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## Cross Institutional Vertical Studio Collaboration: Extending Boundaries during the Time of Covid-19

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# Cross Institutional Vertical Studio Collaboration: Extending Boundaries during the Time of Covid-19

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## Abstract

This paper reflects upon a cross-institutional and multi-level studio collaboration developed in response to the mid-semester closures of Mount Holyoke College and Smith College during the spring 2020 Covid-19 pandemic. Our collaboration was a conscious effort to offer our students an educational opportunity driven by both the students' and our own desires to meaningfully address the unfolding global pandemic. Within the context of the liberal arts, our focus was to continue to develop the technical capacities of our students, while providing opportunities for vertical collaboration as well as an additional layer of lateral collaboration exposing students to rapid design work occurring in the medical and engineering fields. This paper will focus on the processes of collaboration and methods of engagement enabled by various digital platforms that erased all geographical constraints for collaboration and reflect upon our successes and shortcomings. These methods may be applied to many design studios addressing global issues requiring interdisciplinary and geographically disparate engagement to achieve sustainable design solutions.

Keywords: Studio Collaboration, Pedagogy, Interdisciplinary, Fabrication, Digital Platforms

## Introduction

This paper reflects upon a novel cross-institutional and multi-level studio collaboration developed in response to the sudden mid-semester closures of Mount Holyoke

College and Smith College during the spring 2020 Covid-19 pandemic. This was the first time that we had collaborated in this way and it was a conscious effort to offer our students an educational opportunity driven by both the students' and our own desires to meaningfully address the unfolding global pandemic, as case counts and deaths were rapidly rising and the early data presented clearly the need for protective equipment for frontline medical workers. In addition, it was an attempt to offer our students a unique learning experience understanding that so much of a typical studio experience would not be possible.

Mount Holyoke College and Smith College are both small women's liberal arts colleges from which students graduate with a BA in architectural studies. Over the course of their undergraduate careers, students may take three or four design studios, much less than in many pre-professional programs, and this means that there are typically one or two studios at each level (intro, intermediate, advanced) taught across our Five Colleges Consortium which also includes Amherst College and Hampshire College (but not including UMass Amherst where there is a fully accredited architecture program) with opportunities for vertical collaboration. The implications of this pedagogical model are that students bring into the classroom interests and backgrounds from other fields in which they often double major – areas such as economics, geography, mathematics, French, English, gender studies, music, etc. giving each studio inherent interdisciplinarity. It also means that each design studio typically has to cover a breadth of content in terms

of teaching technical capacity, visual communication, and spatial intelligence.

Within this context, our approach to the collaborative work was grounded in continuing to develop the technical capacities of our students, while providing opportunities for vertical collaboration--students of different levels interacting with each other in a virtual studio environment. The response of the broader design community to the pandemic was swift and this enabled an additional layer of lateral collaboration--exposing students to rapid design work occurring in the medical and engineering fields, in addition to engaging with their local communities and less design literate audiences. In this way we sought to equip students with the tools to engage in democratic and decentralized modes of making and prototyping while collaborating across boundaries of age, perceived expertise, or discipline. This paper will focus on the processes of collaboration and methods of engagement in the final four weeks of the semester after transitioning to a remote teaching model as opposed to the specific design results as we hope that these methods may be applied in a more planned way to many design studios addressing global issues requiring interdisciplinary and geographically disparate engagement to achieve sustainable design solutions.

## Methods of Engagement

### *Syllabus Coordination*

In deciding to collaborate and take on the challenge of addressing the pandemic in our studio courses, the first step was to redesign and coordinate our syllabi both in terms of content, how each class would look at a different aspect of the pandemic, as well as schedule and timing, during the two-week gap in which our institutions pivoted to remote learning and the majority of our students left campus for the remainder of the semester. Teaching three studios at different levels on two campuses – suddenly now occupying a digital space and not

constrained by the geographical reality of the distance between our campuses – offered the unique opportunity to address the same problem, through three projects unfolding in coordination. (Figure 1) In Architecture 281, an introduction to digital design studio at Smith College, students designed face masks, in Architecture 311, a design-build studio at Mount Holyoke College, students designed face shields and in Architecture 381, an advanced topics in architecture studio at Smith College, students developed a historical framework through which we can understand current events. While this type of coordination across studios happens at larger institutions

