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# **Interaktive 3D-Zeugnisse von Holocaust-Überlebenden**

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Anja Ballis, Markus Gloe, Florian Duda, Fabian Heindl,  
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**Interaktive 3D-Zeugnisse von Holocaust-Überlebenden.  
Chancen und Grenzen einer innovativen Technologie**

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**Fabian Heindl**

## **The Role of Narrative Structures and Contextual Information in Digital Interactive 3D Testimonies**

### **Abstract English**

This article explores the role of narrative structures and contextual information in the development and implementation of digital interactive 3D testimonies. Based on considerations associated with other testimonial formats and the discourse surrounding them, it will be argued that the conceptual nature of digital interactive 3D testimonies leads to the circumstance that they lack a coherent original narrative when reduced to their interactive elements. Instead, individual audience decisions could lead to the construction of different individual narratives. However, this paper will show that this is not necessarily the outcome for all forms of interaction. Instead, multiple different scenarios are imaginable, varying greatly in the quantity and depth of interaction between testimony and audience. The provision of contextual information may further the goal of enabling audiences to independently interact with a digital interactive 3D testimony and, thus, enhance the overall experience and the likelihood of individual narratives emerging. Overall, these findings are meant to assist the future development and implementation of digital interactive 3D testimonies, and also to provide new theoretical insights into the format for researchers involved in the field of oral history.

### **Abstract Deutsch**

Der nachfolgende Artikel untersucht die Rolle von Narrativstrukturen und Kontextinformationen bei der Entwicklung und Umsetzung interaktiver 3D-Zeugnisse. Ausgehend von Überlegungen und dem Diskurs über andere Formate von Zeitzeugnissen wird argumentiert, dass interaktive 3D-Zeugnisse aufgrund ihres Konzepts normalerweise kein kohärentes Narrativ aufweisen, sofern sie lediglich auf ihren interaktiven Teil reduziert werden. Hieraus entsteht stattdessen die Möglichkeit einer Konstruktion verschiedener individueller Narrative auf der Grundlage der Entscheidungen des Publikums. Eine solche individuelle Narrativkonstruktion ist jedoch kein notwendiges Ergebnis jeder Form von Interaktion. Vielmehr sind mehrere verschiedene Szenarien vorstellbar, die sich in der Quantität und Tiefe der Interaktion zwischen Zeugnis und

Publikum und hierdurch in ihrem Ausgang stark unterscheiden. Vor diesem Hintergrund wird ferner argumentiert, dass die Bereitstellung von Kontextinformationen verschiedener Art in hohem Maße dazu beitragen kann, eine möglichst unabhängige und direkte Interaktion zwischen dem Publikum und dem interaktiven 3D-Zeugnis und damit individuelle Narrativkonstruktionen zu fördern. Insgesamt sollen diese Erkenntnisse die zukünftige praktische Entwicklung und den Einsatz interaktiver 3D-Zeugnisse unterstützen, aber auch neue theoretische Zugänge zum Format für die Zeitzeugenforschung und Oral History im Allgemeinen liefern.

## Introduction

In 1965, philosopher and art critic Arthur Coleman Danto provided a novel theory to characterise the unique aspects of historical observation and historical knowledge. He claimed that it is not possible to interpret or attach meaning to single events without reference to larger structures. Danto referred to this form of representation as *narrative sentences*:

Narrative sentences, as I characterize them, give descriptions of events under which the events could not have been witnessed, since they make essential reference to events later in time than the events they are about, and hence cognitively inaccessible to the observers. ‘The Thirty Year War began in 1618’ could not have been known true in 1618, and in the main the descriptions of central historical importance are those which contemporaries and eyewitnesses could not have had. (Danto 1985: xxii)

