Вестник Томского государственного университета. Культурология и искусствоведение. 2024. № 54. С. 21–32.
Tomsk State University Journal of Cultural Studies and Art History. 2024. 54. pp. 21–32.

Original article
УДК 7.01
doi: 10.17223/22220836/54/2

CULTURAL LAG AND VISIONARY CHALLENGES: SPECULATIVE APPROACH TO GENERATIVE DESIGN

Weng Wei[1], Dmitry V. Galkin[2], Yue Zixuan[3]

[1, 2, 3] *National Research Tomsk State University, Tomsk, Russian Federation*

[1] *vivianglia2022@outlook.com*

[2] *gdv_t@mail.ru*

[3] *zixuanmimor@gmail.com*

Abstract. This paper presented an attempt to formulate Speculative Generative Design (SGD) approach (Generative Design based on "Speculative Design" Theory) to contemporary design methodology. We suppose that generative art and design – rooted in Modernist tradition of creative practices and currently developed as computer Artificial Intelligence based technology – should be integrated with speculative design as the critical intellectual synthesis and design methodology in the context of rapid social change and so called "cultural lag" (W. Ogburn). In authors's perspective SGD can productively use advantages of technological and cultural determinist theoretical frameworks and stimulate creative potential of uncertainties implicit to technological driven design. Computer algorithms and programming languages could change the necessity of the designer imperative. For many practitioners these changes also open a new area of interdisciplinary intersections and collaborations between arts, design and technology. As it was demonstrated in recent publications, origins of generative art and design come from modernist visionary art and have more than century of very rich history. Authors apply the philosophy of speculative design as a framework to investigate the experimental future of generative design, based on computer algorithmic methods. Fundamental explanations of speculative approach we use presented in the book by Dunne and Raby "Speculative everything. Design, Fiction, and Social Dreaming". Following this in order to help designers effectively explore generative design and improve their design decisions, we offer an SGD (Generative Design based on "Speculative Design" Theory) design methodology. Currently different cultures and ideologies are cognizant of the distinctions between the original settings and their own national contexts since speculative design is a culturally dimensional design methodology framework. From the bigger theoretical perspective contradictions between technological and cultural determinism could be solved in our approach in speculative manner through the generative design prototyping with the focus on possible deviations not functional capacities. With SGD-prototyping we transfer the problem into the virtual world and parallel designs appearing for creative transformations. Using props from science fiction novels and film and television dramas as media, and based on virtual future scenes and corresponding science fiction-like writing structures, future design becomes an innovative framework logic.

Keywords: speculative design, generative design, cultural and technological determinism, cultural lag

For citation: Weng Wei, Galkin, D.V., & Yue Zixuan (2024) Cultural lag and visionary challenges: speculative approach to generative design. *Vestnik Tomskogo gosudarstvennogo universiteta. Kul'turologiya i iskusstvovedenie – Tomsk State University Journal of Cultural Studies and Art History*. 54. pp. 21–32. (In Russian). doi: 10.17223/22220836/54/2

Научная статья

КУЛЬТУРНОЕ ОТСТАВАНИЕ И ВИЗИОНЕРСКИЕ ВЫЗОВЫ: СПЕКУЛЯТИВНЫЙ ПОДХОД К ГЕНЕРАТИВНОМУ ДИЗАЙНУ

Вэн Вэй[1], Дмитрий Владимирович Галкин[2], Юе Цзысюань[3]

[1, 2, 3] *Национальный исследовательский Томский государственный университет, Томск, Россия*

[1] *vivianglia2022@outlook.com*

[2] *gdv_t@mail.ru*

[3] *zixuanmimor@gmail.com*

Аннотация. В статье представлена попытка сформулировать подход спекулятивного генеративного проектирования (SGD) (генеративный дизайн на основе теории «спекулятивного дизайна») к современной методологии дизайна. Генеративное искусство и дизайн с их корнями в традиции модернизма сегодня развиваются как технология, основанная на компьютерном искусственном интеллекте (AI), и должны быть интегрированы со спекулятивным дизайном как критическим синтезом и методологией дизайна в контексте «культурного отставания» (У. Огберн). SGD также может продуктивно использовать противоречия и преимущества теорий технологического и культурного детерминизма.

