



On Korsakow and the korsakowian way:

“more scholars of the documentary form need to sit down and watch this kind of work; developers need to commit their ideas and aims to paper; and, makers need to share their processes and their tools.” (Soar, 2014, p.169)

DAS KORSAKOW PRINZIP

**An Investigation into Doing Documentary the korsakowian way
or
Is it smart to keep things complex?**

progression report
Florian Thalhofer | 20972395
2023-06-22

Just before we say goodbye, Mike Robbins¹ says more to himself than to me, "Most people try to simplify things in order to understand them, but I somehow never seem to be able to resist the temptation to leave things complicated."

It takes me a while to understand that Mike Robbins is also describing Korsakow with this. And I wonder if "leaving things complicated" is not simply a different methodological approach to arriving at new knowledge.

¹ Mike Robbins is a well established early contributor of interactive and generative documentary.

Terms I use	4
My project	6
Research inquiry	7
Intentions behind my research	8
Methods	11
Context	14
Timeline	16
Bibliography	17

TERMS I USE

Korsakow

“The Korsakow System is an authoring program that, since its inception in 2000, has been used and discussed frequently in the evolving field of interactive documentary (Aston and Odorico, 2022; Weidle, 2020; Hight, 2017; Brasier, 2015; Miles, 2014; Soar, 2014; Favero, 2013; Aston and Gaudenzi, 2012).

I started to built Korsakow in 1999 in order to do my MA project at the University of the Arts in Berlin² where I was exploring new possibilities for using computers to work with film.

The following refers to Adrian Miles paper “Materialism and interactive documentary: sketch notes” (Miles, 2014):

The Korsakow interactive documentary software system holds significance in the field of documentary-making due to its unique features and capabilities. It allows for the creation of generative, associative, and processual films. These films are characterised by their dense interconnections and patterns of relation, which emerge for both the author and the users. Korsakow provides specific functions and affordances that facilitate the development of these dense relations, making it a distinct programmatic environment.

Furthermore, Korsakow is a software application written in Java that can be installed on a personal computer and allows for the creation of interactive films. These films can be viewed within any contemporary web browser and can be accessed online or locally from various media, such as a hard drive, DVD, or USB drive .

Overall, the significance of Korsakow lies in its ability to enable the creation of complex and interactive documentaries that rely on patterns of relation and offer a unique viewing experience for audiences.

² [korsakow syndrom] was the title of the work that was made with the tool that later was named “Korsakow”. The [korsakow syndrom] was presented on Dec. 6, 2000 at the University of the Arts, Berlin as my Diploma Project (MA).

korsakowian

Projects or works made in the spirit of Korsakow, as defined by Adrian Miles.

Adrian Miles describes the software tool that I invented as “computational nonfiction” (2016, p.2), Franziska Weidle refers to it as “computational correspondence” (2020, p.171), Andreas Schleicher describes a similar approach with “computational thinking” (2022, p.22), Grasseni and Gieser speak about “computational networked environments” (2019, p.12).

There is a Babylon of terms that describe aspects of the thing that I understand through my own practice as *korsakowian*. In this text, I will use this term with the understanding that korsakowian projects are not necessarily made with Korsakow and not all projects made with Korsakow are korsakowian.

Korsakowian projects are made in the spirit of Korsakow, which is to use computers to create explicitly “open works” (Eco, 1989) that facilitate relational as opposed to linear causal thinking. These kinds of open works on computers can be found in different incarnations across many places, one of which, for example, is inside the realm of YouTube, where trails of thought can be followed, often in new and surprising ways.

Doing with a korsakowian approach

Doing korsakowian projects involves a blend of authoring and viewing. It can be argued that every viewer of an interactive documentary becomes, to some extent, an author, while every traditional author also assumes the role of a viewer to some degree. This holds particularly true for the korsakowian approach, where the boundaries between author and viewer become even more blurred. In a korsakowian project, the author does not anticipate every possible outcome but rather witnesses the outcomes of their actions with each viewing experience.

MY PROJECT

In my PhD, I want to critically question whether the phenomena I have observed in myself through more than 20 years of practice with Korsakow³ is something that is unique to me or that is shared by others who have been working with similar tools.