On the basis of this example, narrative sentences may be understood as descriptions or interpretations, in which several events and informational sequences are meaningfully related to each other<sup>1</sup> (Herman/Vervaeck 2005). In this paper, I will not only explore the role of narrative structures in the formation and reception of digital interactive 3D testimonies (DITs), but also show how these processes might be related to the integration of contextual information in this particular testimonial format. Referencing conceptual considerations about DITs developed in the USA, UK and Germany since 2012, my goal is to provide an initial approach to categorising the specific roles of narrative structures and contextual information in DITs within the larger category of testimonies in general. Therefore, I will first present some contextual and methodological information on the general theoretical concepts of narrative and context in testimonies. I will then analyse the unique role of these concepts in DITs and highlight relevant implications for their development and later implementation. Overall, this study aims to specifically support agents involved in the development of DITs as well as educators and facilitators involved in their presentation, who still often take a rather experimental approach due to the recent emergence of this technology. However, I hope that these theoretical considerations might also assist interested third-party researchers in their attempt to access this format, about which a large number of factors and aspects are still unknown.

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<sup>1</sup> The second part of this sentence describes what I refer to as ‘narrative structures’.

## **Background and approach**

Although DITs have received a reasonable amount of media attention since their development in 2012 (Maio/Traum/Debevec 2012), only a few studies have so far researched (e. g. Ballis/Gloe 2019; Brüning 2018; Traum et al. 2015) or mentioned (e. g. Bothe 2018: 456–460; de Jong 2018: 247–248; Gray 2014: 109–110) this novel and unique testimonial format. Several publications have, however, explored the roles of narrative and context in general (e. g. Daiute 2015; Deppermann/Lucius-Hoene 2002; Meuter 1995), or as part of broader research projects related to testimonies (e. g. Bothe 2018; Brüning 2013; Brüning 2018; Keilbach 2012; Knopp 2016; Michaelis 2016; Urban 2015). In these latter research projects, most texts have focussed on traditional visual formats of Holocaust testimonies, often with reference to well-known video archives such as the Visual History Archive (VHA) at the USC Shoah Foundation or the Fortunoff Video Archive at Yale (e. g. Bothe 2018; Brüning 2013; Keilbach 2012; Knopp 2016).

As part of my goal to provide a preliminary analysis of the roles of narrative structures and contextual information in DITs, I will touch upon this existing knowledge where it applies to the specific characteristics of this new format. In terms of methodology, I will employ an exploratory approach combined with a phenomenological understanding of testimonies in general and DITs specifically. Furthermore, I will present hypothetical, but viable, suggestions for the future development of DITs. I will also illustrate how this process might easily be subject to the conflicting interests of the parties involved in production and implementation: witnesses, audiences and agents.

## **The General Role of Narrative and Context in Testimonies**

Common testimonial formats generally include personal accounts, written texts and audio and video recordings. While all testimonies necessarily involve a witness and (potential) audience, some may also require additional agents, specifically when in formats requiring prior technical production. I suggest that testimonial formats can be categorised according to the structure used to present their information. I have therefore devised a spectrum that ranges from linear and non-linear (or input-dependent) sequencing. Testimonies with linear structures for example – commonly found in most books or videos – feature an original sequence in which the author(s) or agent(s) first present the testimonial information based on their own decisions. Although audiences may later be able to



manipulate this original sequence or deviate from it by consuming it in another (non-linear) way, the original (or core) sequence remains the same. On the other hand, some testimonies may choose a less rigid sequence or none at all to present their information (McErlean 2018: 112–115). As we will see in the case of DITs, one option is to reveal information and create sequences based on the later choices or input of the respective audience.

It is essential to mention that the historical proximity of witnesses to the events of a testimony often causes a unique pre-assumption of (sometimes questionable) authenticity for agents and audiences (Brüning 2013: 162; Hartman 2002; Ochs 1997; Smith/Watson 2012). Holocaust testimonies benefit from a special status and socio-cultural developments during the last decades have led to increased prevalence and popularity of witnesses and their testimonies in several countries such as the USA, Israel and Germany (Bothe 2018: 97; Dean 2017: 1–30; Shenker 2015: 118). These prevailing cultural and moral circumstances suggest that audiences and agents will likely tend to avoid placing open demands or restrictions on witnesses providing their testimony.