Ключевые слова: спекулятивный дизайн, генеративный дизайн, технологический детерминизм, культурный детерминизм

Для цитирования: Weng Wei, Galkin D.V., Yue Zixuan. Cultural lag and visionary challenges: speculative approach to generative design // Вестник Томского государственного университета. Культурология и искусствоведение. 2024. № 54. С. 21–32. doi: 10.17223/22220836/54/2

Ongoing discussions on computation-based methods in art and design demonstrate that increasing power of computer algorithms, AI (Artificial Intelligence) and cloud computing is causing a paradigm shift in design. Computer algorithms and programming languages could change the necessity of the designer imperative [1]. For many practitioners these changes also open a new area of interdisciplinary intersections and collaborations between arts, design and technology. However, as it was demonstrated in recent publication [2], origins of generative art and design come from modernist visionary art and have more than century of very rich history.

Our research uses the philosophy of speculative design as a framework to investigate the experimental future of generative design, based on computer algorithmic methods. Fundamental explanations of speculative approach we use presented in the book by Dunne and Raby “Speculative everything. Design, Fiction, and Social Dreaming” [3]. Following this in order to help designers effectively explore generative design methodologies and improve their design decisions, we offer an SGD (Generative Design based on “Speculative Design” theory) design methodology.

There is no single meaning of the term “Generative Design” (abbreviated “Gen-Design” or simply “GD”), although there are several complementary definitions with common traits that change according to different theories. Generative art and design have always gone hand in hand throughout the history of design, dating back to the invention of the computer. While “art” is mediated

through exhibitions and typically has strong representational elements defined by the creative power of artist, "design" is more implicit and follows the development of engineering and technology with strong orientation to the functional demand of different markets. As an exploratory approach to technological practice, GD has always made modest theoretical advancements. The author believes that the idea of "generative design" ought to depart from conventional technical methodology and adopt a broader perspective. Recent developments in 2021–2023 marks a significant turning point in the raise of generative design as Artificial Intelligence (AI) technology becomes gains significant advantages with new Large Language Models (LLMs) such as Chat GPT by Microsoft.

However, industrial design and construction, architectural practices used to be the main domains where "generative design" technological approaches were employed in visual solutions for design projects. The bionic form of the building or product surface is sought through criteria to achieve an aesthetically pleasing appearance, while various materials and production processes are analyzed by algorithms to accomplish the desired structure. Furthermore, the main arena for generative design is the field of virtual design, which includes multimedia dynamic design and gaming. As virtual technology has grown, so too has the notion of generative design, which is becoming more and more rich and diversified. Beginning in 2023, generative AI-represented by GPT-will have significantly enhanced natural language processing powers. "Generative design" moves from the technical to the conceptual domain when designers are able to communicate with AI directly.

The power and influence of this new technology is undeniable, yet utilizing AI effectively for innovation has been hampered by the concept's lack of clarity. The primary cause is because technology innovation primarily focuses on the efficiency dimension, with relatively little attention paid to the building of the content quality dimension. According to influential Ogburn's model [4], the most crucial consideration during the Culture Lag[1] phase is how to integrate the new technical logic with an appropriate design approach in light of the influence of new technologies.

In an effort to solve this problem and provide an equally open-ended theoretical framework for explaining potential humanistic and "culture respected" (Ogburn's notion) developments in the future generative design, this study presents a generative design methodological framework based on "Speculative Design Theory" (abbreviated SGD in this paper). We'll start with introductory explanations of what this terms mean and how this phenomena historically evolving.

1. Speculative and Generative Design

First of all, speculative design (SD) is focused on social and cultural value dimension of design by presenting future worlds, parallel futures, and hypothetical moments anticipated by technological changes. It originates in the experimental

[1] American sociologist WF Ogburn first proposed the concept of "cultural lag" in his book "Social Change" published in 1923 [4]. Cultural lag refers to the backwardness of a part of the cultural cluster during the process of social change. Other parts appear sluggish. Also known as cultural distance or cultural backwardness. Two or more parts of a culture become less coordinated with each other due to inconsistent timing and extent of change.

design creation and teaching contexts of late 20th-century Western society, but also has its roots in different experimental practice of modernist art. Speculative design has distinctly interdisciplinary orientation to the future agenda with almost exact dictionary meaning of guessing on opinions that have been formed without knowing all the facts.