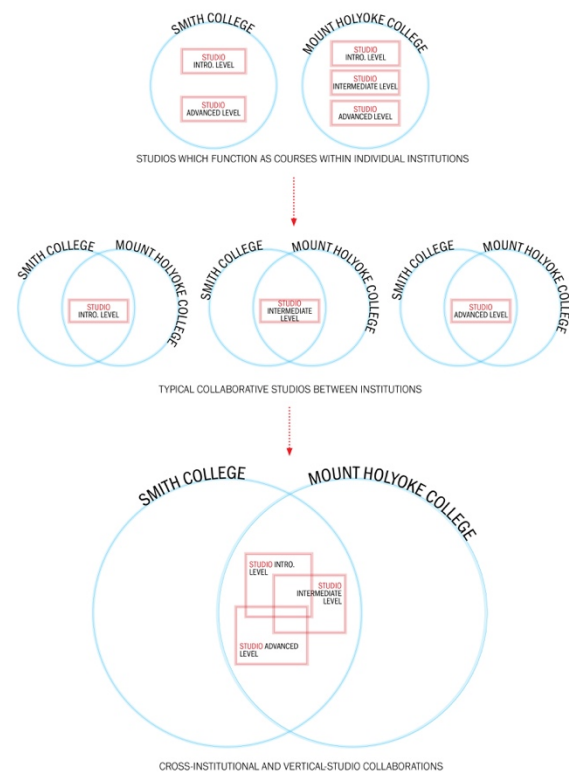


Fig. 1. Coordinating three studios at different levels on two campuses

through multiple sections, coordination vertically is less common and in our smaller liberal arts context, where we don't have the numbers to explore an issue across multiple sections, it was a first. Fortunately, the academic calendars of Mount Holyoke College and Smith College are well aligned due to the long-

established Five Colleges Consortium and we had overlapping teaching schedules - this helped to facilitate finding dates for intercampus critiques and reviews.

### Digital Space Opportunities

*...each remote meeting felt like I was meeting with old friends, and to discuss our take on potential cutting edge innovative technology that can save our lives and the world.*

*-Richie Rodrigues-Dell Italia, Hampshire College*

With unprecedented speed necessitated by the Covid-19 pandemic, remote digital platforms have brought about a revolutionary change facilitating communication and collaboration across great distances and multiple time zones. In the context of our architectural design studios, we used four platforms as we made the transition, each with its own opportunities and shortcomings. Zoom, Moodle, Miro and Slack all became the digital spaces replacing the physical studio spaces on campus. We did have an advantage to fully remote classes in that students had been working together in-person for the first

half of the semester and so had established relationships, friendships, and a studio community prior to the transition online – this is typically a challenge for fully remote classes.<sup>1</sup> Zoom is a surprisingly effective platform for discussion and critique allowing for live video discussions, breakout rooms, and annotation on the screen. While the handling of 3D physical models is absent, for those already accustomed to working within a 3D digital space, the transition was fairly seamless. Over the course of the four and a half weeks remaining in the semester, we created two opportunities for intercampus critique with students participating from all over the United States as well as internationally. At the “mid-term”, we were able to have a broader discussion with all students about the integrated studio and students were able to see the work of the other studios providing an opportunity for critique across different levels of architectural studies students. For the final review (Figure 2), students were able to see their own work in the context of the larger collaboration and for beginning

