OLAQ

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Beyond Curation: Libraries as Creators of Cultural, Digital, and Material Things

OLA Quarterly

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Cultural, Digital, and Material Things**

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Upcoming Issue

Spring 2015

Growth

2015 OLA Conference in Eugene—Cultivating Creativity!
Wednesday, April 15 – Friday, April 17th

"Creativity" is not easily definable, but as library employees, we are familiar with the term, especially as we are all asked to think more creatively in order to enhance our libraries and to meet our continued challenges. We understand that creativity is not limited to new inventions, products, or firms, but can also include revisions, enhancements, or new processes. The conference will be covering a wide range of topics related to creativity.

Please visit the conference website page for information about
registration, the hotel, vendors, and more:
http://www.olaweb.org/ola-conference-2015

The conference keynote speaker will be Dr. David Krakauer, Director of Wisconsin Institute for Discovery, who will present "Living at the Edge of Mystery: Creativity, Information & the Experimental Life."
From Dr. Krakauer:

> J. Robert Oppenheimer wrote that "both the man of science and the man of action live always at the edge of mystery, surrounded by it." The greatest of our creative institutions have sought to confront the singular mysteries of their time: the fundamental elements of life, the nature of gravity and light, and the atomic structure of matter. Ours is an age of overwhelming information that we seek to transform into comprehensible knowledge. I shall discuss several examples of creative institutions, all of which seek to make sense of the challenges of our age: the Media Lab at MIT, the Institute for Advanced Study in Princeton, the Santa Fe Institute in New Mexico, and the Wisconsin Institute for Discovery at the University of Wisconsin, Madison. These all question the boundaries, boxes and constraints we place on thought and seek to render comprehensible our mysterious informational universe.

Here are a few more thoughts on creativity from an article in *Chronicle of Higher Education* titled "Let's Gets Serious About Cultivating Creativity" by Steven Tepper and George Kuh. They state that creative people:

- approach problems in non-routine ways using analogy and metaphor;
- pose "what if" question;
- see new or unexpected patterns;
- face ambiguity and uncertainty;
- use feedback to revise and improve an idea; and
- bring people, power, and resources together to implement or communicate novel ideas.

The 2015 OLA conference will offer inspiration, innovation—and creativity!

Libraries as Creators

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desk. In his spare non-work
time, he writes science fiction
and poetry.

This issue is titled "Beyond Curation: Libraries as Creators of Cultural, Digital, and Mate-rial Things." What does that mean? In part, it is a common-sense observation that librar-ies are not mere inert receptacles of printed matter. It is also an assertion that libraries and librarians make things, and enable things to be made—either directly, through the provision of materials and tools, or indirectly, through the provision of space and expertise.

The articles in the issue come from librarians at all kinds of libraries, and deal with many different aspects of "creation." But before I tell you about them, I'd like to tell you a story.

Once upon a not so long ago, I was an undergraduate student who had tentatively decided on aiming for library school. I was wandering the stacks when I stumbled upon an anthology of odd library science essays and articles. Although I've never been able to find it again, and don't remember the title of the anthology, I have clear memories of reading an article that talked about the possibilities of nano-technology in libraries. The libraries in this hypothetical post-nano world, the author argued, could serve as public access factories, providing people with "recipes" to create real, working machines with their own supply of (hypothetically readily available) incredibly small, multi-purpose, self-replicating robots.

This was in the early 2000s, and the only place I'd encountered ideas like that before was in science fiction novels, so it was really exciting to think about futuristic library-facto-ries taking an active role in enabling the creation of physical objects. These days, of course, it doesn't sound quite so far-fetched. There are a rising number of libraries with 3D printers for patron use. While 3D printing may not be quite the same as nano-sized robots, it is still one way in which libraries have moved beyond their stereotypical roles as collectors of static information. I would even argue that this role has never been the sole purpose of publicly accessible libraries. There have always been less visible, less techy ways in which libraries have served as creators or co-creators, whether by creating exhibits, providing books that can serve as instruction manuals, giving communities and hobbyist groups and a space to work, plan, and collaborate, or any number of other approaches.

The articles in this issue of *OLA Quarterly,* as mentioned above, come from librarians working in public, academic, and school libraries, and the ways they and their libraries have been creating range from technological to cultural. Catherine Jasper shares her experi-ence launching a local online music service at Deschutes Public Library. Peggy Christensen describes how students at Marshfield High School in Coos Bay use the library after school to create art and share knowledge. Karen Muller, Erica Buss, and Brendan Lax talk about how collections at Hillsboro Public Library have moved beyond books to help patrons bake cakes, teach themselves programming, and play games in the comfort of their own homes. And Dean Walton of the University of Oregon explains how a science librarian might find himself launching home-built rockets and satellites with local student groups.