With an eye toward the future, SD encourages innovation, topicality, and uncertainty, building also on the critical design movement that began in the 1960s with all similar references to "non-solution design," "forward-looking design," or "provocative design" will help people understand it more intuitively. In already mentioned Dunn's and Rady's book authors also draw attention to the Western chronological and spatial restrictions of his theory, which holds that the philosophical heritage of the Western humanities is consistent with the predominance of speculative design in American and European institutions. It is worth mentioning, nonetheless, that scholars from various nations have shown a great deal of interest in speculative design from its creation since it is a very open-mind conceptual category, to which they have added their own distinct insights.

For example, the "whatif" exhibition at the 2011 Beijing International Design Triennial was the first Civic Design Center exhibition in China featuring a hypothetical future. Since 2012, research has been carried out in Taiwan at several universities, including the National Chengchi University, the Taipei National University of the Arts, and the National Taiwan University of Science and Technology. Although speculative design has arisen and been actively discussed in the West, it is still scarce among the mainstream voices of the design industry and academics in mainland China. Zeng Yiwen, a Chinese student of Dunn & Raby, claims that because there were established techniques in place at the time for meeting the demands of commerce and industry, the design industry in China received little attention [5].

Speculative design was only formally introduced into the curricula of many Chinese universities and integrated into the teaching reform after Dunn was invited as an expert to visit China for the Un-Future International Education Forum, which the Central Academy of Fine Arts organized at the end of 2017. A significant academic portion of Tsinghua University's 2018 3.0 Design Forum also included speculative design.

The China Academy of Art's School of Innovation and Design invited Dunn to deliver a keynote address on December 14, 2019. Since then, Dunn has been invited to lead a Q&A session with students on the Zoom platform for an exclusive course, and the China Academy of Art has provided a professional elective course for sophomores.

A collection of translations from the Design Theory Research Series, edited by Li Yanzu and executive edited by Zhang Li, released in 2020. *Speculative Everything: Design, Fiction, and Social Dreaming, Adversarial Design, Design History: Understanding Theory and Method, The Idea of Design A Design Issues Reader, Design and the Creation of Value, Critical Design in Context: Hitory, Theory and Procticn and Design and the Question of History* are the seven books that make up nearly half of the 17 translations, all of which were translated by Zhang Li. Guangdong University of Technology, founded by Zhang Li, has grown to be a significant critical design theory hub. Each year, she publishes theoretical pieces on the subject of speculative design in which she describes the state of the

field in China and puts out the idea of CSD, a hybrid of critical and speculative design with a distinctively Chinese "flavor" (see list of publications [5–9].

Several Chinese academics have provided an overview of their experiences integrating their theoretical frameworks into the process of design practice. Zhang Yizhi, for instance, examines how design is "mediated" to influence social interactions and reconstruct values, and presents the "media view" of speculative design as a means of engaging in co-creation and environment construction [10]. To assist practitioners in creating a more accurate vision of the future, Zhu Ziying suggests using a Speculative Canvas for discernment [11]. Xu Lijun and Wang Jinhua: Using "PUA" as an example, they investigate how speculative design affects contemporary social challenges [12]. According to Yang Yan, the creation of speculative designs can stimulate and encourage people to use their imagination to redefine the symbiotic relationship between humans, science, and technology, as well as the reality. It can also help to strengthen the depth of humanistic thinking by conducting in-depth exploration of the many possibilities of how humans and science and technology can coexist [13]. Since the goal of Speculative Thinking was also to serve as a source of educational inspiration, the outcomes of the pedagogical interface are especially significant. For instance, Zeng Yiwen contends that Speculative Thinking stresses the conceptual idea of future diversity and change, which runs counter to China's long-standing beliefs about education and culture. More guidance is needed for Chinese students in the areas of critical thinking and broad science understanding.

This and other cases demonstrate, when discussing the framework, that different cultures and ideologies are cognizant of the distinctions between the original settings and their own national contexts since speculative design is a culturally dimensional design methodology framework. This allows for modifications to be made. The notion of speculative design has been actively incorporated into the contemporary design academy and is regarded as a tried-and-true design methodology that can foster creative thinking in design. It has also resulted in the emergence of self-contained design forms in a number of design institutions and design exhibition activities. These factors provide a valuable perspective for examining the dynamics of design development in the modern era and served as a major inspiration for this study. Once the purpose of speculative design has been made clear, SGD can be used to suspend uncertainty, which is a modern problem with generative design.