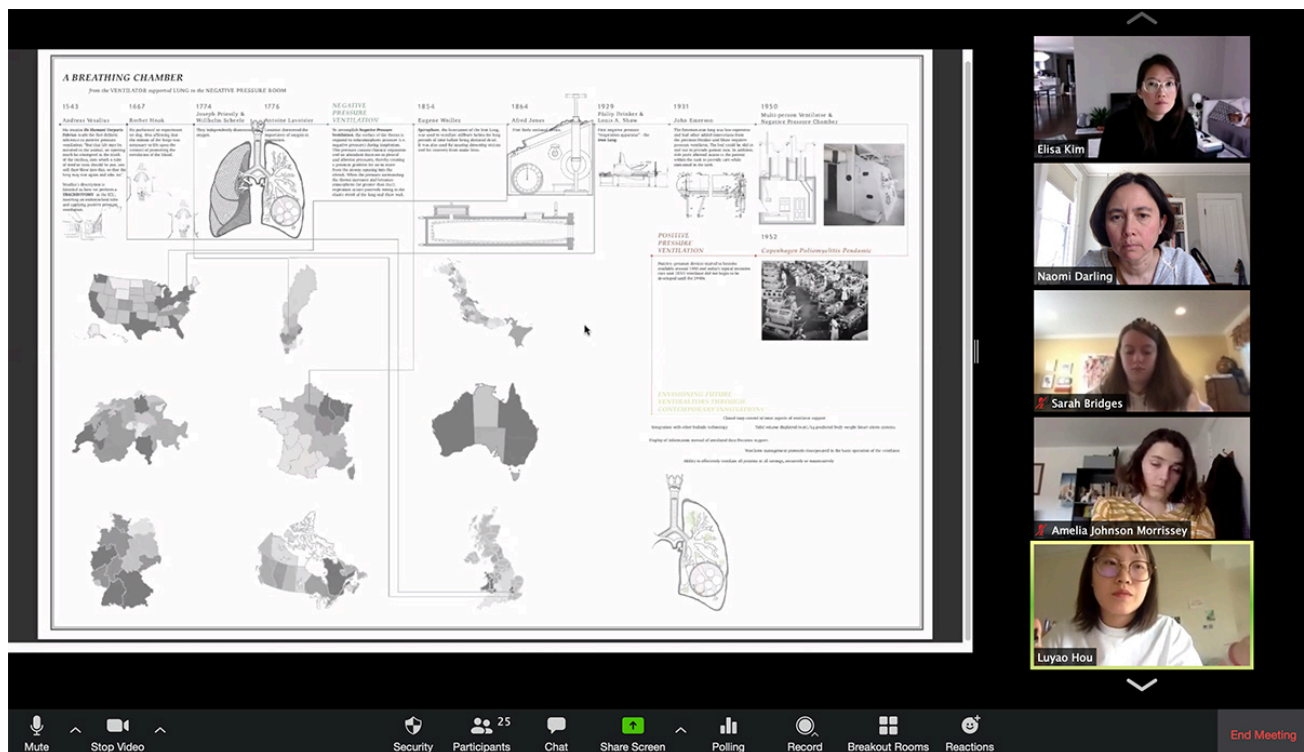


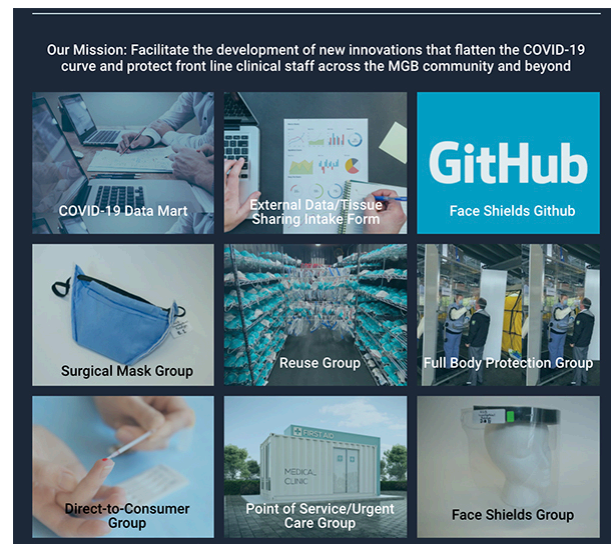
Fig. 2. Final Review with a student from Architecture 381, XC presenting to the vertical studio

students, learn from more advanced students' methods of graphic communication and presentation. With only four and a half weeks remaining in the semester, gathering twice was all that we had time for, but in thinking about a similar intercampus vertical studio collaboration for a full semester, there are many ways that we could increase the opportunities for interaction and collaboration including smaller vertical working groups and drop-in discussion sessions.