The phenomena that I and others, such as Adrian Miles or Franziska Weidle, have observed can be described as follows:

Korsakowian practice affects thinking and sense making (Aston, 2022; Wiehl and Lebow, 2016; Soar, 2014; Gaudenzi, 2013), in the sense that it questions linear causal thinking, calls categories into question, and directs attention instead to circularly acting relations within complex systems (Latour, 2005; Capra, 1997; Glanville, 2004; Von Foerster, 1984; Ingold, 2018).

Korsakow seems to be a tool that inspires *this kind of* systems thinking (Glanville, 2014, pp.4–6) which has certainly been inherent in human thought since time immemorial. However, the one to many fixed forms of mass media such as books, radio, television and cinema, are only able to represent this way of thinking to a limited degree. Korsakow, as a computer-based system can be seen as being aligned with this approach that can be described as “systems based”.

Computer systems as a form of mass media are relatively young, and the body of experience is therefore relatively limited. My initial hypothesis is that if such systems are used based on the wealth of experience gained primarily with linear causal systems, this will lead to unsatisfactory results in many places (Miles, 2015).

What approaches can be identified within the experience already gained that are more promising?

In this context, I would like to investigate to what extent a different kind of *literacy*⁴ is necessary to both create (write) and view (read) Korsakowian works and how this literacy affects thinking over time.

³ My practice with Korsakow includes my documentary film making, my observations of students of Korsakow since 2001, my showing Korsakow films in public (and observing the reaction of audiences) and using Korsakow as a collaborative discussion format in a series of so called “Korsakow Shows” at Kammerspiele, Munich and at other places in Germany, Greece, Romania, Mexico, Venezuela and Canada.

⁴ My use of the term *literacy* includes the ability to effectively use and interpret various forms of communication, such as digital media or visual images (Weidle, 2019, p.20).

RESEARCH INQUIRY

"I prefer the term 'research inquiry' to 'research question' since questions may imply answers and the kinds of work typically undertaken in the PaR⁵ PhD context, while they yield findings, do not typically produce solutions to problems in the mode of answers." (Nelson, 2013, p. 97)

What does the doing do to the doers of korsakowian projects and what can we learn from this?

Are there common patterns of thinking and perception that experienced practitioners working with korsakowian methods that can be related to the "affect" (Deleuze and Guattari, 1989, p.17) that "doing korsakowian documentary" had on them?

This is primarily in terms of how they see logical connections, what role they see emotions playing in judging connections, and to what extent they consider it to have affected their thinking in moral terms.

Through asking the above question, I want to consider whether fundamentally different methods of both making and receiving korsakowian projects are necessary, compared to the methods used in more traditional forms of documentary making. If so, I want to look at how these methods can be described.

To what extent is Korsakow a representational tool, a research tool, or both at the same time?

Through my research, I want to consider how I can build on methods in connection with Korsakow (developed for example by scholars such as Matt Soar, Adrian Miles, Franziska Weidle, Daniel Fetzner, and also myself⁶) to create a coherent and understandable methodology for working with the korsakowian way.

As the initial developer of Korsakow and the person who has used it the most (as part of my daily practice as an artist over a close to thirty year period) I want to bring my own experiences into dialogue with that of others who also have extensive knowledge of doing documentary in the korsakowian way.

⁵ PaR = Practice as Research (Nelson, 2013)

⁶ All of whom have worked with and/or extensively studied Korsakow.

INTENTIONS BEHIND MY RESEARCH

What is the problem or theme you are looking at?

The linear or unisquential (Murray, Lashley and Creech, 2017, p.1)⁷ presentation of ideas and arguments (Aston, 2003) is very well suited to convincingly present complex relationships in science communication in a form that can be understood by the general public. However, this is always accompanied by simplification (Venturini, 2010, 2012).

This leads to problems in an increasingly rapidly changing world. For example, the Corona crisis showed that many people reacted with great irritation to the repeatedly changing statements and recommendations of science, which in turn were based on a constantly evolving state of knowledge that not infrequently made earlier knowledge obsolete.

Not only did the storytelling that resulted from this keep changing, but newer parts of the story often contradicted the old. Many people were so frustrated by this that they stopped believing anything that came from official sources. They began to weave together their own stories and things that seemed plausible to them, perhaps because they had seen them in movies or picked them up from somewhere else.

This suggests that it is becoming more and more difficult to present a rapidly changing world in a coherent way. At the same time, the means of choice for creating coherent stories (the linear causal narrative) is doing less and less justice to what many people are experiencing as an increasingly complex and uncertain world.