It's my hope that their shared expertise and experiences will inspire creation in libraries around Oregon, or that they'll encourage librarians to think about and highlight how their libraries already create. If nothing else, the next time I tell someone I work in a library and they say "It must be very quiet working with books all the time," I'll have a better response than "Something like that."
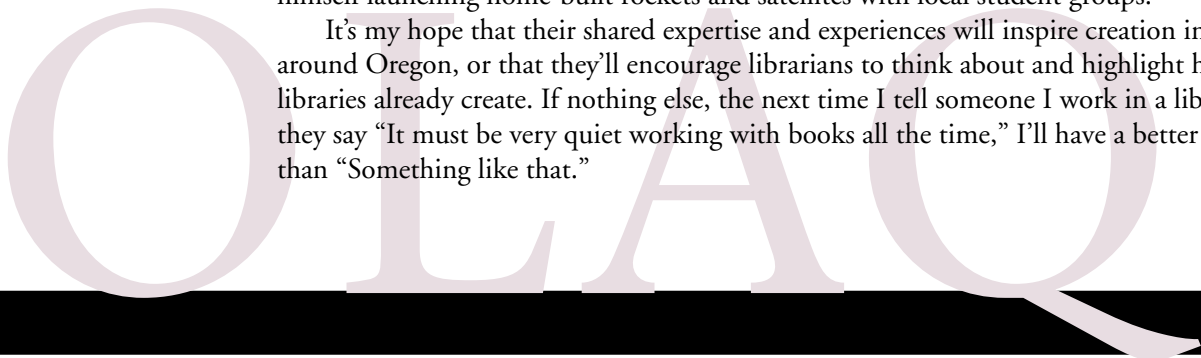
Listen Local at Deschutes Public Library

by Catherine Jasper
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Catherine Jasper

Catherine has been the Collection Development Librarian for adult materials at Deschutes Public Library since 2008.

Over the last two decades, the music industry and the ways people acquire music have changed dramatically. Fewer and fewer people rely on CDs, instead using online sources to discover and enjoy music[1]. The ripple effect from this digital shift can even be felt at the local library, where circulation of CDs has decreased. In a world where savvy music listeners find almost anything they want quickly and for free, what role does the library's music collection have for a community?

One response has been to offer free music downloads to customers through services such as Freegal and Hoopla. Deschutes Public Library (DPL) has also responded with the launch of Listen Local (www.deschuteslibrary.org/localmusic). Listen Local brings together albums by area artists and makes them free to preview and download for library cardholders. This new resource offers unique home-grown content, increases discoverability for local musicians and can ultimately strengthen our community.

For years, I have wanted to offer local music to our customers. The costs and staff time needed to buy directly from individuals coupled with the relatively short life of library CDs—due to damage, loss, and normal wear and tear—prevented me from pursuing this. When I read about the Iowa Music Project[2], I realized that shifting the collection online could eliminate the risks and maximize our investment. After bringing on other staff, I was ready to look into creating a similar project for DPL.

An important first step was to identify local musicians willing to work with us. With a dovetailing goal of exposing listeners to artists that customers could see perform live, I began by contacting musicians based on two criteria: they have produced a full-length album and also play regularly around town. Our local daily paper was a great resource for helping us find people who fit this criteria—both the annual top ten list and weekly calendar listings. Most bands have websites or are on Facebook, so a little digging around gave me the contact information I needed.

Following the Iowa City Local Music Project model, local musicians sign a contract with DPL and are offered compensation for their work. Response was positive overall. Some musicians had questions that were easily addressed by a personal phone call.

Once paperwork was in order and music files received, DPL started the process of building the webpage, complete with preview, library account authentication and downloading capabilities.

Listen Local launched in December 2014 with 11 local bands featured. We have done a soft launch publicizing it on our Facebook page, and will send out a press release to local media in the coming weeks. As far as content, this is just the beginning—every six months we hope to add another round of albums.

We are now able to offer local music—content not readily available through our library vendors or the bigger streaming sites like Pandora and Spotify. More importantly, Listen Local gives our customers a place to discover music created here—in and by our community.

