IU SOUTHEAST INTERNAL GRANT APPLICATION COVER SHEET

Type(s) of award(s) s	ought:	
Faculty Development Travel GrantStudent Assistant Grant		
Grant-in-Aid of ResearchX Summer Faculty Fellowship for Teaching		
Improvement of	Teaching Grant Summer Faculty Fellowship for Research	
Regional Resear	ch/Creativity Initiative Student Assistant Grant	
Other		
Applicant=s Name:	Susanna Garts Crum	
Title & Department:	Assistant Professor of Fine Arts - Printmaking, Fine Arts Department	
Project Title:	"Using the Fine Arts Department's ShopBot: The CNC Router as Emerging Technology in Printmaking Coursework"	
Amount Requested:	\$8000.00 (grant applications only)	
Special Needs. Does Human Subject If so, please provide y appropriate committe	sLaboratory AnimalsBiohazards	
Terms & Conditions:		
 needed for the pr A progress report completed. Because some prother income to the fund from such proceeds some prother income exceeds some prother income excee	tions from grant budgets are not to be made without prior authorization and funds not ojects described should be promptly returned. t will be submitted by October 1 of each year until funds are expended or the project is ojects supported through Grants-in-Aid of Research or Teaching may yield royalties or he grantees, each applicant agrees, as a condition of the award, to repay the University ersonal income when the amount is in excess of \$100 in any year. Thus, each year that the \$100, the recipient is obligated to repay to the University fund one-half of such excess until	
 It is understood t the applicant wai The conduct of p the <u>IUS Research</u> policies with reg 	 the grant is repaid. It is understood that letters of reference solicited in connection with this application are confidential, and the applicant waives any right to request access to such letters. The conduct of projects and management of funds under this award will adhere to the policies described in the <u>IUS Research Policy Manual/Faculty Manual</u>, and <u>Policies and Procedures Manual</u>, and to all laws and policies with regard to research involving live human or animal subjects or hazardous materials. IU Southeast support will be appropriately acknowledged in presentations and publications resulting from this award. 	
In signing this application Signature Revised 9/14	tion, the applicant signifies having read and agreed to these conditions. Date: <u>11/15/2018</u>	

"Using the Fine Arts Department's ShopBot: The CNC Router as Emerging Technology in Printmaking Coursework" Application for Summer Faculty Fellowship in Teaching, 2019

Susanna Crum, Assistant Professor of Fine Arts – Printmaking Indiana University Southeast www.susanna-crum.com sgcrum@ius.edu

November 15, 2018

Special Competence for this Project

Background, Preparation, Training, Relevant Teaching Experience, Presentations, Publications, Exhibitions

Since 2011, I have created original prints that combine analog and digital technology to investigate the ways that archival and contemporary print media maintain social norms, rules, and erasures in public spaces. My current ongoing body of work, titled Alternative Maps, explores the globe as both an ephemeral printed object and a device for the distortion of landscape and spread of geopolitical power. For centuries, globes have signified power, education, and scientific inquiry. However, because of exploration, shifting borders, and war, globes have often been out-of-date by the time they were produced. Instead of featuring international borders, these dimensional "alternative maps" interpret migration routes and tourism industries, engaging the social history of the globe as a hand-printed object and model for power and exploration. The first iteration of this project, the Handheld Utopias globe, is 28" in diameter and features cyanotype blueprints comprised of banknote designs from over 190 countries around the world. Through 2D and 3D map projections using traditional globe-building techniques, laser-cut sculpting tools, and specialized cartography software, my ongoing Alternative Maps globemaking project began in 2017, and has already been on display in several juried and invitational exhibitions. Included in this proposal are images of my first globe project, Handheld Utopias, which has been featured in several solo and invitational exhibitions in 2017 and 2018. In fall 2018, I presented this project at the Society for Utopian Studies, a crossdisciplinary conference, at the University of California -Berkeley, Berkeley, CA.

A large part of my teaching practice focuses on interdisciplinary and emerging approaches to research and image-making. To keep up with printmaking programs at other institutions, my coursework should include the use of computer-aided technology such as CNC (computer numerical control) laser cutters and routers, so that students are able to use collaborative "maker spaces" like Maker 13 (Jeffersonville, KY) and FirstBuild (Louisville, KY), which make these tools accessible for nominal fees, to support their creative practice after graduation. It will also make students eligible for teaching and research assistantships if they continue on to graduate programs. It is crucial for emerging and student artists to learn tools and resources that can support them as they continue their creative practices after graduation. I try to model this as best I can through my own research, embracing a "teacher-scholar" model of education¹. In addition to using computer-aided technology to create their artwork, students who are familiar with these tools are more likely to be eligible for jobs in galleries, museums, fabrication studios, and design firms, all of which have hired recent printmaking graduates from IU Southeast for jobs, teaching opportunities, or internships. My *Alternative Maps* globemaking project, for example, would not have been possible without the use of a laser cutter, a CNC device for cutting a wide range of materials with a laser operated by specialized software, made available to

¹ "How Teacher-Scholars Prepare Students for an Evolving World," *Chronicle of Higher Education*, 17 Aug. 2017, <u>https://www.chronicle.com/article/How-Teacher-Scholars-Prepare/240874</u>. Accessed 15 Oct 2018.

me free of charge by FirstBuild², a public facility managed by General Electric Appliances and the University of Louisville Speed School of Engineering.

"A typical CNC machine is used for cutting, milling, drilling, and routing of almost any material, for any reason, and it can be used for any project that requires accurate, repeatable, and efficient mechanical movements for extended periods of time...CNC applications will not necessarily create new objects but rather automate processes that once had been done by hand. CNC paint sprayers, or etching devices that can be moved with more precision that any human can achieve. Industries have sprung up around these applications. It is now possible to draw a design with a pen and paper and have it etched or painted on a laptop, or cut from vinyl to stick on the window of your car."³

The inherently collaborative nature of printmaking classes makes them well-suited to adopt use of the ShopBot CNC router to carve wood blocks for relief printmaking, and assist in the etching of plates for intaglio printmaking. Because they need to share large equipment like printing presses, print-based artists often work together in shared studio spaces, in an environment of creative problem solving that creates a supportive network for innovation in emerging technologies such as the CNC router (like the ShopBot). In addition to the necessity of sharing space, I am in my third semester of assigning class activities and assessment techniques to bolster collaborative problem solving with the use of cohorts in introductory, intermediate, and advanced Printmaking courses. I implemented these cohorts following a FACET peer review in 2017. In the beginning of most classes, students meet in small groups to report on their progress, discuss technical and conceptual challenges they're having, and work to solve problems together through drawing, technical demonstrations, and writing. I assess the efficacy of these cohort meetings in midterm and final questionnaires, in which students share their experience and assessment of the usefulness of the cohort in devising solutions and working together. Student responses over the past two semesters suggest that there is less waiting to use equipment, students balance providing and receiving help in the studio, and meet and/or communicate more often outside of class time. This cohort system can easily be transferred to using the ShopBot CNC router, in which small groups would begin with a shared project to start, and learn to use the software and machine together.