2. Uncertainty: cultural and technological

Many jobs that have historically been associated with mental labor are now on the list of jobs that Artificial Intelligence (AI) may replace due to technological advancements, which has alarmed the public. Depending on whether AI is categorized as a pure technical tool or as a quasi-human being with autonomous agency, it will determine whether or not it can take the place of humans. We take this conceptual and interpretational difference as crucial for our research.

According to the current so called "threat hypothesis", it is incorrect to say that AI will replace mental labor. The industrial revolution replaced manual production with machine production, which altered the relationship between humans and machines. In the beginning, humans had to screw; in the control of the industrial era, humans controlled the machine; in the information age, humans

designed complex automation procedures based on the industrial process and these procedures instructed the machine to screw. In the current intelligent era, humans instructed AI to manufacture; AI used a database to calculate which components, therefore, the manufacturing process was likely to result in an event of screwing and AI generated automation instructions to tell the machine to screw. This phenomenon suggests that the evolution of the link between humans and machines is moving from direct to indirect, and the ultimate objective of AI design is for it to become a human agent. However, the distinctive social characteristics of people who live in groups and organize their labor socially make it impossible for robots to replace man-oriented employment at this time. AI on the higher degree of autonomy will find it challenging to replace human-oriented employment since, up until it develops a cluster intelligence, it lacks any human social characteristics.

This argument claims that any kind of technology requires its cultural and social adaptation. And here we arrive to the notion of cultural determinism and our initial Ogburn's model of Cultural Leg. New technology is always a product of cultural situation and historically shaped social needs. Then it takes time – little or significant amount – for what W.Ogburn calls diffusion or appropriation of technology by different groups of society [4]. The telegraph is a result of industrial revolution in railway transportation in the first half of XIX century but later became major communication technology. Computer systems in 1960–70s were corporate and scientific "toys" until became must have consumer goods in 1990s. Many technological achievements such as VR were "invented" and described in literature, arts and movies, which is another example of how culture facilitated technical progress.

Cultural determinism has its contradictory moments. If technology is culturally assimilated, is it possible that it drives a cultural and social change? There is a classical case how growth of automobile industry has dramatically changed not only modern cities but the whole life style, habits and behaviors of people. Responding to this contradiction comes technological determinism.

In his book "The Gutenberg Galaxy" [14], Marshall McLuhan – whose influential theory is frequently regarded as technological determinism–tries to explain how one technology – the printing press – completely and deeply transformed culture and society in Europe. The growth of nations and national cultures, development of national language standards, spread of individualistic values and more major elements of Western cultures are driven and pushed to life by printing press. Somehow new technology operates as an alien element of particular culture and becomes an able to transform it despite any social preconditions. Of course, in this argument new technology is always a challenge and even danger for society

The benefits of techno-determinism include its ability to forecast future developments, comprehend technological progress, and handle productivity and efficiency. The drawbacks include its tendency toward simplicity, disregard for human agency, and fatalistic outlook. Cultural determinism's strength lies in its emphasis on the human condition and its conviction that culture is extremely malleable to technology, with the potential to steer it toward contextual awareness. Its reluctance to adapt, variability, difficulty in generalizing, and predisposition toward staticism are its drawbacks. For the purpose of our research this contradiction seems very productive since it helps to understand our speculative

approach as a next level of analysis where techno-deterministic and culture-deterministic arguments can play together in speculative visions.

3. Speculative Generative Design: at the nexus of culture and technology

Since the culmination of industrial revolution in XIX century and the increasing complexity of the global economy and society, necessitating the development of new technical innovations to suit the demands of its many constituents. Among them is design. The cultural outcomes of design include the graphic and communication design for visual promotion of certain topics, architecture (incl landscape and interior) design geared toward the professional environment of the user population, industrial design that meets everyday situations of furniture, fashion, appliances etc, and stage design that transportation design must ensure the comfort and smoothness of long-distance travel, APP design must provide visual ease of use, stage design may fulfill the development of drama through music and light, and so on.

