Hackerspace Culture: An Interview with Alicia Gibb of the Blow Thing Up Lab

In this interview for Theory & Practice of "Doing" // From Digital Humanities to Posthumanities*, [Georgie Archibald](#) speaks with [Alicia Gibb](#), director of the [Blow Things Up Lab](#) at the University of Colorado Boulder. The interview explores the function and culture of the BTU Lab as a university and community hackerspace. It was conducted and recorded in person at the Lab in November 2015, before being transcribed at a later date.*

GA: Can you tell us about your background, and your role as director of the Blow Things Up (BTU) Lab?

AG: My background is in Library and Information Science and I also have a Masters in Art History. As I was finishing grad school I was piecing together—you know, Library and Information Sciences now has a lot of code in it and you learn about HTML 5 and websites and databases and all that kind of stuff—and I was going through that, and had a book called *Processing* that was based on light code. In the very back of that book is a chapter called Arduino, which is the controller that we use for hardware hacking. So I started looking that up and just fell in love with the electronic side of things. I was teaching myself a little bit of code, and there is also a hackerspace in Brooklyn called NYC Resistor that was just getting started (I was at grad school in New York City). They hadn't even really found space yet to build everything up, but I started meeting with that group of people and then eventually we moved into our second hackerspace. So I was really self-taught in all of this stuff, and then being in a hackerspace and a lab—it was this concept of freedom of information that really resonated with my concept of what is good about Library and Information Science, it is this access to information and this openness about information transparency, all that kind of stuff. So I really ported that over to all the open-source things in terms of teaching and sharing and learning that's happening at hackerspaces. I thought, this is access to information, this is freedom of information; exactly what my morals and values are, just transported to a different medium.

I began there and then I started a corporate hackerspace at a company called Bug Labs, and I was the director at the Test Kitchen, and now here, this is the university hackerspace. These hackerspaces are all kind of different, they all want different things. In terms of building up, there is a really great guide out there to build out any hackerspace for anyone who is thinking of starting one, they're basically free hackerspace design patterns. That was started through a trip to Europe; there's a guy named Nick Farr who started a program called Hackers on a Plane, which in 2008 took a bunch of Americans over to Europe where there were already hackerspaces for the past couple of decades. They toured a number of hackerspaces in Austria and Germany, and at the end of that trip American hackerspaces really got started. Hac DC and New York City and San Francisco were founded, and those were the first three hackerspaces in America; more started popping up afterwards. The people who who established them realized that others wanted to know how they designed their hackerspaces and so they released the guide. There's all kinds of different things in it; for example, the Tuesday meeting pattern. They realized that there's never any good days for meetings, people are always busy, so if you ask people when to meet, everybody will have a different response. They decided to give everyone the answer: all hackerspaces will meet on Tuesday nights.

So no matter if you're at a corporate or community hackerspace, a university hackerspace, everybody meets on Tuesdays, everybody knows that that's the guideline to follow for meeting times.

GA: Can tell us a little bit about your specific work here at the BTU Lab?

AG: I've known Mark Gross (director of CU Boulder's Alliance for Technology, Learning and Society Institute) for a really long time, so when he got put in the position of directing ATLAS he said, "Hey, I need your help, what do you want to do?" And I said, "I want to do a student hackerspace," and he named it the Blow Things Up Lab, the BTU Lab. And this is what I know how to do, to set up labs and hackerspaces. So I just came in and we've built up the materials that we needed and the equipment we needed. And basically, it wears three hats. It is in part a classroom, I teach classes in here on Tuesdays and Thursdays. It's a residency space, there are desks over there, those are all what we consider residents of the space, so for people who sit at that desk, that's their desk, and their desk only. A lot of times it's grad students, although we're playing around with the model; we're having an undergrad at a desk, and a community member at a desk, we're just kind of like checking out what works and what doesn't.

GA: Are they always CU students, or do you also have visitors from the wider community?

AG: We might have some visiting students, or we might have some visiting sponsors, so people are not necessarily always affiliated with CU. And then the third hat of the BTU Lab is the student hackerspace hat, and that's the biggest and the most populated in the sense that my classes are 15 students, and those desks are six students with the residency, but there are about 74 members of the hackerspace who might be here at any given time.

GA: You've talked about how BTU Lab came about—was its establishing movement aimed at forming a student hackerspace, and this specifically being a space of free information, of experimenting and the like?

AG: Exactly, yes.

GA: Have those goals changed at all? For example, did the residencies come into place once the Lab was firmly established, or are there other ways in which the Lab has evolved?

