

Against the Grain

Manuscript 8238

Third Time's the Charm: Finding a Permanent Home for the University of Maryland's John & Stella Graves Maker Space

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change to “information center,” “commons,” or other approximations, the signifier of the word “library” transcends time and context (Radford & Radford 2005). Given this semantic claim, the authors of this white paper make the case that “[t]he reimagined and renewed **Georgia Tech Library** will continue to be the important hub for campus knowledge creation, collaboration, and scholarship that it has always been. Every great academic institution relies on the spaces, services, staff, and symbolic value of the ‘library’ to serve that purpose, regardless of the form its library may take” (Bennett, Hagenmaier, Rascoe, and Rolando 2014). As a result, the new facility will indeed be called a library, which stands as a rather important signifier, given the fundamental change in programmatic focus of the building.

Conclusion

As many campus libraries face the design challenge of renovating mid-century buildings that are reaching the end of their useful lives, our hope is that the **Georgia Tech Library Next** project stands as an emblem of positive change towards a “knowledge-driven” university (Youtie & Shapira 2008). Furthermore, by fully embracing the term “library” we aim to transcend and liberate ourselves from the narrow definition of a “space for books” towards an active *agora* that embraces a plurality of voices and transdisciplinary knowledge sharing. An enduring place where the human spirit, material experiences and the digital *zeitgeist* coexist in mutual beneficence.



Georgia Tech Library Tower, Grove-level Reading Room (Rendering by BNIM)

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Third Time's the Charm: Finding a Permanent Home for the University of Maryland's John & Stella Graves MakerSpace



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Origins

Our journey started with the acquisition of a single MakerBot Replicator 2 3D printer early in the 2014 spring semester. This purchase was part of a plan to create a 3D printing request service in the Terrapin Learning Commons (TLC), an extremely popular, undergraduate-oriented service point located in the **University of Maryland's** main library which offers group study spaces, specialized printing services, and an equipment loan program. **Preston**, who was a member of the Libraries IT department at the time, was charged with learning everything he could about the printer.

The 3D printing request service was extremely popular with students right from the start. Initially, the overwhelming majority of requests we received were for novelty items and souvenirs such as shot glasses, but we soon started to see a rise in requests for more practical items such as smartphone cases and prints related to student projects. The first large-scale project we assisted with was student printing boxes to hold sensitive electronics for atmospheric data collection using a weather balloon. By late March, the success of the new service had led to an invitation to provide a 3D printing demonstration for the university's biggest donors at Maryland Day, an annual university-wide open house that offers a great

opportunity for marketing and outreach. Two of the attendees, **John and Stella Graves**, were so impressed that they decided to make a one-time donation of \$30,000 to kick-start the launch of a dedicated space for maker technologies in the Libraries.

The money was used to repurpose a small (approximately 250 square feet) group study room in the TLC and fill it out with additional 3D printers and other maker equipment such as a vinyl cutter, an Arduino kit, small soldering learning kits, and a 3D scanner. Following a grand opening ceremony, the **John and Stella Graves MakerSpace** (as we decided to call it)

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was formally opened in September 2014. (See Grand Opening photo.)

First Try

From the very beginning, our vision for the MakerSpace placed an emphasis on teaching and learning, in part to differentiate ourselves from other makerspaces on campus such as the School of Engineering's Terrapin Works, which included many more and higher-end 3D printers than we could afford on our limited budget. In the first iteration of the MakerSpace, library patrons used **Springshare's** LibCal system to reserve time for a one-on-one training session on the equipment in the MakerSpace with **Preston**, after which they could use it on their own. This became very popular very quickly with library patrons, which led to a problem: because **Preston** still had a full IT workload, he was unable to devote enough time to the MakerSpace to keep up with demand. This situation was helped somewhat by **Andy's** promotion to Head of Learning Commons, a position which included oversight of the MakerSpace, in 2015. Issues related to understaffing persisted, though, such as how to increase the number of hours that the space was available to train users without resorting to simply leaving it unlocked, which exposed expensive equipment to the risk of damage and untrained library users to the risk of injury.