I have worked with computer-aided design technology such as CNC routers and laser cutters since 2007, and various machines often use proprietary software, developed by the company that fabricated the cutting device. There is a learning curve for each type of device, software, and application. Additionally, many technological changes, improvements, and applications have taken place since I last used the very same device (a ShopBot) that we have at IU Southeast. The ShopBot at IU Southeast is housed in the Fine Arts 3D Design studio in Knobview Hall, and although it was purchased in 2015, several technical imperatives (such as proper electrical service and ventilation) have delayed its use and application to Fine Arts curricula. The ShopBot is now ready for use, but unfortunately the Fine Arts faculty are each so busy in their own areas, managing our own equipment and inventories that make it possible to teach, that projects with the ShopBot have been limited in scope and execution. I last worked with a ShopBot as a graduate assistant at the University of Iowa in 2011, and endeavored to update my knowledge at a workshop by Ryan Mandell that Associate Professor Brian Harper organized at IU Southeast in October 2017. I have clear notes and instructions on processes and exercises from Ryan Mandell, but have not been able to implement these due to the time constraints of departmental, school, and university service obligations.

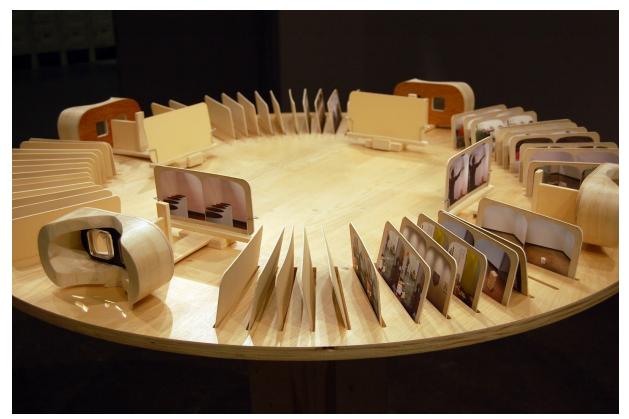
A Summer Faculty Fellowship in Teaching would give me the time and support to expand my printmaking curriculum to include an important emerging technology in relief and intaglio printmaking assignments and

² FirstBuild, <u>https://firstbuild.com/about/</u>, accessed 13 Nov 2018.

³ "3 Ways that CNC Will Change Our World," *American Machinist,* 4 April 2012. <u>https://www.americanmachinist.com/cutting-tools/3-ways-cnc-will-change-our-world</u>, accessed 10 Nov 2018.

projects. Students would gain skills that would make them unique among other printmaking students in the region, as use of CNC technology in the classroom is being established in university art programs (particularly through grants and special initiatives, as I saw as a visiting artist at Middle Tennessee State University, outside Nashville, TN, in 2017). With implementation of the ShopBot in Printmaking classes (and training other Fine Arts faculty, also as part of this Summer Faculty Fellowship), IU Southeast students would graduate with distinct skills that would make them competitive in jobs and graduate programs. To accomplish this, I will reach out to several friends in the national print community who are using the ShopBot for intaglio and woodcut processes. Through correspondence with printmakers I am connected with across the US, experimentation with processes, bits, and materials, and an end-of-summer workshop with faculty, I could use the ShopBot to add an innovative set of digital tools within the print curriculum and engage printmaking students starting in fall 2019. I will also speak with my former colleague and mentor Adam Krueger, Instructional Services Specialist at the University of Iowa, about how best to make the ShopBot accessible to more students in the Fine Arts program.

During a Summer Faculty Fellowship in Teaching, I would work primarily with wood, coated copper plates, and pink foam and lead a workshop to give demonstrations and orientation to faculty. Using the ShopBot to process or cut wood and coated copper plates will translate directly to my Fall 2019 curriculum in my Intermediate/Advanced (stacked) Printmaking courses in Intaglio and Relief, as well as my introductory course (FINA-S 240). However, these materials will also prove useful for faculty members throughout Fine Arts to see the possibilities and techniques available in ShopBot use. Products created with the Shopbot could be components of sculpture, blocks to print with, packaging for graphic design students, panels for painting and drawing, presentation devices (pedestals, stands, specialized shelves, etc) for all students, and more. Below are examples of my works in print and sculpture that have utilized CNC technology.



A History of the Printmaking Staging Space, 2010 52 archival inkjet prints on cards, wood, plastic lenses, wire, 52" x 46" x 46" Birch plywood cut and slotted with ShopBot CNC router



The Garden of Forking Paths, 2009 Wood, paper, steel, 48" x 36" x 95"

Birch plywood gears cut and slotted with ShopBot CNC router

This circular book documents a camera's voyage through a model landscape, and transports viewers to a miniature, animated world. When animated with the pedal-powered device, each page operates as a frame in a moving paper picture.



Handheld Utopias Globe, 2017 (from the exhibition Tracing A Line, University of Notre Dame) Cyanotypes, cast plaster, 64" x 28" x 28" Globe sphere created with CNC laser cutter



Handheld Utopias Globe, 2017 (detail), Cyanotypes, cast plaster, 64" x 28" x 28" Globe sphere created with CNC laser cutter



Handheld Utopias Globe, 2017 (detail) Cyanotypes, cast plaster, 64" x 28" x 28" Globe sphere created with CNC laser cutter

Previous Research Funding (with accompanying progress reports)

 Faculty Development Travel Grant, "Society for Utopian Studies Conference: Presentation and Attendance", awarded November 10, 2018, \$500.00 from Improvement of Learning Committee, \$500.00 from Research & Grants Committee

This Faculty Development Travel Grant supported travel and lodging to present at the Society for Utopian Studies conference to a crossdisciplinary audience at University of California – Berkeley on Nov 3, 2018. A large part of my teaching practice focuses on interdisciplinary approaches to research and image-making, including work with historical archives, libraries, and museum collections. At the Society for Utopian Studies conference, I presented my creative research alongside three other printmaking professors from University of Minnesota, University of Arizona, and California College of the Arts. Each of us models a research-based practice in our artwork and our teaching, and I made connections with scholars in a variety of fields, including American Studies, Cultural Studies, Economics, Engineering, Environmental Studies, Gender Studies, and History.

