Article

Transmedia Storytelling: Addressing Futures Communication Challenges with Video Animation

Joern Buehring[1],[*], Nury Vittachi[1]

[1]*The Hong Kong Polytechnic University, School of Design, Hung Hom, Kowloon, Hong Kong, China*

Abstract

Transmedia storytelling represents a process of communicating integral parts of a narrative across multiple delivery channels. Within the futures field this technique is being recognized as a potential instrument when determining how to present information in futures-oriented projects. Foresight professionals and researchers are often faced with the challenge of communicating large amounts of data generated through qualitative methods such as interviews, interpretive narration, and oral history at the end of a research project. While the process of disseminating research is every research's obligation, communicating key insights gained from futures-related research, and presenting these in other formats that effectively extend the research results and new knowledge gained to nonexpert audiences, remains a key challenge. The purpose of this research is to address this gap in the literature by answering the question of how to communicate futures scenarios to nonexpert audiences, corporate decision-makers, and their organizational teams using transmedia storytelling techniques and video animation as a medium. The four-step process presented in this paper is based on a use case in which academics and designers, at a design school, took the findings of a financial services futures study and applied storytelling and visualization techniques to bring futures scenarios to life with video animation.

Introduction

Effectively reaching non-expert audiences, corporate decision-makers, and their organizational teams in today's complex media environment is made especially challenging when communicating visions about the future (von Stackelberg & Jones, 2014). In social science and the field of futures studies, foresight practitioners and researchers alike are often confronted with large amounts of data generated through qualitative methods such as interviews, interpretive narration, and oral history. Modern media has made content easily accessible via many different forms, and the types of media best suited to engage decision-making audiences to think and act on the future, necessitates a strategic communication paradigm shift if the objective is to learn to navigate disruption, make sense of complexity, and deal with uncertainty to envisage the medium and longer-term futures of social and technology environments (Buehring & Liedtka, 2018). In the futures studies field, scholars Milojević and Inayatullah (2015) reported on the potential of narrative storytelling as an effective means for futures thinking and strategy development. For instance, calling on foresight professionals to adopt storytelling techniques as a means to engage audiences on the crucial issues facing 21st century society, von Stackelberg and Jones (2014, p. 58) argued that much can be learned from science fiction writers when it comes to shape perceptions about the future and move people to act. Transmedia storytelling, a concept first introduced by Henry Jenkins' seminal work "Convergence Culture" (2006), represents a process of communicating integral parts of a narrative across multiple delivery channels. As scholars have observed, transmedia storytelling, or narrative practice, has been recognized as a potential instrument

*   Corresponding author.
    E-mail addresses: Joern.buehring@polyu.edu.hk (J. Buehring).

65

when determining how to present information in futures-oriented projects (c.f. Milojević & Inayatullah, 2015).

As we first reported in an earlier version of this paper presented at the Academy of Design Innovation Management conference on June 19, 2019, communicating the findings at the end of a research project is every research's obligation (Berg, 2001). In academia, the dissemination of the authors work traditionally serves research communities, who are reached through journal articles and conference paper presentations (Barnes, Clouder, Pritchard, Hughes, & Purkis, 2003). However, dissemination of key insights gained from academic research and presenting these in other formats that effectively extend the research results and new knowledge gained to nonexpert audiences, is many times forgotten (Dahlstrom, 2014; Troman, 2001). Top executives in industry know that they can profit from research findings, sometimes directly. Nonetheless, scholarly literature focused on dissemination strategies able to illustrate academic research findings to business stakeholder communities is still relatively scant (Phillipson, Lowe, Proctor, & Ruto, 2012; Starkey & Madan, 2001).

The purpose of this research is to address this gap in the literature, by answering a core research question: "How to communicate futures scenarios to nonexpert audiences, corporate decision-makers, and their staff using video animation as an effective medium"? Specifically, the aim is to contribute to improved practice and the impact of foresight by providing an exemplar of a transmedia research dissemination process in conceptual and operational context, using narrative storytelling and video animation as a medium of communicating about the future. That is, for design and foresight researchers to diffuse the research finding's most salient features outside of the traditional journal publication setting, could the presentation of narratives in an accessible video animation become an effective medium in transmedia storytelling?

The paper begins with introducing the background that motived this research, before introducing what can be learned from the design and foresight literature with regard to the core research focus in narrative foresight, storytelling, and visualization context, as the relevant areas of inquiry. The paper then outlines steps in transforming written research into animated futures scenarios using narrative storytelling to deliver ideas (Dahlstrom, 2014; Milojević & Inayatullah, 2015; Price, Matthews, & Wrigley, 2018). The process is based on an applied research use case in which academics and designers, at a design school, took the findings of financial services futures studies and deployed narrative storytelling and visualization techniques to bring futures scenarios to life with video animation. Finally, key observations are presented of the applied process framework that can help improve the researcher's understanding of theoretical and practical considerations of presenting research findings through video animation as an integral part of communicating futures stories across channels, and to a boarder audience of nonexperts.

Background to project

Complexity and hyper-uncertainty in business, increasingly effecting all industries, are some of the elements that present the context in which organizations view their current and future state. Managing the allocation of resources and capital funding into projects are becoming increasingly difficult for stakeholders responsible to balance short-term objectives, with the longer-term strategic direction needed to adapt and survive amid accelerating change in the external macro-business environment (Buehring & Liedtka, 2018; Hamel & Valikangas, 2003; Vecchiato, 2015; Wolf & Floyd, 2017). To tackle these challenges, decision-makers are called upon to develop their organizational learning by practicing systematic futures thinking to anticipate scenarios of the future (Adegbile, Sarpong, & Meissner, 2017; Rohrbeck, Battistella, & Huizingh, 2015). Developing systematic futures thinking and forward-looking research capabilities can help organizations to envision how seeds of change from today's fringes might make way into the mainstream and how, conversely, the elements from today's mainstream might fall to obsolescence (Cagnin, 2018; Slaughter, 2002). Areas deeply concerned with changes in the external environment, in both theory and practice, are foresight and design - each focused on thinking about, and gaining a better understanding of the future (Buehring & Liedtka, 2018; Cagnin, 2018; Gabrielli & Zoels, 2003; Heger & Rohrbeck, 2012; Wilkinson, Mayer, & Ringler, 2014).

