

UNDERGRADUATE DESIGN FICTION A FRAMEWORK TO ENACT A GUERRILLA FUTURE.

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1 INTRODUCTION

Designing believable future fiction narratives can be a catalyst to provoke discussion and debate with institutional and public audiences and a powerful means of educating critical and reflective designers that question the ethics of what and why we create.

This paper describes a particular model for design fiction, a guerrilla future, that draws context from a case study, a project-based collaborative studio that brought together 16, third-year students from industrial design, interior design, and visual communications. The objective is to suggest a framework that can be replicated with an undergraduate design studio and enacted with a student, public or corporate audience. The resulting discussion and debate surrounding these emerging, potentially transformative technologies, is intended to foster three concepts among designers and larger audiences. 1. An anticipatory mindset. 2. An awareness of how incremental “seemingly benign” advancements in technology can lead to massive shifts in social behavior. 3. The realization that “successful design” can initiate complex systems, unintended consequences, and unforeseen circumstances which are sometimes more harmful than the ramifications of design failures. Finally, the framework describes a specified type of class and protocol and the results that emerged. A discussion of possible variants to this approach will follow at the end.

2 COURSE OVERVIEW

Design fiction emerged in the early part of the 21st century as a design research technique to create deliberate future scenarios with the aid of diegetic prototypes, or story props. In its most practical form, design fiction is a research tool emerging from the intersection of design thinking, critical design, science fiction and foresight studies to bring legibility to the future. With the latest wave of technologies such as human augmentation, the Internet of Things, or the neural networks of artificial intelligence (AI), which learn and evolve in unpredictable ways, new possibilities and combinations produce levels of complexity that may become incomprehensible—at least to humans. According to Allenby and Sarewitz (2011, 80), a failure to understand “[...] the systemic, transformative effect of technological change [...] is to grossly overestimate how much we can know and understand about the world we live in, and how it is reconstructing us [...].”

In the last decade, there have been numerous approaches to design fiction, and there are an increasing variety of methodologies and applications. One such approach borrows on the idea of Stewart Candy's guerrilla interventions, a sub-category of experiential futures, referred to here as guerrilla futures. Candy (2010) explains ‘guerrilla interventions,’ as:

“Its aim as a practice is to introduce sceneric possibilities to publics that otherwise may not be exposed to them, or that, while perhaps aware of the possibilities in question, are unable or unwilling to give them proper consideration. It is about enabling people to become aware of and to examine their assumptions about futures -- possible, probable or preferable -- by rendering one or more potentials concrete in the present, whether or not they have asked for it. (209)”

Exercises in future narratives and the resulting prototypes enable students, through a structured process of speculation [Table 1.] to examine the potential ramifications for people, culture, and society as well as the designer’s motivations and biases.

A specific transformative technology :	convergence mapping	touchpoints	final documentation
Augmented reality + human augmentation	final logical succession	personas	final refinements
showcase student skills	visualizing	scenarios	
surround the topic set up GoogleAlerts	sorting	prototyping	legacy documents
data collection + reporting	defining the	storyboarding	
identify trends and behaviors	customer	scripting	
identify the driving forces	experiences	video	
statement of intent	maps journies	refine prototypes	
begin logical succession	concept sketching	event presentation	
Weeks 1-3	Weeks 4-6	Weeks 7-9	Weeks 10-14

Table 1. A structured process.

3 THE PROJECT TOPIC

The Collaborative Studio is a recurring part of the third year design curriculum that meets two times per week for two and one-half hours. With this particular case study, however, there was an opportunity to unite with a larger campus research initiative centered on the broader topic of Humane Technologies (HT). The HT initiative would be culminating with a series of technology-based explorations and provocations, termed as Pop-Ups, to be held during week nine of the semester. Since a typical semester is 14-15 weeks, the normal design process would have to be accelerated to meet the nine-week deadline. This was also referred to as Pop-Up week. Toward this end, students were asked to apply design thinking and making to explore what it might be like to work, to play, to share, and to think in more dynamic mediums that access full multi-sensory human capacities.