- Grant-in-Aid of Research, "\$1,000.00 in support of Artist's Residency at Mildred's Lane Complex", awarded March 7, 2018, \$1000.00. The Grant-in-Aid of Research provided crucial support for the payment of fees related to an artist residency at Mildred's Lane in Beach Lake, PA, which I attended in July 2018. Through this experience, I met many artists, scholars, and curators who work in fields related to my own personal creative research. Based on my collaborative work during the residency with these artists, I am currently planning new projects with several of them, including:
 - A collaborative print publication on glass with artist Caroline Woolard
 - A collaborative print publication in screenprint and/or lithography with artist Robert Williams
 - Future projects at Mildred's Lane with J. Morgan Puett, particularly with their printmaking facility
- Summer Faculty Fellowship for Research/Creative Work, "The Collaborative 'Workstyle' and the Teacher-Scholar," awarded Dec 6, 2017, \$8000,00. Please see Grant-in-Aid description above for more details. The collaborative projects we worked on during the Mildred's Lane sessions were presented to the public during two large events, and remain on display on an ongoing basis. I also had the opportunity during the residency to display my work at the Mildred's Lane Complex(ity) gallery in Narrowsburg, NY, during their exhibition *From the Archive of Mildred's Lane*, and give a slide presentation of my own research. My experience at Mildred's Lane provided invaluable learning opportunities and new connections to a community of creative practitioners, which will continue to grow as I stay involved with the organization and its artists.
- Faculty Development Travel Grant, "Travel to Kala Art Institute," awarded March 23, 2018, \$514.45. In December 2017 and January 2018, I made artwork as an artist-in-residence at Kala Art Institute's printmaking studio in Berkeley, CA. The Faculty Development Travel Grant provided crucial support for travel to and from Berkeley. I completed four new stone lithographs during my time there, and planned the entire series of 12 prints that are part of my current project, *This Land*. I used the Electronic Media Lab at Kala Art Institute to create the digital layers for all 12 prints, which were printed in inkjet on specialized Eastern paper. Since then, I have been able to continue working on the hand-printed elements with this important work complete. One of the prints is now in the permanent collection at Kala Art Institute. While there, I made important connections and was invited to show my artwork in their Artist's Annual <u>invitational exhibition</u>, which was on display from Feb 1 - March 17, 2018.
- Faculty Grant-in-Aid, "Cyanotypes in Many Colors" with Douglas Darnowski, Associate Professor of Biology, awarded April 24, 2017, \$1,000.00. We have conducted the first in a series of experiments to

test various metals chlorides, to (1) see what colors can be obtained and (2) to test the light-fastness of those colors; (3) to test the stability of the chemical mixtures using various metal chlorides; and (4) to test the use of blue, green, and red cyanotype layers to create full-color images. 1-3 will be subjects of this grant and 4 may be, depending on time and how long supplies last. In summer 2017, Professors Darnowski and Crum mixed the first solutions to print red, yellow, and blue imagery. Professor Crum conducted a series of exposure tests with the single-point exposure unit in Printmaking, and we found that all three solutions require modification to shorten exposure time. We are currently working on modifying these solutions, and then will conduct lightfastness tests (stage 2). Progress has been delayed due to constraints in Dr. Darnowski's schedule. Professor Crum has created the necessary photographic films to test continuous tone, halftone, and hand-drawn ink imagery for the experiment in printing single color imagery (stage 3) and overlaying color layers for full-color imagery (stage 4).

- Summer Faculty Fellowship, "A Collecting Place," awarded Dec 8, 2016, \$5,000.00. Supported travel May 31 July 4, 2016 to and from Edinburgh, Scotland, where I worked as a visiting artist in the Edinburgh Printmakers studio, creating original lithographs that were part of my solo exhibition, *A Collecting Place*, at the 1078 Gallery in Chico, California in October November 2016. In addition to my daily work in the studio, I also conducted research with the collection of the Camera Obscura and World of Illusions, and attended a one-day symposium organized by the Scottish Historic Buildings Trust, which featured speakers from the National Library of Scotland, the City of Edinburgh Council, and the University of Edinburgh. During this symposium, I attended a special viewing of artifacts and archival documents in the University of Edinburgh's Centre for Research Collections, which were pertinent to my research of Patrick Geddes and the 19th-century Outlook Tower.
- Improvement of Teaching Grant, "A Collecting Place," awarded Dec 9, 2015, \$1,000.00. Supported travel May 31 July 4, 2016 to and from Edinburgh, Scotland, where I worked as a visiting artist in the Edinburgh Printmakers studio, creating original lithographs that were part of my solo exhibition, *A Collecting Place*, at the 1078 Gallery in Chico, California in October November 2016. As components of my Improvement of Teaching Grant proposal, I conducted one-on-one sessions with the studio's director, in which I learned about the nontoxic and less-toxic materials and processes the studio is so well-known for using.
- Research Support Fund, "A Collecting Place," awarded Jan 5, 2016, \$2,835.00. Supported travel May 31 July 4, 2016 to and from Edinburgh, Scotland, where I worked as a visiting artist in the Edinburgh Printmakers studio, creating original lithographs that were part of my solo exhibition, A Collecting Place, at the 1078 Gallery in Chico, California in October November 2016. See the Summer Faculty Fellowship and Improvement of Teaching Grant descriptions for more details on my activity and productivity.

Letters of Support

- Debra Clem, Professor of Fine Arts, Indiana University Southeast
- James Hesselman, Dean, School of Arts and Letters

Student population being served, including number of students potentially reached by the results of this proposal in a given academic year:

In a given academic year, assignments that require the ShopBot CNC router will apply to Relief and Intaglio Printmaking assignments, which will be taught to the Basic Printmaking Media (FINA-S 240) class in spring and fall semesters, and the concurrent "Stacked" Relief and Intaglio Printmaking Classes (FINA-S 348, FINA-S 448, FINA-S 341, FINA-S 441) in the fall semester. This totals around 45 students a year. However,

the proposed Summer Faculty Fellowship in Teaching would also include a workshop to other area faculty in Fine Arts, in which I would demonstrate techniques and help them devise ways to incorporate use of the ShopBot in their classes. The ShopBot Tools lists the following applications for their tools: cabinets, woodworking, signs, boats, instruments, manufacturing, interior and creative design/build, architectural millwork, prototyping and modeling, and trade shows and exhibits.⁴ My Summer Faculty Fellowship in Teaching would spread student awareness of the ShopBot's many potential applications, and my coursework will include an introduction of the wide range of applications in design, fabrication, visual art, and craft, and their utilization in a variety of career paths.