Integrating design with foresight

Just as the foresight discipline comprises of a wide range of approaches and activities, such as trend forecasting and storytelling techniques designed to help business stakeholders envision opportunities in the future (Inayatullah,

2008). The practice of design in business encompasses visual communication tools and processes that engage interdisciplinary stakeholder teams responsible for creating sustainable value propositions that ensure the organization's future (Bohemia, Rieple, Liedtka, & Cooper, 2014; Buhring, 2017; Heskett, 2001; Lojacono & Zaccai, 2004). Traditionally, foresight processes focus on the contingency as its entry point, building future scenarios based on key trends and uncertainties in order to lay out a set of plausible futures. Whereas in design, possibilities are taken as the starting point, laying out a portfolio of concepts based on the question "what if anything were possible?" Where the design thinking realm is likely to generate preferred scenarios (in the eyes of users), foresight generates plausible scenarios (based on trends and uncertainties). Similarly, design has the ability to envision, visualize, and communicate things that do not yet exist (Candy & Dunagan, 2017; Dunne & Raby, 2013; Eggink & de la Bruheze, 2015).

The development of futures scenarios is equally central to both foresight and design practices. While effectively disseminating insights derived from, e.g. trend analysis, expert consensus (cf. Delphi method), simulation, causal modelling or other forecasting techniques, the outputs can vary between written text and/or numerous visualization styles. Data visualization, as a communication medium for storytelling, is considered important when the research team is not the same as the one that will have to act and make decisions based on the reported data findings (Vaughn et al., 2013). Equally, stories have proven as an effective way of conserving and passing on information, and framing data through visualization techniques and images as sequences of events, may provide audiences with stronger memories (Austin, 2010; Dahlstrom, 2014; Dator, 2009; Ma, Liao, Frazier, Hauser, & Kostis, 2012).

Thus, foresight approaches have called for broader inclusion of more "non-expert" stakeholders (Cuhls, 2003) and have evolved to incorporate more of a social dimension (Chan & Daim, 2012). Preferable futures, Voros (2003, p. 14) notes, "are more emotional than cognitive", and Inayatullah (2008) argued for practicing futures thinking to enhance employees' confidence that they can create the future that they desire. To this end, however, precious little guidance exists on how to apply the logic of narrative storytelling and visualization as understood by fiction writers, designers, or animators to the creation of outputs that bring futures scenarios to life (Raven & Elahi, 2015).

Transmedia / Narrative storytelling

Transmedia storytelling represents a process of communicating integral parts of a narrative across multiple delivery channels. A common phrase "the whole is greater than the sum of parts" is attributed to the Greek philosopher Aristotle who defined the rhetorical whole and thus the modern concept of synergy. Comparably, the duality of purpose in transmedia storytelling lies in creating synergies between content and the participatory experience for the audience, which von Stackelberg and Jones (2014, p. 58) proposed can be an effective approach to sense-making in the futures field.

Based on established concepts from design and foresight literature theory, narrative storytelling focuses on the stories individuals, organizations, states and civilizations tell themselves about the future (Milojević & Inayatullah, 2015). Ramos however stressed that futures researchers must begin with the appreciation of the ways by which people perceive their world, and, moreover, that this cannot be fully understood without taking into account the consciousness of the individual's connectiveness with culture (Ramos, 2006, p. 1121). To make sense of the world around us, stories can teach, and entertain us, and give us insights into history, and the metaphors that explain our knowledge of the world. Telling stories can also help shape the future; McDowell (2019) calls this 'worldbuilding', which is a rhetorical and communicative practice of speculative fiction. Contextually, this study was informed by prior futures research, which transpired around cultural significances (e.g. Chinese consumers), geography (e.g. Greater China) and place-based phenomenon, and the knowledge derived from organizational stakeholders (e.g. Wealth Management and Private Banking) and their use of information shaped by epistemic practices to understand and enact their worlds (Choo, 2002).

In this research, the study was focused at the intersection of three areas of inquiry: design and foresight, and methods such as narrative storytelling and data visualization, where the process of communicating the findings derived from a futures study or project to nonexpert audiences, is based on the logic of storytelling as a prerequisite to provide visual representation of narrative fiction.

A narrative fiction model, comprising of idea, character, setting, storyboard, composition, technique and colour (cf. Maass, 2002), is used to present data in a format that is more readily accessible yet aimed to be much richer than typical "infotainment". The motivation for adopting a video animation style as a medium is that people in

modern societies have undoubtedly become more used to dealing with content on digital displays and screens (Feather, 2013). A century ago, almost all popular fictional entertainment was consumed in books (Blundell, 1988; Thompson & Bordwell, 2003). Electronic storytelling (in the shape of the radio drama or news reports) was in its infancy. Education, similarly, was delivered almost entirely in the form of a teachers standing over textbooks, and that state of affairs continued throughout the 20th century. But there have been rapid changes in the past few decades. Today, the default medium of sharing content is electronic and visual: people watch stories unfold on television, on their computers, on movie screens and even on their telephones (Dahlstrom, 2014; Introna & Ilharco, 2006; Rosen, 2004). Conversely, conversations are more likely to happen by digital means, through text or social media, than by voices (Dahlstrom, 2014).

In an organizational environment, the context in which this design foresight research took place, the objective of practicing futures thinking and foresight is to decide on what decisions management can make today to create a best possible future for the organization (Horton, 1999; Slaughter, 2002). Equally important in strategic foresight practice, however, is to stimulate not only futures thinking through scenarios and narrative storytelling, but to provoke a call to action from the intended target audience once research is completed, and insights have been disseminated (Jarva, 2014; Slaughter, 2002; Vaughn et al., 2013). As Michel Godet, a pioneer in the field of futures studies pointed out:

> Even though I introduced methods into the field of futures studies, I think that scenarios are overdone. Making scenarios is fine, but so what? Once a scenario is drafted, what do we do to take action, to make whatever we want to happen or not to happen? We should really be turning them into a project-based approach. (Godet, 2012, p. 47).