AG: We've have only been here for a year, we started in fall semester 2014. So, our goals are still very much the same, but there is definite potential for that to change in the future. And something that has changed, is what kind of equipment we have here at the Lab. I originally brought some equipment in, but none of really the big item kind of stuff. We have all our meetings on Tuesdays, and the students get to decide what they want to spend and what piece of equipment they want. I don't think that it would be very sustainable or fiscally responsible to run a lab where I just buy the equipment that I want regardless of whether or not it ever gets used. So the students decided to buy the laser cutter first, then the 3-D printer, and right now they're in talks about what to get next. So the model was there from the beginning and it hasn't really changed, but we keep growing the

equipment in this weird organic way. I don't know that students usually have input on what is built out about their lab, but that is really important here, in terms of wanting the equipment to get used and also wanting the students to have more ownership over the Lab itself. If this is their hackerspace, then they should feel like they're able to responsibly spend a budget and figure out what it is that they want to get next.

GA: Is this type of innovative space common in university environments?

AG: I don't think so. I mean, I think it's getting very sexy to have something like a hackerspace in a university. There is a lot of innovation coming out of the different community hackerspaces and industry definitely hooked onto that and decided, we need these innovative labs in our space or we need to pay the hackerspaces to undertake work for us. I think that the universities saw that some people were going to these hackerspaces and realizing, if I just build enough stuff in this hackerspace, I'll get a job, I don't necessarily need a degree. So I think that universities recognized the kinds of innovations and opportunities that were coming out of such spaces, and said, we need these in our spaces as well. But university systems and structures don't really lend themselves to hackerspaces in the same way that they are built out in the community. The very nature of how each different department is funded at a university makes it really interesting and strange to put a hackerspace in because of its interdisciplinary nature; anybody from any major, or any community member, or staff or faculty member, can come and play in this space. That's a definite challenge, and it's a good thing that ATLAS is here at CU Boulder, because they've had this interdisciplinary structure going on for a while. But I think that other universities really struggle as to where to put a hackerspace; if it's not put in a place that's already for all students then it kind of becomes isolated in one field of research and never really broadens out.

GA: Can you clarify what type of infrastructure the BTU Lab is framed by, and whether there were any problems when implementing the Lab: for example, funding issues, or pushback from CU Boulder's more intellectually conservative community?

AG: There wasn't any pushback that I have heard of. We kind of found our own funding early on— there's this company in town called Spark Fun Electronics, so they are our founding sponsor and sponsored the build out of the Lab. Otherwise, I haven't heard of any type of resistance.

GA: What about the Lab's culture and community? You've suggested that members come from all sorts of backgrounds—what types of academic fields are students coming from?

AG: I was just sitting here with somebody who is a dance major, and right after she left somebody else came in from film and was asking about using our space—they've got like a really nice high-powered camera and wanted to take pictures of something getting blown up, so this seems to be the right place to come to. These students over here [gesturing to the side of the room] are CU students, and then there are the students who are back at the desks who are involved in music, and education. One was a neuro science major but I think she's switching to engineering because of this Lab, and another one is situated between music, art, TAM (Technology, Arts and Media program), and

ATLAS. It's definitely just a mix with various majors. Last semester there was a finance major, and he was making connective desk art; he said that he was going to be working at a desk for the rest of his life, so he wanted some cool desk art. He created a log that had magnets on the inside and then it had these magnetic balls that were like rolling around the top; it didn't look like they were being controlled by anything, it was kind of this invisible little piece. So, we get all kinds of different students and faculty members, staff and community members, all different types, and all doing different things.

GA: That must be one of the biggest benefits of being here in the lab space, this assemblage of all of these interdisciplinary students.

AG: I think that's the biggest benefit; to get people from different walks of life who are used to thinking in one aspect. To get them to break out, to think with different perspectives, I think that this is really important. That's a big thing that makes hackerspaces so successful in communities, because you've got people from all different kinds of jobs coming together. They have different positions, backgrounds, and skill levels, and are all coming together and sharing that. And sharing is the keyword.

So here at the Lab it's really great because we can have a table of students sitting here and somebody might say "I need help with my calculus homework, who knows XYZ about this?" or "I need help with the code, is there anyone here who does CSS?" or whatever else they're struggling with. And so you get this really nice ebb and flow in sharing that happens, in terms of what I think is sometimes the type of best education, which is students teaching students, students learning from students; you get a lot stronger in your knowledge set when you can teach somebody how to do it. I think that it's also really healthy for students to realize that they can teach other people, and that they know enough about that subject matter to be able to teach other people, because too often in the university hierarchy, the situation is that "I'm the teacher and you're going to listen to me, I'm going to talk at you and tell you how to do all these things." But often in the world there are multiple ways to do any one thing, and it's a lot better if you have different people working together on a problem set than just the one person telling you exactly how to do it.