In the end, design must maximize the brilliance of human-centered people's lives, regardless of the particular circumstances. Humans' demand for novelty in their living spaces may be met by some inventive designs. Within the conventional industrial paradigm, design tactics are determined by designers through manual research and aggregated summaries of user preferences. In complex cultures, humans and technology coexist, as eclecticism indicates. The area of design synergy is growing in importance. Since technology is always evolving, it's important to understand the difference between subjective and objective uncertainty. Both bring us to understanding generative design as a creative process.

Technical uncertainty, or objective uncertainty, was present in the early stages of artificial intelligence (AI), such as expert systems. This was because the functions were low dimensional, there were few random variables used, and it was difficult to effectively control the weights of the variables. In AI, uncertainty specifically refers to the reality that an AI system is typically unable to possess perfect and all-encompassing knowledge about the outside world.

Numerous factors, like data noise, unclear information, or the intrinsic unpredictability of some systems, may be to blame for this. Artificial intelligence (AI) has developed a number of techniques to cope with and reason about this uncertainty since AI systems frequently have to make judgments based on inadequate knowledge. AI research is now focusing on developing computable models, measuring the psychological metrics utilized in decision-making, and mathematically modeling the degree of pertinent metrics.

Using the CAN model from the hot art generation as an example Based on Martindale's "artistic arousal" idea, Ahmed Elgammal and other AI academics presented the Creative Adversarial Network (CAN) model because they believe that Generative Adversarial Networks (GAN) only combine different artwork styles and lack creativity. Martindale's "artistic arousal" idea served as the foundation for their Creative Adversarial Network (CAN) model. This demonstrates the idea of cultural determinism, which holds that "culture is highly adaptive to technology and overwise" and that it is our responsibility as humans to develop strategies for making technology less unpredictable and more stable and controlled.

Conversely, subjective uncertainty is the mistrust of computers that results from humans entrusting highly subjective aspects of mental behavior, like creativity, to an artificial intelligence agent. It is also possible to claim that stimulus can be created by taking advantage of this mistrust. If we take uncertainty of creative ideas, it brings us to individual creative potential of designer. AI uses big data to generate design proposals, which are essentially data-mixed copies of existing artists' works (combined in data sets). And because human designers are limited in their ability to think creatively, designs that don't originate from their own minds are inherently uncertain and untrustworthy. If we take uncertainty that appears from the value of creation (creative product), this takes us full circle to the earlier discussion of cultural determinism and different ways society is able to recognize and diffuse innovations. It can be through significant functional improvement, solving problems or extending aesthetic qualities.

From the methodological perspective these contradictions could be solved in speculative manner through the generative design prototyping with the focus on possible deviations not functional capacities.

The traditional design direction is the one that employer decides upon. The design content presented by its platform has a relatively mature mechanism to ensure that the creative direction of the design work, which has also caused the solidification of the design language, under the highly mature mechanism of the commercial society, regardless of whether it is an opinion media or an advertising agency. For example, Internet products are designed based on user portraits, friendly usability, and commercial aesthetics.

The “Collegiate Dilemma” and anti-utopian critical routes are frequently the foundation of speculative design concepts, which defy conventional design routes and engage in multi-dimensional aesthetic critique and value judgment on the subject of future technological life forms or parallel worlds. These concepts are based on conceptual art and cross-media methods.

SD is a continuation of postmodernism's ideals, which include opposition to authority, diversity and ambiguity, rejection of monolithic discourse, search for alternatives, and skepticism toward “normality” and “common sense”. A discursive design project by Japanese designers Hiroki Yokoyama and Zhou Guanhua, titled “The Black Ship and Gifts” [15], provides four seemingly erroneous narratives about the Black Ship within the social context of the well-known “Black Ship Incident”. This is an attempt to challenge traditional historical stereotypes through the use of design prototypes.

Any design methods should aim to stimulate and discover more complex diverse process for creating ideas. The speculative design has three levels of future possibilities and one in-between, from “the probable future” to “the plausible future” to “the possible future”. The “preferable future” as the main target of the theory lies between the “probable future” and the “plausible future”. The various levels stand for various categories, where the scope for consideration is compact to broad and the probability range from high to low.

The main goal of SGD's proposal to create virtually generated prototypes of future-based or parallel present scenarios is to provoke thought on a variety of topics by presenting potential benefits and drawbacks of future technological scenarios. This approach also facilitates a more effective discussion of the larger future design metrics of “what kind of future do we want?”