The purpose of using animated video in this design foresight research was to transform the written report findings into narratives and visuals, while at the same time giving the data a new shape to engage and make it acceptable to a nonexpert audience of corporate decision-makers. Empirical studies support narrative and visual processing as generally more efficient; for example, Glaser, Garsoffky and Schwan (2009) describe four important factors in narratives, namely dramatization, emotionalization, personalization, and fictionalization, which makes it an effective form of knowledge acquisition. Stories can change or enhance the observers' perceptions of futures, seeing themselves in different perspectives, and identifying their "self" by interpreting and completing the story in his or her head (Ramos, 2006; Sametz & Maydoney, 2003). Moreover, as Wyer (2014) highlights, narrative cognition is considered the default mode of human thought, which provides the structure and underlying foundation for memory. Ramos (2006) argued that the future can only be understood by understanding worldview and ideology, and the perspectives people hold as this mediates the communication of foresight. Hence, the integrating foresight and design principles in forms of 'narratives and storytelling futures scenarios' manifests a basic hypothesis that providing the user audience (i.e. corporate decision-makers) with a format of comprehension, is to gain a deeper understanding of change, and acting on the implications of possible realities emerging in the macro-business environment.

Applying Design to Foresight Outputs for Non-Academic Audiences

In this paper, a real-life use case featuring a major research project undertaken by a university in partnership with a global leader in wealth management, is presented. Large-scale research produced a significant amount of data over a long period of time, as it was really a series of futures study projects spanning over a three-year timeframe. Traditionally, findings would be shared with senior executives in printed report formats. While each research outcome produced data resulting from varying forecasting techniques designed to help envision trends in wealth management and private banking scenarios over the 2030 time horizon, the types of median deployed to communicate visions of the future typically comprised of posters, presentations, sketches, and audio files. A common thread across the median was the use of user-centric scenarios to describe potential events in the future. In the 2018 incarnation of this project, a decision was made to produce a portion of the findings in the form of an animated video - and thus applying a transmedia storytelling approach to making the most salient findings "consumable" by a larger and more varied group of staff and internal stakeholder audience.

During this process, a great many discoveries were made about the necessary steps, which have to be taken to

make the most of this modern medium, and to successfully bridge these two worlds - or indeed, two sets of two worlds. That is, the communication-style gap between academia and industry had to be bridged, as did the gap between printed data and dynamic images. Furthermore, steps in this process may be considered to have transferable value for design research, futures scholars, and practitioners involved in strategic design and innovation. The following table (1) describes the four process steps taken in this project:

Table 1: Four process steps in video animation design

Process Step	Activities and processes	Key considerations

1. **The Challenge**	• Outlining important issues at the beginning.
	  o What is the present form of the report data?
	  o Who are the audience members who will ultimately "consume" the key findings?
	• Transitioning from producer of a research report, to producer of a short film (e.g. a timeline for preparing a traditional research report is very different from the timeline for creating a movie production.)
	• Identifying the production stages, and their specific objectives.
		• Research Data
		• Technological advances

2. **The Exploration**	• Clarifying the aims and objectives. • Identifying key activities relating to the writing, editing and filming process. • Familiarization with the research findings; identifying the most salient features of the research data. • What form should the output take e.g. visual lecture, character-based storytelling, narrative animation? • Creative options available, and best formats (delivery systems) to meet the desired outcome(s). • The length of story / narrative animation, respective of target audiences. • Available resource (e.g. time, talent, materials, financials). • Learning from other disciplines.	• Choosing the genre
3. **The Interactions**	• Issuing of key research data sets (most salient features) to project stakeholders, and seeking feedback / identify remaining issues. • Project Management: Allowing for multiple iterations between key project stakeholders incl. secondary parties, such as the writers, the animators, and the actors. • Time management: Allowing ample time for extrapolating the most compelling data features. • Developing the script. • Selecting the animation type format.	• Preparing the script • Selecting the data • Applying narrative techniques • Choosing an animated style format
4. **The Delivery**	• Rendering and sequencing the video animation. • Issuing of video to project stakeholders, and seeking feedback / identify any remaining issues. • Fine-tuning video animation, sound track, and any additional opening/closing messages	• Gathering audience feedback

Following, are the detailed explanations of each process step:

Step 1 - The challenge

Research comes in two main forms: quantitative and qualitative. In simple terms, the first involves the collection of numbers and the comparison of data; the second involves interviews, discussions and theoretical projections. In this particular project, there were both types of data, but the emphasis was on the second. Since the aim was to consider future scenarios, there was no actual numerical data available about financial services in the distant (2030) future. The project depended on taking current data available through secondary research, and exploring alternative futures

and directions inspired from prior research, which produced a set of futures scenarios developed through Delphi as a proven foresight technique in futures studies. Hence, the findings were necessarily generalized and non-specific. Notwithstanding the rigorous nature of research, anticipation of possible futures must be rooted in firm ground, hence copious amounts of data were analysed and synthesized. Consequently, a portfolio of materials considered as important for the intended audience must be gathered before any work on the video deliverable can begin. In this particular project exemplar, the relationship between the academics and the industry representatives had already progressed over a 3-year timeframe, hence, substantial amounts of documented data was available.

Research data

The research data generated in prior research (i.e. project 1, project 2) provided valuable insights and trends, additionally, illuminating the early signs of change that would substantially determine alternative futures as influenced by the numerous projected changes in modern society. For example, business activities in the future would involve human face-to-face interaction for some functions, and automated interactions for others. The general move towards convenience would continue. Individuals would expect to be able to use technology to do business anytime, anywhere, and anyhow. And, as with any commercial activity, there would need to be a focus on recruiting future clients at a young age and being aware of their changing needs. There were worries, too. For instance, if more activity was done through digital screens, the relationship-building process between clients and representatives of the industry might be disrupted or destroyed. The change of demographics was also considered key; especially relevant to the rise of Asia's upper middle class population. Thus, in the geographical context of this study, gaining a deeper sense of the emerging needs and aspirations of Chinese consumers was considered important.