However, in reality, witnesses and their testimonies are always subject to different and complex sets of rules and expectations. Borrowing from the theoretical considerations of Michel Foucault and Giorgio Agamben, some researchers have used the term *dispositive* to describe this phenomenon (Bothe 2018; Keilbach 2012; Michaelis 2016). Traditionally, a dispositive describes the sum of explicit and implicit elements which are employed to regulate and standardise social behaviour. Therefore, the concept essentially represents the explicit and implicit system of social conformity in a given sphere or domain of human interaction. When applied to the realm of Holocaust testimonies, relevant dispositives would be dynamic sets of elements that enable, regulate and limit the creation and reception of different formats of Holocaust testimonies (Bothe 2018: 138–140).

It is also important to mention that the elements of a dispositive may vary significantly in relation to circumstances such as language, time, place, institution or audience of a testimony. Moreover, different formats of Holocaust testimonies might also be subjected to different dispositives, thus resulting in various regulations and options for the respective witnesses and other agents. For example, a personal testimony given in a school setting might allow for a more freely structured presentation than a standardised video-interview. But on the other hand, a witness may avoid discussing certain topics in a personal testimony which he or she might otherwise mention when asked directly by an

interviewer. These variances may be rooted in differences between the respective dispositives of the testimonial formats.<sup>2</sup> It would therefore be erroneous to assume the existence of one single dispositive for all testimonies. Rather, dispositives may vary according to the format, country of origin, time or audience of a testimony.

General theories in the fields of history, linguistics and communication commonly identify both narrative structures and contextual information to be crucial elements that enable recipients to understand the relevance of particular statements and attach meaning to them within broader topics (Deppermann/Lucius-Hoene 2002: 17–76). Since testimonies represent individual memories and experiences of an overarching historical event (e. g. the Holocaust), narrative structures and contextual information likely help audiences to follow and assess personal information as part of a more complex background. More generally speaking, the understanding and acceptance of a testimony is ultimately likely strongly influenced by there being a defined narrative structure and sufficient contextual information (laid out in the dispositive).

While existing studies indicate a close relationship between narrative structures and contextual information (e. g. Xu et al. 2005), the nature of this relationship is rather complicated and is the subject of ongoing debate across different scientific fields (Phoenix 2013: 72–75). However, with specific regard to Holocaust testimonies, the understanding of a testimony and its narrative (in the case of a linear testimony) or the interaction with and construction of a narrative (in the case of non-linear testimonies) may benefit from the presence of contextual knowledge. To further expand this idea, it is necessary to distinguish between what I refer to as the *factual context* and the *personal context*. Factual context in this sense relates to background knowledge or information about the circumstances of the events related in the testimony. Looking at the case of Holocaust testimonies, factual context would therefore describe the existing information and knowledge of the facts and terminology related to the events of the Holocaust.

Personal context describes information or knowledge about the witness that may help audiences and agents to place his or her biography within the overall time and space of the historical event related in the factual context. To provide another example, an audience might assume that a Polish Holocaust survivor might have personally experienced an event such as the invasion of Poland in 1939. However, learning that the

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<sup>2</sup> Bothe (2018) went even further in her analysis of video testimonies by attributing a unique dispositive to the Visual History Archive of the USC Shoah Foundation, thus even implying the existence of different dispositives among this subgroup of testimonies (138–155).

witness in question was not born until 1943, for instance, would enable the same audience to assess the upcoming themes of the testimony more clearly.

