not like the Mona Lisa, when you go and you are disappointed, turn 54). In this reflection, both visitors introduced their past into the present by comparing a previous encounter with a famous artwork to their encounter with Klimt's "Judith" in terms of how the social realm affected their experiences. They both mentioned that they preferred encountering paintings when there are not many people sharing the same space with them, as crowds seem to be obstructing their experience ("pushed by a hundred other tourists taking photos", turn 56). Here, the embodied experience of being at another museum came into contrast with the embodied experience of being at the Secession room.

6   Conclusions

There has been strong criticism on the validity of data collected through T&T based on researchers' observations and interpretations of what visitors did and what they looked at [27-28]. The findings of the study presented here exemplify how SMM can complement third person observations conducted through T&T by introducing visitors' own reflections on their experience, the space, the interpretive resources that became, or not, relevant during their visit to the Secession room.

In our given example, the pair represented their visit as a sequential line. Our analysis did not focus on the interactions visitors had with each artwork displayed in the room; rather, we collected, represented and analyzed the museum experience as a trail since "the unit of analysis is not a work of art [...] it is the collection of the works of art that a person encounters in a museum visit" [29, p.35]. While marking their 'trail of walking', the pair made relevant several aspects related to their personal and social context through their 'ways of talking', including interactions unfolding between them and others in the same room. Their map making was highly collaborative, with each finishing the other's sentences and sharing the same reflections on the artworks, the artists and their techniques. There were many layers of information revealed during the SMM, with visitors discussing other experiences they had in different museums in the world, their previous and extended knowledge of art and artists, and their interpretations

being based on the artworks' characteristics or the emotions emerging when looking at them.

Despite the richness of the dataset we collected through SMM, the design features of SMM imposed a number of restrictions and challenges. For example, we decided that each pair was assigned to one researcher taking care of all three study stages for reasons of clarity and trust. As the data collection for all stages lasted approximately thirty minutes (but in some cases even much longer as the researcher was waiting for visitors to show up in the Secession room), it imposed demands on the workforce used during the study both in terms of time and physical involvement. Moreover, as we collected data in one gallery room, we avoided having more than two researchers present at the same time. This decision restricted the number of pairs we could recruit per day. When it comes to using SMM, visitors found it sometimes hard to identify which room was represented in the digital floor plan, while the small size of the tablet's screen restricted both visitors from map-making simultaneously. This could impact the degree and the ways in which visitors collaborated, or not, during SMM.

Nonetheless, the multiple layers of information we collected through T & T and SMM can inform the arrangement of the collection and the design of interpretive resources, including the label text, audio guide, and museum brochures. By looking at the pattern of movement of all visitors, the curatorial team can easily identify areas and artworks which visitors approach or avoid. In this case, the two sculptures positioned in the middle of the room seem to be neglected by visitors. At the same time, most of the artworks that visitors talked about during their SMM seemed to be those displayed at the top left corner of the room. Displaying popular artworks in the same space partly led to instances of crowding, which has been mentioned during SMM as a factor affecting negatively visitors' art experience. Combining consciously art-historical knowledge and empirical evidence on visitors' responses to specific artworks and gallery settings as provided through SMM, can thus help in developing curatorial solutions that (better) work in museum practice. It could even be possible to integrate SMM in a procedural and participatory exhibition development offering visitors to embed visual and verbal responses to different prototyped exhibition constellations.

Our focus in this paper was to present SMM as a participatory method and its capacity to facilitate, evoke as well as collect visitors' collaborative and personal reflections on the recent visit to a gallery room as a temporally and spatially embodied activity. Contrary to place-based digital technologies that do not take into consideration the social nature of the museum visit [30-31].

SMM allows visitors to work collaboratively and "write themselves" on the map by "seeing themselves" in the room represented in the digital floor plan [12]. Thus, SMM collects and represents their experience by mobilizing both their memories about their experience and their embodied memories about being in the room. Aspects of embodiment contribute to a better understanding of the experience they had and allows multiple layers of information to emerge in relation to the physical, social and personal context of their visit. More research is needed to explore the potential of using SMM as an interview method in different museums and in more than one rooms, foregrounding how the design of the museum space and juxtaposition of the collections informs visitors' experience and meaning making.

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