Technological advances

Making sense of uncertainty is particularly relevant when technological advances, such as artificial intelligence, machine learning, big data analytics, and hybrid human-machine systems could play a vital role for mature organizations to sustain the effectiveness of their strategic innovations, and the enterprise itself. Hence, technology roadmaps as potential future enablers of client-centric services and experiences was a critical focus in this futures study project. This raised numerous questions that were not easy to answer. For example, if business core functions were going to be more automated, would there be a need for expensive physical buildings on High Street corners? How much of the physical infrastructure of businesses might disappear entirely? If computers did the back-office work, would there be a need for so many staff performing administration? Moreover, if a foresight study is taking a ten or twenty years outlook into the future, what can be realistically anticipate will happen? Technology is generally designed to make life easier. As the first step in defining the challenges, this futures study project was encouraging as the data derived from previous research provided many thought-provoking data sets that would lend themselves perfectly to visual interpretation.

In the second stage, the objective was to explore the ways to select and deliver the information.

Step 2 - The exploration

The exploration of formats for this project began with researchers having to accept a few simple facts: books are long, movies are short. A film contains a fraction of the amount of data in a book. For example, a Harry Potter movie may be about two hours long. But a Harry Potter audio book can take more than 20 hours to read out loud. So in that sense, films can never deliver as much data as books. But in another sense, the opposite is true. The adage that a picture speaks a thousand words (Magill, 1989) is valid even in its most literal interpretation. One could easily expend a thousand words describing a painting by Hieronymus Bosch and fail to do it justice. In terms of delivery of information, a filmed image has thousands of pixels of data, and may deliver more information (albeit of a different kind) than a chapter of a book.

Furthermore, there is a difference in audience reach and audience impact. A chapter of a book can deliver a large amount of information to the person who sits down and studies it. That may be a small number of people. Books are not passive entertainment - they have to be actively read by participants who have to be willing to do the work, so readers are self-selected enthusiasts for the material. In contrast, movies are more easily accessible, so can find wider audiences, and if well put together, can have as much impact as books (Ma et al., 2012). A short film can have

enormous emotional powers. Still, this is not a clear win for movies. Book readers are a self-selected group of people seeking information (data) and willing to work to obtain it, so books end up doing their job well. Movies, in contrast, reach a wider but less focused, less committed audience. Viewers are not asked to work as hard as readers, and thus may reach a lower level of engagement.

Choosing the Genre

Once it was acknowledged that the film would deliver a relatively small, yet critically important selection of the most salient features derived from previous studies, and newly added findings, the next choice-making process was focused on the genre. A futures project would naturally require images of things that don't yet exist. Working within the parameters and financial constrains typical of any research project, it would clearly be impossible to make a live-action movie in a science-fiction mode. The costs associated with producing a short animation movie can vary greatly, when comparing a professional 3D animation production that produces Pixar-style movies with a much more cost-effective 2D animation. While budget constraints are inevitable, the real emphasis in the choice-making process should be placed on illuminating preferable or desirable futures concepts and emerging ideas, which the project stakeholders have carefully assessed and selected based on the research dissemination aims and objectives. However, it must be emphasized that animation project teams opting for a 2D animation format to present their futures study findings, should allow for stakeholder expectation to be managed, as limitations on the animation quality and the length of video requires a balanced approach (Vaughn et al., 2013). Secondary research into the length of applicable video animations, and informed by well-reviewed short animation films in a similar genre, were typically between two and five minutes in length.

In this use case, a small team of animators was engaged to produce a 5-minute animated video. Step 3 in the process explored the interactions between all parties concerned, i.e. academics and the industry representatives, but also the secondary parties, such as the writers, the animators, and the actors.

Step 3 - The interactions

Professional moviemakers speak of a system known as "the pipeline"; its purpose is the ordering of the processes into an efficient linear timeline (Mullen & Andaur, 2010). The script is written, reviewed and finalized before any production work starts. The video work is then done, and filmed (animated) segments are edited and reviewed and approved before any final rendering is performed. The aim of the pipeline process is to prevent changes after filming or rendering have begun, and thus avoid creating frustration and wasted work.

Preparing the script

Frequent meetings and exchanges between academics and industry representatives, and between academics and animators, were needed. Script ideas were circulated and presented in reiterative form; the logical idea for the "future narrative" script using prior research as source materials, was to show a day in the life of a person doing his or her wealth management banking in the future (i.e. 2030 time horizon). This format would be a simple translation of the key ideas that have transpired from the academic futures studies reports, and converting these into a visual presentation showing a typical day of an individual in the future. However, experiences in this regard have shown that extreme predictions (i.e. events yet to be experienced) can be open to mockery (Tetlock, 1999). Lest not forget that people have been producing cartoons predicting the future since at least the 1950s - showing citizens going to work in flying cars, and so on. As a possible counter measure, design teams could insert detectable elements of self-awareness in the animation cartoon - if the work included a degree of ironic self-mockery, it was less likely to be attacked. For example, in this case study, the opening scene was designed to a 1950s style "day in the life of a future citizen" element, thus teasing the audience to common folklore of science fiction genre. In a subsequent draft, the cartoon opening scene was replaced with a Star Wars parody - rising yellow text and grandiose epic music. This choice-making process was decided as academic statements have the potential to default to over-wordy jargon in a video context. But placing some useful academic statements into the Star Wars passage enabled the project team to deliver key introductory context-setting lines using academic language in a way that was most probably acceptable to the viewers.

Selecting the data

What data should actually be include? This question took a long time to deal with. The first draft included quite detailed summaries of the main points in the print findings of this, and past projects. Subsequent drafts contained less and less material directly lifted from the print work. In this particular case study, the objective was to adhere to a core narrative of preferable, or desirable futures scenarios, while all parties eventually agreed to use relatively few direct transcripts of ideas. It should be noted that this was a single case, and may not be representative of most cases - it was a pleasant surprise to the academics and the creative partners that the industry representatives were so willing to move away from a literal transmission of the print work towards a thematic one (Fig. 1).

Fig. 1: Animation video story master board - production design - high-level scene sequencing

The final draft was much more story based, including only a general and quite impressionistic view of the findings. Once this had been agreed, the process went quite smoothly. All parties agreed that while academic reports have lengthy lists of findings, stories, and especially short cartoon-style animations, almost always have a single powerfully delivered message. Subsequently, instead of using the "day in the life of a future citizen" outline, it was decided to tell the story of a single event in the life of a single individual. In this use case, a young person reaching adulthood and dealing with his wealth creation needs. The core message was simple: "*Everything you think you know about handling future wealth creation activities is going to change*".

