VISIONING THROUGH DIVERSITY: 'OPEN VISIONS' – AN OPEN, DIGITAL COLLABORATIVE RESEARCH TOOL FOR DESIGN CLASSROOMS, INDUSTRY AND CITIZENS

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ABSTRACT
Open Visions is a digital tool that responds to hegemonic constraints and diversity needs in the context of industrial design pedagogy. The aim of this project is to integrate a multitude of perspectives and systems thinking depth into existing speculative design methods. This is developed as a response to what can be seen as a white, binary, Eurocentric practice for a design classroom that has a strong mix of ethnicities, genders and socio economic backgrounds. In this paper, we draw a link between hegemonic conformity and a decline in critical thinking skills in education. We analyse existing methods of teaching critical thinking in design, discuss limitations of some of the tools they provide and explore the potential of moving those tools into a digital environment. *Open Visions* aim to open the studio space to communities, citizens and industry thus providing opportunity for students to be part of the public discourse on a variety of trending relevant issues. We explore possible criteria for success for *Open Visions* such as easy access and knowledge exchange, safe space, customization and agency over content and discuss an initial case study and our next steps.

Keywords: Design Education, Speculative Design, Diversity, Critical Thinking, Co-Visioning

1 CONTEXT: INDUSTRIAL DESIGN AND CRITICAL THINKING IN A DECOLONILIZED AND INDIGENIZED CANADA

Over the past four years, as part of a comprehensive interdisciplinary trend [1], [2], we observed a significant decline in the critical thinking skills of our Industrial Design (ID) studio students - a consistent drop in students' ability to engage in high order thinking tasks such as analysis, synthesis, systems thinking and narrative generation from inclusive perspectives [3]. The decline in critical skills sit in contrast to our ambition as a university to implement an academic plan that responds to the national call to decolonise and indigenize the educational institutions and curricula across Canada. This means finding meaningful ways in which our studio based art and design university responds to the truth and reconciliation act, acknowledging the loss of land, culture, language and ways of knowing of the indigenous peoples of Canada. As faculty, we are engaged in exploring ways to decolonise our design curriculum and practice through challenging notions of modernism, capitalism, white male dominated, hegemonic design practices that are infused with western bias. Furthermore, our student body is made up of 50% ethnic and visible minorities (incl. women), 1st, 2nd, 3 rd and 4th generation immigrants from across the globe [4]. They find themselves surrounded by Eurocentric commercial perspectives while there is an opportunity for a diverse design culture to emerge from their own heterogeneous backgrounds and lived experiences [5].

2 PEDAGOGICAL APPROACH

As part of a broader pedagogical effort to respond to the call for decolonisation, we explored new ways to teach critical thinking skills. Critical thinking is often referred to an array of universal features such as clarity, relevance, depth, breadth, and fairness [6]. The authors define critical thinking in design as the ability to study, research and identify a problem (e.g. inequality/social issues/power dynamics) from diverse angles, contexts and realities. This enables students to understand personal

conformities and form unique perspective that reflects the impact a product and/or a type of interaction has on different systemic spheres (politics, economics etc.) that shape communities, society, cultures and histories.

We experimented with, and assessed various methods (spanning from systems thinking in speculative design [7], [8], [9], co-design [10] to foresight and strategic design [11], [12]) in the context of a 2nd year ID, emerging technologies courses and the 4th year ID major design project, in which students develop a self-driven project based on their own interests.

The part of critical thinking we became most interested in exploring, is its intrinsic call for diverse perspectives. We believe it has the potential to support students' exploration of different aspects of hegemony, and more importantly, to provide an opportunity to break out of cultural, social and market-driven constraints. Although the methods we used as a starting point for our exploration (speculative design, foresight, design fiction) are all human centred and encourage diversity, most of them stem from a white male perspective (recent criticism towards speculative design highlights it as a binary, white practice [13]).

In response to both the needs of the pedagogical context, the opportunity and the critique of speculative design, we started the process of developing *Open Visions* - a digital, open platform for creating diverse speculative scenarios and alternative design solutions.

3   METHODOLOGY: OPEN FUTURES

Expanding from a range of methodologies used in foresight, critical and speculative design (CSD) - from system mapping to role playing, method cards and visualization techniques - we have developed a set of in-class processes and tools, to facilitate critical and systems thinking. The tools equip students with a variety of different lenses (e.g. political, ecological, cultural etc.) and are designed to deepen their research of the ramifications their ideas might have on people's daily life; both in the present and in the near future. We are interested in the 'future' as a medium that facilitates student investigation into alternative futures. A medium that connects emerging technologies and shifting trends to the unique perspectives and backgrounds of our students. We believe that this will prompt our students to identify their assumptions, rethink their practice and most importantly, points at a trajectory to become part of a collective effort to imagine a different and better tomorrows.

