As design educators, we feel it’s imperative to prepare students for the wicked problems of the 21st century. Design Futures, the briefing papers released by AIGA in 2018, anticipates a complex future where design solutions must be increasingly open-ended to accommodate many layers of uncertainty. In an effort to model such unpredictable constraints, we developed the Mash Maker project, a design charrette that explores the collision of time and form through a system of carefully devised prompts. The conditions encouraged first-year design students to utilize improvisation methods, iteration, and collaboration while underscoring the value of process over outcome. Music provided a logical framework for exploring this relationship, precisely, hip-hop, which uses time-based characteristics for structuring sound (Caswell). In many ways, a beat mimics “the grid,” a principle of design. Students designed songs in real-time using specific visual and typographic prompts. By designing and listening in tandem, students connected the auditory to the visual in a pro-process experience that often led to uncertain territory.

Keywords: improvisation; constraints; unpredictability; process; participatory

Introduction
As the role of design changes within contemporary culture, especially in the midst of a global pandemic, design educators must take initiative to prepare students for the wicked problems of the 21st century. Specifically, Design Futures, the briefing papers released by AIGA in 2018, anticipates a complex future where design solutions must be increasingly open-ended to accommodate many layers of uncertainty. Ezio Manzini uses the term emerging design, the practice of designing tools and methods rather than product or service-based solutions (2016). This approach allows for design to become a much more participatory practice, rather than one obsessed with solutions to narrowly scoped problems.

In our pursuit of more participatory design culture, we were interested in how we might rotate our students’ thinking, and shift perspectives of their chosen degree paths. We often observe our students be more concerned with learning software skills rather than design processes. Meredith Davis references this in her book, Teaching Design (2017), noting the importance to adapt to the changing nature of the design profession and discipline. To do this, students must learn to rely not on their software skills but rather the flexibility of their thinking and their willingness to adapt.

The Design Process and the Culture of Student Studios
When you consider the history of design education and the traditional Bauhaus model, the landscape has changed. Digital tools for design have become widely available as both subscriptions and through open-source platforms. While this contributes positively to accessibility, it can make the design student feel irrelevant, or even “creatively constipated” (Lynam 2019). We wanted to design a process that encouraged students to design in “real-time” rather than a more passive experience. We believe the real-time lends itself to a more participatory activity. Much like improv acting, when a participant lacks the time to reflect or change course, often resulting in unexpected outcomes.

We consider the traditional, Bauhaus-derived, design process no longer critical to the education of design students. As students move from component and product-based solutions to processes and systems, we are
concerned with also redesigning the process of learning as well. Borrowing from other disciplines, we applied learning and pedagogical theory and practices to disrupt traditional processes, anticipating a shift in our students’ learning, personal methods, and designed outcomes. In order to effectively disrupt the familiar process of design education, we used principles of defamiliarization to present familiar things to students in unexpected ways. Defamiliarization is a popular artistic technique especially in Russian literature but can also be observed in the Dada movement. Recently, it’s sometimes known as “culture jamming”. Improvisation can also be used to disrupt the designer in “auto-pilot”. All designers struggle with fixation, especially novices (Cross 2010). While not always an impediment, fixation can cause “blind adherence to a set of ideas or concepts limiting the output of conceptual design (Jansson & Smith 1991, 3-11). Students stuck in this type of rut, are prone to overuse cliches, tropes, or mimic work they’ve seen before. Improvisation is a direct contrast to fixation and can promote creativity, and positively encourage “deviant ideas” (Kleinmintz, Goldstein Abecasis & Shamay-Tsoory 2014).

The design studio is not always the epitome of creativity and collaboration. One might often observe students working in “co-acting groups”, physically close yet still working individually (Hackman 2002). Dr. Derek Ham, an educator at North Carolina State University, incorporates rules or constraints to the design process, resulting in exploration as a form of “gameplay”. Students become more mindful of their decision making, but also are reassured in their risk-taking. A set of rules or processes creates a sense of direction, especially for students new to design (Ham 2013).

The Mash Maker Project
As active designers and educators, our investigation surrounding these principles inevitably led us to create the Mash Maker Project — a nod to a mash-up of oppositional elements, commonly found in music. In this constraint-led system, we “designed songs” in real-time while working within a set of three specific parameters: time (the song’s duration), image (the top Google image search of the song’s title), and type (Times New Roman). These ubiquitous constraints were designed to provoke improvisation and introduce a disruptive and participatory design process.