References
[1]"Album Sales Hit A New Low"
By Ed Christman and Glenn Peoples in *Billboard* August 28, 2014
http://www.billboard.com/articles/business/6236365/album-sales-hit-a-new-low-2014

[2]"Iowa City Library Launches Local Music Project"
By Jenny Baum in *Library Journal* on June 26, 2012
http://tinyurl.com/o83p5d8

Other Libraries with Local Music Pages
Denver Public Library
https://volumedenver.org/

Iowa City Public Library
http://music.icpl.org/

Monroe County (New York) Library System
http://www3.libraryweb.org/localmusicproject/

The Pirate Underground

by Peggy Christensen

Peggy is the teacher-librarian at Marshfield High School in Coos Bay, Oregon. She also serves as district librarian for the five other campuses in the district. She is a member of the Oregon Association of School Libraries (OASL) board where she serves as District Representative and is the Chair of the Oregon School Libraries Standards Committee. She is co-hosting the annual OASL conference which will be held in Coos Bay on October 9–10, 2015.

How do you find an activity for students who feel like they have no place to belong and no one to champion their needs? The answer to that for the Marshfield High School Library was to start an after school program that would allow students to pursue their own interests and collaborate on their own terms.

The idea of creating opportunities for students to use the library beyond the school day had been brewing in my mind for several years. The barriers that kept popping up were the usual ones: finding the money, time, and personnel. Plus, transportation issues always seemed to stop forward progress. But then a pathway opened.

A young intern teacher, Jeff Van Vickle, came to our school. He was a little unconventional, full of ideas, and had a strong desire to get involved. I approached him about my idea to create a space for kids who always seemed to be on the fringes because they were not "joiners" and asked him if he would like to work with me to get something started. He did.

The concept for the program was rather idealistic in the beginning, but then we boiled it down to some practical baby steps. We began by giving the program a name that Jeff came up with, *The Pirate Underground*. Then we defined what we could offer in the beginning and what we would like to offer as the program grew. We created a student survey to see what kind of interest might be out there and conducted it during the students' English classes. We took the survey results to the principal and asked if he could find some funding to support our student teacher in running the program. For additional funding, I successfully applied for a $500 *Connie Hull Grant* that was offered through the Oregon Association of School Libraries.

The Pirate Underground was born. We met two nights a week for one hour. Our initial focus was on reading and creative writing and, to the extent we could support them, art activities. The first year *The Pirate Underground* hosted a small, but dedicated group of students. There were no real requirements for those who came except to sign in. They could participate in the activities we presented if they wanted. They almost always did.
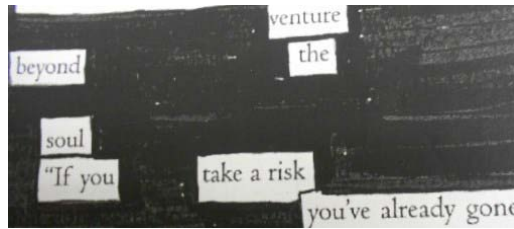
Close up of a "Black Out Poetry" activity presented by library clerk Anita McHaney.

Jee Seon "Rain" Eo and Jui-Tung "Melody" Chang are creating a Zentangle taught to them by community Artist Joan Crawford.

Close up of a Zentangle.

I wanted to see the program open up to anything in the "arts." So I approached people at the Coos Art Museum who directed me to the Bay Area Artists Association. I shared my idea with the assistant Directors of both the Coos Bay and North Bend Public Libraries. I was looking to tap into the interests of the high schools fandom community. Students talked excitedly about Enochian, Gleeks, Whovians and other groups they followed. That did not pan out the first year, but this year students stepped forward to present. They advertised their session as a *Fandom Gathering*. The fandom sessions doubled participation the first night.

The Coos Bay Public Library offered to host an open mic and art exhibition night if we were able to put something together. I continued to work on making connections with members of the community throughout the summer.

We are in our second year of *The Pirate Underground*. Jeff has moved on to another school district, but my library assistant successfully applied for the position. I don't run the sessions, but I continue to offer ideas and work on finding more community volunteers. This year, 100 percent of the funding for the extra-duty stipend came from the building principal and the superintendent. The *Bay Area Artist Association* (BAAA) gave the program $150 for supplies and agreed to have an artist volunteer come for one hour a week to work with the students. The Coos Art Museum donated art supplies and the promise to offer scholarships to students interested in their programs when possible.

My ears are always tuned to tips for program ideas and people I can contact so *The Pirate Underground* program can continue to grow. We now have a student who has stepped forward to host several sessions to her fellow fandom followers on writing Enochian. Another student has stepped for-

Skyler Houghtaling, Bailey Elkins and Kierstin Martin present to a group of Fandom followers.

Gabrielle Beauchamp, Naketa Smith, Michaela Barnes and Katie Baimbridge working on creating perspective of an object. Session taught by community Artist Charles Edmunds.

