Design Foresight – strategic innovation decision-making

Dr. Jörn Bühring

PolyU UoA 38

Contents

'Design with Foresight' in the transformational era of Business

The Research Background

Formulating the beginnings of new and varying approaches that are dealing with uncertainty in strategic business and design innovation decision-making, this longitudinal research (body of work) is spanning the Foresight, Strategic Innovation and Design Management disciplines. The objective of this on-going research is to make the case that decision makers need to rely on new approaches to the future in the increasing turbulent environments they face today. The emphasis in this body of work, in the main, is on how innovation stakeholders might engage with the future in order to overcome the challenges in strategic innovation decision-making.

Derived from design futures thinking field research conducted over a four-year period, critical perspectives were generated that illustrate how systematic futures thinking can inform decision-makers concerning the innovation challenges and opportunities emerging over medium and longer-term (5-15 years) time horizons. Combining foresight and design in an approach herein referred to as "Design with Foresight", the emergence of new and more creative possibilities were envisaged that offer inclusion and common goal alignment between diverse stakeholder groups within traditional sectors of industry (e.g. Financial Services). Consequently, the "design with foresight" hypothesis resulted in ongoing learning through in specifying a portfolio of desirable futures, and to engage ecosystem partners in conceptualizing, prototyping, experimentation, and demonstration, using design and foresight tools and approaches to achieve deeper insights and alignment around current reality. By using common language in the form of 'scenarios', processes applied to the development of alternative futures become inherently heterogeneous, increasing the transparency among stakeholders of social groups and perspectives in the decision-making process. Hence, the aims were to facilitate a more productive conversation across interdisciplinary participants, to aid n active experimentation that generates new knowledge and sustainable value for economic and societal gain. To this end, each research project (BoW) produced critical insights into the strategic value of 'design with foresight' as an organizational learning capability and futures literacy competence.

'Design with Foresight' in the transformational era of Business

The Principle Investigator [PI]

[Dr. Jörn Bühring](#)

Dr. Bühring's research explores Design Foresight, Vision and Fiction techniques as emerging processes within Strategic Design and Innovation Management. A full member of the "World Futures Studies Federation" (www.wfsf.org), he has conducted since 2010 several major futures studies in luxury hospitality (2020), Omni-channel retail (2020), and within the Financial Services sector (cf. Body of Work) he has been spearheading a series of industry funded futures studies in Wealth Management and Private Banking to the year 2030.

Research Theory / Hypothesis

The research sets out to investigate:

Theory

1. Derived from comprehensive research into the drivers of uncertainty involving business leaders [1], the drivers of uncertainty (globalization, digitization, commoditization, and politicization) have a direct impact on the innovation eco-system.

2. Scholars in foresight and strategic planning have argued that new tools are needed [2], that practitioners need help in finding the right tools [3], that education is needed to create futures thinking (foresight) literacy [4], and mechanisms need to be developed to allow for more participation of stakeholders [5] in order to increase the impact of foresight activities [6].
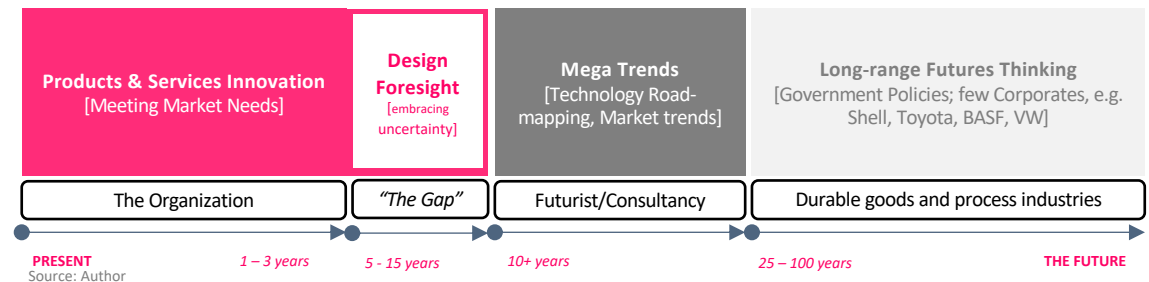
Hypothesis

1. That systematic futures thinking activities can offer decision-makers a holistic view on looming issues in the external macro-business environment, and that the role of design, particularly found in its creative thinking, scenario building, visualization, and prototyping competencies, may help produce tangible images that further advance collective visions of futures as preferable and desirable.

1. F Ferraro, B Cassiman, Three trends that will change how you manage, IESE Insights, 2014

2. V. Coates, M. Farooque, R. Klavans, K. Lapid, H.A. Linstone, C. Pistorius, A.L. Porter, On the future of technological forecasting, Technol. Forecast. Soc. Change 67 (2001) 1–17.

3. A.L. Porter, W.B. Ashton, G. Clar, J.F. Coates, K. Cuhls, S.W. Cunningham, K. Ducatel, P. van der Duin, S.W. Cunningham, K. Ducatel, P. van der Duin, L.; Technology Futures Analysis Methods Working Group (2004), 'Technology Futures Analysis: Toward Integration of the Field and New Methods', Technological Forecasting and Social Change, 71, 287-303

4. Georgehiou, T. Gordon, H. Linstone, V. Marchau, G. Massari, I. Miles, M. Mogee, A. Salo, F. Scapolo, R. Smits, W. Thissen, T. F. A. M. W. Group, Technology futures analysis: toward integration of the field and new methods, Technol. Forecast. Soc. Change 71 (Mar 2004) 287–303.

5. R. Miller, Futures literacy: a hybrid strategic scenario method, Futures 39 (2007) 341–362.

6. R. Van der Helm, Ten insolvable dilemmas of participation and why foresight has to deal with them, Foresight 9 (2007) 3–17.

Observation - Dealing with Uncertainty

Lack of systematic awareness of long-term challenges in decision-making

While most product or service innovations focus on meeting current market needs (typically over a 1-3-year time period – see figure below), there is still precious little real understanding in how designers and interdisciplinary innovation practitioners learn to navigate disruption, make sense of complexity, and deal with uncertainty of social and technology environments over the medium and long-term time horizon (5-15 years).