Teaching/learning problems the proposal addresses:

Since my arrival at IU Southeast in 2015, I have worked to incorporate more discussion and application of projects related to specific career paths within the Printmaking curriculum. At a time when students are increasingly paying for their own education, it is becoming ever more important to allocate class time and resources to share with students the ways that their investment in a professional studio arts degree (like a BFA in Printmaking) can translate to a sound future in their field, whether they make their work on an entrepreneurial/freelance, contract, or salaried basis.⁵ Additionally, students need to gain skills to work in internships during school, and prepare for a diverse range of work to support their creative practice, particularly just after graduation when they are establishing their own studios, commission and exhibition practices, marketing strategies, and relationships with arts professionals, clients, and organizations in the regions they live. Knowledge of CNC technology will allow them to apply for more jobs in which they can use creative thinking and be around other artists, in fabrication, galleries, museums, arts organizations, and makers' spaces. As you will see in the next section (Significance of the Project), use of the CNC router simultaneously expands options and project scope for students, in regards to scale, number of layers to be printed from wood and metal plates, and ease of creating the printing surface. It also allows for students who have injuries, fatigue, and variations in physical ability to make printing surfaces for intaglio and relief techniques, which otherwise are at times physically demanding. I know this firsthand: following a hand injury when I was in college, I was able to continue with coursework with the aid of a laser cutter carving my wood blocks for me. In this situation, CNC technology was a make-or-break for me - despite losing the use of my dominant hand for a semester, I was able to use the computer and device to make artwork that expanded my portfolio and presented new ideas and accomplishments that led into my senior thesis work for my own BFA.

Applications of CNC technology in the job market and artist's studio are increasingly important, and introducing introductory through advanced Printmaking students to the ShopBot will broaden opportunities for them to see themselves continuing their artistic practice after graduation. I already incorporate several assignments that challenge students to think and work outside of school, so these conversations will fit well within existing curricula. These assignments include the Professional Practice Interview project, published on my teaching research blog, People Powered Prints (<u>https://www.peoplepoweredprints.com/blog</u>). In these interviews, students write artists and designers that they admire, and ask them questions about how they pay the bills, balance time in the studio with other requirements, and find important venues and opportunities to sell and share their artwork. Students are also required to apply for juried exhibitions outside of the university, to learn how to write about, document, and share their artwork in a competitive setting. Several students have had work accepted to

 ⁴ Shop Bot: Applications, <u>https://www.shopbottools.com/applications.htm</u>. Accessed 10 Nov 2018.
 ⁵ "How the Great Recession Reshaped American Higher Education," *The Chronicle of Higher Education*, 14

Sept 2018. https://www.chronicle.com/article/How-the-Great-Recession/244527. Accessed 1 Oct 2018.

these competitive shows, and have shipped work to Illinois, Florida, Washington, and Rhode Island, among others.

Significance of the project in relation to more general problems in pedagogy or your discipline:

The use of a CNC router, specifically the ShopBot, has been outlined in various reflections and writings by contemporary printmakers and printmaking educators in the US and abroad. Use within contemporary art and arts education is on the rise, as it increases accessibility for differently-abled students (for whom carving wood may be difficult), and enables all students to combine photographic and hand-drawn imagery to create more complex, multi-layered prints in a shorter amount of time. In their book, "Post Digital Printmaking: CNC, Traditional, and Hybrid Techniques,"⁶ Paul Catanese and Angela Geary write about artist Mike Lyon who has created an extensive body of prints created with CNC machinery. "The introduction of the CNC router into the printmaking studio helped Lyon to expand image size and address mounting issues of fatigue," using photographic imagery to create luminous, hand-printed images, shown below.



Figure 163: Mike Lyon, "Anthony", 2004. Size: 76 x 53 cm (30 x 21 in). 15-block woodcut, printed in an edition of 13. Permanent collection of McNeese State University. Image courtesy of the artist.



Figure 164. Overhead view of the 15 cherry blocks used for the printing of Anthony, by Mike Lyon. Image courtesy of the artist.



Figure 165. Digital image of 15 preproduction images used for the carving of 15 cherry blocks used in the printing of Anthony, by Mike Lyon. Image courtesy of the artist.

⁶ Catanese, Paul and Angela Geary, "Post Digital Printmaking: CNC, Traditional, and Hybrid Techniques," A&C Black Publishers, 2012. Pp. 119-128. Excerpts from <u>http://mlyon.com/2012/post-digital-printmaking/</u>. Accessed 10 Nov 2018.

Pedagogically relevant research hypothesis/question or creative problem to be investigated:

In printmaking, the artist modifies a surface like a wood block (relief printmaking) or copper plate (intaglio printmaking), then adds ink to the surface to create precisely reproducible, original works of art in multiple. Printing presses almost always aid in this process, but the tools to create an image on the block are left to an artist's innovation, with centuries of tradition and process for support. How can digital tools like ShopBot CNC technology increase the complexity, scale, and scope of projects created by IU Southeast students?

"Lyon practiced moku-hango [traditional Japanese wood block printing] for years, developing a workflow that allowed him to integrate photography with hand-carving, a process that he later adapted to generating CNC tool-paths. Over time, he gained expertise in carving and printing images with ten, 20, 30, or more woodblocks in tight register - a physically demanding process that required weeks of carving... Ultimately, the new approach had a profound effect on his art practice as a whole, sparking a flurry of new creative questions and avenues for his work."⁷

For Mark Lyon and other artists using tools like the ShopBot, CNC technology becomes an additional tool in their toolbox - it joins engraving burins, wood gouges, and etching scribes (used since the Renaissance era in Europe and for centuries in Japan and China) as vehicles to make original works on paper, in conversation with contemporary art and art history. However, use of the CNC router is not yet a natural progression or addition to all academic printmaking programs - it requires additional training beyond what a simple hand tool requires, and opens up many opportunities for printmakers to work sculpturally (see images of my kinetic and interactive graduate work, included on pages 3 and 4) and across disciplines, in line with many contemporary artists and designers today. Using the CNC router, specifically the ShopBot, will create a wide range of new opportunities for students at IU Southeast to create artwork - not just in intaglio and relief printmaking (the subjects I teach regularly) but also in sculpture, packaging design, drawing (see below photo with ShopBot modified for ink drawing), ceramics, and painting. Every discipline



Figure 177. Large ShopBot router at Mike Lyon's studio in Kansas City. The router is set up to hold an ink pen that is raised and lowered via a custom solenoid headstock designed by Lyon. Image courtesy of the artist.

area in the Fine Arts program at IU Southeast could benefit from using the currently-underutilized ShopBot, and printmaking offers a very strong place to start, as it would offer so many new ideas and approaches for students.