Researchers have comprehensively analysed general reoccurring themes and elements that are crucial for the classification and formation of narrative structures. Among those mentioned are a logical-temporal sequence of sentences, the distinction between relevant and irrelevant information, or the introduction of relevant actors (e. g. Deppermann/Lucius-Hoene 2002: 35–36; Herman/Vervaeck 2005: 12-14). However, it is not the purpose of this paper to analyse the concept of narratives from a theoretical point of view but rather to explain its overall importance for Holocaust testimonies. Therefore, I will employ a broad definition of narratives or narrative structures as representations of a series of events and informational sequences which are meaningfully connected to each other (Herman/Vervaeck 2005), thus distinguishing a narrative from a loose, unconnected or purely associative sequence of random statements. Regardless of specific formats, the representation of memories or biographical information in narrative structures – or the possibility of their emergence during an interactive process – might be crucial for the overall understanding and acceptance of a testimony.

If we apply these considerations to the different formats of testimonies mentioned above, it becomes apparent that the structural and technical dispositive of the respective testimonial format further influences the roles of narrative structures and contextual information. For example, if we examine the non-linear testimonial format of an open Q&A session between an audience and a Holocaust survivor, following a linear narration of his or her testimony, the interaction could potentially facilitate mutual understanding between the witness and the audience. Audience members are given the opportunity to clarify misunderstandings or to close gaps in information caused by previously missing or inadequate narrative structures and/or contextual information.

Linear formats such as books or most video testimonies, on the other hand, generally cannot employ such mechanisms as they are characterised by a temporal shift between their production and reception. While audiences may interact with such formats in a broader sense by re-reading certain paragraphs of a book or re-watching sequences of a video, there is usually no possibility for direct interaction between the witness or producer and the recipient. Hence, it becomes more important that narrative structures and contextual information are provided inherently or by alternative means. Specific linear testimonial formats, like the recordings made by the VHA, allow for this phenomenon to be more closely observed. Testimonies in such databases are usually produced according

to standardised procedures that ensure understanding, integrity and comparability. This may eventually lead to a situation where testimonies are ‘trapped’ in a struggle between standardisation and individuality (Bothe 2018: 181–183). These examples also show the potential impact on narratives by other agents involved in the process, resulting in some testimonies, such as DITs, which can plausibly be considered to be the result of ‘multiple’ or ‘pluralistic’ authorship (Ballis in this volume).

Of course, even in testimonies without the involvement of additional agents the mere existence of expectations, technical circumstances and other factors rooted in the dispositive makes a potentially neutral testimony highly improbable. However, the involvement of additional agents may affect the creational process of a testimony and the authenticity of its core narrative even further. I refer again to Bothe’s observation that testimonies of any kind are not isolated stories, but rather narrative events tied to specific situations and that while many testimonies might possess a narrative core or stable truth, they must adjust themselves to the circumstances and requirements of their dispositive (Bothe 2018: 183–184).

### **The Novel Role of Narrative and Context in Digital Interactive Testimonies**

It is crucial at this juncture to point out that DITs, despite sharing the same technological concept of databases using speech-to-text matching algorithms, are produced and implemented in different ways by different institutions (Ballis/ Barricelli/Gloe 2019: 410–433; Ma et al. 2017; Traum et al. 2015). However, as the conceptual basis for all DITs remains the same, our general considerations can still be applied. In the following chapter I will touch upon more specific factors regarding the production and implementation of DITs.

Considering the theoretical considerations discussed above, it may be argued that DITs feature aspects of both linear and non-linear as well as input-dependent testimonies. Depending on the method of implementation or presentation, the exact position on the spectrum may vary. For example, a DIT might start with a strictly linear video sequence of the witness telling his or her story and then switch to a non-linear testimonial format as audiences ask questions (Ballis/Barricelli/Gloe 2019). In other cases, the presentation of a DIT could simply consist of the aforementioned non-linear sequence or interaction (Gloe in this volume). Consequently, by making it possible to affect the information and sequence of the testimony, DITs necessarily distinguish themselves from other strictly

linear testimonial formats which always present the same content in the same sequence unless actively manipulated by the audience.