3.1 Existing speculative design methods & tools

Existing CSD cards (Figure 1, left) offer an array of variables and ask students/users to imagine fictional narratives (alternative futures/alternative presents) where all the variables work together as part of a new rational system. The most common variables are contextual (such as geographic place), disruptive (such as technology, trends, type of possible change) and time perspective (Figure 1, bottom left). Combined together, the tool activates narratives by offering new, unexpected types of relationships and combinations between the variables. The results are manifested as written stories, and sometime as artefacts (Figure 1, right).

In class, we tested the above and added a variety of additional variables exploring the limitations, adaptability and flexibility of such cards in four dimensions: 1) Introducing specific types of users 2) Introducing types of needs 3) Introducing types of experiences 4) Introducing types of technological paradigms.
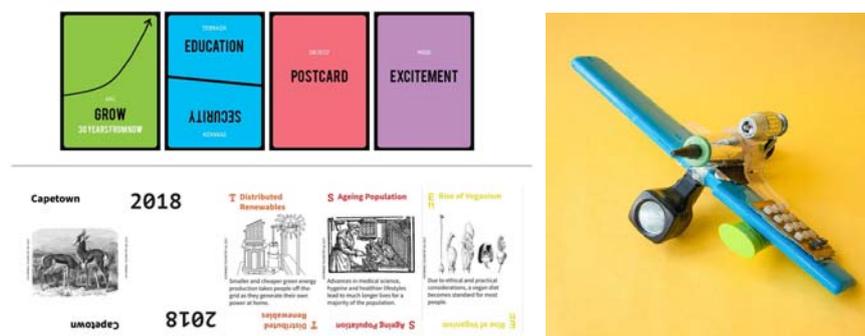

Figure 1. Top left: The Thing From The Future [12]. Bottom left: Futures Poker [8]. Right: Dro-Yo [14]

4   LIMITS AND OPPORTUNITIES OF EXISTING DESIGN METHODS IN THE CONTEXT OF INDUSTRIAL DESIGN STUDIO CLASSROOM

Although the variables were helpful in directing our students, who are familiar with a human centred design approach [15], what appeared to be preventing the students from uncovering their own limitation was, firstly the challenge of constructing a scenario that takes place 10-50 years into the future, secondly a 'top down' approach that restricted users point of view to that of the cards author [16]. The card's authors 'cherry picked' the components– they selected the data that students/users were working with. The inability to customise the existing tools for a variety of students, themes and meeting course specific needs is limiting and removes the agency students could have over their own learning [17]. To decentralize such a design toolkit, we involved our students and other parties in the process of choosing the 'right' components for the method cards. In addition to this insight, we reviewed existing method cards that are specific to CSD alongside relevant literature [16]. The following limitation and opportunities emerged from the experimentation undertaken in our design studio class:

4.1 Bridging user centred design methods into CSD

Users and needs were often very general or missing a category (Figure 1, bottom left). Asking our students to build a narrative without including a specific user or need posed a challenge. Most of our 2nd year ID students utilize basic human centred design methodologies and are actively seeking variables including specific users/needs to build upon and integrate into their design scenarios and developments/processes.

4.2 Customization

Current CSD methods are limited in the way they can be adapted and modified. Defining the top-level variables that students have to work from (e.g. technology, social issue) plays a significant role in how students engage with, research, and frame a design opportunity. Therefore, we have concluded that design methods tools must have the flexibility to be adjusted to a range of contextual frameworks.

4.3 Systems thinking

Although most CSD cards are based on systems thinking in design and encourage it, they lack flexibility and ability to integrate additional social, economic and political spheres [12], [8]. By providing students with the ability to choose what variables will shape their narratives, *Open Visions* encourages them to explore an unlimited space of interconnected factors in design – from people and the context they live in, to the objects they use and the way they are being manufactured, used and impacting society, ecology or politics. Adding these variables is hoping to improve student's ability to develop their individual way of seeing and understanding design as a system.

4.4 Open collaborations

Based on our professional experience as workshop facilitators, we see CSD method cards being used with homogeneous interest groups such as students, organisational employers or think tank experts that are locally bound by proximity and physical attendance. Creating a digitized version of such tools could facilitate distributed collaboration as an inherent part of the process and opens the door to diversity and inclusion by erasing the limit to the number of collaborators, their geographical place, and the time of use, ages, education, financial status, gender, race or background.

4.5 Co-created critical Industry engagement

The authors see current industry engagement in classroom projects as 'dictated' by the client, forming a one-way channel in which industry partners often ask students to respond to a very narrow brief. Instead of limiting possibilities by setting standards, *Open Visions* creates opportunity for industry and students to become active participant in a public debate about future needs rather than imposing it, hence engage in a bigger social debate as citizens [3].

By combining industry, students and other participants' perspectives into one collective database, *Open Visions* becomes a research knowledge pool that leads to a co-created brief – one that is relevant for all parties included at the onset of the project. *Open Visions* therefore, suggests a less dominant mechanism to involve industry in the students' learning experiences.