Plan for assessing the eventual impact of this teaching project on student outcomes:

Below is an example of the learning objectives and outcomes for intermediate and advanced printmaking classes. Utilizing the ShopBot as a tool for printmaking processes will create more opportunities for students to select techniques and processes to use in their work, complete both 2D and 3D (sculptural) prints, create original work that uses the ShopBot as a tool (not a crutch) to create innovative work that could not be created with other tools or methods, **demonstrate** that they researched possibilities and uses within contemporary art and design while planning their ShopBot projects, and synthesize knowledge of centuries-old processes with computer-aided design tools. Though projects that require the ShopBot will fit well into existing learning objectives already assessed in introductory through advanced Printmaking coursework, these will require more problem solving skills, procedural thinking, collaborative work (cutting blocks and plates in small teams), and time management, each of which are cornerstone requirements, which students write reflections and self-assessments about at midterm and at finals, in the IUS Printmaking program. Works will continue to be printed by hand, but the creation of original blocks and plates in relief and intaglio will expand to include digital technology, aided by the ShopBot software. For students of all levels, this would lead to even more self-guided research and innovation in their portfolios, as they consult web-based resources, interview artists and designers on their processes and approaches, and create new ways to use the ShopBot software and tools to reach their goals.

Learning Objectives	Outcomes
<i>EVALUATE</i> and <i>SELECT</i> printmaking techniques and processes that enhance the content of your work.	 In in-class work sessions, you display knowledge and skills in the use of basic tools, techniques, and processes sufficient to work from concept to finished product. You self-assign projects that demonstrate mastery of at least one printmaking technique, including the ability to experiment and innovate with that method. Your sketchbook demonstrates a commitment to both the written and hand-drawn components of realizing your class projects.
<i>COMPLETE</i> individual projects in 2D and/or 3D formats that are both innovative and well-crafted (all elements look intentional, could be shipped to an exhibition and still appear of professional quality, and are assembled in a long-lasting way).	 Projects, whether presented as traditional prints-on-the wall or as an installation, book, sculpture, and so on, demonstrate attention to detail and well-crafted execution. Critiques demonstrate your grasp of basic design principles, concepts, media, and formats. Your <u>sketchbook</u> charts both investigation and development of solutions to aesthetic, procedural, and design problems.
<i>CREATE</i> a portfolio of work that demonstrates clear communication of concepts, engagement with one's own personal expressive interests, and well-defined personal methodologies for project development.	 Your sketchbook charts the development of ideas and concepts from inception to completion. Your portfolio shows experimentation and variation of the way concepts are addressed, explored, and communicated. Your written self-evaluation of each project demonstrates a reflection of the concepts, audience, display, and effectiveness of that work.

<i>DEMONSTRATE</i> through your work that you conducted the necessary research into processes, techniques, and artists that are relevant to your particular interest.	 In your sketchbook, you include personal research on other artists, exhibition methods, techniques, and processes. To prepare for in-class work sessions, you consult technical resources from beyond the classroom to solve problems and create solutions. In your Professional Practice Interview, you demonstrate a familiarity with and command of online research tools and library resources related to contemporary theory and practice. During cohort meetings in the first 15 minutes of each class, you discuss project timelines, provide progress reports, share technical and conceptual questions and ideas with peers.
SYNTHESIZE a knowledge of and engagement with the historic and contemporary roles of printmaking in art and everyday life.	 In <u>critiques and in-class discussions</u>, you display a functional knowledge of the history of printmaking and its roles in contemporary art. You are able to make relevant recommendations for artists that fellow students should research. In the introductory paragraph of your <u>Professional Practice</u> Interview, you articulate the content, concept, and context of an artist of your choice, and how their work and studio practices influences or clarifies your personal and professional goals. Your artist statement provides a clear description of the techniques, concepts, and context of the work you create.

Below is the rubric I use for all Printmaking classes, from introductory through advanced. Printmaking projects range in complexity, research and conceptual development, and scope based on course levels. Work with the ShopBot in course assignments will support each of these grading elements.

	Needs work	Adequate	Outstanding
Technique : Work exhibits a grasp of techniques that you're exploring. You've reached out to me during class, did your own research on best practices for the processes you're learning, and it's clear you've worked outside of class time to accomplish these processes.	15 points	20 points	25 points
Concept/context: Elements of image demonstrate creativity, originality, and ambition. It's clear you took time to experiment with a variety of image-making techniques within the medium you're working with.	15 points	20 points	25 points
Craft : Prints reveal the artist's attention to detail. They are clean, signed and numbered consistently, and accurately registered.	15 points	20 points	25 points
Self Evaluation (written) – you took the time to think carefully about your experience of this process, and the results of your work.	6 points	8 points	10 points
Dialogue (verbal) – you spoke up in the class critique, asked questions, and offered constructive criticism to your peers. It's clear you were looking closely at all work on display, and employed terms that we discussed in class.	9 points	12 points	15 points

I consistently seek innovations to my Printmaking curriculum, to model career paths for students and expand their conceptual and technical skills to prepare them for sustainable creative practices after graduation, whether through continued study in graduate programs or as professional artists working in a variety of environments. Below is a quote from a fall 2017 FACET formative peer review:

"Susanna's course materials reflect that she is well-organized and has given considerable thought to designing curriculum that is in the best interest of students. Especially noteworthy in this regard is the alignment between Susanna's learning objectives and course outcomes; such alignment ensures that students are successfully achieving course objectives. Students are given a variety of tasks and methods to demonstrate what they have learned and Susanna provides a warm and supportive environment for students within her classroom. Class time reflects careful design to facilitate the specified learning outcomes. Most noteworthy in this regard are Susanna's exceptional interpersonal and creative skills. Susanna has created a challenging and engaging learning environment that is supportive to student's learning."

With a Summer Faculty Fellowship in Teaching, I can expand on already existing student outcomes to add an important tool to their artist's toolbox to make work in conversation with emerging technology in contemporary printmaking, while understanding a relatively new technology that is popular in art, curatorial, design, and fabrication fields.