In addition to Zoom, Moodle provided another platform for students to upload work and provide feedback. As an interface for sharing and submitting work, Darling found Moodle to be quite effective but as a platform for peer-to-peer feedback, it was not effective and we found that many students did not provide written comments to their classmates in a timely manner to be helpful. For immediate feedback, Whatsapp chat-groups set up internally by the students most closely replicated the studio feeling. Smith College students were introduced to Miro and Slack as digital extensions of the studio space. Students used Miro as a virtual pin-up space, posting process images daily and also presenting visual work formally during reviews. Here, each student's iterative work was always on view, acting as a public forum for critique and conversation both during and after studio hours. Miro was critical to maintaining an active virtual studio culture in that it allowed students to see each other's work and progress at any time - much like they would in the studio. Because of this, students could maintain the informal conversations and learning that would otherwise occur in the physical studio setting by having constant access to the body of visual work in progress. To this end, Slack was used in combination with Miro as the main forum for informal communication between students, and where students maintained the rapport with each other that they had built in the beginning part of the semester.

### *Extended Networks and Collaborations*

In mid-March, when our campuses closed, Covid cases were rising exponentially in Boston and there was a dire shortage of personal protective equipment (PPE) at our hospitals and care facilities. In response, the Mass General Brigham Covid Center for Innovation (MGBCCI) was launched with working groups to facilitate the development of new innovations to flatten the Covid-19 curve and protect front line clinical staff. The working groups were divided into teams including for face masks, face shields, reuse, and ventilators (Figure 3). The entire effort was very well coordinated, open and accessible with Town Hall Style Zoom meetings<sup>2</sup> as the process was initiated with team leaders of each working group. The Face shields working group was co-organized by professors bio-engineering, research scientists and post-docs from the Wyss Institute for Biologically Inspired Engineering with over 150 volunteers brainstorming together following a process flow with inputs, research, prototyping and validation (Figure 4). The entire collaborative studio, both professors and students, were



*Fig. 3. Mass General Brigham Covid Center for Innovation Working Groups<sup>3</sup>*



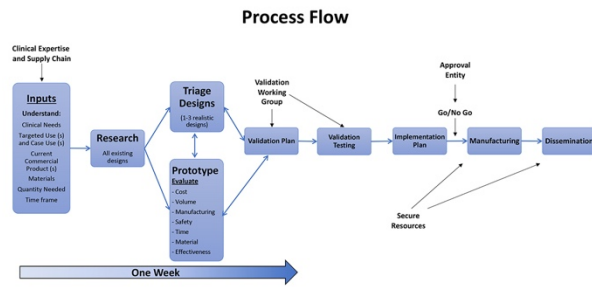


Fig. 4. Image from First Meeting of Face Shields Working Group, March 26, 2020 – Process and Schedule <sup>4</sup>

invited into the effort and this became an important way to expose students to a rapid-response and rapidly changing design initiative in a time of crisis. Students were able to participate in extended working group meetings and hear input from a dynamic and interdisciplinary team that included medical professionals working on the front lines, epidemiologists, and medical residents alongside fabricators with access to factory scale production. In addition to scheduled meetings, there was much conversation on a Slack working group where designers shared ideas, prototypes and cut files as well as feedback. The design studio became a case study of how architecture and design can participate in developing solutions by working within larger interdisciplinary teams, receiving feedback from experts in other disciplines and working iteratively against real time constraints. The speed of development was impressive and eye opening for students to see real deadlines set due to an unfolding medical emergency.

At the community level, students engaged with their own communities by designing and providing masks and face shields to frontline workers such as grocery store employees and delivery personnel, and community members unable to purchase or locate a mask or face shield due to the shortage being experienced at the start of the pandemic in the spring of 2020. In the MGBCCI working group Slack and more broadly online, all designs were open source and democratic with people sharing

not only images of finished masks and face shields but also the directions for how to make these items and thus contributing to the larger local, regional and global efforts to flatten the curve. (Figure 5)