Narrative techniques

A member of this project was a fiction writer who introduced techniques from narrative production. For example, what is sometimes known as the Sherlock-Watson technique (Eger & Martens, 2017), is when one character regularly explains things to another character - and in doing so, gives necessary information to the audience without the need for excessive narration or voiceover. Another technique in storytelling is the use of the twist at the end (Ekström, 2000). Relevant to the use case, the story included a teacher who introduces the main character to a digital version of himself. The twist at the end was the revelation that the teacher is not a human teacher at all, but the teacher's own digital alter ego.
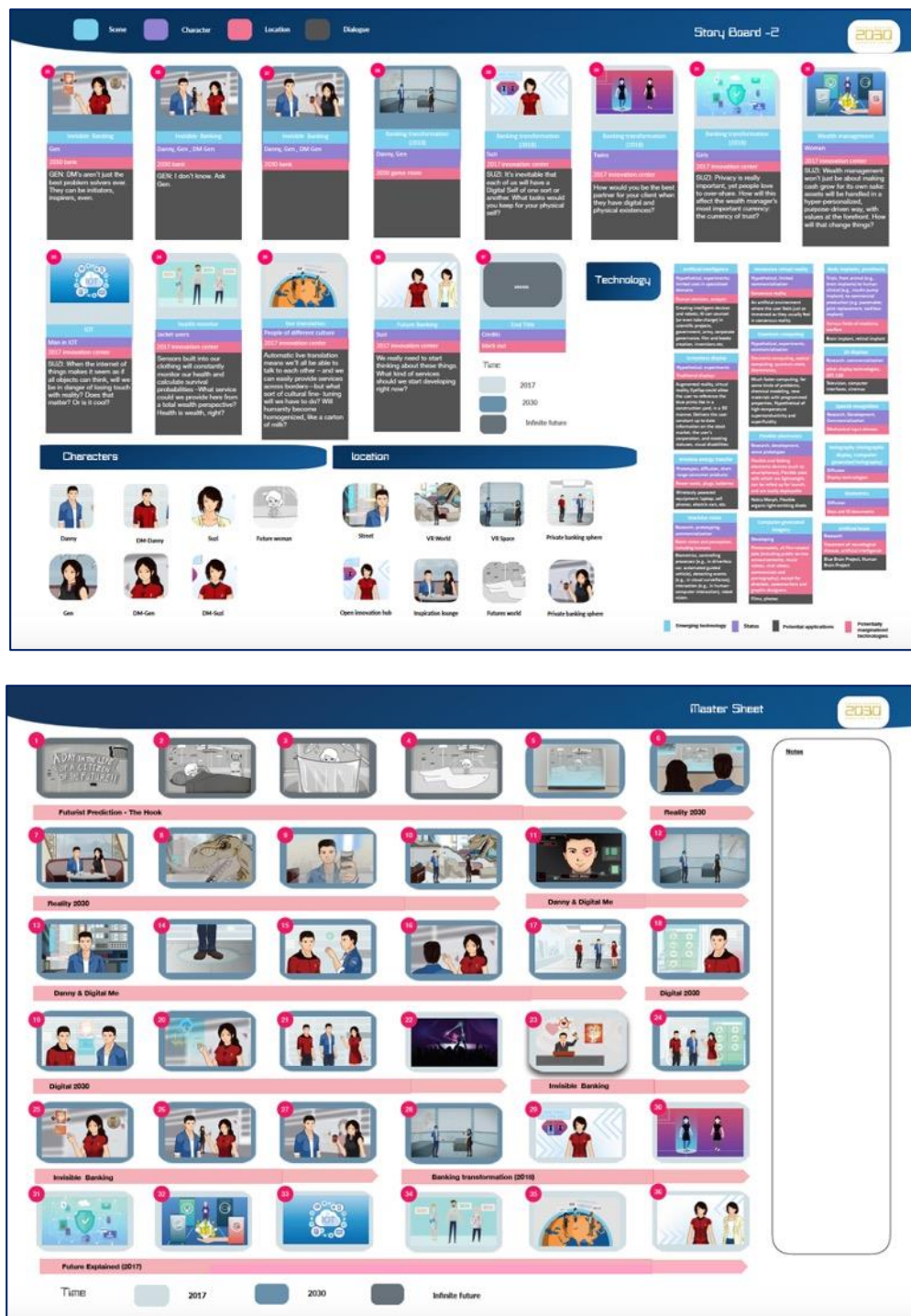
Fig. 2: Animation video storyboards - production design, incl. character development

Choosing an animation style format

Researchers and designers of video animations can often experience frustrations during the iterations of the visual work. There are numerous different software programs which can be used to produce animated videos. The most popular software programs include Flash™, Blender™ and Maya™. All of these produce work in very different styles and qualities. The most cost-effective and fastest is Flash™. However, in this use case the results of the first

draft looked clunky and unappealing. It quickly became clear that Flash™, while relatively easy to use, can produce uncomfortably simplistic work. Multiple iterations of the visual material storyboards (Fig. 2) eventually led to a compromise where the quality was at its best considering the project-related budget constraints.

Step 4 - The delivery
One of the main discoveries made in this use case was that what was imagined were the two main considerations - the handling of authentic academic findings and the delivery to a real-world audience - were joined by a third element: artistic validity. The short movie had to work on its own terms, as a short movie. It needed internal logic and had to be artistically satisfying. In the final stages, judicious editing was applied to tighten the scenes and make sure the story elements moved swiftly enough to hold an educated audience's attention. Pacing was vital. Furthermore, a great deal of time was spent reviewing music libraries - using the right soundtrack elements for each scene can make a major difference in touching the audience emotionally (Walker & Boyer, 2018).