However, it is still important to consider the nature of interaction and the existing data. Since DITs use pre-recorded data, the quality and amount of potential interaction is naturally limited. In other words, a DIT is not able to adequately respond to all input, rather only to questions or inquiries that match the records in its database. In some cases, the DIT can only respond by stating that the desired information is not available. Real-life witnesses would also unlikely be able to answer all questions, but could, however, at least explain why they are unable to answer a question, provide suggestions or research the missing information in order to be able to answer similar questions in the future. In other words, DITs are currently unable to act beyond the limits of their databases or handle problematic inquiries in the same flexible manner that a real-life witness could. Furthermore, the databases of current DITs still consist of linear, pre-recorded videos (Ballis/Barricelli/Gloe 2019; Traum et al. 2015). While audiences may input information or selections that influence which videos will be presented to them and in which sequence, they are not able to alter the content of the videos themselves. The linear structure of single database elements means the nature of interaction between DITs and real-life witnesses is very different. While the latter might be able to answer the same question in multiple ways or present the same information differently each time, a DIT cannot change the linear sequence of the video it matches to a given input by itself. In effect, the same input will always lead to the same answer in the same sequence unless the data or software algorithm of the DIT is altered externally. Hence, despite the different forms of DIT presentations mentioned above, even the apparently non-linear part of the interaction still has linear characteristics due to its technological nature, which is based on databases with linear elements and strict algorithms.

In terms of the role of contextual information, it is important to bear in mind that the entire key concept behind DITs is that of interaction. Unlike monographic or linear accounts, DITs have interactive or non-linear elements where audience input decides what content will be presented, and in what order. This is remarkable, since DITs are likely the first testimonial format – apart from Q&A sessions with living witnesses – that requires active participation by audiences to function. However, the skill to ask suitable questions necessarily requires contextual information (Ashwin 1991). Even though most DITs possess a certain number of answers to general questions (e. g. ‘What is your name?’, ‘When were you born?’, ‘What is your favourite colour?’), the vast majority still

revolve around information related to specific historical events or personal details. In this case that event is the Holocaust, so the respective DITs revolve predominantly around the topic of the Holocaust, the witness's role in it and the effects on his or her life overall. A certain amount of factual knowledge about the historical context of the Holocaust is therefore necessary for audiences to be able to understand the testimony and deliver suitable input. However, this does not yet distinguish DITs from other testimonial formats related to the same event, which also require this factual, contextual knowledge in order to be properly understood.

The notable difference in DITs lies in the aspect of personal contextual knowledge. As already mentioned, using the example of the video testimonies in the VHA, many linear testimonies possess external gatekeepers such as trained interviewers or fixed sequence structures to ensure that basic personal information about the witness is presented early before moving on to more detailed questions about his or her life. Even other examples of non-linear formats, such as Q&A sessions with a living witness, are commonly preceded by a personal introduction and even where this is not the case, living witnesses can still clarify general misunderstandings about basic personal information related to them. For example, we can consider the fictitious scenario where a Holocaust survivor who had not been sent to Auschwitz is asked about his experiences in Auschwitz. In this setting, the question would likely result in a clarifying answer including the information that the witness had not been in Auschwitz and probably even providing additional relevant contextual information (e. g. 'Oh, I was a prisoner in Mauthausen, not in Auschwitz.'). Such an answer would not only provide information about the witness but would also allow the audience to adjust their subsequent questions.

In the case of DITs, the underlying software is not generally able to handle or correct such scenarios in a similarly flexible or individual way. In our fictitious scenario, multiple outcomes are theoretically possible, depending on factors such as the training of the algorithm or the size and quality of the database. Yet, they will likely be similar to one of the following scenarios: In the first and most favourable scenario, a suitable match would exist that could provide adequate information to the audience (e. g. 'I was not in Auschwitz.'). In the second scenario, the algorithm would recognise that there is no suitable data and would inform the audience that it was unable to provide a specific answer to the question (e. g. 'Sorry I cannot answer this question, why don't you ask me something else?'). In the third and least favourable scenario, however, the algorithm might match the question with a completely unsuitable answer (e. g. 'When I was eight