However, *korsakowian* narratives, which might be more adequate to describe a more complex world, are often found to be incoherent and unconvincing by the general public. I think that this could be because audiences are still seeking identifiable solutions to complex messy problems, which are in fact ongoing.

Why is the problem a problem?

Describing complex research in terms of linear causal stories leads to errors in description because contradictions can only be negotiated to a limited degree within a linear causal story. Therefore much of what is important but does not fit the story must be omitted (Soar, 2014, p.167).

Errors in description usually lead to suboptimal choices and to difficult-to-resolve conflicts between those who believe one story and those who believe another.

⁷ By this, I am referring to a narrative structure within film texts that is sequential and fixed, with one beginning, one middle and one end.

What could be the solution?

Korsakowian documentary and related know-how might offer a more fit-for-purpose approach to the problem described above, one which is better able to embrace complexity and multiperspectivity⁸.

My assertion is that *skilled practitioners* (Ingold, 2011, p.11) in the field of korsakowian documentary have a special know-how, usually gained from experience, to find meaning in complex systems by not simplifying things, but instead "leaving things complex". This know-how refers to both the production and the reception of what is called korsakowian documentary.

Korsakow is, argues Adrian Miles, a program that "is distinct to other interactive documentary platforms" (Miles, 2014, p.205).

In line with his analysis, this distinctiveness can be described as follows:

1 Korsakow is 'generative'

The generative is the result of the underlying database-based software architecture and means that a Korsakow film dynamically assembles itself each time during runtime from elements defined in advance. It is comparable to a set of Lego bricks that assemble into an object at the moment of viewing. Each time you watch a Korsakow film, a different object is created. This kind of media object was relatively new when Korsakow was created more than 20 years ago, it is nothing unusual nowadays. Web 2.0 is based on this technology, Twitter, Facebook, YouTube, Wordpress, or just about any news site is based on a database that dynamically assembles the elements in the background and presents them to the viewer.

2. multiple links

Building on the technical foundation described above, the principle of organizing defined elements in the form of meta-information (e.g. keywords), Korsakow affords the creation of multiple relations between elements. This means that unlike, for example, on a website where one link points to exactly one other media element, a single keyword usually generates links to a multitude of other elements. This is unusual for an authoring system, because it easily creates a 'barely manageable' number of relations, making the author's full control in such a system difficult – or, from another viewpoint, requiring the author to relinquish a degree of control (cf. Weidle, 2019). This is unusual in this form, since authoring systems tend to be structured in such a way as to impose full control over the organization of the material on the author. In Korsakow's case, however, it is as if the elements take on a life of their own. The author's control over the organization of the elements is by no means zero, but it is less than, for example, the author of a more controlled media object.

3. non-story narrative

The generative and the multiple links are the essential factors that allow authors who engage with them - more on this later - to weave narrative systems that are shaped by the

⁸ Multiperspectivity can be seen as a positive approach which promotes tolerance, creativity and understanding (Kornmann *et al.*, 2016; Watzlawick, P., ed., 2006).

author, but are not preconceived and controlled. The consequence is that such media-objects systematically tend to reveal to the viewer references between elements that the author was not aware of in the making of the media-object.

Whilst Korsakow is not the only system that makes such media objects possible, it is the system that I understand more than any other system. Through my PhD I therefore wish to put my own experiences into dialogue with that of others whose practice and research is very much pushing in the same direction.

The focus of this PaR project is **firstly** to illuminate what effect korsakowian projects develop in the long term on those who experience the full breadth of such works, who are intensively engaged with such works over the years and are both authors and viewers of such projects. This PaR project aims **secondly** to expand knowledge of how korsakowian projects develop their inherent power (as described by Adrian Miles 2014, Franziska Weidle 2020, Matt Soar 2014) and thus to draw tacit know how into the light and thus make it more accessible (Nelson, 2013, p.43). **Thirdly**, I would like to better understand to what extent such practices can be used as a “tool for thought” (Aston, 2016; Wiehl and Lebow, 2016, p.121; Rheingold, 2000) or the resulting objects can be used as a medium to communicate knowledge or both.

METHODS

“The practice, whatever it may be, is at the heart of the methodology of the project and is presented as substantial evidence of new insights.” (Nelson, 2013, p. 26)

Nelson acknowledges that the question of methodology in practice as research in the arts can be complex. He suggests that defining structured approaches to creative inquiry and establishing *methods* of documentation, recording, and presentation may be more fruitful than engaging in extended philosophical debates on methodologies (Nelson, 2013, p.98).