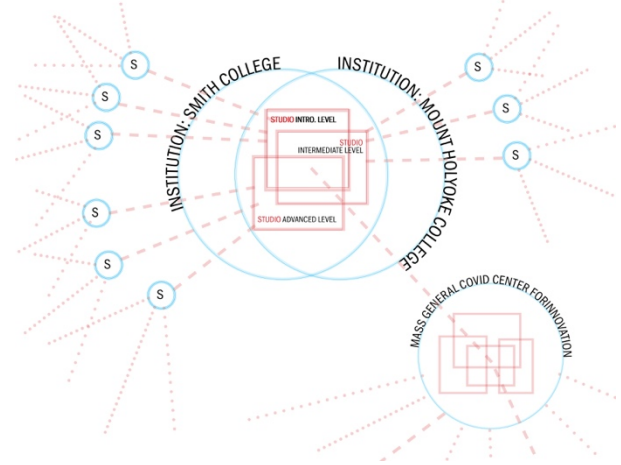


Fig. 5. Extended Lateral Networks enabled via Remote Studios

### Website

The final stage of the studio was to share the work of the studio in an on-line exhibition through a website displaying the student's work. During the semester, one student developed a shared graphic template and language to unify the work of the studios and two students were assigned to develop the website itself but this proved difficult to do before the work had been completed. In hindsight, the greater lessons of this studio were in the process of engagement as opposed to the final products. Due to the fact that most students were working from home, their masks and face shields were by necessity made from common house-hold goods using low-tech methods of making and challenging students to think of materiality and design in a new way with ready access and replicability as prime considerations. The masks and face shields developed were functional and their processes replicable by almost anyone working from home. This inverted the typical hierarchy in a design studio of giving priority to equity and service over innovative spatial design thinking typically highlighted in an (architectural) website. A public student blog would

have enabled students to share their work, thinking and process in real time with an extended audience who may have infused further energy into the process. The website, while a good record of the work produced in the studio, seems static in comparison to the dynamic process that unfolded over the final 4+ weeks of the semester.

## Reflection

*For this course, I was trying to decide if I would have rather designed something unrelated to the pandemic and I am not sure. I think at times, I really valued my courses that allowed me to focus on something other than the current situation. At the same time, even if we designed something unrelated, it would still be influenced by the current situation regardless. It is nearly impossible to design in isolation, even if you want to.*

*- Abby Tuckett, Mount Holyoke College*

Inviting students to respond with technical skills in real time to pressing current events and foregrounding the importance of flexibility as we encounter new conditions in architecture are what we consider to be the larger successes of our pedagogical project. We believe successful teaching in architecture is embedded in the basic liberal arts ideals of participation in civic life and public debate, and that it prepares students to adapt and reinvent the practice of architecture by responding to the world and conditions around them.

We made the conscious decision to address the pandemic in the final weeks of the class after our campuses pivoted to remote teaching. This gave us the opportunity to role-model to our students an activist design practice. Recognizing that students would have different stressors in their new environments, we did give students an opportunity to provide input into the type of work they would like to be engaged with after the pivot to

remote work. In all three studios, students were asked whether they wanted to address the PPE shortage and the pandemic through a design project, or whether they would rather work on something else. Virtually all students expressed the desire to work with Covid-19 related problems - but of course there were a few exceptions. Even students who had expressed interest initially often found engaging with the pandemic to be challenging but for the most part also rewarding as in these examples:

*This class definitely contributed to my response of Covid-19 in a unique way: I think for me as a person who has only left my house a handful of times since I got home it was sort of hard to connect to the whole crisis. I'm definitely feeling the effects of it but it was hard to think about what other people were having to go through on the front lines. Designing a face shield and really having to think critically about all aspects of how it would be realistically used made the whole situation feel a lot more real to me. I had to imagine my design actually being used and all the ways it could possibly be compromised and to be honest it was very stressful to think about: however, it made me also realize how important good, thought-through design is. It also made me realize that design can flourish in places where materials and resources are limited. While sometimes the last thing I definitely wanted to be thinking about was the virus, for the most part designing something practical in an impractical time made me feel better, like I was actually doing something.*

*- Trinity Kendrick, Mount Holyoke College*

*I appreciated the opportunity to contribute in a situation where I feel powerless, and it helped to cement the real-world benefits of the makerspace and STEM outreach. Free access to the gathered knowledge and designs of people around the globe,*

*making use of the resources at one's disposal to help the community ...*

*- Susanna Howard, Mount Holyoke College*

*I find the pandemic very stressful so the added assignment didn't really ease my stress but it was really interesting to do the research of everything that was going on. ... Making masks makes me feel a little more like I am helping the situation and less like I'm just letting the chaos happen and more people get sick.*