years old, I lived in Cologne.’). Based on these potential outcomes, DITs can indeed provide audiences with more insight into the witness’s experiences and about other information that might be useful to them, as long as the necessary data is available and the algorithm correctly matches the input. Yet, neutral or unsuitable matches, which we would not usually expect during personal interactions, could leave audiences disoriented or unsure how to proceed. While such scenarios could probably be resolved by experienced staff assisting the audience (Gloe in this volume), this is not compatible with the goal of enabling as much independent interaction as possible. In short, the technical infrastructure of DITs might be able to fulfil a gatekeeping function in some scenarios, but obviously starts falling short of this function as soon as no suitable data is available. Therefore, the provision of sufficient personal context could potentially achieve higher matching rates and better independent interaction, as it would enable audiences to preselect suitable thematic clusters and potential questions without having first to explore their options on a ‘hit-or-miss’ basis. Furthermore, DITs would benefit greatly from another form of contextual knowledge unique to their format, which can be defined as the *technical context*.

DITs differ from other testimonial formats, such as personal accounts or video interviews, in their presentation and underlying way of functioning. Interaction with them may not be as intuitive for some users as interaction with traditional media formats that they encounter on a daily basis. Without prior explanation, audiences might be unaware of how the testimonies were developed (Pagenstecher 2018: 114–115) or how they function, which could prevent them being able to properly interact with the DIT. To provide an example, current DITs usually have difficulties processing overly complicated phrasing or unclear articulation. So, if audiences are aware of these issues they will be able to adjust their behaviour accordingly, leading to a more satisfying interaction with the testimony. I would consequently argue that properly addressing the personal and technical contexts is of utmost importance for the DIT to properly function.

The significance of narrative structures becomes more apparent when considering the implications of the technical dispositive of DITs for contextual information. Since DITs are primarily based on interaction and not on linear autobiographical stories or interviews, they do not possess one single narrative that runs independently of the audience’s selections (Bothe 2018: 459). This means that questions from audience members during implementation, combined with decisions taken by agents during production (question selection, existing data, quality of the matching process...) may lead to a variety of

possible narratives that effectively replace the original witness narrative later on (Bothe 2018: 459). Notably, some authors have considered this a unique chance for audiences to access historical sources and construct independent narratives by decreasing the risk of bias through the witness (Bothe 2018: 456–460; Brüning 2018: 230; Daiute 2015). In other words, this non-linear access to unordered data sets that are detached from their linear or preferred narration by the witness is supposed to open up new chances to independently construct a meaningful image of his or her story and personality.

While this is certainly an appealing thought and obviously a potential of DITs that should be taken seriously, it is important to consider whether any form of interaction will necessarily result in the construction of a narrative at all. Earlier, I characterised a narrative structure as a representation of a series of events and informational sequences in a meaningful connection to each other, therefore, distinguishing it from a loose, unconnected, or purely associative sequence of random statements. However, apart from weak interaction, it is possible that faulty development or simply thoughtless presentation could lead to scenarios where DITs are at risk of only producing a sequence of random statements, making it difficult, if not impossible, for audiences to construct coherent narratives. Hence, there is a significant risk that DITs could provide audiences with multiple unrelated statements that make it difficult to reconstruct the witness's life cohesively and meaningfully. This obvious risk should be carefully considered in the process of developing and implementing DITs. The following chapter, therefore, considers the above issues of narrative structures and contextual information in DITs and applies them to these specific processes.

### **Considerations on the Role of Narrative and Context in the Development and Implementation of Digital Interactive Testimonies**

Generally, all existing DITs share the same technological principals of speech-to-text conversion and algorithms that match the input to entries in a database and return the selected output to the user (Traum et al. 2015). This is, however, just the technological result of an extensive process of production, which requires the agents involved to choose between numerous alternatives and make decisions along the way. Most of these decisions must be made with the knowledge that DITs are costly and time-consuming to produce and difficult, if not impossible, to alter after completion (Bothe 2018: 459).<sup>3</sup> This

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<sup>3</sup> For more detailed information about the productional process see e. g. Ballis/Barricelli/Gloe 2019, Ballis/Gloe 2019; Traum et al. 2015.



means that there is potentially more pressure to make the right choices during the development process than with other testimonial formats involving third-party agents. As already pointed out, there is currently also little to no standardised procedure for most of the necessary steps, such as the selection of candidates, choice of content, number of questions, or later ways of implementation.