Songs designed within the Mash Maker project drew heavily from one specific musical genre: hip-hop. Perhaps more than any other musical genre, hip-hop celebrates spontaneous lyrical improvisation while being foundationally rooted in “time-based sound structures” (Caswell 2016). Rap, after all, is primarily composed of bars (the method in which a song is measured) and beats. The act of being in the flow, or “freestyling” as it’s commonly referred to, can be aptly described as “a subject’s complete immersion in creative activity, typified by focused self-motivation, positive emotional valence, and loss of self-consciousness” (Abrams 2012). Mash Maker pulled from this precedent by championing the act of immersion and the unexpected chance outcomes that arise from such a methodology, all within the confines of time.

Central to our set of constraints was the need for open-sourced accessibility. The Google image result of the song’s title delivered a widely referenced visual artifact, while the inclusion of Times New Roman connotes a sense of universal “defaultness” — an omnipresent typeface readily available to anyone. Both components of applied content — imagery and typography — carried forth a degree of an implicit commonplace, further provoking improvisational design decisions. These constraints, or rules, “sharpen the perspective of the process and stimulate play within the limitations” (Maurer, Puckey, Wouters, & Paulus 2010). Such seriality allowed for transformation and variability within a set of controlled rules. “Before I give control away,” Luna Maurer of Conditional Design states, “I must first develop a system that will take over the decisions of design. I make decisions on which factors will influence the design, but also what kind of rules and properties this system will follow” (Conditional Design 2010).

Precedents
As designers and educators, our investigation was driven by our interest in current precedents. In particular, the conditional design method. Devised by Luna Maurer, Jonathan Puckey, Roel Wouters, and Edo Paulus, conditional design uses conditions and rules of play to encourage participation. By “regulating” the process, the goal is that creativity can be found in uncertainty, leading to an unpredictable result. Conditional design “focuses on processes rather than products or things that adapt to their environment, emphasize change, and show a difference.” In devising a process rather than a product and concurrently placing emphasis on a process, we wanted students to shift value away from final artifacts and forms. We hoped they would notice unexpected patterns, and find significance in time, relationships, and change.

Our interest in conditional design is closely related to the characteristics of improvisation. In place of a script, improv actors work with two conditions: a rough structure and a common belief. This process absolves actors
of the responsibility to “figure things out”; instead, it requires trust in the process while encouraging exploration, risk-taking, and even failure. Anaïs Nin puts it best; “It is a sign of great inner insecurity to be hostile with the unfamiliar, unwilling to explore the unfamiliar” (Nin 1947-1955). Design educators Denise Gonzales Crisp and Nida Abdullah have previously published material related to using improv in the design classroom as a way to ready students for “the uncertainties inherent in design processes” (2018). In particular, they use improvised critique methods such as the ‘I Wish Critique,’ and the ‘Ok, Go! Critique.’

Other precedents included Designercize, an online, random prompt generator that facilitates design charrettes. This platform encourages improvisational design and “whiteboard” practice at all levels. Brian Eno and Peter Schmidt, devised a musical prompt generator in 1975 called Oblique Strategies. Presented as a deck of cards, the intent was to force musicians out of creative roadblocks.

Student Project Adaptation

The Mash Maker project was designed to invite unpredictable outcomes through constraint-driven processes while mashing together sonic and visual entities. As we progressed in our research, we questioned if this system would apply to our students. As educators interested in the transferability of these explorations, we decided to adapt this project to the design classroom for further research.

![Figure 1. Students began the charrette with analog exercises](image)

We began with an in-class design charrette in which first-year design students responded visually to songs in real-time. In an effort to create a diverse sonic experience, songs for this workshop were chosen based on their specific qualities and as such, ventured between instrumental scores to 70’s-era punk rock. Specific constraints were allocated to each song in a mix of familiar, analog-based tools customarily found in a studio setting: Highlighters, Sharpies, tape, Post-it notes, glue-stick, and X-acto knives. As the workshop progressed, the constraints became more challenging and collaborative. In one exercise, students were blindfolded throughout the duration of the song. In another, students demonstrated a collaborative response when they were partnered together with their hands bound and prompted to create with only one tool, a Sharpie.