Products & Services Innovation [Meeting Market Needs]	**Design Foresight** [embracing uncertainty]	**Mega Trends** [Technology Road-mapping, Market trends]	**Long-range Futures Thinking** [Government Policies; few Corporates, e.g. Shell, Toyota, BASF, VW]
The Organization	"The Gap"	Futurist/Consultancy	Durable goods and process industries

PRESENT   *1 – 3 years*   *5 - 15 years*   *10+ years*   *25 – 100 years*   **THE FUTURE**

Source: Author

- **Research 1 – Design-led - 2015**
  "Purpose-driven Investments – Millennials in 2020"

- **Research 2 – Research-driven - 2016**
 *"The Delphi Study 2030 / Data Visualization"*

- **Research 3 – Design-led – 2017**
  "Animated Motion Video – 2030"

Research 4 – Research-driven – 2018
"Client-integrated Ecosystems – 2025"

Observation - Dealing with Uncertainty

Lack of systematic awareness of long-term challenges in decision-making

Learning from other disciplines – methods, approaches, and perspectives – example: "scenarios"
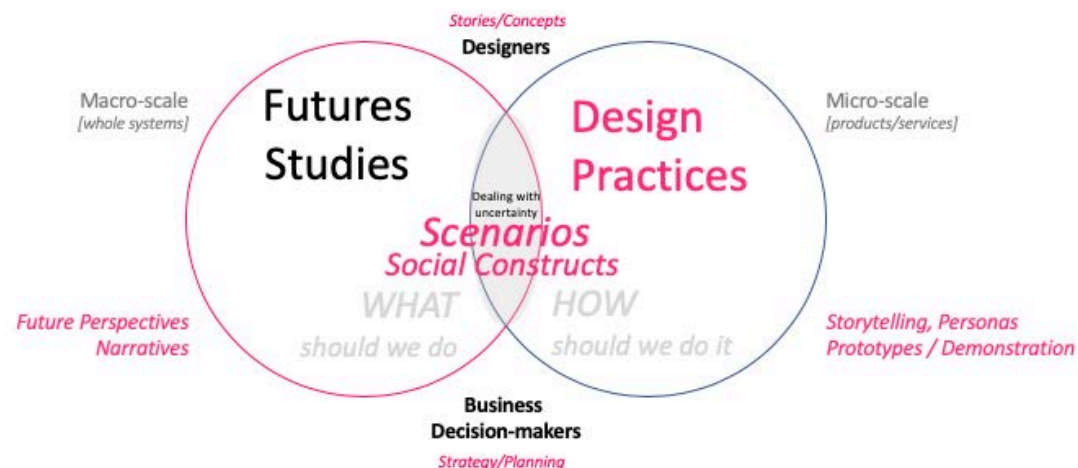
Source: Author

Foresight and Design scenarios -
commonalities across diverse discourse; see figure

Research Questions

The research sets out to investigate:

1. [RQ1] How does the integration of design with foresight might deliver significant opportunities for anticipating (*thinking of*) alternative scenarios and envisioning creative responses (*acting on*) that deal with the complexity and uncertainty inherent in the external macro-business environment?

2. [RQ2] What are key themes at work in foresight and design fields and the opportunity that integrating aspects of this work might hold for improving an organizations' strategy development and futures thinking (foresight) literacy?

3. [RQ3] In context (place-based, e.g. Greater China) and content (industry relevant case studies, e.g. Financial Services), should more attention be paid to plausible changes in the external business environment, and its implications for the enterprise and the design task?

Research Outputs

The 'Design with Foresight' research project portfolio is comprised of several key outputs:

Each project has produced several findings that emerged, as a result, which test the research questions and indeed the outcomes. Outputs, are direct and indirect contributions to academic (i.e. traditional publications) and organizational (report-based) learning and knowledge disseminations. Directed at industry, deliverables produced were; in Project 1, (i), empirical research [RQ1] deploying and testing design tools to illicit stakeholder insights into the *status quo* of Wealth Management services delivery (2015), (ii) co-creation workshops identifying the challenges and opportunities in a desirable futures (2020) context, the (iii) mapping of current/future stakeholders and ecosystems, and (iv) the emergence of key innovation concepts of desirable futures service value propositions directed at Millennials in 2020.

Following the learnings (shortcomings/challenges) and research insights generated during project 1, Project 2 was to engage with experts employing the Delphi method as a basis for foresight; this approach delivered results testing RQ1 and RQ2, while project outputs - comprising of visualization design, and storytelling techniques, further enhanced the decision-making impact of the study findings.

The third project (Project 3) was designed with focus on RQ2 - applying animation design with narrative foresight. The output was an animated motion video delivering high-impact scenarios, thus testing the results of a new medium to engage with senior stakeholders, decision-makers, and non-expert audiences.

Project 4 was directed at RQ3 – gaining a deeper understanding of China's rapidly evolving internet ecosystem, frequently associated with market-specific phenomena known as "BAT" (Baidu, Alibaba, Tencent). The emphasis of this design foresight project was on anticipating a set of alternative futures scenarios [2025], which were derived from research and trend analysis techniques previously tested [RQ1, RQ2] and to help envisage client-integrated value generators in hyperconnected user context.

Research Outputs – Body of Work Visualization [2015-2018]