*Student Victor Elam works on learning the heavy metal ballad —*Floods.

ward to host board gamers who want to play *Pandemic, The Resistance*, and *King of Tokyo*. These board games were recommended and reviewed by students for students.

Two students are talking about getting a student readers' group going and some simple coding sessions. A staff member has agreed to offer 3–4 sessions on "How to Crochet," and another has agreed to offer a similar number of sessions on "How to Create Floral Arrangements." Right now I am trying to locate a community member who will spend some time with eight of our boys who want to learn and share what they know about playing electric guitar.

This fall, *The World* newspaper did a front page article about *The Pirate Underground*. (http://tinyurl.com/knht7h5) I loved the quote by student Jessica Baimbridge who said, "You're sitting in a classroom for 45 to 50 minutes straight and here you get to do what you actually like." Staff writer Chelsea Davis indicated in an email that she related to the students in *The Pirate Underground*. Actually, I think a lot of people do. Since the article appeared, people have come forward with other suggestions. Have I approached the local Coos County Radio Club or the Coos County Master Gardeners? The answer is, "Not yet." But, if it is something the kids want to do, I will try to find someone and some way to support it.

Arduino Kits, Bakeware and LEGOs … Oh My!

by Karen Muller
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and

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Libraries have always had resources to help our patrons in their creative endeavors. We buy books with knitting patterns and DVDs that show woodworking techniques. We help connect patrons with community theater groups and direct them to online resources with the best recipe for soufflés. Now we have entered a time when libraries not only have these traditional resources, but spaces dedicated to our patrons' creativity. At the Hillsboro Public Library we've added a new dimension for supporting patrons' creativity. In addition to creative spaces, we are providing the actual tools that people need to explore new areas of interest and learn a skill.

When developing the strategic plan for the Hillsboro Public Library, support of lifelong learning was chosen as one of our top priorities. We were already doing a good job of that with our print and AV collections and our online resources. But we wanted to do more. We wanted to engage with the patrons and help them connect with each other. As we expanded and remodeled our two branches, we built in space for people to gather, including study rooms, conference rooms, and a multi-purpose room, fondly known as the "glitter and glue room," where groups could explore and create. We've had our local watercolor group come in to paint, groups of students study and collaborate on projects, and people complete Skype interviews. As we expanded services to fit these new spaces we concentrated on programs that would encourage connection between people and the library, and with the community at large.

One resource that has long fostered creativity and the "maker" spirit in children—and many adults too—are LEGOs. Assembling plastic blocks into a near-endless number of compositions allows people to explore possibilities and to fabricate tangible objects from just a picture in the mind. LEGO clubs and pro-

grams have long had a home in public libraries, extending the development of early literacy skills to include creative play, and the Hillsboro library is no exception. We have run a very successful "open" build program for a number of years, putting out thousands of blocks and letting families take over the space to participate in unstructured play together. While the initial benefit we saw was to promote tactile learning for kids who might not have access to LEGOs and DUPLOs at home, we discovered that one of the remarkable things about LEGOs is that they engage everyone—mothers, fathers, sons, daughters, teens and grandparents—and allow people to experience the simple joy of building something together. In the years since our club started, the popularity of LEGO has moved beyond just the iconic plastic block, and into the realm of electronics, robotics, and the prevailing winds of the modern maker movement. Many of the LEGO robotic kits are cost-prohibitive for a library to purchase outright, and likewise for many patrons, so we are collaborating with a local group willing to donate their time and LEGO kits to run workshops at both of our branches. With LEGO WeDo for kids ages 7+ and the more complex Mindstorm kits for the teenage crowd, we have been able to offer a fantastic fusion of tactile play and STEM-based programming, coding, and engineering. While many of our local middle and high schools do a great job offering robotic programs that let young students design and program robots, the Hillsboro library continues to offer these programs to enthusiastic audiences looking to try out some of these resources and technologies for the first time, with little pressure or demand to do more than simply let the mind express its creativity.

As part of their long-established tradition of offering new technologies to the public, many libraries are now providing 3D printers for patron experimentation. 3D printers allow people to bring their creative ideas to life. Many of the libraries that offer this technology do so in the spirit of connection, education, and innovation. Designating space for 3D printing, where people come together to collaborate, learn, and explore, aligns naturally with libraries' historical mission as a place for everyone to have equal access to resources.. At our library, in the heart of Oregon's "Silicon Forest," it seemed natural that we would offer this service to our community, rich with hobbyists, techies, and creatives.