In the following, I would like to briefly describe the methods I plan to use in my PaR inquiry. The methods largely result from my practice, which I have developed over the years. The development of my methods resulted from my doing, but the methods were not informed by theory. I want to make up for this in my PhD research.

Please find a more detailed project-plan written for this report in the appendix.

Step 1 - auto-ethnography

One of the methods I will use to gather data about how doing korsakowian documentaries affects the doers of such processes is auto-ethnography. This will involve two processes that I will do in parallel.

Firstly, I will retrace the beginning of the path that led me to Korsakow. I will critically reflect on each step of the way and link it to relevant theories. These are theories and concepts around documentary, anthropology, cybernetics and systems theory, which I didn't know about when I first walked the path and which I now think influenced me unconsciously. I will also look at theories that didn't exist at that time, as they were developed later and partly in direct relation to Korsakow by scholars like Adrian Miles, Judith Aston, Matt Soar, Franziska Weidle and Sandra Gaudenzi. This will entail the re-construction of the 1997 work [kleine welt], which was what I would call in retrospect an auto-ethnographic work published on CD-ROM and DVD-ROM in 1999, 2001 and 2007 respectively. [kleine welt] is the conceptual predecessor of Korsakow, but is no longer viewable on current computers. The resolution of 640x480 pixels, which was standard at that time, can be brought up to today's standards by re-digitizing the material. The conversion is done in Korsakow, whose output in html5 standard promises to be future-proof. The working title is [kw1997].

Simultaneously, I will translate the theoretical-practical insights gathered while (re) building [kw1997] into an auto-ethnographic Korsakow project [kw2024], in which I critically reflect on the person that I am today, having been *affected* (Deleuze and Guattari, 1989) by several decades of experience of doing algorithmic documentary. This work will critically reflect on my current perspective as a PaR PhD student and will be imbricated with theoretical reflection (Nelson, 2013, p.33).

Step 2 - doing (korsakowian) documentary

The Korsakow projects created in step one will lead into the second part of the project, in which [kw2024] or parts of it will be the basis to underpin dialogue with others who have had similarly long and formative experiences with doing korsakowian documentary. The aim will be to share experiences of tacit know-how (Nelson, 2013, p.43) and to make this visible. The material from Step 1 will be the basis for unstructured interviews, which will be recorded on video and related to each other via Korsakow. This third Korsakow project with the working title [Doing Documentary] is deliberately vague at this stage, it will be defined more precisely over time and with the learnings and insights from the previous doings. In identifying who to enter into dialogue with, I will adopt Tim Ingold's concept of 'skilled practitioners', drawing on expertise from within the i-Docs (interactive documentary) community of which I have been an active member since the first i-Docs symposium in 2011. My intention is to enter into in-depth dialogue with between 3-5 i-docs practitioners and to potentially also include one or two skilled practitioners from within the YouTube community, whose approach I consider to be korsakowian. I see this as relating to a specific group of practitioners within YouTube who are open to following new and surprising trails of thought that can be opened up through the mechanism of the platform. I appreciate that I will be making value judgements here but, as a skilled practitioner myself, I will be explicitly seeking to enter into dialogue with others working in similar ways to me, in order to explore the tacit knowledge that we potentially share.

Step 3 - critical reflection

Alongside the Korsakow projects I will write a 40,000 word thesis, putting the research and new knowledge that will be embedded into the Korsakow work itself into wider context and critical reflection. Here I will make the insights gained regarding the methods from my PaR explicit - bringing forth tacit knowledge and making it accessible to others. I will do this primarily through methods and from a position of being both the inventor of Korsakow and a highly experienced practitioner. However, I will also continue to engage critically with the literature from anthropology, documentary, cybernetics and systems theory from an inside position of being a skilled practitioner with Korsakow. This is about the relationship between inductive and deductive research. With my reading and prior experience as a skilled practitioner I am developing a hypothesis (deductive) which is informed by putting my reading into dialogue with my practice to date. Then I will test this against practice and by putting my hypothesis into dialogue with other skilled practitioners (inductive). Finally, I will revisit my theories to see what sticks and what new theories might be needed to help better think through the tacit knowledge that I have uncovered.