5 DESIGN CRITERIA AND FIRST PROTOTYPE FOR OPEN VISIONS

As a first step to develop criteria for success for *Open Visions*, we identified the affordances of everyday collaborative digital tools Google Docs and Trello. The affordances varied from real time co-working, sharing, editing, commenting to taxonomies and categorised archives. This analysis highlighted the limitations of current analogue CSD methods. Our next step was to synthesize the added values of digital capabilities in the form of design criteria for *Open Visions*. The latter included: connecting the class to industry and public both locally and globally, share knowledge, co-create, debate, collect. Most importantly, it set the foundation for a transparent framework that gives each student agency over the content and context they are engaging with. Those insights were compiled and integrated into the first proof of concept digital prototype of *Open Visions* with the intent to define it as an open digital collaborative tool for designers, industry and citizens.

5.1 Prototyping

The *Open Visions* prototype is a web based, single-page application - interacting with the student/user through one primary page that is dynamically changing content by loading new data from the server. The primary page consists of 5 different cards (see figure 3, right); each represents one variable in a possible scenario (e.g. technology type, user type, etc.). The dataset of variables is written by the participants and collaborators. For example: private companies, citizens or communities that participate in such a session can submit their own content (prioritizing their personal views on each variable). Users can choose to load external datasets (e.g. a collection of socio-economic issues relevant to a specific community or a collection of emerging technologies researched by specific faculty/institutions) and customize the type of variables that fit their project scope and needs. Loading variables from the database calls random entries and creates a unique card combination of the loaded variables (e.g. artificial empathy, 2030, millennials, need for privacy, housing, Toronto, Canada). When users are satisfied with their card combination, they launch a 'Create scenario' window - an editable text field with few initial narrative suggestions based on the selected cards output. This gives users a starting point to think about possible context for their design concepts. The narrative suggesting mechanism is adopting language associated with generic news taglines that represent top-to-bottom and bottom-to-top approaches:

> *The Housing system in Toronto is slowly deteriorating and the government is not doing anything to help the situation. By 2030 few Millennials are looking into new ways to use Artificial Empathy to change the condition.*

or

> *In 2030, Housing is one of Toronto's biggest issues. The provincial government is looking to help Millennials by using Artificial Empathy.*

At this point and after imagining possible alternatives, users submit their scenario to the archive, where it can be viewed and considered in relation to all other scenarios by all project participants.

5.2 Testing

As a first step, we asked both faculty and students to contribute to a shared database (Figure 2 on the left shows the jointly generated database that was created in the context of ID 2nd year, Emerging Technology course). Students used the combined data to develop scenarios and talk about possible implications of the given technologies. The written scenario offered the students a more granular description of a speculative/existing user, need and context for further design research and development.
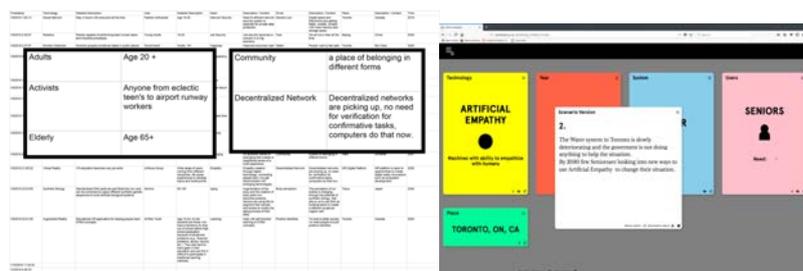

Figure 2. Left: Screenshot of database generated by students and faculty. Right: Open Visions user interface

5.3 Findings

Assessing the data entries, we have discovered that most individuals select personas/users from a category they easily identified with (student = millennials, faculty = age 50-66) leading to a hegemonic design space. We suggest that the next iteration of the tool looks at tactics to purposefully contrast backgrounds (randomisation/oppositional tactics) and create more opportunities to work in a speculative space with an improved representation of the diverse spectrum of needs/wants/aspirations etc. Students reported positively about the amount of agency the *Open Visions* allowed them to have and its contribution to the process of framing their own projects.

6 CONCLUSION & NEXT STEPS

From a pedagogical perspective, *Open Visions* is an opportunity to expose our students to external unfamiliar perspectives, establish new mechanisms for collaborations and encourage a critical debate that offers different opinions across different contexts, settings and stakeholders in design. To continue refining the intentions of *Open Visions*, testing the digital platform with industry partners is a next step. With industrial design students and faculty, we'd like to compare the analogue *Open Visions* card tool in one course and the digital tool in another and test if the hypothesized benefits of the digital tool (customization, open collaborations, systems thinking, archiving etc.) hold true. On a curricular level the authors hope that *Open Visions* will provide students with a tool that they can customize to their project scope and complexity as they gain design skills and competencies from year 2-4 of their studies. As a contribution to design practice the authors attempt to democratise speculative design methods and open them to multiples ways of knowing, break down disciplinary silos (university, industry, community) and decolonize the processes through which we design.

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