With the support of our Board of Trustees and funding from the Friends of the Library, we purchased two Up! Mini 3D printers in the fall of 2014. As buzz about the printers has spread throughout the community, we've faced a steady stream of inquiries from patrons, fellow city workers, and the media. *How does it work? What can I do with it? When can I use it?* People are clearly curious about this new technology, and while many have heard about 3D printers, they have yet to see one up close. We are hopeful that the many inquiries we've received are an indication of how popular this service will be.

While the cost of 3D printers has fallen significantly, they are still out of reach for most. We are delighted to offer access to this innovative technology at no/low cost and we are drawing from our rich pool of volunteers and interns to help us do so. A local high school student and 3D printing hobbyist trained staff in using the printer and was a panelist in our Open House 3D printing demonstration that caught the attention of local and national media. Weekly 3D printing labs, begun in February 2015, allow patrons to design and print their own creations with the help of staff and volunteers. In the near future we plan to offer basic CAD classes and instruction on using open-source digital design sites such as Thingiverse. We are still in the early stages of this service roll-out and there are plenty of mistakes and discoveries ahead of us.

After seeing the success of these spaces we decided to further expand our support of these creative endeavors. But our rooms were full, and we couldn't build more. So, how could we grow? The answer was by expanding collections into non-traditional areas. We decided that if we couldn't bring more people into the library to use our space, we would find ways to provide tools for them to use at home.

Our first opportunity for a unique collection came in the form of Arduino micro-contoller kits. An Arduino is a programmable circuit board that allows hobbyists to write code on their computers, upload it to the board, and see their commands direct all sorts of functions, from illuminating tiny LED lights to dictating the precise movements of a servo. These kits are essentially a modern equivalent of the chemistry sets of the past, providing programming and electronics experience to both beginners and seasoned tinkerers. Spark-Fun, a company based near Boulder, Colorado, donated a number of Inventor's Kits to our library, and we immediately decided to put them directly into the hands of our patrons. The challenge, as you can imagine, was first to catalog and process these kits, with all the tiny little components (transistors, sensors, lights, and actuators), and then to lend the kits out to the public with the hope that everything would come back in working order. The processing, while certainly a labor-intensive task, was embraced by our Technical Services staff, who saw the value this kind of resource would add to our community. We did our due diligence setting up a check-out process that would work for both our Circulation staff and our patrons, and while we considered as many contingencies as we could think of, it turns out we needn't have worried so much. 12 months and over 50 check-outs in, the kits are still going strong and haven't missed a circulation beat.

Knowing we could put a 50 piece kit into a fishing tackle box and still manage to get things back in relative order, we saw our options for special collections blossom. The next thing we decided to circulate, and something our cooperative partner, West Slope Library, had just added, was designer and European-style board games. Board games have long held the distinction of fostering the social connections between people, whether friends, families, or colleagues, and the recent proliferation of designer tabletop games has pushed beyond traditional competitiveness to include more collaborative styles of game play. As with the LEGO programs we offered, board games provided our patrons with tools for multi-generational and multi-cultural interaction, creating strategies and narratives within the game context, and opportunities to develop problem-solving and critical thinking skills while having fun. The idea that patrons could take these games with them wherever they liked—to the beach, to the bar, next to the fireplace at home—and try something that promoted creativity and social interaction in a real, physical space, fit into the priorities and values of our library. We did have some challenges figuring out how to catalog, process, and circulate these games (the last thing we wanted was for a fistful of meeples to fall into our automated materials handling apparatus!), but with the dedicated work of our volunteers and staff we have over 50 games now in circulation, and rarely do they ever find the time to sit on the shelf.

Our newest collection innovation has been to add bakeware at both branches. Our objective with this collection was to provide access to tools that not everyone would be able to obtain for their own home. Most people only need to use an *Elmo* or *Dora the Explorer* cake pan once and either are unwilling to invest the money or do not have storage space for something they may rarely use. We have added a large variety of specialty bakeware including a popover pan, madeleine pan, and an æbleskiver pan. Most of the pans are more main-

stream, like springform, bundt and tart pans, but we also have a selection of special-interest pans like *Thomas the Tank Engine, Darth Vader* and a Christmas wreath. Again, our technical services staff was put through their paces finding ways to process these very unusual items, but have created packaging that makes them easy for patrons and staff to track.

By collecting these kinds of pans, we're making it easier for patrons to explore specialized baking and cake decorating and we're providing a unique resource for our entire community. The bakeware collection has only been available for two months, but is off to a great start, with high turnover. As we go forward we will be adding more seasonal pans for holidays and incorporating programming centered on this collection, and we have invited patrons who borrow the pans to send us a picture of their final product for us to share on social media.