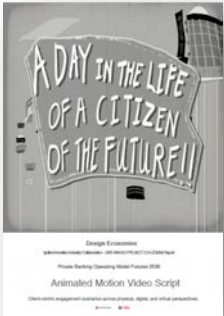## Sustained research in Financial Services industry context over a four-year period
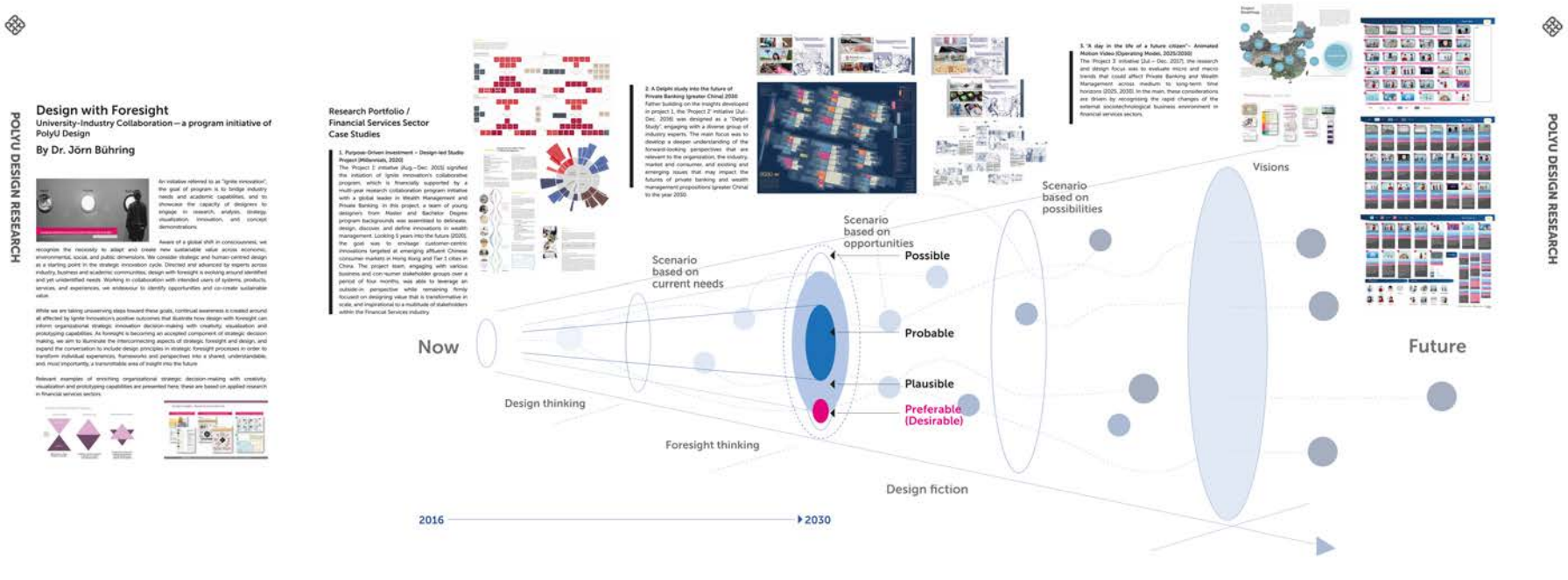
Research Outputs – Spin-off publications with referencing case studies

Sustained research in Financial Services industry context over a four-year period

In-direct Research contributions

- IASDR 2017, Conference – Full Research Paper, peer reviewed: 'Beyond Forecasting: A Design-inspired Foresight Approach for Preferable Futures', Joern Buhring and Ilpo Koskinen, 2017

- ISPIM Innovation Summit, - Academic Workshop, 'Futures Thinking Techniques: Dealing with Uncertainty at the Front End of Innovation', Joern Buehring and Joseph Voros, Dec. 2017

- Design Management Academy [DMA], Conference 2017 (7-9 June, Hong Kong) Full Research Paper, peer reviewed: 'Design-inspired foresight: strategic foresight techniques for preferable futures', Buhring, 2017

- Cumulus 2018, Paris, Conference - Full Research Paper, peer reviewed, 'Foresight by design: Supporting strategic innovation with systematic futures thinking', Buehring and Liedtka, 2018

- Journal of Innovation Management – 'Embracing systematic futures thinking at the intersection of Strategic Planning, Foresight and Design', Buehring and Liedtka, forth-coming, Dec. 2018

- Academy for Design Innovation Management 2019, "Bringing futures scenarios to life with video animation: A case of disseminating research to nonexpert audiences", Jörn H. Bühring and Nury Vittachi; presented at Loughborough, London City Campus, 20.06.2019

Design Foresight – Project 1 *[Keywords: design thinking, futures thinking, tools and methods]*

Purpose-Driven Investments – Design-led Studio Project [Millennials, 2020]

Design-led - 2015
"Medium: Report (Fig.1 – 130 pages)

Fig. 1

- The 'Project 1' initiative [Aug.-Dec. 2015] signified the initiation of the design with foresight research program. In this initiation project, the Principal Investigator assembled a team of young designers from Master and Bachelor Degree program backgrounds to delineate, design, discover, and define innovations in wealth management. Looking 5 years into the future [2020], the goal was to envisage customer-centric innovations targeted at emerging affluent Chinese consumer markets in Hong Kong and Tier 1 cities in China. The project team, engaging with various business and consumer stakeholder groups over a period of four months, was able to leverage an outside-in perspective while remaining firmly focused on designing value that is transformative in scale, and inspirational to a multitude of stakeholders within the Financial Services industry.

- The report findings were presented to senior executives and organizational stakeholders responsible for strategic innovation decision-making. Resulting from this research outcome, were reported changes in ways the organization was asking questions toward broader goals and objectives in the early stages of innovation.

Outcome: Systematic futures thinking activities can offer decision-makers a holistic view on looming issues in the external macro-business environment.

Design Foresight – Project 1

Purpose-Driven Investments – Design-led Studio Project [Millennials, 2020]

Design-led - 2015
"Medium: Report (Fig.2 Video - scenario enactment)

- In 'Project 1 a short futures scenario video produced was produced; the objectives was to test an actor scenario output to engage nonexpert audiences in stimulating, inspiring, and experiential ways to imagine a preferable future in wealth management and private banking producer-consumer interactions.

- Stakeholder audiences reported the effectiveness on 'experiencing' vivid and tangible futures scenarios – more powerful, than in written form.

Video

https://www.youtube.com/watch?v=j3uP0cGb9Sk

Design Foresight – Project 2 *[Keywords: Delphi, futures thinking, scenarios, data visualization]*

Wealth Management / Private Banking Futures 2030– Research Project [Delphi, 2030]

Research-driven - 2016
"Medium: Report (Fig. 3– 100 pages)

Limited Edition "Delphi 2030" Private Banking Book edition and Data Visualization Map – issued to Delphi participants, and the Organization collaborator.