A more detailed description of the individual steps of my PaR Project is given in the section "PaR. Project(s) Plan" to be found in the appendices.

I will be starting to work on my ethics application and data management plan as the very next step after my viva.

I am confident that I will find skilled practitioners with whom to enter into an extended dialogue, as I already have a strong network to build on. My intention is to enter into a series of ongoing conversations with my selected participants. However, my methods

and working practices with Korsakow are flexible, in that if somebody pulls out or doesn't want to participate beyond an initial conversation, this can be accommodated without detriment to the project as a whole. My use of Kolb's learning cycle (Kolb and Kolb, 2013, p.8), as explained in the more detailed appendices, will enable an iterative approach to be taken which can adapt to unforeseen circumstances.

CONTEXT

What I am looking at, and what I am not looking at?

In the wider field of interactive documentary, many studies focus on what the affordances of these new media formats are in the sense of “the creative possibilities of media technologies” (Weidle, 2019, p.17; Gaudenzi, 2013; Soar, 2014; Aston, Gaudenzi and Rose, 2017) or “how we think through digital media about an increasing digital world” (Hudson and Zimmermann, 2015, p.14).

I could not find any study that zooms in specifically on how the practice of doing korsakowian documentary affects those who are involved in this process of doing.

Research in the field of interactive documentary revolves primarily around the questions: What is it? What does it afford? What can it be used for?

I would like to add to these questions another one:

How does *it* affect and what is the longer term effect of this?

I am specifically interested in those who have been working intensively with korsakowian approaches to interactive documentary for years, who have experienced the process of doing *it* as authors **and** viewers.

What is my field?

My field, therefore, is interactive documentary but I am looking at a specific aspect within that, which is korsakowian approaches.

In this sense, I am not looking at the full breadth of all that interactive documentary encompasses (eg. VR, AR, or other forms of digital storytelling), but am looking only at korsakowian forms. I am, however, also interested in looking at certain platforms which are not generally included within interactive documentary but which I consider to have korsakowian qualities. For example, the synergies between Korsakow and YouTube might not seem obvious at first but there are definitely YouTubers who think and practice in a korsakowian way, which could bring an additional dimension into the discourse on doing documentary.

What are the important influences for my research?

Literature that deals with the question of relations has proved helpful for my research e.g., Adrian Miles, Bruno Latour, Tim Ingold, Karen Barad, Gilles Deleuze, Fritjof Capra, Humberto Maturana, Francisco Varela, Paul Watzlawick, Heinz von Foerster (to name just a few). These thinkers all look at the world in a dynamic and interconnected way. They do not so much place their attention on categories and objects, as on flows and movement between and across more dynamic and less fixed entities.

On the other hand, the approach of focussing on objects, such as specific documentaries, proved to be less helpful for me. In other words, methodologies that search

for categories through which a better understanding can be achieved, as for example Bill Nichols with his modes of documentary (2017), and Sandra Gaudenzi with her modes of interaction (2013) are not where my interest lies. I can see that these modes or categories can be helpful when coming from other perspectives, but I am more interested in the flows and relations between humans, computers and the expressions that can result from this. This leads me to Bruno Latour's work with networks (2005) and Tim Ingold's work with meshworks (2015), as well as to new materialist approaches (Miles, 2014).

Korsakow does not work with categories, but with keywords, which, although often understood similarly by people who use Korsakow, at least initially, are something quite different. I don't want to go into this in more detail here, but just this: keywords, unlike categories, are overlapping by default. Or as Nelson would say, imbricated (2013, p.33).

That is why I feel very much at home, for example, in Cybernetics and Systems Theory, which assumes that the 'thing' as such does not actually exist. According to systems theory (and this coincides with my experience with Korsakow), things are always, on closer examination, systems of relationships of smaller things, which in themselves are systems on closer examination. Consider an organism, which can be understood as a system of organs, the organs as a system of cells, the cells as a system of molecules, which in turn can be understood as a system of atoms, etc. A definite end (although repeatedly asserted) is not in sight.