As part of the course description, the instructor provided the initial provocation, a corporation named AugHumana, derived from the combination of two terms: augmented and human. The Corporation designs systems and products, in a public-facing entity, which requires considerations of product offering, perhaps facilities, branding, service design, communications, and more. The fictional company promotes the idea of human enhancement through systems that could be wearable, ingestible or implantable. The project assignment was to develop an augmented reality (AR) system that could be ubiquitous seven years from now, in 2024.

4 METHODOLOGY

4.1 PRE-SEMESTER

A presentation date was selected during Pop-Up Week and an audience of non-design students, in this case, 12 students from a Women's Gender and Sexuality Studies investigating Global Human Trafficking, 28 students from the Environmental Humanities as well as instructors and visitors were invited.

4.2 WEEK 1 - WEEK 3: RESEARCH, IMMERSION, AND REFLECTION

The first three weeks of the class focused on an immersive exploration of emerging technologies and the socio-techno issues surrounding them. It included an extensive set of links to online articles, videos,

blogs, and TED Talks as well as a required textbook, *The Techno-human Condition* (2011). Students were also directed to set up Google Alerts for topics such as artificial intelligence (AI), Human augmentation (HA), Augmented Reality (AR), the Internet of Things (IoT), and other transformative technologies. These could include topics like biotech, genetic engineering, nanotechnology, robotics, machine learning, and virtual reality among others. A necessary reading was Kurzweil's, *Law of Accelerating Returns* (2001). In the blog article, technologist Ray Kurzweil presents the case for why technological development is an exponential curve. It was important that students come to grips with the nature of exponentially accelerating technologies. A series of short quizzes were set up online to generate short reflections on the readings. Lectures included a discussion of the origins and definitions of design fiction, the concept of technological convergence as well as logical succession.

4.3 PHASE 1 DATA COLLECTION REPORTS

At the end of the second week, the class was divided into five teams each preparing a presentation for the class on the data collected. The instructor designated a leader for each team and five specific topics: AR technology, human enhancements, HA technology, society and technology, and systems utilizing the IoT. Nine slides were required to highlight key findings, cite sources and support a final trends matrix (Kumar, 2013, 37). On the left of the matrix were Technology, Experience, Market Segment, and Culture. Across the top were current, trending, and next. [Table 2.] All of the presentations were added to a class archive. After each exercise, team members were required to complete an online, confidential peer-review. The instructor has the option of maintaining a consistent team structure and leadership or to alter it based on team performance.

	Current	Trending	Next
Technology			
Experience			
Market Segment			
Culture			

Table 2. A trend map.

It was stressed that research was incomplete since technology is constantly evolving, new advancements will show up regularly throughout development and that students needed to continue to pay attention.

Through the first exercise, students caught a glimpse of what is both socially relevant and genuinely possible, and that in the future, corporate decisions will continue to rely on finding the intersection of possible (buildable), desirable and viable/profitable. (Dubberly, 2010). Seven years into the future, AugHumana will find this sweet spot as well. A key realization was that the product/service would likely not be the first of its kind, but rather an improvement on previous iterations already in the marketplace.

The next exercise was to designate and articulate a Statement of Intent (Kumar, 2013, 47). The statement is purposely broad and can be changed. Statements had to include the following:

We intend to design a system for:

- We will incorporate these emerging or converging technologies:
- We anticipate that this offering will contribute to the following customer needs and desires:
- This offering will address these values:
- We must continue to research and refine how we will craft the experience of:
- We see this offering working primarily within the context of:
- We anticipate the following risks associated with achieving this.

At the end of the third week, new teams were configured, this time four even groups, to tackle the challenge of logical succession.

4.4 WEEKS 4-5: ANALYSIS & LOGICAL SUCCESSION

Favorably demonstrating logical succession required that teams identify real research that is underway and the progress that it is making. Assumptions required verification from journal citations, science-based articles or expert interviews. Media accounts are helpful but insufficient by themselves. Students would need to search these reports to find names of researchers, and locate their actual research. The instructor stressed that it is not enough to say that robots will be ubiquitous in 2024 if we don't see a logical succession, (technologically, economically, socially and culturally) that will get to that place. If certain things need to happen to make a particular future possible, then there needs to be a logical pathway—no wildcards—to assemble these into a rational and believable narrative that explains how it comes to be. If not, then that technology is inadmissible.