For instance, in 1994, when the Motorola brick-sized mobile phone was the sole option available, designers like Dunn had previously created an installation to conceal from cell phones. It is clear that speculative design is valuable when it comes to imagining the potential changes that a modern society may bring about and planning forward to the point where one day smartphones may trap humans and how they will escape. This utopian viewpoint challenges our broad conception of the future. It's about making better decisions from a creative and strategic standpoint, not simply about fantasy. The purpose of the speculative design of fictional futures is to elicit empathy for these imagined situations and the conviction that they are feasible in the actual world.

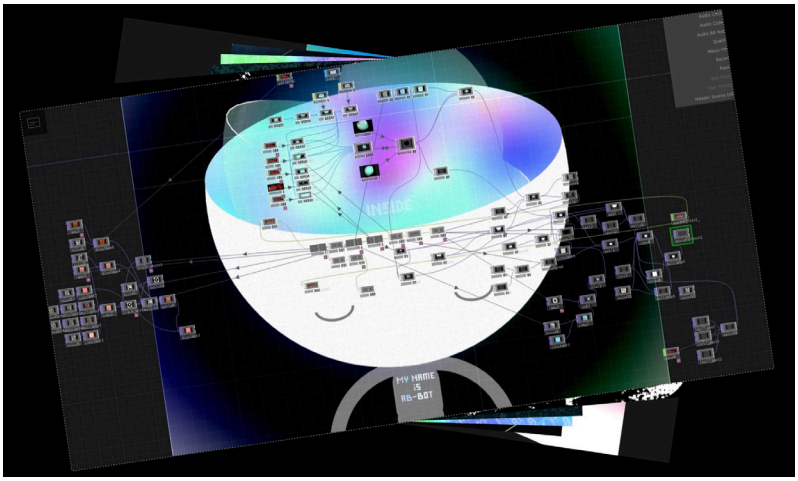
With SGD-prototyping we transfer the problem into the virtual world and parallel designs appearing for creative transformations. Using props from science fiction novels and film and television dramas as media, and based on virtual future scenes and corresponding science fiction-like writing structures, future design becomes an innovative framework logic. Future designs can be used to test several hypotheses about the near and further future. Whatever is up for discussion, including artificial cellular meals, robots, suture biology, and generative AI.

What are the immediate effects of autonomous automobiles, for instance? Are cell phones able to exist in the mind or the eye? Or is there a way for us to be able to connect to our phones? If you survive until 2100, what kind of planet will it be? Will you undoubtedly get old? Will you be employed going forward? Is the spirit still alive and the body dead? The way you communicate, commute, work, eat, and interact with neighbors, coworkers, society, pets, and the environment... Any of these can be used in place of the hypothesis. Which concepts would you generate? Projects, things, images, places, services, and systems: how would you solve this problem? What moral and societal challenges might we confront in the future?

For the practical part of our research, we explored the creation of dynamic generative visual design based on virtual novels using the concept of SGD. The “builder” character from Japanese manga artist Makoto Ichiban's science fiction work “Blame!” served as inspiration for this work, and a number of character settings were created, including the Artman series of robotic products for automated construction on Mars and the people who built them. The core theme of the novel revolves around an AI builder who, after several failures at space missions, learns his lessons and rebuilds his ideas for exploration. And borrowing the idea of brand image design, we conceived a robot that can collect material information on the planet and generate construction algorithms. The work's dynamics use generative design, utilizing TouchDesigner software for visual programming. This allows the visual shape of the design to change as the tale progresses [9]

If we consider random inputs or “randomness”, it's really a black box for modelling: I don't know all the rules of a system, so I assume that there are some extra factors in the system that are providing “random” inputs. Random in this sense is just proof that you haven't modelled the system completely and accept uncertainty and don’t pretend that the world is fully computable as long as we are able to construct a complete set of rules that account for all the variables. SGD may also seem unconstrained, but in fact it is a test of the designer's creativity and predictive power in writing a planning and design blueprint, and a reflection of the designer's comprehensive ability to present ideas in a small way through prop prototype design. Even if you can show that something works on paper and the

calculations are clear, it won't be fully accepted until you actually build it and people can drive it.