The final test of how well the learnings from trials during the production phase were applied in the animation video production, is the first reaction of the stakeholder viewing audience. How they (in this use case they were financial services decision-makers) react is a matter of concern. If busy people are pulled away from their desks to be made to watch a preachy cartoon made by non-bankers about banking, any form of denial or rejection would be an undesired outcome. To disarm accusations that production teams are telling industry players how to do their jobs, the project team decided to end this futures short film with an animated character asking a series of questions - thus presenting the work as a conversation starter, rather than a preaching message. "*Here are possible futures for your industry*", the movie said. "*But what do YOU think?*"

Audience Feedback
As a final outcome of this use case, the futures scenarios that were transformed into a short (7-min) video animation movie received gratifyingly positive feedback from its intended audience. Futures scenarios and their interpretations were hailed as interesting, thought-provoking and succeeded in sparking rich conversations among wealth management decision-makers and their staff about the different types of business operating model futures [2030]. Unlike with written reports and academic papers, the feedback was instant - as soon as the video animation film was finished, people expressed opinions and shared the ideas that the 'design storytelling with futures scenarios' had triggered.

The following diagram (Fig. 3) is a high-level visualization of the actual production design activity flow applied in this video animation project.
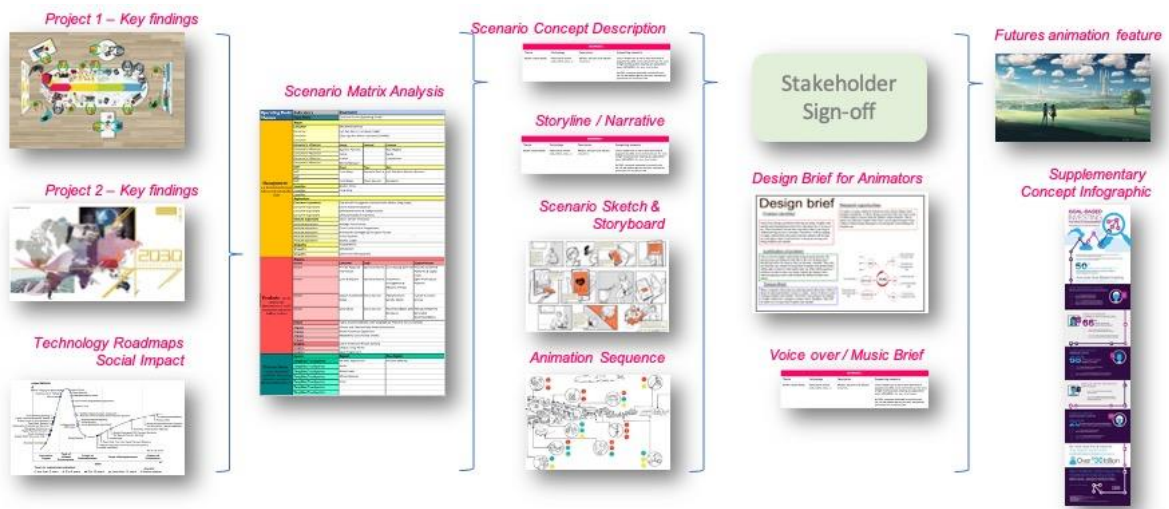

Fig. 3: Animation video production design - high-level activity flow

Ten Key Observations

Important observations were made in this use case, which apply strongly to futures narratives animation where artistic interpretation is needed to show things that don't yet exist. It can be argued that futures studies should have an obvious imaginative appeal, hence, the call for adopting visual interpretations. From the learning of this use case, the following table (2) is a summary of key observations made:

Table 2: Four process steps in video animation design

Key Observations	Lessons Learned
1. Set Stakeholder expectations	Audiences are used to extremely high production values for screen productions. They regularly see work with quality writing, visuals and acting. Academic researches should not try to compete. Instead, they need to set reasonable expectations for themselves and their viewers, aiming to simply produce watchable, functional videos that provoke interest and can trigger further explorations. As this use case has highlighted, when resource limitations may prevent the production of a hyper-realistic 3D animation, making a simple, likable 2D animation video can be an important medium to deliver a message and provoke questions leading to actions.
2. High selectivity	Successful writers of academic studies pride themselves on the wide comprehensiveness of their work, missing no angles, and covering every possible interpretation of their data. Successful creators of good short films pride themselves on the opposite -- their brutal selectivity and their skill in ignoring all but the key elements. Thus major compromises are necessary. Academic researchers will need to realize that significant elements of their printed report will not be included, and may only be represented in thematic form.
3. Tight scripting	The careful, precise language of academic research findings has the potential to come across as unattractive wordy jargon in TV format, where sentences have to be very short and very punchy. The involvement of experienced screenwriters should be considered as vital.
4. Self-awareness	Academics research delivers serious work. But TV is a medium with a light, entertaining tone, and the presentation of lengthy, hyper-analytical material can come across as too overwhelming for nonexpert audiences. Thus video representation of academic work benefits from a light touch, or even the inclusion of elements of irony, wit or self-deprecation.
5. Deadlines	Academic researchers value precision of language, and the editing process will continue until the writer is pulled away. In filmmaking, however, the pipeline system means that the script must be completely finalized before the production process begins. Filmmakers are strongly opposed to any re-visitation of the script after this moment.
6. Single message	A report containing academic research findings can make numerous important points. In a short film, however, only a single key message can be delivered. Other findings can be included, but only if they reinforce the main message. In this use case, it was: "*Everything about this industry is going to change.*"
7. Climax	The delivery of a lecture or the recitation of a paper at a conference is a linear presentation of data - an evenly paced list of facts in a straight line. Films are very different. Animation storytelling videos need to have more of a "story shape", with an introduction, developments, a climax, and a twist at the end.
8. Team game	An academic report is often the work of a single author. Yet video productions are necessarily team games - there are numerous contributors to the final product, from the director to the camera operator to the sound technician to the editor. A strong sense of collaboration is needed, as all the elements, and all the contributors, are important.
9. Audience awareness	Printed reports are "pull" media. They are only read by the interested reader who chooses to read it. But videos are "push" media, unspooling on any type of screen. Thus material should be prepared for a wider, less informed, less sympathetic audience. This is a positive in some ways - more people will see the report. But it can also be a negative. The material needs to be shortened and simplified, without being "dumbed down", which is a challenge any production team needs to anticipate.