These new collections at Hillsboro Public Library have allowed us to take an active part in supporting creativity throughout our community. The tools and programs allow patrons to find new ways to express themselves, whether they spend an afternoon making a LEGO robot, print out their design on the 3D printer, make something move with the Arduino kit, or bake their very first angel food cake from scratch. The library is reaching patrons where they are—in their homes—making us an integral part of their creative lives. And who knows where we will go next? The sky's the limit when it comes to creativity.

Rocketing Out of the Library
and Putting A Satellite In Orbit

by Dean Walton, PhD

Dean Walton is a science librarian at the University of Oregon where he is the subject specialist for Departments of Biology and Geology and the Environmental Studies Program. He is also a past field biologist and has a strong interest in the use of GIS and remote sensing for research and disaster relief efforts.

How does a librarian get involved building and putting a real, honest-to-goodness, satellite into orbit around the Earth? Simply interest, desire, and of course bringing something to the table. But what can a librarian bring to a table full of physicists and engineers? I claim many things: from identifying funding sources, to website design, to communication and science education outreach.

As a science librarian, I cover the areas of biology, geology, and environmental studies. I love to investigate all the tools associated with research in these areas. However, my foray into rocketry and astronomy started, as it did for many folks, when I was a kid building and launching model rockets. I chose the Estes™ Sprite, a small rocket, for my first project. It was the size of 16 oz. coffee cup with a circular band connecting the three tail fins together, giving it a unique and radical appearance. This rocket appealed to me in particular because it didn't use a parachute. At apogee, the final blast of the engine that would usually push out a parachute, instead would push the engine backwards 3 cm out the back of rocket. The net effect of this is that the center of gravity changes allowing the rocket to tumble back to the ground instead of falling nose first at a high velocity. This was my first entry into why some rockets flew straight and others didn't.

Jump ahead 30 years to the 1990s and I saw an issue of *Popular Mechanics* that highlighted a bunch of enthusiasts, mainly from the San Francisco area, who would go out to the Black Rock Desert to launch their rockets, which were really big for your average hobbyist. These rockets can be 3 meters or more tall, and as of last year have flown to heights exceeding 120,000 ft. Upon my move to Oregon, I was now near this desert and could go visit the event, that is, if it was still going on. Turns out it was.

Now let's jump to 2010. Not only were people still launching large rockets in the desert but those rocketeers were also promoting STEM related contests in a program called ARLISS (A Rocket Launch for International

Student Satellites: http://www.arliss.org/) which encourages students to design sensors, fold-up quadcopters, and rovers that could potentially explore extraterrestrial worlds. Students from around the globe were coming to this dry lake bed to test their skills. It was an amazing place to be.

ARLISS team members readying a rocket for launch by loading it onto the launch rail. The rail will be lifted vertically once the rocket is ready.

The first few years I was solely a spectator at the event, but as one colleague I met at the event said, "There is no way to be a spectator for very long." It was true. Since then, I have built up a group of colleagues, all of whom are interested in rocketry and space research. Although I am a biologist by academic training and focus mostly on conservation biology as a research area, I do enjoy electronics. I became a licensed amateur radio operator many years ago, helped form a local robotics group back in 2007 that merged with others into a local maker-space several years later, and just generally like to build things.

I had already helped the University of Oregon's Science Library acquire a 3D printer and had acquired grant money from our newly formed STEM center on campus to train students on how to design and 3D print nose cones for model rockets. I developed a tutorial on nose cone design using the computer assisted design program Rhino5TM, took the printer on tour out into the K–12 school system, and got students making nose cones. With my help, the students then tested their designs by flying the noses cones on small rockets and recording the results with on-board data loggers that provided us with the maximum velocity and acceleration of the rockets. The money even provided for funding a week-long science camp on rocketry for 4th–6th graders and the staff to run it. I was looking at new roles for libraries and librarians.

One important aspect of the future of librarianship is the notion of embedded service. As a science librarian I work closely with many of our researchers. Many of these researchers receive funding from the National Science Foundation and are required to show greater impact of their research. This greater impact is often equated with science education outreach. Additionally, not every researcher has the time, interest, or skills to do that outreach even if she or he believes it is very important. So, you have a librarian, trained in the sciences, who

likes to make things, and who also teaches science research classes to a wide variety of audiences, and you have a potential for an outreach and maker specialist.

At the University of Oregon we also have a science technology engineering and math (STEM) Center called STEM CORE, and I was invited to participate with the group. I was already active with the Oregon Academy of Science (OAS) and co-chair of the science education section. Through the UO STEM CORE group, I became more involved with science outreach in the K–12 system. Additionally, the University of Oregon is in the process of building a new science library, one envisioning the future of libraries and one that includes a maker-space. The vision is of a communal space where students and researchers can work with each other, utilize community owned tools like 3D printers and laser cutters, learn new software skills, and visualize data on wall sized high definition screens.