*- Maitlyn Lang, Mount Holyoke College*

The final weeks of the spring 2020 semester were tumultuous and stressful for everyone as there was still so much unknown about the nature of Covid-19. Much of the nation was in some type of lock-down and tuning in to New York Governor Andrew Cuomo's daily coronavirus briefings about the dire situation unfolding in New York City, where in early April, 2020, the record for the highest daily death toll from Covid-19 was being broken almost daily. Although we intended to be empathetic and flexible with our students, in hindsight, for some students, needing to address the pandemic through our studio work was too much and we should have provided further alternatives. One student became ill with Covid-19, several students had family members working on the front lines while other students worked as essential workers delivering groceries. As one student wrote:

*At first, I was excited to get started on this project but getting sick (with Covid) and seeing the increasing bad news made me need to take a break from this project. It was a heavy weight to face reality. I think I will feel a lot better about it once the catalogue is published because I will know that at least it is being used as a resource for people who may need it.*

*- Jennifer Villa, Mount Holyoke College*

For students in this situation, we should have developed alternate projects so that these students could feel heard, while engaging in the issues peripherally but still as an active member of the studio. Roles such as working on the design of the website, or producing graphic standards or other graphic design projects are initial ideas.

Architectural education is a multi-dimensional activity of which visual thinking is traditionally a core element with the social, political and civic aspects of the profession integrated to a greater or lesser extent. Perhaps the most significant change brought about in the final four plus weeks of the semester was to invert the hierarchy of importance from the visual and spatial typically taking precedence to the collaborative, social, and service aspects of the profession taking center stage. In addition to the communities nurtured within the studio context, students had the opportunity to participate in multiple levels of civic engagement via the more centralized and institutional MGBCCI working group and also through informal, hyper-local engagement within each student's own community, as defined by each student. Both of these methods of engagement allowed students to explore how design skills could be leveraged in a public health crisis and to participate in a rapidly unfolding design charette with "all-hands-on-deck" and understanding that everyone has the ability to engage and contribute. These opportunities begin to probe at possibilities for new forms of collectivity and networks of studio learning that extend between and beyond institutions.

While the collaborative studios succeeded in engaging in expanded networks and highlighting architecture's potential impact to address pressing societal needs, our profession remains rooted in our ability to think spatially and communicate graphically. The reciprocal dialogue between two-dimensional and three-dimensional space is critical for students of all levels but particularly important for beginning students just learning the



language of architecture. Materialization is another critical element of design work, as reiteration and process driven design work tests out strategies through product-driven models. Though operating remotely, this project still invited students to work through architectural methods: developing iterative physical sketch models, translating between physical space and digital space, and drawing 2d orthographic plans, sections, and a series of instructions for mask- and shield- construction and assembly. Although these architectural design methods were practiced in the development of the projects, this is an area where things were vastly different than they would have been if we were in the studio, on campus. Most students in both the mask group and the face shields group ended up using materials and tools found in their own homes. This meant that the majority of the materials, tools, and ultimately constructions, were low-tech. Within these constraints, the students did develop innovative spatial solutions such as repurposing a bra for a face mask (Figure 6) or reusing a bicycle helmet adjustment system for a face shield. (Figure 7)

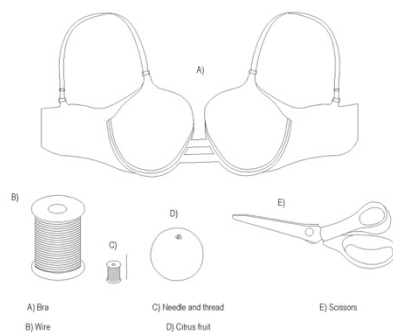


Fig. 6. BRASK – The Bra Mask by Tillie Schneiderman, Smith College '22

While understanding the benefits of working low-tech, students missed the opportunity to digitally fabricate their prototypes and learn how to use the laser cutters and 3D printers that have become ubiquitous tools of our profession. In Arch 311 at Mount Holyoke College in particular, a course designed to give students a

design/build opportunity using the new facilities of the Fimbel Maker and Innovation Lab, one of the primary