Key Observations	Lessons Learned
10. Right for some	Learnings from this use case suggest that the presentation of research material in video form, especially for a futures narrative storytelling project, can be very satisfying--yet it is challenging, time-consuming and requires many man-hours and an appropriate budget. A film (animation video) reaches a wider audience, but also a less specialist, less engaged one. The material can be more easily accessed, but is necessarily simplified. As a result, it can be argued the majority of research reports, especially very technical ones, should continue to be presented in traditional form, as printed documents. But a minority of research reports - especially in the context of futures studies, and their futures scenarios, can benefit greatly from translation into video format. While challenging at times, a positive learning process will benefit academic researchers exploring this type of medium to successfully deliver the key conclusions of a body of research to a wide nonexpert audience, corporate decision-makers, and their staff.

Conclusion

The dissemination of design foresight research brought to light several important issues. An exemplar of a research dissemination process was presented in conceptual and operational context, were the challenge was to concentrate a relatively large number of research insights into a brief animation video of seven minutes in length. A list of academic findings considered most relevant to a nonexpert audience was turned into a narrative story plot that worked on its own terms. Researchers and designers delivered an important message derived from design foresight research in a dynamic format that was designed to getting non-academic staff thinking and talking about alternative futures relevant to their industry. A meaningful experiment was conducted in presenting academic research findings across transmedia formats using narrative storytelling and dynamic visualization techniques. However, this process also illuminated the challenges in bringing futures scenarios to life with video animation. While it was highly engaging, it is important to stress that this type of dissemination activity takes time. Moreover, many of the research findings were identified as being too challenging to interpret in narrative storytelling form; hence, disseminating design foresight research in short video format runs the risk of only conveying a smaller view into a larger research project. At worst, it might be little more than an expanded visual abstract, thus, project stakeholders have to be very selective, and remain mindful of the principle that simplification is necessarily misleading (Punch, 2013).

What was learned from this use case is that researchers and designers have to work hard to concentrate the material, ensuring that a wide range of ideas is delivered quickly and efficiently, but without overloading the story frame. Equally relevant was the realization that what is lost in the amount of detail may be more than compensated for in terms of reach, accessibility and impact (Macoubrie & Harrison, 2013). That is, in a world in which high quality and exciting visuals are the norm for entertainment and education purposes, it is inevitable that academic researchers responsible for effectively extending the research results and new knowledge gained to nonexpert audiences, will have to become innovative in keeping audiences engaged across a multitude of delivery channels (c.f. von Stackelberg & Jones, 2014). Furthermore, artistic considerations have to be reasoned in addition to academic ones, as these can subtly change the ultimate message of the work: academic research address the head, while narrative storytelling and dynamic visualization techniques have the ability to also touch the heart. To this end, the objectives for engaging the audience have to be clear upfront to ensure that the approach most favoured by the research stakeholder team, is also the most effective form of research dissemination (Punch, 2013; Ramos, 2006; von Stackelberg & Jones, 2014). In this use case, the objective was to experiment with transmedia storytelling and video animation as a medium in order to disseminate research results and new knowledge gained to a larger group of nonexpert audiences. In future studies, however, this approach will benefit from adding additional outputs, thus balancing the key findings gained from design foresight research across complimentary median, for example, combining video animation with infographics (McDowell, 2019).

Acknowledgements

References

Adegbile, A., Sarpong, D., & Meissner, D. (2017). Strategic Foresight for Innovation Management: A Review and Research Agenda. *International Journal of Innovation and Technology Management*, 1750019.

Austin, M. (2010). *Useful Fictions: Evolution, Anxiety, and the Origins of Literature*: U of Nebraska Press.

Barnes, V., Clouder, D. L., Pritchard, J., Hughes, C., & Purkis, J. (2003). Deconstructing dissemination: dissemination as qualitative research. *Qualitative Research, 3*(2), 147-164.

Berg, B. L. (2001). *Qualitative research methods for the social sciences*: A Pearson Education Company.

Blundell, W. E. (1988). *The art and craft of feature writing: based on the Wall Street Journal guide*: Penguin.

Bohemia, E., Rieple, A., Liedtka, J., & Cooper, R. (2014). *Proceedings of the 19th DMI: Academic Design Management Conference: Design Management in an Era of Disruption*: Design Management Institute.

Buehring, J. H., & Liedtka, J. (2018). Embracing systematic futures thinking at the intersection of Strategic Planning, Foresight and Design. *Journal of Innovation Management, 6*(3), 134-152.

Buhring, J. (2017, 7-9 June 2017). *Design-inspired Foresight: Strategic foresight techniques for preferable futures.* Paper presented at the Design Management Academy, Hong Kong, China.

Cagnin, C. (2018). Developing a transformative business strategy through the combination of design thinking and futures literacy. *Technology Analysis & Strategic Management, 30*(5), 524-539.

Candy, S., & Dunagan, J. (2017). Designing an experiential scenario: the people who vanished. *Futures, 86*, 136-153.

Chan, L., & Daim, T. (2012). Exploring the impact of technology foresight studies on innovation: Case of BRIC countries. *Futures, 44*(6), 618-630.

Choo, C. W. (2002). *Information management for the intelligent organization: the art of scanning the environment*: Information Today, Inc.

Cuhls, K. (2003). From forecasting to foresight processes - new participative foresight activities in Germany. *Journal of forecasting, 22*(2-3), 93-111.

Dahlstrom, M. F. (2014). Using narratives and storytelling to communicate science with nonexpert audiences. *Proceedings of the National Academy of Sciences, 111*(Supplement 4), 13614-13620.

Dator, J. (2009). Alternative futures at the Manoa School. *Journal of Futures Studies, 14*(2), 1-18.

Dunne, A., & Raby, F. (2013). *Speculative everything: design, fiction, and social dreaming*: MIT Press.

Eger, M., & Martens, C. (2017). *Character beliefs in story generation.* Paper presented at the Thirteenth Artificial Intelligence and Interactive Digital Entertainment Conference.

Eggink, W., & de la Bruheze, A. A. A. (2015). Design storytelling with future scenario development; envisioning" the museum". In *Unknown*.