- Father building on valuable insights into industry and business practices gained in prior research, this project focused on macro and micro trends, and user engagement opportunities and possibilities for consumer directed future value creation. The 'Project 2' initiative [Jul.- Dec. 2016] was designed as a "Delphi Study", engaging with a diverse group of industry experts to develop a deeper understanding of the forward-looking perspectives that are relevant to the organization, the industry, market and consumer, while exploring methods to help illuminate existing and emerging issues that may impact the futures of private banking and wealth management propositions (greater China) to the year 2030.

- Recipients of the final report (Figure 3) reflected on the impact the study had on the actions they needed to take over the long-term to prepare themselves for the change and to influence that change.

Outcome: Systematic futures thinking activities can offer decision-makers a holistic view on looming issues in the external macro-business environment, using actor-scenarios and data visualization techniques to prepare for change.

Fig. 3

Design Foresight – Project 2

Wealth Management / Private Banking Futures 2030– Research Project [Delphi, 2030]

Research-driven - 2016
"Medium: Narrative Storytelling – Actor scenarios in form of Generational characters (Fig. 4)

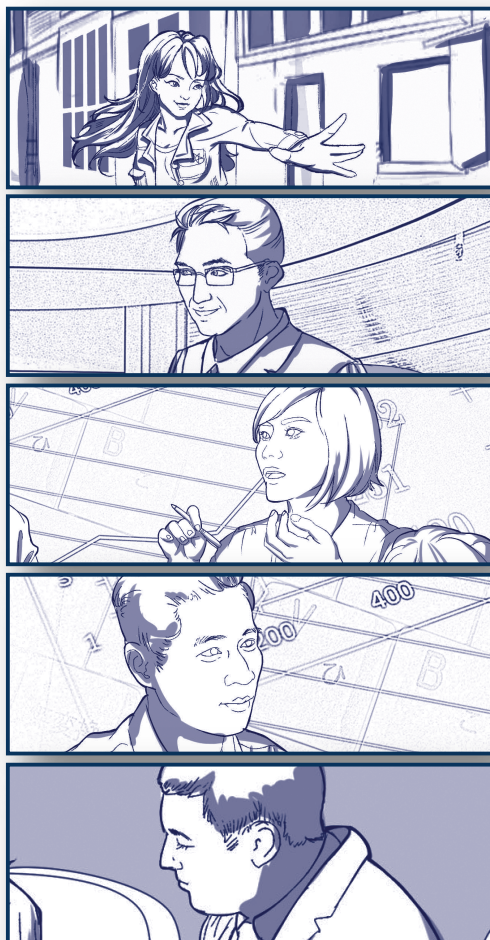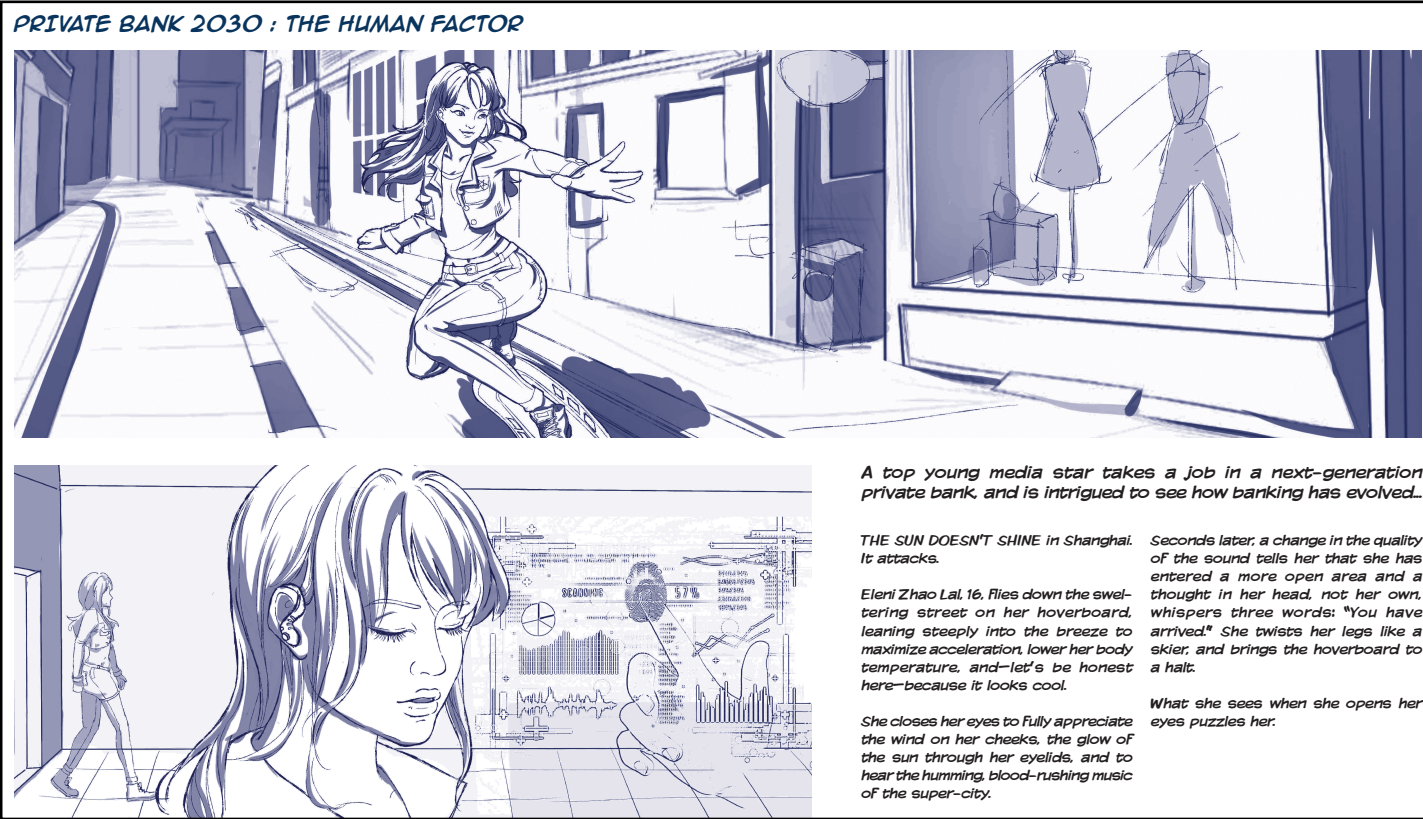*Fig. 4*

ELENI ZHAO LAL

She IS the zeitgeist, which makes her their best chance of seeing the future

FRANK CASTOR

Node chief Frank is a plugged-in bank boss like no other

PAMELA XI CHEN

Pamela has her finger on the pulse of the world's biggest economy

AH–LUM LO

Tech-chief Ah-Lum switches seamlessly between humans and AI

ADITI DAS

The data miner knows whom to sign up in partnership deals

Design Foresight – Project 2

Wealth Management / Private Banking Futures 2030– Research Project [Delphi, 2030]

Research-driven - 2016
"Medium: Narrative Storytelling - Persona (Fig. 5)

PRIVATE BANK 2030 : THE HUMAN FACTOR

A top young media star takes a job in a next-generation private bank, and is intrigued to see how banking has evolved...