Since technologies always converge, students were also encouraged to consider a convergence map, a list of plausible technologies on one side of a matrix and the same list on the other side to provide unusual combinations of potentially innovative systems. These could be combined with many different components to end up with interesting innovations. Of course, these would have to be vetted to see if they could come to pass in logical succession. This process was designed to take them from trends to context. Teams could also use the convergence map to generate preliminary concepts. Each of the final presentations was required to address the prevailing culture, the workplace, the social influences and the home. From the team presentations, a single, best-case logical succession scenario can be selected or the best elements combined into an official roadmap toward the design solution.

The process continued with additional exercises leading the students through insights, a user-journey and finally, design principles or design specifications. The students also generated a variety of preliminary design concepts. The result was a plausible, detailed design fiction narrative that would render the future scenario more credible, thereby increasing realism and believable context.

4.5 WEEKS 6-9: IDEATION AND MAKING

The class now became one team with different sub-collaborations, as if employees of one corporation with the objective of creating the future that aligned with the story. Through the rigorous process described earlier students have determined that a logical outworking of current technologies is a pair of seventh-generation (Vision7), wearable augmented reality glasses that provide users with a high-resolution interactive “layer” that is placed “on top of” their existing visual environment. Because of advancements in eye tracking technology, heat sensing lasers, and refractive layers embedded into the lenses the system is entirely hands-free. Through additional converging technologies such as the Internet of Things (IoT), and Artificial Intelligence (AI) the system allows for advanced features that enable users to “better” navigate their “real-world” experiences. Featured apps would include driving and navigation, shopping, social media and a medicine assistant app.

During this third phase, the “employees” were divided into two working groups one for industrial design, technology, and fabrication and the second team for branding, app, and user interface design. Students

were also encouraged to “float” between groups to keep the development dialog open. The instructor selected two group leaders based on previous team performance, with the assignment to divide and conquer.

Collaboratively, student groups applied skill sets from their various disciplines, and at times crossing disciplines, to visualize concepts and create dynamic prototypes. These included:

- **Object/Artifact:** Wearable prototypes
- **Environmental:** Spatial, sensorial, physical, digital experiences
- **Visual:** Interface design, interactivity, motion graphics, identity design, branding

During class time throughout the making phase, teams presented their progress and exchanged critiques as well as checking to ensure that apps and interface were consistent with the technology and could be delivered by the fictional hardware.

Roughly three weeks before the presentation, the instructor provided a draft script outline, which consisted of three parts. The first was an introduction of the design fiction methodology to the audience. The second part began a future “enactment.” A “live” presenter opened with a company introduction logo animation, slides of product renderings and a description of the enabling technologies all within the context of a new product keynote address. [Figure 1.] The final component was a video that demonstrated the system from the user’s point of view featuring the selected apps, including a visual walk-through of how to initiate the system. The students shot the video, recruited theater students as participants, scripted their dialog, added effects, motion graphics, and sound. [Figure 2.] These prerequisite skill sets are designed into the curriculum and acquired in a preceding semester, specifically to scaffold the Collaborative Studio.



Figure 1. Branding and industrial design details.

On presentation day, the audience was reminded that the AugHumana team had created a “fictional future” that it was not intended to be either utopian or dystopian. Students could have focused on utopian futures, of what the world will be like should everything work out perfectly, but that is not the essential ingredient of design fiction nor is it the nature of things. It is not about utopia or dystopia, because the future will not likely be either, but rather a combination that includes elements of both. Design fiction paints futures, but it is also an invitation to examine the present because it is indeed, today’s decisions that affect the future. The introduction acknowledged the premise that design is a key contributor to futures, and that the confluence of technology together with the human condition is an outcome best not left to accident, but rather, whenever possible, to reasoned collaborative and participatory design.