Ekström, M. (2000). Information, storytelling and attractions: TV journalism in three modes of communication. *Media, Culture & Society, 22*(4), 465-492.

Feather, J. (2013). *The information society: A study of continuity and change*: Facet publishing.

Gabrielli, S., & Zoels, J.-C. (2003). *Creating imaginable futures: using human-centered design strategies as a foresight tool.* Paper presented at the Proceedings of the 2003 conference on Designing for user experiences.

Glaser, M., Garsoffky, B., & Schwan, S. (2009). Narrative-based learning: Possible benefits and problems. *Communications, 34*(4), 429-447.

Godet, M. (2012). To Predict or to Build the Future? *The Futurist, 46*(3), 46.

Hamel, G., & Valikangas, L. (2003). The quest for resilience. *Harvard Business Review, 81*(9), 52-65.

Heger, T., & Rohrbeck, R. (2012). Strategic foresight for collaborative exploration of new business fields. *Technological Forecasting and Social Change, 79*(5), 819-831.

Heskett, J. (2001). Past, present, and future in design for industry. *Design Issues, 17*(1), 18-26.

Horton, A. (1999). A simple guide to successful foresight. *foresight, 1*(1), 5-9.

Inayatullah, S. (2008). Six pillars: futures thinking for transforming. *foresight, 10*(1), 4-21.

Introna, L. D., & Ilharco, F. M. (2006). On the meaning of screens: Towards a phenomenological account of screenness. *Human Studies, 29*(1), 57-76.

Jarva, V. (2014). Introduction to narrative for futures studies. *Journal of Futures Studies, 18*(3), 5-26.

Jenkins, H., & Culture, C. (2006). Where old and new media collide. *New York: New York UP*.

Lojacono, G., & Zaccai, G. (2004). The evolution of the design-inspired enterprise. *MIT Sloan Management Review, 45*(3), 75.

Ma, K.-L., Liao, I., Frazier, J., Hauser, H., & Kostis, H.-N. (2012). Scientific storytelling using visualization. *IEEE Computer Graphics and Applications, 32*(1), 12-19.

Maass, D. (2002). *Writing the breakout novel*: F+ W Media, Inc.

Macoubrie, J., & Harrison, C. (2013). *Human Services Research Dissemination: What Works?* : Office of Planning, Research and Evaluation, US Administration for Children ….

Magill, F. N. (1989). *Masterpieces of world literature*: HarperCollins Publishers.

McDowell, A. (2019). Storytelling shapes the future. *Journal of Futures Studies, 23*(3), 105-112.

Milojević, I., & Inayatullah, S. (2015). Narrative foresight. *Futures, 73*, 151-162.

Mullen, T., & Andaur, C. (2010). *Blender studio projects: digital movie-making*: John Wiley & Sons.

Phillipson, J., Lowe, P., Proctor, A., & Ruto, E. (2012). Stakeholder engagement and knowledge exchange in environmental research. *Journal of environmental management, 95*(1), 56-65.

Price, R., Matthews, J., & Wrigley, C. (2018). Three Narrative Techniques for Engagement and Action in Design-Led Innovation. *She Ji: The Journal of Design, Economics, and Innovation, 4*(2), 186-201.

Punch, K. F. (2013). *Introduction to social research: Quantitative and qualitative approaches*: sage.

Ramos, J. (2006). Consciousness, culture and the communication of foresight. *Futures, 38*(9), 1119-1124.

Raven, P. G., & Elahi, S. (2015). The New Narrative: Applying narratology to the shaping of futures outputs. *Futures, 74*, 49-61.

Rohrbeck, R., Battistella, C., & Huizingh, E. (2015). Corporate foresight: An emerging field with a rich tradition. *Technological Forecasting and Social Change, 101*, 1-9. doi:10.1016/j.techfore.2015.11.002

Rosen, C. (2004). The age of egocasting. *The New Atlantis*(7), 51-72.

Sametz, R., & Maydoney, A. (2003). Storytelling through design. *Design Management Journal (Former Series), 14*(4), 18-34.

Slaughter, R. (2002). *New thinking for a New Millennium: The knowledge base of futures studies*: Routledge.

Starkey, K., & Madan, P. (2001). Bridging the relevance gap: Aligning stakeholders in the future of management research. *British Journal of management, 12*, S3-S26.

Tetlock, P. E. (1999). Theory-driven reasoning about plausible pasts and probable futures in world politics: are we prisoners of our preconceptions? *American Journal of Political Science*, 335-366.

Thompson, K., & Bordwell, D. (2003). *Film history: An introduction* (Vol. 205): McGraw-Hill Boston.

Troman, G. (2001). Tales from the interface: Disseminating ethnography for policy making. In *Ethnography and education policy* (pp. 251-273): Emerald Group Publishing Limited.

Vaughn, N. A., Jacoby, S. F., Williams, T., Guerra, T., Thomas, N. A., & Richmond, T. S. (2013). Digital animation as a method to disseminate research findings to the community using a community-based participatory approach. *American Journal of Community Psychology, 51*(1-2), 30-42.

Vecchiato, R. (2015). Strategic planning and organizational flexibility in turbulent environments. *foresight, 17*(3), 257-273. doi:10.1016/j.techfore.2011.07.010

von Stackelberg, P., & Jones, R. E. (2014). Tales of our tomorrows: Transmedia storytelling and communicating about the future. *Journal of Futures Studies, 18*(3), 57-76.

Voros, J. (2003). A generic foresight process framework. *foresight, 5*(3), 10-21.

Walker, E. B., & Boyer, D. M. (2018). Research as storytelling: the use of video for mixed methods research. *Video Journal of Education and Pedagogy, 3*(1), 1-12.

Wilkinson, A., Mayer, M., & Ringler, V. (2014). Collaborative futures: Integrating foresight with design in large scale innovation processes-seeing and seeding the futures of Europe. *Journal of Futures Studies, 18*(4), 1-26.

Wolf, C., & Floyd, S. W. (2017). Strategic planning research: Toward a theory-driven agenda. *Journal of Management, 43*(6), 1754-1788.

Wyer Jr, R. S.(Ed). (2014). *Knowledge and Memory: The Real Story: Advances in Social Cognition, Volume VIII*: Psychology Press.