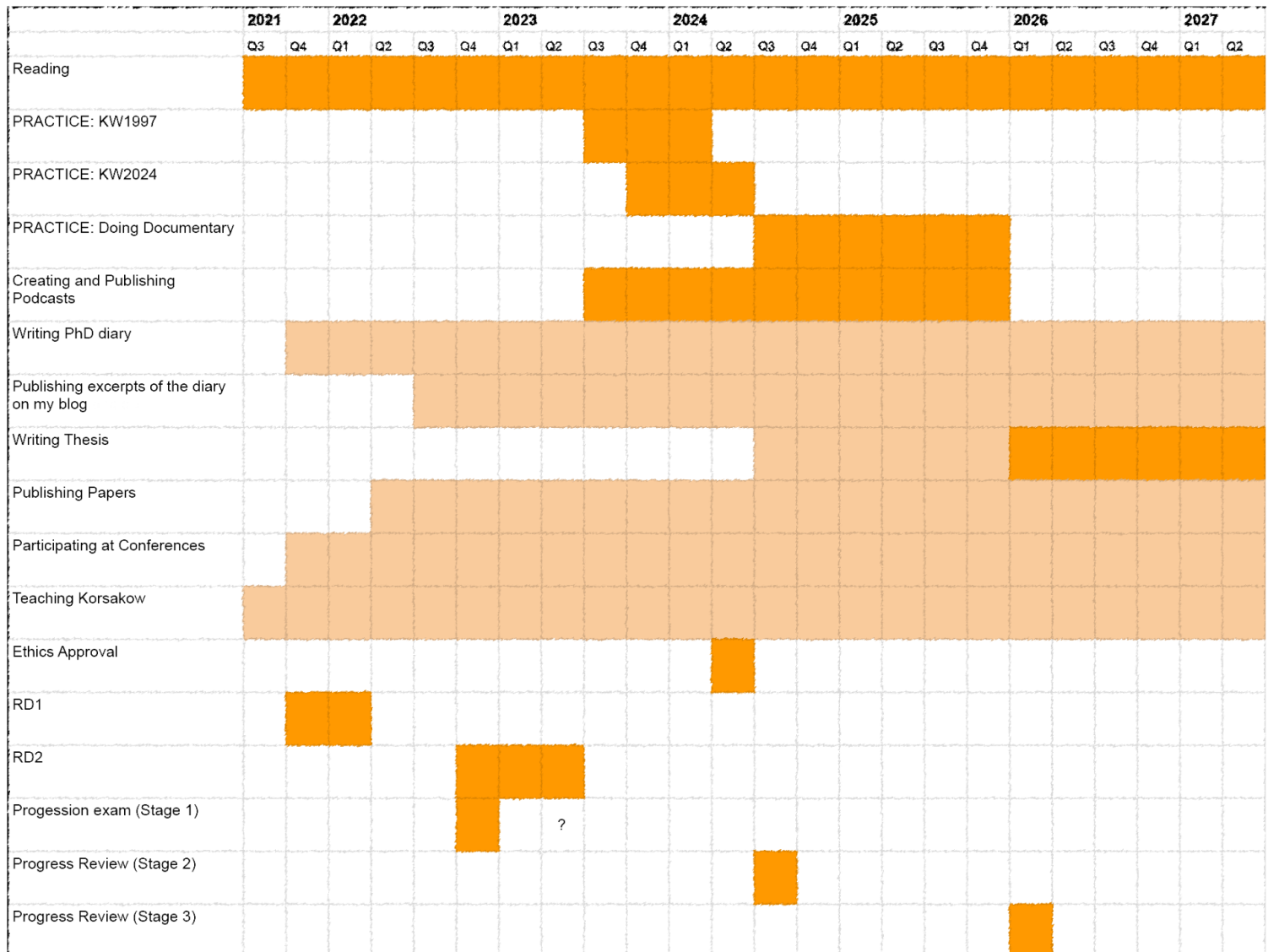
So everything must actually be conceived as a system of references, and it is only to simplify matters that we give the systems names and regard them as things. An important advantage of named things is that they disguise the underlying complexity and thus make the world navigable in the first place (cf. Hoffman, 2019).

Why do I think this is important?

I think it is important to have awareness of systems and of how storytelling veils complexity, because behind the veil are the white spots on the map, the places to look for if you want to discover new thought. The korsakowian approach is about discovery and surprise, about working with film to create new connections and synergies, thus making it a powerful tool for thought. One could argue that our brains are already very good at discovering patterns in noise. A korsakowian approach facilitates the discovery of new connections and patterns between seemingly disconnected 'things' and finding signals in something that was previously considered to be noise. Different people identify different connections. Korsakow therefore stimulates creative and innovative thinking, but I also think that it supports a certain mindset of humility, as through Korsakow it becomes obvious that things are connected in countless ways. As a result my hypothesis is that 'korsakowian doers' realise that there are many different ways of thinking, and of being in the world.