Consequently, different institutions may approach these steps differently or even change their methods between testimonies, which is entirely understandable given the new and challenging character of DITs, and it is not my intention to provide solutions for standardisation. Rather I aim to make suggestions and point out considerations for potential improvements by illustrating options relating to the provision of contextual information and the facilitation of narrative construction.

Currently, these aspects do not appear to be a priority for many institutions developing and presenting DITs. Many DITs exhibited at present in museums in the USA and UK are often part of more extensive exhibitions where independent interaction with the testimonies is not the focus of visitor activity. Furthermore, some of these presentations offer very little background information on the witnesses themselves (personal context) or on the technological characteristics of the testimonies (technical context). This may explain why some initial observations seem to indicate that the quantity and quality of interaction often falls short of its potential, with only superficial questions being asked, for example, or visitors losing interest in the DITs rather quickly (Gloe in this volume).

In other cases, the presentation of DITs involves trained staff moderating the interaction, selecting questions and sometimes even slightly altering them before addressing them to the testimony (Gloe in this volume). Whilst this method may improve the successful matching rate, I would argue that this approach is problematic since it not only detracts from the audience's personal interaction but also risks distorting their input. More importantly, the current, at times unsatisfactory, situation could be avoided if more attention were paid to the importance of providing prior contextual information and exploring creative possibilities to do so. Generally, this could be achieved by including necessary information as an internal part of the testimony or by utilising additional, external sources. The first option could be implemented, for example, by DITs featuring an introductory video or an opening question of witnesses introducing themselves, presenting essential information about their stories and offering advice on how to subsequently interact with the testimony. External solutions, such as documentaries on the process of development, handouts or personal explanations by designated guides

could similarly convey the respective contextual information. However, further studies are needed to compare the actual effectiveness between these approaches. When preparing DITs for presentation at educational institutions such as schools or universities, further measures and considerations should be undertaken regarding suitable didactic implementation (Ballis/Barricelli/Gloe 2019; Ballis/Gloe 2019; Kolb in this volume).

Discrepancies between witnesses could have decisive effects on the development and implementation of DITs in terms of narrative structures. While it might seem evident that personal memories, opinions, or stories are always unique and subjective to the individual, the amount of experience each individual has had in recalling and presenting their stories can be highly unequal. The more practice an individual has had in relating their story, the more likely they are to have established a coherent narrative and to be able to recall relevant information (Deppermann/Lucius-Hoene 2002: 90–91). Such factors might not only have a substantial influence on agents when it comes to selecting candidates, but also on the process of generating questions and answers. For example, witnesses presenting their memories in an unstructured or associative manner – as opposed to in a coherent narrative – require agents to conduct more initial interviews, invest more time in background research and select suitable questions based on the unstructured information available to them. Even then, this information may still leave agents ambiguous or unsure about the importance, meaning, or testimonial suitability of different aspects of a witness's life. However, it is important to mention there is no reason to assume that a person's skill in presenting their testimony necessarily correlates with the actual historical, cultural, or educational value of their memories and experiences. In other words, some witnesses might possess stories of irreplaceable value but simply lack the experience in presenting them in the form of a coherent narrative. Issues related to missing or weak narrative structures might then influence agents to instead opt for witnesses with more experience. As a result, many otherwise compelling witnesses whose testimonies do not fit the scheme of narrative coherence might be disregarded. Given the dwindling numbers of witnesses alive, this problem becomes even more pressing.