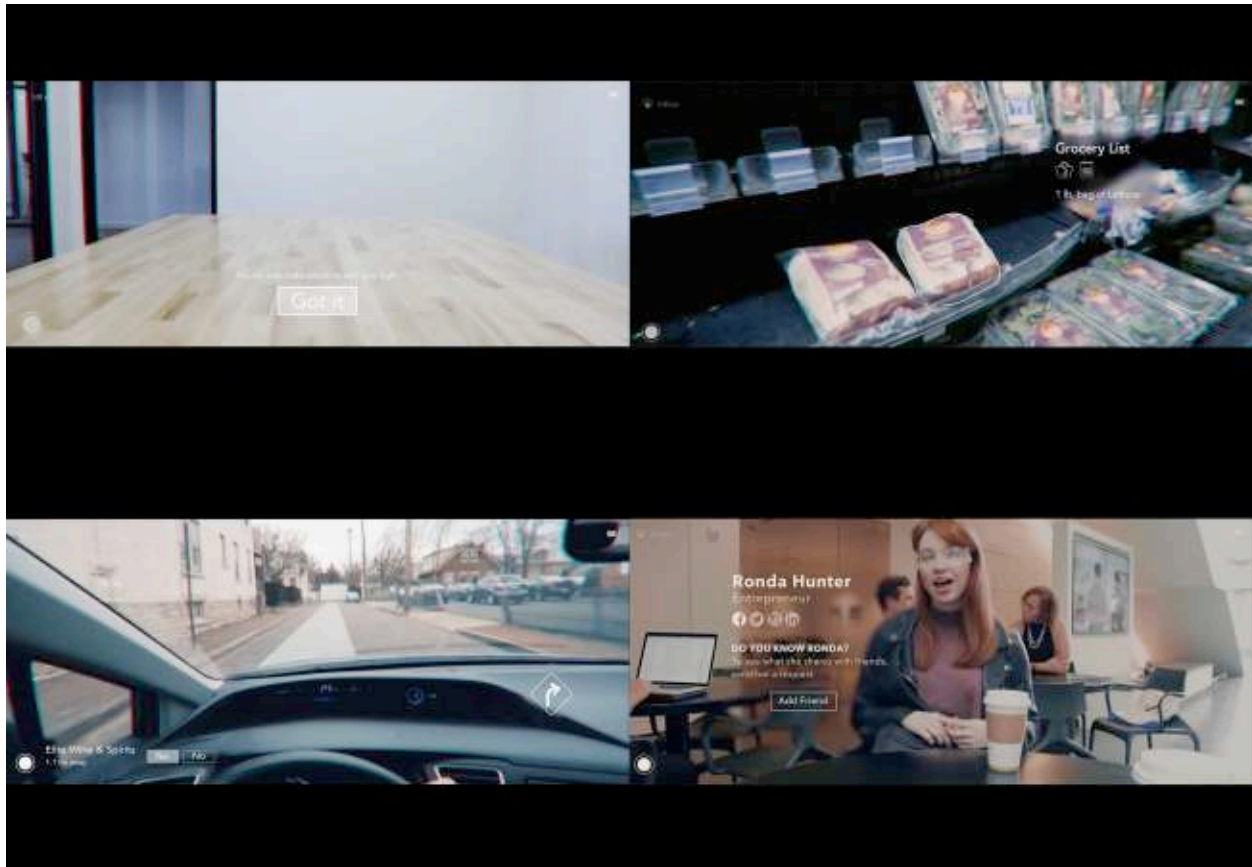


Figure 2. Top Left to Bottom Right: System Set-up, shopping app, navigation app, and social media app.

The presentation venue was a large theater setting on campus and lasted approximately 30 minutes. Immediately afterward, the design class took the stage wearing prototype glasses. The final hour-long phase of the event was reserved for discussion which was planned before the event. Students from the visiting classes were asked to contribute a list of possible discussion topics. Submitted topics included Sacrifice Zones, Sustainability, Visibility, Food Security, Extinction, Capitalism, Assemblage, Post human, Efficiency, Dependency, Criminalization, Satire, Humane Technology, and Human Rights. The diverse student audience gravitated toward small groups around the issues they wanted to discuss. Design students facilitated the dialog and recorded comments and discussion points with markers on large rolls of white paper. The result was a robust session that demonstrated the design fiction objective: discussion and debate.