Pic. 1. SGD prototyping (Simple Chinese info by Weng Wei)

As we mentioned above for our argument is important that we think of design to predict and construct future directions. This is how contradictions of techno- and cultural determinism collide and cooperate in the realm of the future uncertainty including not only technical questions, but preliminary social and ethical ones.

SGD thoroughly explores potential future dimensions through SD and suggests that exaggeration in debating is in line with factual principles. For instance, government planning commonly incorporates a 5-year, 10–20 year, and 50–100 year plan, with longer-term plans requiring more extreme assumptions to anticipate disruptive events and cover a wide range of possibilities. Dunn's installation of mobile phone dodging was predicted to be a likely phenomenon in the next 10–20 years, and it is not an exaggeration to say that this prediction has proven to be accurate today.

From the perspective of historical patterns, “taking history as a mirror,” assuming something is “impossible” can easily change. Humans are fond of patterns, finding order in disorder, and dedicated to predicting the future. Predictive technology has become an effective tool in the game between humans and the natural world. Of course, this tool is continuously evolving. Throughout history, humans have also invented many unreliable disciplines, such as astrology.

Speculative design come close with the turn to “materializing morality” – one of the important methodologies of the “material turn” in the philosophy of technology. AI provides new technological prospects for the design of “thing-turning”. This is due to the conventional view that technology presents unpredictable threats to human civilization, particularly in relation to international group activities.

Use SGD simulation to consider the risks associated with overdesign. The term “over-design” refers to the practice of invading privacy, controlling user behavior, robbing consumers of precious time, and using addictive processes in the name of improving user experience. Capital will often hold the morality of design for business hostage. Now, in order to reclaim the original objective and investigate the kind of future we desire, “design as a research tool” must be used.

More punching real-world examples exist. For instance, Nick, an algorithm engineer at Little Red Book, the Chinese equivalent of INS, posted on YouTube about how he saw data changing creators' behavior and how the platform gets feedback on how anxious creators are. Ultimately, though, it's still metrics-driven because the platform requires a higher level of engagement. Making content creators feel more and more worried about their work is the only way to inspire them to produce new content every day. One day, he was in a large bone-cutting and plastic surgery facility in the heart of Shanghai when he saw that everyone there was swiping on Xiaohongshu.

The algorithm designers behind Facebook and other platforms are no different. With each individual in charge of a certain region, very few people in the organization truly understand how the entire platform works. As the adage goes, “don't know the true face of Mount Lushan, only in this mountain.” As a result, in the modern digital world, even algorithmic engineers–also referred to as the God's viewpoint of the laws made by the data–only stimulate the creation of new data.

It should be highlighted that the actual world and virtual environment have distinct ethical standards. Furthermore, ethical ideas change with time. Over the years, SD has created its own formal formulas. One such formula is the purposeful creation of crude models that are devoid of details, which serves to remind viewers that SD is a serious form of entertainment. It is the peculiarly human need to fictionalise events while still emphasising that they are false.

To enhance the discursive nature of SGD, designers should suspend the question and go beyond the target's framework by placing it in the grand narrative. Thought “synecdoche”, Drawing larger conclusions from smaller observations.

Conclusion

This paper presented an attempt to formulate Speculative Generative Design (SGD) approach (Generative Design based on "Speculative Design" Theory) to contemporary design methodology. We suppose that generative art and design – rooted in Modernist tradition of creative practices and currently developed as computer Artificial Intelligence based technology – should be integrated with speculative design as the critical intellectual synthesis and design methodology in the context of rapid social change and so called “cultural lag” (W.Ogburn). In our perspective SGD can productively use advantages of technological and cultural determinist theoretical frameworks and stimulate creative potential of uncertainties implicit to technological driven design. Practicing the prototype methods, we suggest designers can suspend problems and present them in prototypes or virtual methods to "reward" visitors' opinions. The main point is that designers need to understand how the uncertainty of GD and the potential of SD relate to each other. This study demonstrates that the aim of SGD is to produce forward-looking visionary designs that align with the distinct spiritual and intellectual aspirations of humans, rather than prophesy or actuality.

References

1. Bohnaker, H., Gross, B. & Laub, J. (2012) *Generative Design: Visualize, Program, and Create with Processing*. Princeton Architectural Press.