THE SUN DOESN'T SHINE in Shanghai. It attacks.

Eleni Zhao Lai, 16, flies down the sweltering street on her hoverboard, leaning steeply into the breeze to maximize acceleration, lower her body temperature, and—let's be honest here—because it looks cool.

She closes her eyes to fully appreciate the wind on her cheeks, the glow of the sun through her eyelids, and to hear the humming, blood-rushing music of the super-city.

Seconds later, a change in the quality of the sound tells her that she has entered a more open area and a thought in her head, not her own, whispers three words: "You have arrived." She twists her legs like a skier, and brings the hoverboard to a halt.

What she sees when she opens her eyes puzzles her.

Fig. 5

Design Foresight – Project 2

Wealth Management / Private Banking Futures 2030– Research Project [Delphi, 2030]

Research-driven - 2016
Data Map – Visualization (Fig. 6)
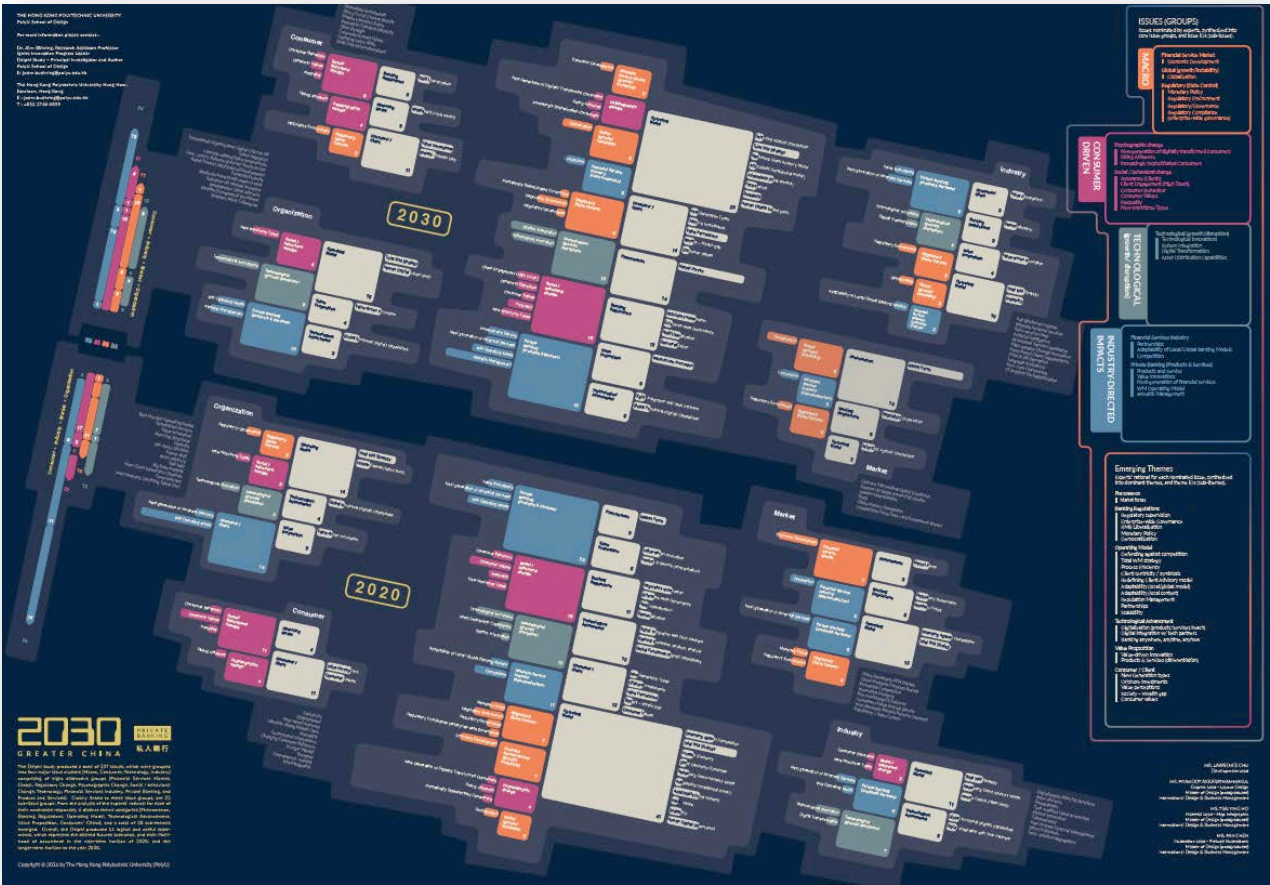
Fig. 6

Design Foresight – Project 3 *[Keywords: storytelling, technology road mapping, animation design]*

Financial Services Industry in Greater China – [Animated Motion Video – 2030]

Design-led - 2017
"Medium: Report (Fig.7 – 50 pages, Fg.8-10 Animated Motion Video – 7 mins.)

- The 'Project 3' initiative [Jul.- Dec. 2017], the research and design focus was to evaluate micro and macro trends that could affect Private Banking and Wealth Management across medium to long-term time horizons (2025, 2030); a (7 min.) high-impact animated motion video brought to life sociotechnological scenarios while raising critical questions as to the impact (causality) these may have in decision-making.