Narrative structures might influence not only the choice of witnesses, but also the production process itself. As already pointed out, Holocaust testimonies, like any other testimony, are inevitably subject to prior expectations regarding their content and structure (Bothe 2018: 444; Deppermann/Lucius-Hoene 2002: 44). This phenomenon not only relates to potential audiences of DITs but also their agents. Given the circumstance of the dispositive regulating technical, administrative, societal and other aspects

associated with DITs that have been mentioned above, agents may face another dilemma when working with witnesses whose accounts do not suit the desired narrative structure. This conflict can be characterised by the wish to respect the authenticity and individuality of a witness's report on the one hand while trying to adhere to external expectations and requirements rooted in the dispositive on the other hand. More precisely, agents must decide whether to preserve the individuality of the witness's account or to try to adapt the account to optimise results of the DIT.

Crucial aspects of the production process in which this dilemma might become more apparent are the selection of questions and the later training of the algorithm. Factors such as the time available for recording answers, high financial costs of production and the advanced age of witnesses limit the amount of overall data it is possible to collect. Agents must therefore carefully select which questions and information to include or exclude. Naturally, these choices will determine what information will be available to audiences and, thereby, ultimately decide how a witness and his or her story will be portrayed later on. These choices will influence the degree to which the final representation might deviate from the witness's original narrative. The agents involved in production ultimately have a correcting role: training the algorithm based on prior input and deciding on the most suitable answers when the algorithm failed to do so.

In many cases, these decisions are not straightforward and might include several alternative solutions. The agents' decisions will not only relate to aspects of functionality or adherence to certain expectations but may involve judgement calls or moral dilemmas when it comes to decisions that could threaten the integrity of a testimony. In conclusion, the particular format of DITs may result in the original narrative provided by a witness being of secondary importance for the audience when looking at the nature of interaction, but the original narratives will still have a significant impact on the decisions of the agents producing and implementing the testimonies.

## **Summary**

In this paper, I have addressed the role of narrative structures and contextual information in digital interactive testimonies (DITs). Based on a general review of these concepts in Holocaust testimonies, I have argued that the existence of factual context (existing information about the broader historical events referred to in the testimony and related terminology) and personal context (information about the witness and his or her role within those historical events) is crucial for the audience to understand and accept a

testimony. The importance of personal context increases tremendously in the case of DITs due to the format's particular focus on interaction with the audience. I further added the category of technological context to emphasise that, due to the novel characteristics of DITs, audiences might require additional knowledge about the functionality to encourage and improve independent interaction.<sup>4</sup> I have argued the significance of the role of narratives and that underlying expectations and implicit rules (as part of the testimonial dispositive) likely tend to favour witnesses who present their testimony in the form of a coherent narrative rather than a loose assembly of unstructured statements. Based on these assumptions, I have outlined how the format of DITs may separate the information given by the witness from his or her personal narrative due to the possibility of constructing multiple new narratives through the course of the interaction. I have also highlighted the implications for the production and implementation of DITs resulting from these observations. For example, although the original narratives of the witnesses may not be discernible in later implementation, they are likely to have had a profound influence on the process of decision-making during the development of the DITs. I have also suggested that the provision of sufficient context might be a crucial factor in enabling and improving interaction between audience and testimony during implementation.

To conclude, I hope that the arguments and findings in this paper provide a suitable, initial exploration of the specific characteristics and requirements of DITs. The novelty of the format, absence of extant research and limited experience of the format in practice make these early observations highly hypothetical, of course. DITs certainly seem to have the potential to enable audiences to explore testimonies from an individual, different and potentially less-biased perspective. However, whether the format can really fulfil this promise will eventually depend, to no small extent, on the decisions made along the way.

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<sup>4</sup> It is possible that increased awareness of the artificiality of DITs could decrease the chances of individual immersion during interaction. However, preliminary observation and first general study results seem to indicate that drawing attention to technical aspects of DITs does not necessarily impact the overall acceptance or satisfaction of audiences (Kolb in this volume). Further research is certainly required into this aspect.

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