Plans for dissemination of the results of the project:

My research in creating plates and blocks for Intaglio Printmaking (to be used in FINA-S 240, FINA-S 341, and FINA-S 441) and Relief Printmaking (to be used in FINA-S 240, FINA-S 348, and FINA-S 448) will provide new tools and approaches to these significant printmaking techniques. Additionally, a workshop (held before or at the beginning of fall 2019 semester, depending on faculty members' availability) will introduce other faculty members to the ShopBot. The workshop will include technical demonstrations,

Timeline for the project from initial steps through final product and assessment, including plans for acquisition and use of technologies, and of any research instruments for assessment:

- May 2019 Knowledge-sharing with printmakers and artists. I have several specific connections that I will reach out to first, such as Lari Gibbons, printmaking professor at University of North Texas Denton, who was my mentor at a printmaking workshop in 2011; and Adam Krueger, Instructional Services Specialist at University of Iowa. I have several other artist-educators in mind to talk with for this project, both to develop assignments and plan how to share these skills with students in and out of the classroom, using web-based resources, handouts, and video tutorials. Also important are safety policies how and where to post them to ensure that only trained students and faculty use the equipment. I would start with the following questions, and open the discussion to see the ways I can make this the best possible resource for students.
 - \circ $\;$ What assignments have they found most successful?
 - What made ShopBot training easiest for students to learn and use the tools and software?
- June and July 2018 Create and edit instructional videos with PDF handouts, to be posted on <u>www.peoplepoweredprints.com</u> for easy student and faculty access. Create "how-to" guides to be posted in the room with the ShopBot. Order new bits and materials, and create multiple blocks and plates that show various stages of the process.

- Late summer 2019: Workshop with faculty, and orientation to the video tutorials and handouts.
- Fall 2019: implement ShopBot assignments in Basic Printmaking Media (FINA-S 240), Relief Printmaking, and Intaglio Printmaking courses.

Susanna Crum

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EDUCATION

2012	Master of Fine Arts with Honors, University of Iowa, Iowa City, IA Major: Printmaking, Minor: Intermedia
2011	Master of Arts , University of Iowa, Iowa City, IA Major: Printmaking, Minor: Sculpture
2008	Bachelor of Fine Arts , Cornell University, Ithaca, NY Major: Printmaking
2006	Study Abroad (one semester), Cornell University College of Architecture, Art and Planning, Rome, Italy

TEACHING & PROFESSIONAL EXPERIENCE

2018-present	President.	Mid America	Print Council

2015-present Assistant Professor of Fine Arts and Printmaking Area Head, Indiana University Southeast, New Albany, IN
 2013-present Co-founder and Associate Director, Calliope Arts Printmaking Studio & Gallery, Louisville, KY.

Dedicated to increasing knowledge and practice of contemporary print media on a national scale, Calliope Arts provides access to equipment, classes, and exhibitions for intaglio, relief, lithography, and screen printing.

- 2014-2015 Adjunct Assistant Professor, Drawing, Indiana University Southeast, New Albany, IN
- 2013-2015 Adjunct Assistant Professor, Drawing, Book Arts, and Digital Media, Kentucky College of Art and Design, Louisville, KY
- 2011-2012 Instructor of Record, Printmaking, University of Iowa, Iowa City, IA
- 2009-2012 Graduate Research Assistant: Collection Management, Iowa Print Archive, University of Iowa, Iowa City, IA

EXHIBITIONS

One and Two-Person Exhibitions (two-person shows marked with asterisk*)		
2018-2019	* Flat Tail Press Gallery, Susanna Crum and Rodolfo Salgado Jr, Minot State University, Minot, ND	
	Meijer Artway, Constellations, Indiana University East, Richmond, IN	
2017	* AAHD Gallery, Tracing a Line, University of Notre Dame, South Bend, IN	
2016	1078 Gallery, A Collecting Place, Chico, CA	
2013	Louisville Photo Biennial: Revelry Gallery, Fight or Flight, Louisville, KY	
2012	Ana Mendieta Gallery, The Heart of the Park, University of Iowa, Iowa City, IA	
2011	Elizabeth Catlett Gallery, Guardians: Care-taking & Place-making on St. James Court, Iowa City, IA Elizabeth Catlett Gallery, Preliminary Investigations at City Park, Iowa City, IA	

2010 * Mellwood Arts Center, And They're Off!, Louisville, KY 2008 AAP NYC, Bound by the Letter, Cornell University College of Architecture, Art and Planning, New York, NY The Experimental Gallery, Walking in Your Landscape, Cornell University, Ithaca, NY Juried and Invitational Exhibitions 2019 Eagle Exhibition Hall, Ecological Connectivity: Trace (Mapping Space), University of Northern Texas, Denton, TX (forthcoming) A-Space at Rozsa Center for the Performing Arts, Salon!, Michigan Technological University, Houghton, MI (forthcoming) 2018 Visual Arts Gallery, Mid-America Print Council Members' Juried Exhibition, Laramie, WY Pacific Studies Gallery, Paper Connections: Works by Faculty and Students of Indiana University Southeast and the National University of Samoa, National University of Samoa, Apia, Samoa Mildred's Lane Complex(ity), The Mildred Complex(ity): From the Archives of Mildred's Lane, Narrowsburg, NY Grunwald Gallery, On Structure, collaborative work with Tiffany Carbonneau, Indiana University, Bloomington, IN Southern Graphics Council International Conference, Imaging Utopia: Blueprints for Intent and Dissent, Las Vegas, NV Museu do Douro, 9th International Printmaking Biennial, Douro, Portugal Kala Art Institute, Artists' Annual, Berkeley, CA University Art Gallery, The Flat Object: Sculptural Prints & Installations, Indiana State University, Terre Haute, IN 2017 Morlan Gallery, MAP/PING, Transylvania University, Lexington, KY Lessedra Art Gallery, 16th Lessedra World Print Annual, Sofia, Bulgaria. Juried by Kalli Kalde, Estonia; Anita Klein, England; Luce, Belgium; Jan Wellens, Belgium; Snezhina Bisserova, Bulgaria; and Grethe Hald, Norway. Awarded Special Prize. Museu do Douro, 3rd Global Print 2017, curated by Nuno Canelas, Douro, Portugal Nicole Longnecker Gallery, NEXT 2017: A Biennial of Contemporary Print, Houston, TX. Juried by Nancy Palmeri, Professor, MFA Director, and Assistant Chairperson of Art & Art History at University of Texas at Arlington New Harmony Gallery of Contemporary Art, MERCATUS, curated by Garry Holstein, New Harmony, IN Artlink Contemporary Gallery, 37th Annual National Print Exhibition, Fort Wayne, IN. Juried by Patrick Flaherty, president and executive director of the Indianapolis Art Center, Indianapolis, IN New Harmony Gallery of Contemporary Art, The Disseminator of Useful Knowledge, curated by Brett Anderson, New Harmony, IN 2016 Brick Street Gallery, A Bridge Between, in conjunction with the Mid-America Print Council conference, curated by Susan Harrison, New Albany, IN