5 WEEKS 10-14: RESOLUTION AND DOCUMENTATION

The closing weeks of the semester were designated for refinements to the final product, user interface, and branding. The class decided that a polished (identified as a design fiction) website could serve as an additional story prototype and archive for the comprehensive speculative future as well as a repository for the full project documentation and reflections. By incorporating a blog into the site, visitors can continue the public discussion and debate.

6 EXPECTED LEARNING OUTCOMES

By the end of this course, students should be able to do the following:

- Understand the various phases of the design process in a collaborative multi-disciplined environment
- Use an iterative and systematic approach to problem solving.
- Explain how technology accelerates exponentially.
- Conduct primary and secondary research to understand the trajectory of emerging technologies.
- Understand the necessity of logical succession in creating believable future scenarios.
- Discern the ethical, moral, behavioral, cultural and social ramifications of design.
- Apply design-thinking strategies to evaluate, conceptualize and synthesize “integrated” design concepts.
- Anticipate the convergence of emerging technologies.
- Create design proposals that converge seemingly disparate design disciplines into a unified and comprehensive design solution.
- Identify project scope and design objectives and methodically plan for its execution; (this includes the development of a design brief and strategy, generating design concepts, and creating design prototypes).
- Construct a believable, detailed design future (i.e., a service, product, environment, information).
- Examine a holistic human-machine interaction and overall experience.
- Communicate verbally and graphically preliminary studies and final design proposals in 2-dimensional, 3-dimensional and, or time-based prototypes.

7 VARIANTS

A blend of design disciplines, while not a prerequisite, is advantageous to learn team dynamics and cross-disciplinary relationships. The project topic could be narrowed to a specific discipline. Assigning a precise topic or theme is also optional. After the Immersion Phase, students could select the transformative technology that interests them most, as long as the same process is followed toward the final product or service offering. The instructor for this course used the fictional corporation to mimic the dynamics of an in-house design team and the cross-disciplinary interactions that are intrinsic to a corporate setting. A similar correlation could be achieved after students have selected a topic of their own. Mixes of team size and leadership are also at the prerogative of the instructor based on student skill sets.

8 CONCLUSION

Design has always had a synergistic relationship with technology, but the two are rapidly becoming more enmeshed and less distinguishable as separate entities. So as technological advances are rapidly creating inerasable societal and cultural changes, design has a role to play. Designers often embrace these advances as inevitable or merely as a more efficient means to an end. Concurrently, society, in the face of change that it feels powerless to control has relinquished any sense of individual agency and now seeks only better methods to adapt to a future that is increasingly beyond their comprehension. The prevailing wisdom suggests we train designers to be better at adapting, but designers have a unique opportunity to impact these technologies not only as better makers but also better thinkers. It is crucial that we move beyond preparation to adapt or react to the future and to actively engage in shaping it. Design fiction and specifically *guerrilla future* scenarios serve as provocations for discussion and reflection on the role of design *and* public agency in technological futures. The presentation was a 30-

minute demonstration of an experiential future. It presented a plausible, detailed and believable scenario to an audience not previously disposed to consider these future implications.

Student reflections capture a valuable learning experience. On logical succession,

“ Much to my surprise, our review of current research actually led me to change an opinion that I have held strongly for many years. I also saw this transition in many of my classmates. I hope that I can use this technique to reach credible, innovative design work and to validate it to others.”

Other comments included:

“A story is a very powerful tool and is just as important as the design itself.”

“The most meaningful part of the half semester was the discussions we had in the pop-up [event]. I didn't quite comprehend the amount of impact we could have on provoking a conversation, but all the participants were really inspired and reflective on what we built. It really tied together what we were making throughout the entire semester. I now understand how powerful design fiction can be as a design tool.”

“This collaborative design class opened my eyes to how corporate jobs will be like. I have to be willing to work with others in order to make the best product/experience I can for my future company.”

About the role of design fiction within this realm, Resnick (2009) may summarize it best,

“While the practices differ in significant ways, they... share some key attributes; in particular, they act to enhance our capacity to seek out and work with possibility, enrich communication in the exchange of speculative ideas, disrupt conventional mindsets with provocative visions of alternative futures, and affirm individual agency.”

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