Once students were familiar with the general premise of our constraint-based music visualization process, we introduced the project scope. To begin, we asked that each student select a song of their choosing. From that
collection of crowd-sourced tracks, we then created a shared Spotify playlist for the class to use as a subject matter. Next, we introduced a set of constraints that would dictate their making. Each student was directed to choose one fixed condition — a connotative visual — and two flexible conditions — a variety of software-based tools. The fixed conditions were generally tied to the subject matter of the song, such as “the top Google image result of the song’s artist.” The flexible conditions ranged from, “any use of the Pen tool” in Adobe InDesign, to a specific Pantone color swatch. For each of the sixteen tracks, students designed a square-based visual in Adobe InDesign using a mixture of conditions. When complete, each student created a family of visuals to their studio’s playlist.

Figure 2. Students worked within a series of conditions in a digital space

Designing in real-time to music was a foundational component of Mash Maker, but we understood that students might feel some anxiety around designing under such a short amount of time. As such, it was important to us as educators that we encouraged process over product in this scenario. In an effort to encourage improvisation in the face of uncertainty and time, we imparted a series of rules for the project: (1) Don’t worry about what it looks like; (2) Allow yourself to have fun and take risks; and (3) There will be no critique. Additionally, we asked that they reflect on their observations, fears, accomplishments, process journey, and visual outcomes through reflective writing immediately following each visualization. In an ever-changing demonstration of their output, students assembled their printed artifacts into a grid on the studio wall as they progressed throughout the project. When finished, the studio collection of over 250 visualizations showcased their collective efforts. Each student then compiled their individual visuals and reflective writing into a process book that synthesized their output in a final artifact.

Student Outcomes
Through the reflective writing responses, we observed that students were generally well-aware of their design decision making throughout the duration of the making process — most certainly due to the limited time constraints. As such, it became undeniable that design improvisational techniques were implemented. Students often remarked that the lack of time to achieve a certain “look” resulted in them abandoning their
preconceived notions of what they envisioned, and instead, allowed for chance opportunities. Students were forced out of comfortable “fixated” thinking. Such fixation can become detrimental to developing surprising design outcomes (Anderson 2019).

Figure 3. Students collaborate by forming a visual grid of their classmates’ process work

Additionally, we discovered that the majority of students demonstrated empathetic listening skills by connecting the sonic qualities of the music to their visualizations — transferable qualities such as the song’s rhythm and its influence on visual cadence, musical tonality as it relates to color, and lyrics with their direct relationship to typographic nuances. Or, in one instance of deviant thinking, a student reconsidered the tools altogether in her approach to a melancholic pop song. By aligning periods and spaces to the rhythm of the song, the student tapped to the beat of the track as it played, creating a visual cadence of lines and dots that mirrored her direct connection to the music. This type of flexible and adaptive thinking will be needed for design students to address 21st centuries wicked problems.

**Future Contexts and Application**

As we adapt our pedagogy during a time of social distancing amidst a global pandemic, we are curious how this workshop-based learning process might be applied in future contexts. First, we have considered accessibility, and how we might replace the music component with other time-based experiences. This could include memories of conversations, prose, live performances, or theater. We also considered how replacing music with other sonic-based (or noise) disruptors might change student output and understanding. The idea of disruption is not limited to physical (external) noise, but there is also psychological (internal) noise and semantic (linguistic) noise. We’re curious how a student could incorporate these factors into the Mash Maker experience.

We are particularly concerned with the designer as a speculator and dreamer. We often associate the design process with tangible output and making. Our students enter our program with this assumption, and we’d like to continue using this learning experience to encourage speculation and future thinking as well as building empathy. We see the potential for this workshop to break down power structures in the design student and
professional studio.
Overall, the outcomes of this project revealed to students the value of improvisation, conceptual design, and community-based collaboration. Students were introduced to the design process through participatory methods, which allowed them to increase their creative output and feel positive toward “deviant ideas” (Kleinmintz et al., 2014). Most importantly, we found that for first-year design students, this experience encouraged a studio culture of solidarity, collaboration, and low-stakes participation.

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