GA: With regard to methodologies in the lab, is there more of a focus on designing and building technologies and tools, or on analyzing those materials as study objects—it sounds like the former?

AG: Yes, there is very much a focus on building in the Lab.

GA: I want to ask about notions of space here in the BTU Lab. You were discussing the restricted desks for specific residents, are there further methods driving the Lab's spatial organization? And does work take place in virtual space as well as the Lab's physical space?

AG: The virtual versus physical space is a really interesting question. There is a woman named Catarina Mota who just wrote her dissertation on hackerspaces, and she found four common things

about why these types of things work together—particularly at this time— in the hackerspace realm, why all these hackerspaces are happening and sprouting up now in time. She found that the Internet was really great because it allowed us to share things, but pretty soon we were all at home in our own little universes attempting to do these things virtually. But at the same time, humans are very tribal. And so we tend to continually find groups of like people to hang out with, and hardware is one of those things where it is really really hard to do virtually. For example, before teaching here I taught out at UC San Diego, and I commuted, and it was really difficult to troubleshoot and help students with problems. Even if they would send me a picture, it might not have been the right angle, so I couldn't see behind the particular wire, or it was kind of fuzzy, or they tried to make a video of showing their problem but they were moving too fast or something. So it's really difficult to do hardware without physically being in the same space.

Hardware is also one of those things where there are particular pieces of equipment that are expensive and not everybody can have one of those at their homes. So we have a laser cutter that is worth $30,000, and you can't all have a laser cutter, but we can pool our money, and at community hackerspaces that's what happens. At Resistor we got a laser cutter because thirty people donated $1,000 to the cause. So, larger pieces of equipment can be shared in a space like this, and I think that it's really important to have a physical space. I definitely agree with Catarina, that this is a reason why all of these hackerspaces are appearing. And the other reason she gave was that many materials are getting less costly; some of the basic materials that we play with that even a decade ago were $100 are now $30, so it's much more attainable for individuals to buy those pieces to use in a hackerspace. And then the other thing that she pointed to is that global markets are available, so you can buy something from China, and it's no big deal to get that shipped overnight anymore, markets are online and easily accessible.

To answer your question about ways that the physical lab space is organized, we have this area of community tables where anyone can feel free to come in and sit down to work. And then there is this lounge area, where you can use the projector to play movies or whatnot. And then behind this wall is the tool shop, it's a little dusty and noisy back there, and it's a little better for conversation up here.

A more communal space in the BTU Lab, with couches, a projector, and whiteboard to the left of frame

The tool shop area at the BTU Lab, with community tables and resident desks left of camera

And then there's the organization of all the materials and equipment that we use as well. So you'll see that a lot of the shelves are open, that's by design, and I always joke that the number one tool to have at a hackerspace is a label maker. That's the thing that I give as a gift to all the new hackerspaces that I hear of that are opening, and the piece of advice that I share is that this label

maker is the most important tool. Because you do need to label everything, and you need to label how to use it, and what's expected for its use. We have labels around here that say "for sharing," and then we have labels that say people's names. And there are others too, for example those tools up there [gesturing to our left] are Zach's, but he doesn't mind if you use them as long as you put them back as you found them. When you have a lab it runs 24/7, but I'm not physically here 24/7; so it's really important to get people who recognize that if they just read the labels they'll know how to use the stuff and what's expected of them, and they'll know if it's consumable or not consumable. They can either put that in their project, or put it back when they're done, etc. That's the reason that I want things to be open and visible, so that everybody feels like they can just walk over and pull that out of the shelf and start to use it.

GA: How much do you view the hackerspace as existing in a similar manner to a traditional scientific lab—all of these things sound very different to some of the restricted spaces and conventional hierarchal structures of scientific laboratories?

AG: Yes, I would say it's probably vastly different from traditional scientific laboratories. The only similarities might be that we probably both have hardware, so we might have similar types of equipment, but nearly everything else is probably is different. Especially in acceptable use policies: one of the things that really struck me when I was walking around CU Boulder when I first started teaching here, was that I visited the lab for undergraduate classes at the Engineering school, and they have of all these signs up stating that there are absolutely no personal projects allowed in the lab. My undergraduate degree was in art, and I thought wow, that's really sad that engineers don't get to have this personal connection of the sort that I had with art. So much of it is all about your personal feelings and emotions to the art, and your personal reflection on this physical manifestation that is your art. And that really struck me as the opposite of what a hackerspace is—I don't care what you work on here, you can work on personal stuff, class stuff, you can work on something that's going to make you a billion dollars a day, I don't care at all. And that's the same as any hackerspace: there are no restrictions on what you can and can't work on, and that's one of their strengths. For example, hackerspaces are going to recognize that while you're playing a video game might be the perfect time that you get an "aha" idea for this brilliant thing that you're going to work on next, so it's important for video games to be in spaces like this. It's important for people to have time to just kind of screw around and do whatever they want, because you never know what meditative process people have, or how other things that they might be doing for themselves could get further work done, or what connects the dots for them to learn another skill.