In trying to embrace this vision, the library looked internally and externally wondering how it could also serve the greater Oregon community. Again, outreach was an idea, and getting students from our state (some of whom have not had family members ever go to college) on to campus to let them see a future possibility of their lives, was one way we approached it. Showing students that research is most easily conducted in a supportive environment that includes library space and provides opportunities to learn new skills was important. And so outreach became one of our goals and we identified the use and sharing of our communal technology as one outreach tool. In the process we began working much more closely with our STEM program and learned new skills we could utilize. The end result was that the Science Library staff could offer their outreach and research skills to programs such as the Oregon Small Satellite initiative (ORSSI), a consortium organized to put an Oregon student designed satellite into space.
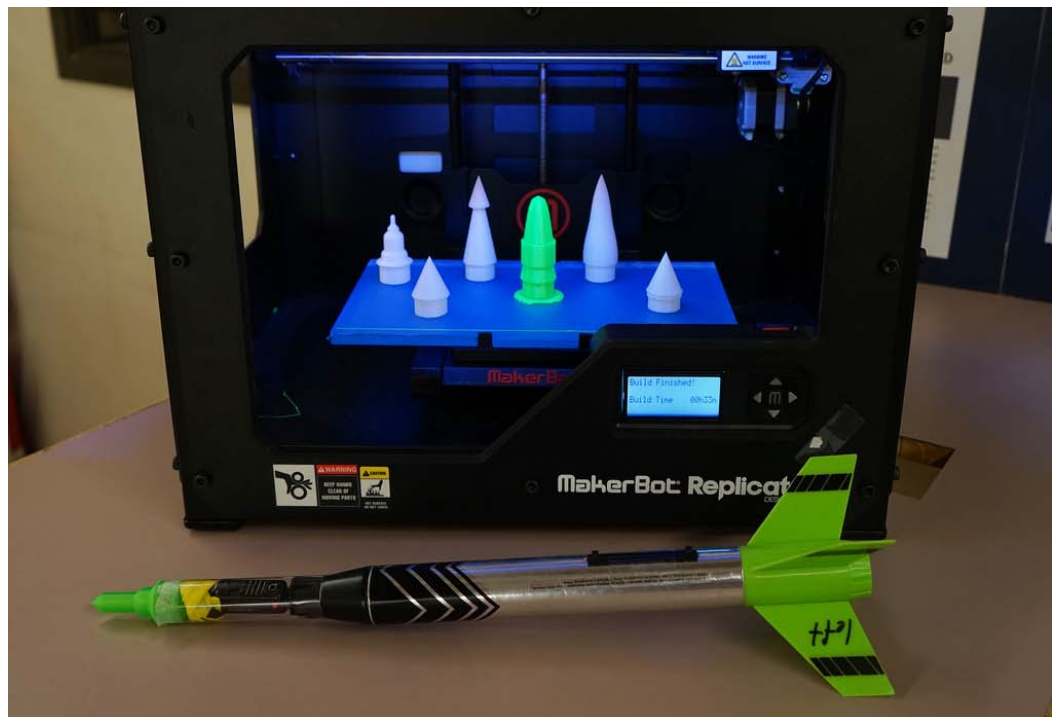

One of the University of Oregon's 3D printer showing off a series of rocket nose cones designed by elementary school kids during a science summer camp on rocketry.

Like many things, the more you work on a project the deeper you get into it. My interests in 3D printers, maker-spaces, and rocketry has brought me to a point where my skills as a librarian and my connections with the space community are paying off in bigger ways. I am currently exploring work with one of two maker-spaces in the Eugene area and hope to add a few physics students from UO and our community college to build what is known as a CanSat, not to be confused with a CubeSat. Imagine a soda-to-coffee can sized device that holds a series of sensors or a rover, all of which are ejected from a rocket at 10k–40k feet. This is a CanSat. You can build a CanSat with an Arduino controller for probably less than $100, well within the range that many school clubs can afford. And imagine showing kids that you can launch these devices on 10 foot tall rockets that roar into the sky and then let them watch the event live from the launch site or anywhere with an internet connection. They are hooked on science and engineering research.