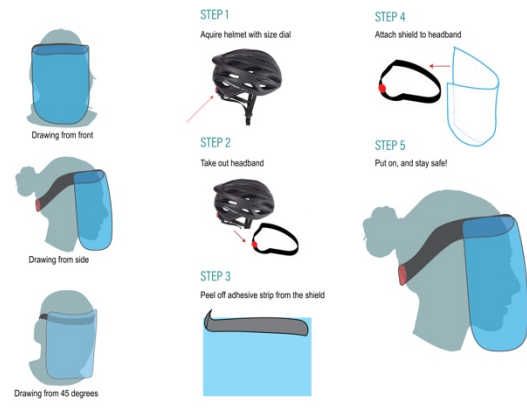


Fig. 7. BIKE HELMET SHIELD by Maitlyn Lang, Mount Holyoke College '22

learning goals - to make students comfortable and familiar with the analog and digital fabrication methods - was not able to be met. In the advanced studio, Arch 381 at Smith College, students were not involved in making but rather in research and communication related to the history of pandemics. Typically, in this research-based studio, physical models and thinking through the physical act of making--whether digitally fabricated or by analog means--are central to the research agenda undertaken by students. Yet as with the Mount Holyoke College Arch 311 studio, the lack of access to fabrication facilities due to remote learning meant that students were unable to achieve this learning outcome. However, through a democratic and consensus-seeking process of discussion and brainstorming, the students were able to decide as a group how to wrap up the semester amid the uncertainty and decentralization of the studio. It was through these discussions that students articulated their desire to understand the spatial history of pandemic and quarantine conditions, to contextualize the current moment through a visual historical analysis, and to work together in small groups in order to maintain a sense of connectedness and collaboration in their production of knowledge. (Figure 8)

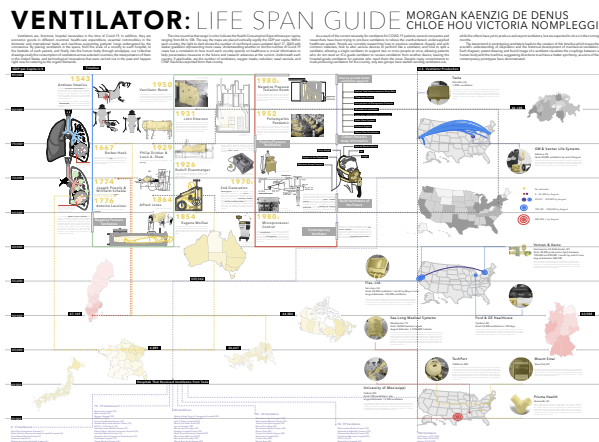


Fig. 8. VENTILATOR: LIFE SPAN GUIDE by Chloe Huo, Smith College '20, Morgan Kaenzig de Denus, Smith College '20 and Tori Nompleggi, Smith College '20.

## Conclusion

The sudden transition to remote learning in the spring of 2020 demanded pedagogical experimentation and innovation in order to complete our semesters and provide learning opportunities to our students that, while different from that which would have happened in the classroom, would continue to expand their technical capacity as designers as well as broaden their understanding of what it means to be an architect working today. In the final four plus weeks that remained in the semester, three studios at different levels on two campuses piloted an experimental vertical cross-campus studio to address the pandemic through a coordinated approach. We believe the methods employed have broad applicability post-pandemic as the profession turns deliberately to address long-standing racial and societal inequities—many of which have been made more visible and exacerbated by Covid-19. Beyond Covid, there are numerous challenges, both local and global, that would benefit from this type of interdisciplinary and collaborative approach with students at varying points in their design education. New forms of inquiry, opportunities for new studio-networks, and new modes of knowledge

production free from the restrictions of geography and institutional affiliation, have the potential to broaden the conceptualization of the design studio. For our programs, specifically, collaborating across campuses and studios levels had not previously occurred to us and we see many opportunities in the future to collaborate across our campuses with potential far reaching partners to mutual benefit.

## Acknowledgements

We would like to thank Five College Architectural Studies for supporting expenses associated with the website sharing the work of these studios.

## Notes or References:

- 1 Boettcher, Judith V. and Conrad, Rita-Marie. The Online Teaching Survival Guide, John Wiley & Sons, Inc. : San Francisco, CA. 2016.
- 2 While the Town Hall meeting from spring 2020 is not available, this gives an idea of the open format - <https://covidinnovation.partners.org/town-hall-update-september-22-2020/>
- 3 <https://covidinnovation.partners.org/>
- 4 MGB COVID Innovation Center, Face Shields Working Group presentation, March 26, 2020. Slide 7