	Chicago Printmakers Collaborative, Cuts: An Exhibition of Relief Prints, Chicago, IL
	City Gallery at Downtown Art Center , <i>Beveled Edges – Printmaking in Kentucky</i> , Lexington, KY
	Manifest Creative Research Gallery and Drawing Center, Memory Palace, Cincinnati, OH
2015	Carnegie Center for Art and History, <i>Held from Beneath: An Exploration of Cultural Sustainability,</i> New Albany, IN, Curator: Karen Gillenwater
2014	Kentucky Museum of Art and Craft, Press: Artist and Machine, Louisville, KY
	Kentucky Derby Museum, Impressions: The Art of the Race, Louisville, KY, Curator: Dominic Guarnaschelli
	Green Building Gallery, Print and Process, Louisville, KY, Curator: Daniel Pfalzgraf
	Huff Gallery, Sustain Invitational, Spalding University, Louisville, KY, Curator: Joyce Ogden
2013	Louisville Visual Arts Association, public @ PUBLIC, Louisville, KY, Executive Director: Shannon Westerman
2011	SHYRABBIT Contemporary Arts Gallery, <i>SHYRABBIT Print International 3: International Juried Online Exhibition,</i> Juror: Juergen Strunck, Professor of Art, University of Dallas, Irving, TX
	Benedictine University , <i>Mid America Print Council Fall 2011 Members' Juried Exhibition</i> , Lisle, IL. Juror: Andrew DeCaen, Assistant Professor of Art, University of North Texas
	Liu Haisu Art Museum, Collision and Equilibrium – American Youth Printmaking Exhibition, Shanghai, China. Juror: Zhiyuan Cong, Head of Printmaking, Director of the Center for Chinese Art at William Paterson University, Wayne, NJ
	Springfield Art Museum, Prints U.S.A. 2011, Springfield, MO. Juror: Elizabeth Wyckoff, Curator of Prints, Drawings and Photographs, St. Louis Art Museum, St. Louis, MO
	Market-Dubuque Gallery, Graduate Art Congress Exhibition, Iowa City, IA. Juror: Eric Asboe, Iowa City, IA
COLLABORAT	IVE PUBLIC ART / ARCHITECTURAL COMMISSIONS

- **2017** Ross Art Museum, *The Shadows We Cast,* architectural video projection in collaboration with Tiffany Carbonneau, Delaware, OH
- 2016 IN Light IN Festival, A Place in Time, architectural video projection in collaboration with Tiffany Carbonneau, supported by Central Indiana Community Foundation and the Efroymson Family Fund, Indianapolis, IN

Churchill Downs, *A Running Loop*, architectural video projection in collaboration with Tiffany Carbonneau, supported by Fund for the Arts, Louisville, KY

1619 Flux: Art + Activism, *Inside and Outside,* architectural video projection in collaboration with Tiffany Carbonneau, Louisville, KY. Supported by B.KIND, a project of the 501(c)3 public charity Art and Heritage Initiative

GRANTS, FELLOWSHIPS, & AWARDS

2018 Faculty Development Travel Grant, Indiana University Southeast Summer Faculty Research Fellowship, Indiana University Southeast Faculty Development Travel Grant, Indiana University Southeast

	Grant-in-Aid of Research, Indiana University Southeast
2017	Grant-in-Aid of Research, "Cyanotypes in Many Colors," with Dr. Douglas Darnowski, School of Natural Sciences, Indiana University Southeast
2016	Guest Artist, "Art Under Pressure" steamroller printmaking instruction and event, Community Arts Center, Danville, KY, recipient of National Endowment for the Arts Challenge America grant
2015	Summer Faculty Research Fellowship, Indiana University Southeast Research Support Grant, Indiana University Southeast Improvement of Teaching Grant, Indiana University Southeast
2013	Mary Alice Hadley Prize for Visual Art, Community Foundation of Louisville, Hadley Pottery, and Louisville Visual Art Association, Louisville, KY
2011	Southwest Missouri Museum Associates Award, Springfield Art Museum: Prints U.S.A. 2011 juried exhibition, Springfield, MO Paula Patton Grahame Scholarship, University of Iowa Len Everett Excellence Scholarship, the Art Guild of Burlington and University of Iowa Strategic Initiative Scholarship, University of Iowa Michael J. Brody Award for Faculty Excellence, purchase prize, University of Iowa

ARTIST RESIDENCIES

2019	Kunstnarhuset Messen, Ålvik, Norway (forthcoming)
2018	Mildred's Lane, Mildred/Lillie Archaeology and Alchemy V, Beach Lake, PA
2017	Kala Art Institute, Berkeley, CA
2016	Edinburgh Printmakers Studio, Edinburgh, Scotland
2014	Kentucky Derby Museum, Louisville, KY
2011	Mary Anderson Art Center, Mount St. Francis, IN
2010	Tiny Circus , collaborative animation workshop, Grinnell, IA Facilitated two community-based stop-motion animation workshops at local youth organizations in Grinnell and Iowa City, IA
2008	Mary Anderson Art Center, Mount St. Francis, IN

CONFERENCES & PRESENTATIONS

2018	Visiting researcher, Exploring Early Modern Maps Workshop, Center for Renaissance Studies, the Newberry Library, Chicago, IL Panelist, "Alternative Maps and Aspirational Pasts," Making Our Place: Disruptive Narratives in Contemporary Printmaking, Society for Utopian Studies, University of California Berkeley, Berkeley, CA
	Panelist, Yes, You Can! The Ups, Downs, Ins, and Outs of Hosting a Conference, Mid- America Print Council conference, Laramie, WY
2017	Panel Chair, Crossroads: Intersections and Interventions, Southern Graphics Council International conference, Atlanta, GA
2016	Conference Organizer, <i>Mid-America Print Council 2016: Print Matters, Printing Matters,</i> hosted by Indiana University Southeast, New Albany, IN and University of Louisville, Louisville, KY