It is the validity of this statement that I wish to test through my thesis, bringing forth my own tacit knowledge and putting it into dialogue with other like-minded practitioners. I will continue to inform my understanding through further reading and consideration of wider work on affect, evolving literacies and expanded approaches to documentary. I see these as being as much about the process of *doing documentary* as they are about the products that are produced, with my PaR bringing new insights into these debates.

TIMELINE



BIBLIOGRAPHY

Aston, J. (2022) Interactive Documentary: Re-setting the Field. *Interactive Film & Media Journal* [online]. 2 (4), pp. 7–18.

Aston, J. (2016) Interactive documentary: What does it mean and why does it matter? [online]. Available from: <http://i-docs.org/interactive-documentary-what-does-it-mean-and-why-does-it-matter/> [Accessed 20 June 2023].

Aston, J. (2003) *Interactive Multimedia: an investigation into its potential for communicating ideas and arguments*. PhD Thesis, Royal College of Art.

Aston, J. and Gaudenzi, S. (2012) Interactive documentary: setting the field. *Studies in Documentary Film* [online]. 6 (2), pp. 125–139.

Aston, J., Gaudenzi, S. and Rose, M. (2017) *I-Docs: The Evolving Practices of Interactive Documentary* [online]. Columbia University Press. Available from: <https://www.jstor.org/stable/10.7312/asto18122> [Accessed 3 April 2022].

Aston, J. and Odorico, S. (2022) Interactive documentary: its history and future as a polyphonic form. In: *Interactive Documentary: Decolonizing Practice-Based Research* [online]. Routledge. Available from: <https://www.routledge.com/Interactive-Documentary-Decolonizing-Practice-Based-Research/Ryan-Staton/p/book/9781032001319> [Accessed 24 February 2022].

Brasier, H.R. (2015) *Assembling Observations: Transformations of Avant-Garde Documentary in Korsakow* [online] Tools and Processes for Creative Practice. Available from: https://www.academia.edu/12302611/Assembling_Observations_Transformations_of_Avant_Garde_Documentary_in_Korsakow [Accessed 14 November 2022].

Capra, F. (1997) *The web of life: a new scientific understanding of living systems* 1. paperback ed. New York, Anchor Books, Doubleday.

Deleuze, G. and Guattari, F. (1989) A Thousand Plateaus: Capitalism and Schizophrenia. *Journal of Interdisciplinary History* [online]. 19 (4), p. 657.

Eco, U. (1989) *The open work*. Cambridge, Mass, Harvard University Press.

Favero, P. (2013) Getting our hands dirty (again): Interactive documentaries and the meaning of images in the digital age. *Journal of Material Culture* [online]. 18 (3), pp. 259–277.

Gaudenzi, S. (2013) *The Living Documentary: from representing reality to co-creating reality in digital interactive documentary* [online]. Available from: https://www.academia.edu/69282290/The_Living_Documentary_from_representing_reality_to_co_creating_reality_in_digital_interactive_documentary [Accessed 24 January 2022].

Glanville, R. (2014) *How design and cybernetics reflect each other* [online] Proceedings of RSD3, Third Symposium of Relating Systems Thinking to Design. Oslo, Norway. Available from: https://www.youtube.com/watch?v=tTN_9mJIWNw [Accessed 26 February 2022].

Glanville, R. (2004) The purpose of second-order cybernetics. *Kybernetes* [online]. 33 (9/10), pp. 1379–1386.

Grasseni, C. and Gieser, T. (2019) Introduction: Skilled mediations. *Social Anthropology* [online]. 27 (1), pp. 6–16.

Hight, C. (2017) Software as Co-Creator in Interactive Documentary. In: Aston, J., Gaudenzi, S. and Rose, M., eds. *i-docs: The Evolving Practices of Interactive Documentary*. [online]. New York, Columbia University Press, pp. 82–96. Available from: <https://www.degruyter.com/document/doi/10.7312/asto18122-011/html> [Accessed 25 October 2021].

Hoffman, D. (2019) *The Case Against Reality: Why Evolution Hid the Truth from Our Eyes*. W. W. Norton & Company.