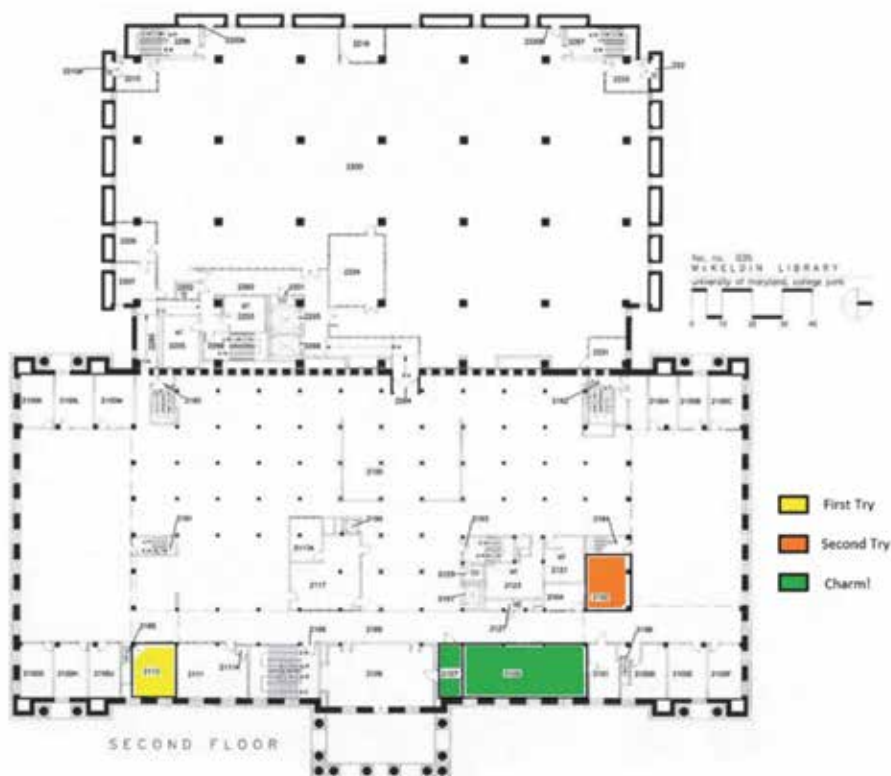
The other major flaw with the MakerSpace's first iteration was its small size. With only about 250 square feet to work with, it was hard to accommodate both the equipment and multiple patrons at the same time. Overcoming these challenges was placed on hold in June 2015 (a mere nine months after our grand opening) when we were abruptly forced to temporarily move all of the equipment into a new room down the hall following several flooding events which occurred during the same two-week period, a decision we later made permanent.

Second Try

The best thing about our new space was its increased visibility. It was situated in an interior corner and featured wall to wall windows, which made it easier for passers-by to see the equipment in the MakerSpace. Library



Grand Opening of the John & Stella Graves MakerSpace



TLC Floor Plan Showing all three MakerSpace Locations

patrons were also able to observe classes, trainings, and other events in progress, which made it obvious to them that something special was going on inside. We started to see a major rise in interest right away.

Unfortunately, this room did not have any HVAC ventilation, so it became uncomfortably hot when the 3D printers were running or when the MakerSpace was full of library patrons. Although we were using only PLA (polylactic acid) filament, which is considered a safe material, at the time, we feared that a lack of adequate ventilation for fumes coming from the printers was a cause for concern. We asked campus for help installing vents in the space, however the logistics of the existing HVAC situation proved to be more challenging than we anticipated. Another problem was that the new space was no bigger than the previous one. In addition to limiting the number of people we could work with at one time (which regularly forced us to split classes into multiple groups), we were unable to feature new equipment we were experimenting with, like an Oculus Rift virtual reality headset we had recently purchased. Less-frequently used items like our vinyl cutter and small electronics kits also had to be placed in storage, which decreased the

demand for them even further. Unfortunately, as a result of all this we increasingly became known to our patrons as a 3D-printing lab, as opposed to a more multifaceted makerspace. Finally, although **Preston's** job description was officially modified in 2016 to specify that he would be spending half of his time in the MakerSpace, we continued to struggle with how to increase the number of hours that the space was open.

Third Time's the Charm

In June 2016 we learned that the departure of the dean of the graduate school meant that a larger (1,200 square feet) room in the TLC was potentially available. The outgoing dean had made an informal agreement with the previous dean of the Libraries to use this space for a Graduate Student Multipurpose Room, more popularly known as the graduate student lounge, but now that neither of those individuals were still at the **University of Maryland**, there was no barrier to relocating it elsewhere in the library. After identifying a new home for the graduate student lounge on another floor, we moved into the room ourselves in January 2017 prior to the start of the spring semester. (See TLC Floor Plan which shows all three MakerSpace locations.)

The primary appeal of the new room was its size and preexisting swipe-card access system, which enabled us to make progress toward fulfilling our longstanding goals to be able to accommodate more library users at one time, feature more different types of maker equipment, and increase the number of hours that trained users could get into the

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MakerSpace. The additional floor space also enabled us to create a more accessible service point by spreading equipment out to reduce overcrowding and installing adjustable-height tables which did not fit in our previous locations. Finally, we quickly discovered that our new location was the most visible one yet when our walk-in traffic dramatically increased overnight.

We completed the move itself in just one day with no special resources. The process of renovating a different room to serve as the new graduate student lounge took longer (about three months from start to finish) and cost approximately \$30,000, which was split between the Libraries and campus. We took advantage of the occasion of the move to request additional furniture and improvement through a variety of means, including the Libraries' student technology fee and the FY18 budget process. Although we did get everything we asked for, some things took longer than others to arrive: items included in our budget requests, for instance, could not be purchased until after the start of the new fiscal year in July. Ultimately, in addition to the adjustable-height tables referenced above, we asked for four clear storage lockers for library user projects, two display cases, one cork bulletin board, one whiteboard, two lockable metal storage lockers for filament and other raw materials, four touch-screen computer monitors with

large-key keyboards and styluses as additional accessibility measures, and a security camera. The total cost of all of these requests was approximately \$11,000.