2. Lukichev, R., Galkin, D. & Konovalova, K. (2023) The problem of interpreting generative art: towards hermeneutics of autonomous systems. Vestnik TGU. *Kul'turologiya i iskusstvovedenie – Tomsk State University Journal of Cultural Studies and Art History*. 49. p. 90–106. (In Russian). DOI: 10.17223/22220836/49/8

3. Dunne, A. & Raby, F. (2013) *Speculative everything. Design, Fiction, and Social Dreaming*. MIT Press.

4. Ogburn, W. (2018) *Social Change with Respect to Culture and Original Nature*. Franklin Classics Press.

5. Zhang Li. (2017) From being radical to being speculative: How design catalyzes social dreams. *Journal of Nanjing University of the Arts: Art and Design.* 4. p. 6.

6. Zhang Li. (2021) How discourse is designed: alternative Things and communication ethics. *Art Design Research*. 5. pp. 58–64.

7. Shi Yue. (2023) *Research on the application of participatory speculative design based on affective computing*. Guangzhou: Guangdong University of Technology. [Online] Available from: https://kns.cnki.net/kcms2/article/abstract?v=FY8FZShUIjEfR55bIIaspBHVXYVHKNgbf6a4PeV7NF6uucWFxRAJdZzWDJuxmpZ0lMuSJD7H -1zLoBpG- waaCOnQiBADh2EF0zJ6VVyJzkpu88rvLGkj7g==&uniplatform=NZKPT&language=gb

8. Zhang Li & Liu Yujia. (2023) How to imagine the past in an alternative way: contingency design Speculative experiments in history teaching. *Journal of Nanjing University of the Arts: Art and Design.* 2. pp. 17–21.

9. Wang Xiaolan & Zhang Li. (2022) Why design is black: narrative media and value fiction. *Art Design Research*. 5. pp. 66–72.

10. Zhang Yizhi. (2023) Design as media - media view and action logic in speculative configuration. *Journal of Nanjing University of the Arts: Art and Design.* 5. pp. 51–56.

11. Zhu Ziying. (2023) Research on speculative design practice strategies for future innovation. *Design Art Research*. 13(03). pp. 30–34.

12. Xu Lijun & Wang Jinhua. (2021) Speculative design of "PUA" on hot social issues. *Hunan Packaging*. 36(05). pp. 98–101. DOI: 10.19686/j.cnki.issn1671-4997.2021.05.028

13. Yang Yan. (2021) Using technology as a medium – Research on speculative design creation. *Art Observation*. 10. pp. 154–155.

14. McLuhan, M. (2011) *The Gutenberg Galaxy*. University of Toronto Press; Centennial edition.

15. *Display website: ArtMan | ReadyMag*. Created by the author during 2022. [Online] Availble from: https://readymag.com/u3582685087/artman/, ArtMan·ArtMan-Bot. (nd-b). https://sway.cloud.microsoft/ 2mzIfIXDdH4CXdO2?ref=Link

Information about authors:
Weng Wei – National Research Tomsk State University (Tomsk, Russian Federation). E-mail: vivianglia2022@outlook.com
Galkin D.V. – National Research Tomsk State University (Tomsk, Russian Federation). E-mail: gdv_t@mail.ru
Yue Zixuan – National Research Tomsk State University (Tomsk, Russian Federation). E-mail: zixuanmimor@gmail.com

The authors declare no conflicts of interests

Сведения об авторах:
Вэн Вэй – аспирант кафедры культурологии и музеологии Национального исследовательского Томского государственного университета (Томск, Россия). E-mail: vivianglia2022@outlook.com
Галкин Д.В. – доктор философских наук, профессор кафедры культурологии и музеологии Национального исследовательского Томского государственного университета (Томск, Россия). E-mail: gdv_t@mail.ru
Юе Цзысюань – аспирант кафедры культурологии и музеологии Национального исследовательского Томского государственного университета (Томск, Россия). E-mail: zixuanmimor@gmail.com

Авторы заявляют об отсутствии конфликта интересов.

The article was submitted 28.04.2024;
approved after reviewing 29.04.2024; accepted for publication 15.05.2024.
Статья поступила в редакцию 28.04.2024;
одобрена после рецензирования 29.04.2024; принята к публикации 15.05.2024.