- Organizational audiences spoke of this medium raising new types of questions previously not considered in their strategic innovation context.
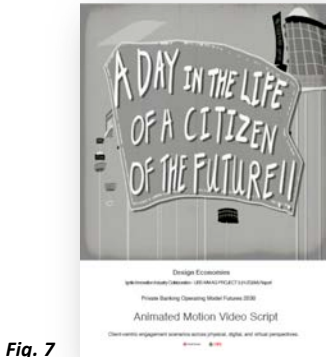
Fig. 7

Fig.8

Outcome: Systematic futures thinking activities can offer decision-makers a holistic view on looming issues in the external macro-business environment, using motion video to depict futures scenarios to stimulate causality.
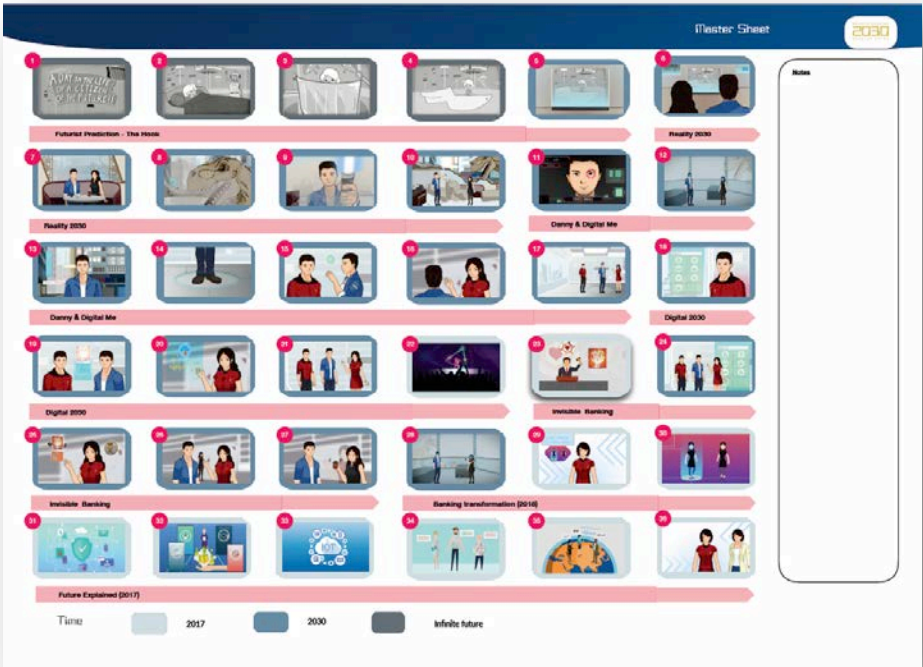
Design Foresight – Project 3

Financial Services Industry in Greater China – [Animated Motion Video – 2030]

Design-led - 2017
"Medium: Report (Fig.8-910 Animated Motion Video – 7 mins.)

Fig. 9
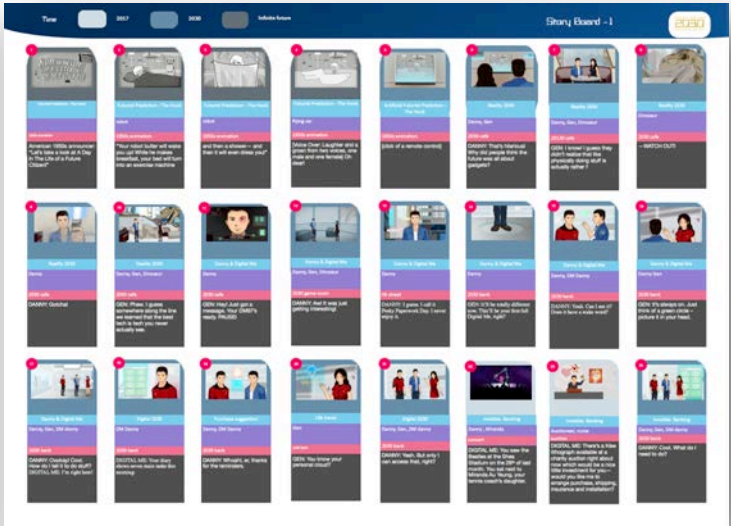
Fig. 10

Design Foresight – Project 4 *[Keywords: design foresight methodology, futures thinking tools, sceanrios]*

Client-integrated Eco-systems – Greater China [Scenario Visualization, VR Experience - 2025]

Design-led - 2018
"Medium: Report (Fig.11 – 139 pages, incl. VR scenario experience; catalogue of trend cards

• The 'Project 4' initiative [Jun. - Dec. 2018], a Design with Foresight methodology was applied to envisage alternative futures in client-integrated ecosystems to the year 2025. Research (secondary and primary) provided the foundation (domain description) and current assessment into the topic, a baseline future was defined. From this stance alternative futures, and their implication to "Client-Integrated Ecosystems - Greater China" futures, were explored and broad alive in form of vivid, and immersive VR scenarios.

Fig. 11
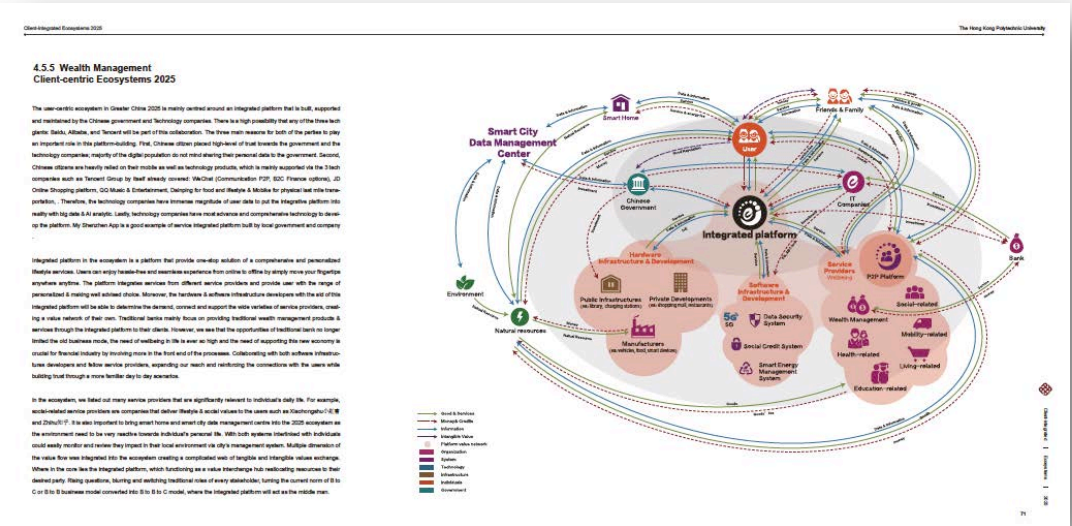
Outcome: Systematic futures scenarios can offer decision-makers a holistic view on looming issues in the external macro-business environment, while facilitating a more productive conversation across interdisciplinary participants.