Finally, as an extension of the move, we rearranged a number of other staff and student services spaces in the TLC. The Undergraduate Writing Center moved their office across the hall into the room vacated by the MakerSpace, and we moved a TLC staff member into their old room. We then converted that space, which was immediately adjacent to the new MakerSpace and connected to it by a door, into an office for MakerSpace staff.

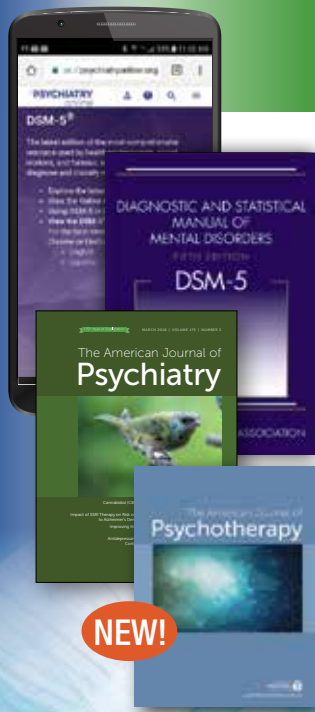
There are a number of reasons why we feel like we've finally succeeded in finding a permanent home for the MakerSpace. First, the larger space has enabled us to tackle the most ambitious event and instruction load in our brief history: in the month of October, 2017 alone we provided 17 instruction sessions tailored to individual classes, additional drop-in sessions for students in those classes who weren't able to attend, and three "Workshop Wednesday" sessions open to the general public. We estimate that together these events were attended by nearly 500 professors and students. We also had a record 450 people visit the MakerSpace during the three hours we were open for Maryland Day. It's hard

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MakerSpace in Use

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to imagine wanting to expand beyond these numbers in the foreseeable future, so the MakerSpace is likely big enough to meet all our immediate needs in this area. (See MakerSpace in Use photo.)

Additionally, we now have enough room to experiment with different configurations of furniture without needing to discard or move anything to storage, allowing us to evolve based on the interests of our patrons in a way we couldn't before. We have steadily increased the amount of space devoted to augmented reality/virtual reality (AR/VR), for instance, without any corresponding decrease in our 3D printing capacity. Finally, as an unexpected but pleasant surprise, all of these changes made the MakerSpace attractive to the library's Social Media Managers and other groups as a regular meeting space, giving us an easy way to keep our colleagues informed about what we're up to, including those most responsible for spreading the word to the rest of our community.

Future Directions

The MakerSpace continues to grow and change: additions since the move include installing an iPad outfitted with an app designed in-house that visitors can use to sign in, ensuring that we're able to follow up with

them later; a wall-mounted TV in the hallway outside of the MakerSpace where we can display our hours of operation, pictures of projects completed in the MakerSpace, and information about upcoming events; and green accent walls. We also installed a capsule vending machine containing small 3D prints created in the MakerSpace and an interactive display case in the main lobby of the library as marketing initiatives. More importantly, as predicted by the psychologist **Abraham Maslow**,¹ we've discovered that meeting our basic need for shelter has given us the confidence to turn our focus to higher-level projects. It's much easier to find time for things like reevaluating our organizational structure or integrating ourselves more fully into our campus and regional maker communities when we aren't concerned about having to drop everything to move again! Other future directions include creating a website as vibrant and dynamic as our physical space, incorporating more information literacy concepts into our instruction activities, and studying the kinds of learning that take place inside the MakerSpace more closely. 🌱

Endnotes

1. **A.H. Maslow**, "A Theory of Human Motivation," *Psychological Review* 50, no. 4 (1943): 370-396.

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bibliographic search and supply service for academic libraries and supporting publishers through promotion and distribution of their print and electronic content.

A personal comment here. The urbane and elegant **Mario Casalini** departed this earth in 1999 but he and his family, **Michele** and **Barbara**, had conceived the **Italian Charleston Conference**, the **Fiesole Retreats**. **Mario** was not with us for the very first **Fiesole Retreat** but the **Retreats** have continued for many years in his honor and we will never forget **Mario!** **The 2018 Fiesole Retreat (no.20!!) was held in Barcelona.**

Macquarie University Library in Australia has gone live with **campusM Mobile Solution** to expand library service access across campus. With the university's new app, users can locate library resources and access other campus information. **Ex Libris**, a **ProQuest** company, is pleased that **Macquarie University** has joined an increasing number of institutions in Australia that have opted for the **Ex Libris campusM Mobile Solution**. Powered by the **campusM platform**, the **Macquarie University Library's libMQ** app provides access to vital library information

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