GA: Regarding the BTU Lab or institutional hackerspaces at large, do you view hackerspace culture as a disruptive political force that is reshaping traditional academic practice?

AG: I don't know if it's as much political, but I think from a business standpoint that it's very disruptive. And this is probably in a way that businesses don't necessarily mind if they're willing to get into the ideas that are right. We need these types of innovative thinkers, but I'm sure if you're on the side of the business that a hackerspace is disrupting, it's not as much fun. But yes, I think that it

is a little disruptive in terms of the typical hierarchy at a university too. So even though I'm the director of a lab, I'm not the one who says what equipment is bought, and everyone who's a member has keys to this Lab, so they can come in and out 24/7. It's not really as though I'm here running the lab, or that it's my ideas and my way or the highway. Students even reorganize the lab spaces every once in awhile, and decide this table's going to come over here, and all of these couches are going to go over to that side of the room. It's not necessarily my decision, it's sort of everybody's decision in how we all decide it as one. I'm kind of the point person, who has to sign the paper, and submit the receipts, and do that kind of stuff, but it is in no way my rule here.

GA: Speaking to you personally, have you experienced any type of resistance as the director of a lab that is associated with the traditionally male-dominated fields of technology and science?

AG: Yes, I mean, I've been in the tech community for the past ten years, and so while there's nothing specific here yet, it has definitely impacted other aspects of being in the tech field. I was also on the Board of the Ada Initiative, which is a group that was very successful in getting women into tech and ensuring that women were treated better in the field. They came up with the code of conduct concept to have at conferences and the hackerspaces. And we actually have our code of conduct, it's in the policy and you have to agree with it in order to become part of this Lab. It breaks down anything that harassment could be here, and some of these things aren't necessarily in any university handbook. So it really examines what harassment could be, and how we report it (even if it doesn't directly happen to you, if you see it). There's also a statement about what will happen to your Lab membership, and a statement about confidentiality. So it's really important to me that people feel comfortable and welcome in the Lab, and that you know they feel like they're not being othered just because of their gender or whatnot.

I will say though, and this is not just in the university space but in all the various tech worlds, is that women often have to be invited in. So that's definitely a difference—where men ultimately feel like they should just be here and just feel entitled to be in a space, that's where women really need to be invited in. A big initiative that I've undertaken is just making sure that anytime I see somebody that might be interested in the Lab, and female, then I walk up to them and say hi and introduce myself. I think that role models also really help this situation; by having female role models, and letting students know that they're working on a cool project and that we hope to see them again, I want to make sure that they do feel that same kind of—if it's not the same kind of entitlement, then at least that they feel equally as welcome. So that's definitely always a challenge in these spaces and I can't wait for the day that it's not a challenge anymore, but it's a problem right now.

GA: When you're speaking to students coming into the Lab, or to the wider community, do you use social media as a platform to disseminate information or to invite people to join up at the Lab?

AG: I'm awful at social media, but luckily that's not really what I have to do as director at the Lab. Lots of student here do use social media. The Makers Collective is a group that meets here, and all

of their stuff is posted on Facebook. We have a web presence, and a Twitter handle, so we try to tweet out all our events. I definitely think that social media is really important; I don't care what university list you email, and there are a lot of posters that get hung up, but it's social media that is most effective. It's so fascinating seeing the difference between generations, some of my students say that they don't use email at all, they are definitely more used to being on social media. I think it does swing back and forth, as students want either more privacy or more sharing in their social life. But yes, I think that it's also important that the Lab is not just within the university walls. That's one of the beauties of social media—anyone can follow us on Twitter, anybody can see one of our upcoming events, whereas if it's just the campus email lists and posters around the campus then you're getting this very specific subset of people. So I appreciate that social media can bring in community members and different types of people, which is really important for a university, especially somewhere like CU Boulder where there are so many amazing science and tech companies in town. It makes sense that we are letting them know what's going on.

GA: Thank you Alicia, I'm very appreciative of the wonderful insights you have provided about the BTU Lab's workings and hackerspace culture in general. Many thanks!