Hudson, D. and Zimmermann, P. (2015) *Thinking through digital media: Transnational environments and locative places*. Springer.

Ingold, T. (2018) 'Anthropology: why it matters' Why it matters. Medford, Polity Press.

Ingold, T. (2011) *Being alive: essays on movement, knowledge and description*. London ; New York, Routledge.

Ingold, T. (2015) *The life of lines*. London ; New York, Routledge.

Kolb, A.Y. and Kolb, D.A. (2013) A Comprehensive Guide to the Theory, Psychometrics, Research on Validity and Educational Applications. p. 233.

Kornmann, J., Kammerer, Y., Zettler, I., Trautwein, U. and Gerjets, P. (2016) Hypermedia exploration stimulates multiperspective reasoning in elementary school children with high working memory capacity: A tablet computer study. *Learning and Individual Differences* [online]. 51, pp. 273–283.

Latour, B. (2005) 'Reassembling the social: an introduction to actor-network-theory' Clarendon lectures in management studies. Oxford ; New York, Oxford University Press.

Miles, A. (2016) I'm Sorry I Don't Have a Story: An Essay Involving Interactive Documentary, Bristol and Hypertext. *VIEW Journal of European Television History and Culture* [online]. 5 (10), p. 67.

Miles, A. (2014) Materialism and Interactive Documentary: Sketch Notes. *Studies in Documentary Film* [online]. 8 (3), pp. 205–220.

Miles, A. (2015) What is it for, if not story? [online]. Available from: https://www.academia.edu/15099940/What_is_it_for_if_not_story [Accessed 24 February 2023].

Murray, J., Lashley, M.C. and Creech, B. (2017) Voices for a New Vernacular: A Forum on Digital Storytelling - Interview with Janet Murray. *International Journal of Communication*. 11.

Nelson, R. (2013) *_Practice as research in the arts: principles, protocols, pedagogies, resistances_*. Houndmills, Basingstoke, Hampshire ; New York, Palgrave Macmillan.

Nichols, B. (2017) *Introduction to Documentary, Third Edition*. Indiana University Press.

Rheingold, H. (2000) *Tools for thought: the history and future of mind-expanding technology* 1st MIT Press ed. Cambridge, Mass, MIT Press.

Schleicher, A. (2022) 'Building on COVID-19's Innovation Momentum for Digital, Inclusive Education' International Summit on the Teaching Profession [online]. OECD. Available from: https://www.oecd-ilibrary.org/education/building-on-covid-19-s-innovation-momentum-for-digital-inclusive-education_24202496-en [Accessed 9 April 2023].

Soar, M. (2014) Making (with) the Korsakow System: Database Documentaries as Articulation and Assemblage. In: Nash, K., Hight, C. and Summerhayes, C., eds. *New Documentary Ecologies. Emerging Platforms, Practices and Discourses* [online]. London, Palgrave Macmillan UK, pp. 154–173. Available from: http://link.springer.com/10.1057/9781137310491_11 [Accessed 16 November 2021].

Venturini, T. (2012) Building on faults: How to represent controversies with digital methods. *Public Understanding of Science* [online]. 21 (7), pp. 796–812.

Venturini, T. (2010) Diving in magma: how to explore controversies with actor-network theory. *Public Understanding of Science* [online]. 19 (3), pp. 258–273.

Von Foerster, H. (1984) 'Observing systems' Systems inquiry series 2nd ed. Seaside, Calif, Intersystems Publications.

Watzlawick, P., ed. (2006) *Die erfundene Wirklichkeit: wie wissen wir, was wir zu wissen glauben?; Beiträge zum Konstruktivismus* Serie Piper Ungek. Taschenbuchausg., 18. Aufl. München Zürich, Piper.

Weidle, F. (2019) Gaining control over the loss of it. Software as focusing media in digital visual ethnography. *Social Anthropology* [online]. 27 (1), pp. 17–32.

Weidle, F. (2020) *Of Trees and Clouds: Software-Mediated Visions in Documentary and Ethnographic Filmmaking Practices* 1st edition. V&R Unipress.

Wiehl, A. and Lebow, A. (2016) Evidence from Living Documentary Archives. Authorship, Curation and editing in Interactive Database Documentary. An interview with Alisa Lebow on her interactive meta-documentary FILMING REVOLUTION. [online]. Available from: <https://mediarep.org/handle/doc/4397> [Accessed 3 April 2022].