Design Foresight – Project 4

Client-integrated Eco-systems – Greater China [Scenario Visualization, VR Experience - 2025]

Research-driven - 2018
"Medium: Catalogue of Trend Cards (Fig. 12)

Fig. 12

Design Foresight – Project 4

Client-integrated Eco-systems – Greater China [Scenario Visualization, VR Experience - 2025]

Research-driven - 2018
"Medium: Virtual Reality Experience (Fig. 13)

Fig. 13

Research Outcome

'Design with Foresight' in the transformational era of Business

The objective of this research (body of work) was to make the case, over a prolonged period of time (4-years) that decision-makers need to rely on a new, emerging approach to the future in increasingly turbulent environments they face today. The concepts of the future and social change itself emerged in the West during the 18th century as machine technology visibly changed the lives of many ultimately leading to the professionalization of forecasting and planning in the 20th century. Most of those techniques, however, were extrapolative, as they were based on the assumption of continuity and that no significant disruption would occur before the time horizon. While this was a pretty good assumption in the pre-Internet world, it has become increasingly risky now as the pace of change has quickened and the increased connectivity of the globalized world connects people and issues as never before.

In response, professional futurists emerged to develop hypothetical scenarios so that decision-makers could prepare for a different world even though the real future was hidden from view. At the same time, professional designers working in product and service development were elevating new tools and approaches to make their skills of creativity and visualization available for decision-makers. This research (applied in nature) has illuminated how foresight with design and design with foresight can guide strategic decision-making, informing both traditional academic outputs (i.e. publications), and organizational knowledge dissemination (i.e. Company ABC's internal staff communication to approx. 65,000 generated global futures thinking awareness and key insights into scenarios that inform possible, probable, and desirable futures over a 5-10year time horizon.

Key Findings

Conceptual Framework – Design with Foresight [futures thinking techniques, scenario visualizations]

Table 1 describes the characteristics of traditional approaches (assumptions) for anticipating and influencing the future compared to the proposed new approach (complimentary assumptions).

	Traditional approach	New approach
Purpose	Working in the existing system	Working on the existing system
Outcomes	Incremental improvement	Transformational change
Time horizon	Short-term, 1-3 years	Long-term, 5-20 years
Environment	Relatively static, stable, predictable	Relatively complex, dynamic, potentially surprising
Typical thinking	Mechanical, cause-effect	Organic, emergent
Related discipline	Systems engineering	Complexity science
Assumptions	No discontinuities, disruptions Future largely knowable	Discontinuities, disruptions likely Future dominated by uncertainty
Approach	Following through on plans as blueprints	Being flexible, adaptable, exploratory, experimental
Tools, methods	Mostly quantitative, extrapolation, modeling	Mostly qualitative, story-telling, visualization, prototyping

Key Findings

Conceptual Framework – Design with Foresight [futures thinking techniques, scenario visualizations]

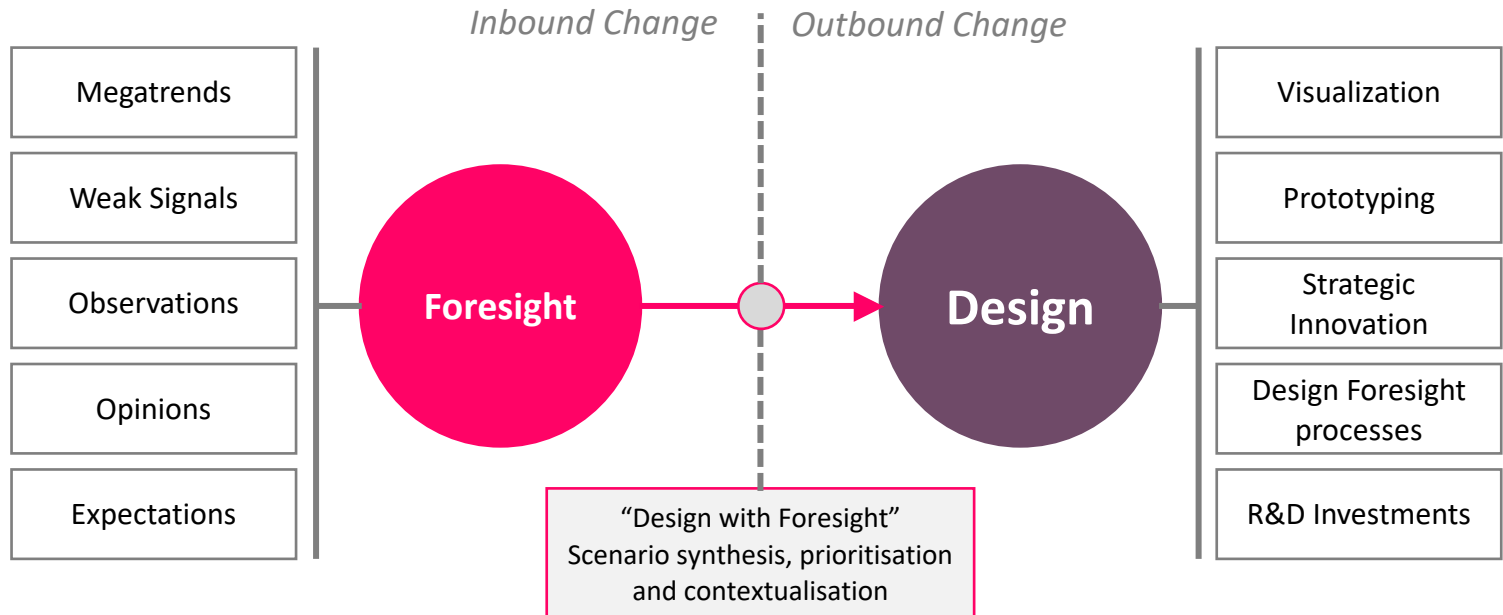02   Conceptual Framework: Foresight and design techniques, methods, approaches