A CubeSat, though, is designed to be an actual satellite, an object that will be in space, orbiting Earth, for what could be a long time. It also has a much bigger price tag. NASA wants more space engineers. So, how do they get more space engineers? They provide grant money to form space consortia between schools of higher education within a state. They look for places that have yet to produce many space engineers and tell them that if their school can get together to build a CubeSat, there is a good chance that NASA could put it aboard a rocket and launch it into orbit. Talk about an incentive for schools either to compete against each other or work together to get this done. However, there is a catch: NASA also wants these consortia to find some of their own funding and to develop outreach programs to get more people involved in space engineering. Outreach to minority groups involved in STEM
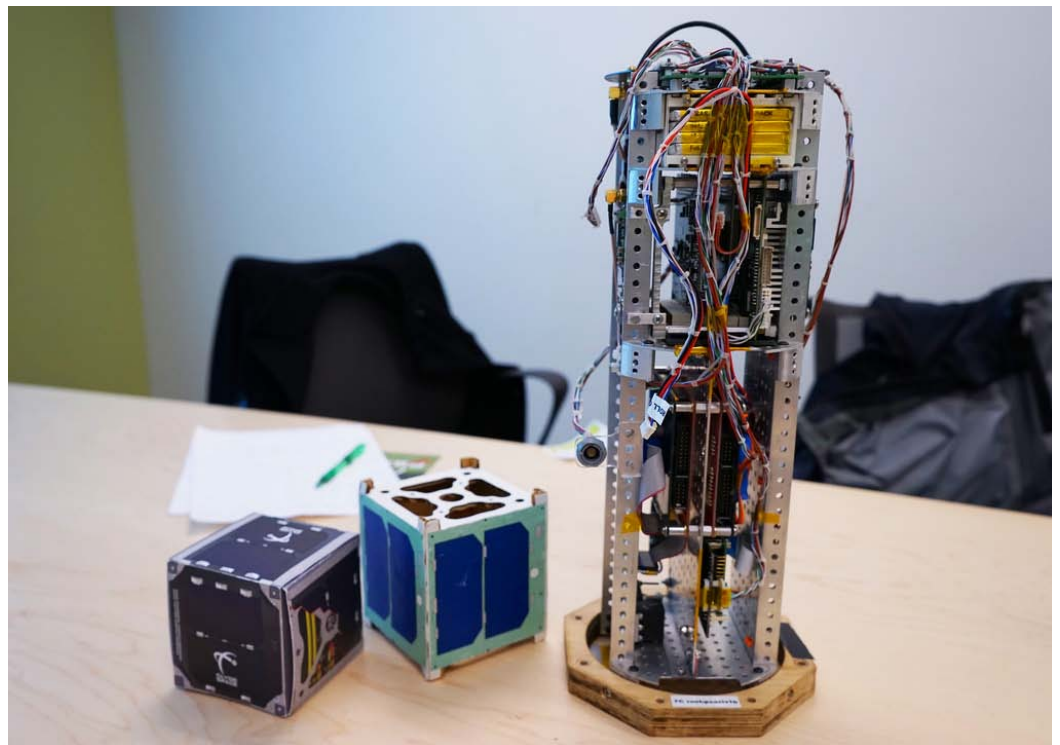
Portland State's satellite control circuitry. The goal is to shrink it to the size of the 10 X 10 X 10 cm cubes to the left, hence the name CubeSat.

activities is a must. NASA believes if they are going to put some set of schools' satellite into space, then all the schools in the area should know about it, and all the schools should be involved in some way however minor. Unfortunately, most of the engineering folks involved are spending their time trying to solve very technical questions and aren't quite ready to do outreach or work on funding. That's where I have something to offer.

There is a statewide space grant helping to fund space research at most of the state universities. This current initiative under the umbrella of the space grant involves Portland State University (http://psas.pdx.edu/), University of Oregon, Oregon State University, and Portland Community College. I was approached by team members to write an out-reach plan to maximize the impact of the multi-university project to build a satellite. Team members were also interested in additional funding opportunities, and I was able to show them the Foundations database from which I identified additional funding sources. I will be actively grant writing to fund more of the project and creating content for ORSSI webpage. On the technical side, I identified a scientific direction for the project to measure the impact on micrometeorites on satellites and will be forming a team to review our collected data.

Building multi-institutional relationships provides greater communication with research-ers that might not otherwise have worked with a librarian and increases the awareness and reputation of the science library in these communities. Work on the physical building of the satellite will be taking place at the Portland State University, while many of the administrative activities will likely be coordinated at Oregon State University. The education outreach associated with building to the satellite, well … that's where a librarian comes in to play. 🏃

http://www.nasa.gov/mission_pages/smallsats/elana/
http://psas.pdx.edu/
http://blogs.oregonstate.edu/oregonspacegrant/
http://www.arliss.org/

All pictures were taken by the author, Dean Walton.

Liftoff of an ARLISS rocket to launch a small CanSat test unit at 12,000 feet.