Career Mentor, Southern Graphics Council International conference, Portland, OR

2015 Panelist, "A Call to Print: Establishing a Cooperative Studio," *Constructing Programs and Communities*, Knoxville, TN

ARTIST TALKS & DEMONSTRATIONS

2018	Mildred's Lane, Structure and Experience, Beach Lake, PA University of Kentucky, A Call to Print, Lexington, KY Kent State University, Alternative Maps, Kent, OH Kent Blossom Art, Cyanotype Workshop, Kent, OH
2017	Middle Tennessee State University, Worldmakers, Murfreesboro, TN University of Notre Dame, Imaginary Lines, South Bend, IN Southeast Missouri State University, Constellations, Cape Girardeau, MO Catapult Press, Mining the Southeast Missourian Newspaper Archive: Letterpress Printing Demonstration, Cape Girardeau, MO
2016	California State University - Chico, People Powered Prints, Chico, CA
	Kentucky College of Art and Design, People Powered Prints, Louisville, KY
	Community Arts Center, Lost in (Public) Space, Danville, KY
2015	Indiana University Southeast, Investigations: Now and Then, New Albany, IN
2013	Louisville Visual Art Association, Context and Collaboration, "Food for Thought" lecture series, Louisville, KY
2012	Cornell College, <i>Place and Process,</i> Mt. Vernon, IA Augusta State University, <i>Placemaking: The Heart of the Park,</i> Augusta, GA
2010	Coe College, Career Workshop, Coe College, Cedar Rapids, IA

CURATORIAL WORK & WRITING

2018	Curator, <i>Imaging Utopia: Blueprints for Intent and Dissent</i> exchange portfolio, Southern Graphics Council International printmaking conference, Las Vegas, NV Juror, <i>10x10x20 Exhibition</i> , California State University, Chico, Chico, CA
2017	Juror, Chautauqua Festival of Art, Madison, IN Juror, St James Court Art Show, Louisville, KY
2016	Guest Curator, Interventions: Re-Framing the Printed Image, 21c Museum, Louisville, KY Juror, 10x10x10xTieton 2016 international exhibition, Tieton, WA
2015	Author, "Brick by Brick: Creative Entrepreneurship After Graduation," <i>Mid America Print Council Journal</i> , Vol. 23, p. 50. Feb 15. http://www.midamericaprintcouncil.org/journal
	Author, "Beyond the Studio: WPA Printmakers and Networks for Innovation in Print Media," <i>Arts Louisville</i> , June 8. http://arts-louisville.com/2015/06/08/unique-worlds-of-women/
	Juror, Mary Alice Hadley Prize, Louisville Visual Art Association and Community Foundation of Louisville, Louisville, KY
2014	Co-curator, <i>Armatures of Audubon: Contemporary Constructions and Ecologies,</i> 849 Gallery, Kentucky College of Art and Design, Louisville, KY

Juror, Fine Arts Juried Student Exhibition, Indiana University Southeast, New Albany, IN

2012 Co-curator: *The Iowa Print Archive,* Art Building West Gallery, University of Iowa, Iowa City, IA

SELECTED BIBLIOGRAPHY

2018	Elizabeth Kramer, "Supporting Our Creative Community," For Good: Louisville's Philanthropy Magazine, issue 7. Graphic Impressions: The Journal of Southern Graphics Council International (cover)
2017	Nancy Gilson, "Museum Director Erin Fletcher Puts Art at Center of Discussion," Columbus Dispatch, April 9.
	Stephen Simmons, "IU Southeast Printmaking Program Encourages Artistic Expression," Horizon, March 13.
2016	Robert Speer, "The Artist as Anthropologist: Bridging Past and Present, People and Place," <i>Chico News and Review,</i> Nov 3. Rebecca Bates, "The Ultimate Print Shop," <i>Sweet,</i> July 2.
	Lucas Spivey, "10x10x10 Juror Spotlight," <i>Mighty Tieton</i> , May 8. Steven Krolak, "Printmaker Susanna Crum exposes fractured history of segregation," <i>IU</i> <i>Southeast Now</i> , Feb 17.
	Elizabeth Kramer, "Printmakers Converge to Show Art's Evolution," <i>The Courier Journal,</i> Sept 30.
2015	"Community Arts Center receives \$10,000 NEA Challenge Grant for Art Under Pressure", <i>KY Forward,</i> Dec 18.
	Jo Anne Triplett, "A Q&A with artist Susanna Crum on the opening of Calliope Arts", <i>LEO Weekly,</i> Oct 16. Elizabeth Kramer, "Artists' Smoketown print shop a dream come true", <i>The Courier</i>
2014	<i>Journal,</i> July 31. Yasmeen Siddiqui, "How One Regional Craft Museum is Expanding Its Horizons,"
2014	Hyperallergic, June 4. Heberling, Rachel, "Press: Artist and Machine - A Printmaking Exhibit at the Kentucky Museum of Art and Craft", <i>Printeresting</i> , June 1.
2013	Elizabeth Kramer, "Artist Susanna Crum Chosen for New Louisville Visual Art Prize," Courier- Journal, June 10.
	Keith Waits, "Louisville Artist Susanna Crum Wins First Hadley Prize Fellowship," Arts Louisville, June 12.
	Elizabeth Kramer, "A \$5,000 Grant Reinforces Artist's Decision to Make Her Career in Louisville", <i>Courier-Journal</i> , June 23.
	Erin Keane, "Susanna Crum Awarded Inaugural M.A. Hadley Visual Art Prize," <i>WFPL News,</i> Louisville, KY, June 10.
	Erin Keane, "LVAA Opens New Gallery on Whiskey Row," <i>WFPL News</i> , Louisville, KY, June 10.
2011	Sarah E. Buhr and Elizabeth Wyckoff, "Prints U.S.A. 2011," <i>Springfield Art Museum</i> , (catalog).
	Teresa Parker, "Susanna Crum's Print Technology Revisiting Victorian Era ," <i>That's Inked Up</i> , Dec 5. Sage Dawson, "Susanna Crum: Hybridizing Past and Present," <i>Printeresting</i> , Sep 8.

COLLECTIONS

Iowa Print Archive, Iowa City, IA Kala Art Institute, Berkeley, CA Kirkwood Community College, Cedar Rapids, IA Mildred's Lane Complex(ity), Narrowsburg, NY Museu do Douro, Douro, Portugal Omni Hotel, Louisville, KY Southern Graphics Council International Archives, Zuckerman Museum of Art, Kennesaw, GA

Numerous private collections in New York, NY; Lexington, KY; Chicago, IL; and more