Key Findings

Conceptual Framework – Design with Foresight [combining design and foresight methods]

03   Conceptual Framework: Design with Foresight - *Inbound and Outbound change*

INBOUND
Change that happens to us

Acting
•Initiatives
•Results

Planning
•Mission
•Strategy

Visioning
•Vision
•Goals

Forecasting
•Baseline
•Scenarios

OUTBOUND
Change we create ourselves

Research
•Information
•Scanning
•Intelligence

Foresight Framework

Framing
•Purpose
•Scope

Design Foresight Integration

Discover
• Scanning
• Insights
• Scenarios

Define
• Sense-making
• Goals

Develop
• Concepts
• Prototypes

Deliver
• Production
• Results

Design Process

Foresight as inputs to the design process

Design Foresight Visualization Brief

Source: Adapted from Hines & Bishop, 2007, p.7

Source: Adapted from British Design Council, 2005

Key Findings

Conceptual Framework – Design with Foresight [disrupting the rule-based innovation trap]

04

Discontinuity/Disruption

Accumulation of Ideas
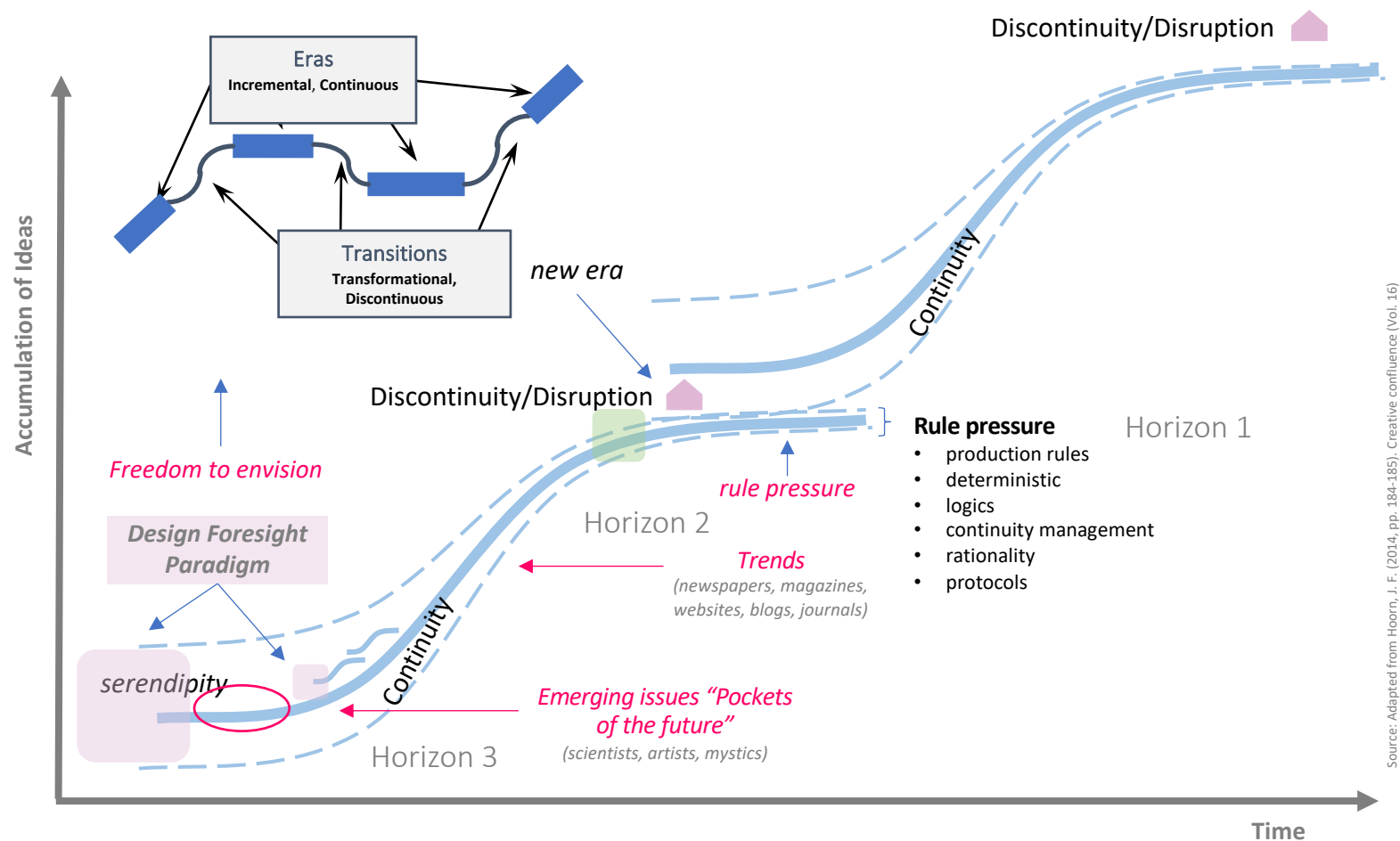
Eras
Incremental, Continuous

Transitions
Transformational, Discontinuous

new era

Continuity

Discontinuity/Disruption

Rule pressure

Horizon 1

Freedom to envision

rule pressure

Horizon 2

Design Foresight Paradigm

Rule pressure
- production rules
- deterministic
- logics
- continuity management
- rationality
- protocols

Trends
(newspapers, magazines, websites, blogs, journals)

serendipity

Continuity

Emerging issues "Pockets of the future"
(scientists, artists, mystics)

Horizon 3

Time

Source: Adapted from Hoorn, J. F. (2014, pp. 184-185). Creative confluence (Vol. 16)

Sources

Copyright

Unless the sources are specified in this Body of Work, the copyright of the materials presented (excerpts, photos, videos, figures, drawings, diagrams and media) is owned by the author.