LCC 6650 B: Digital World & Image Group Studio
Digital Craft
Project Studio Spring 2014
Michael Nitsche

Where? TSRB 325
When? Mo 2-3:30 + Wed 12:30-2

Instructor Name, Contact Information and Office Hours

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Course Description

Digital craft combines digital media, physical computing, and traditional craft approaches. It does not favor any single domain over another as it balances and transforms all three components. It is the goal of this course to explore this transformation for one particular material: paper. The course asks how material and digital qualities overlap, conflict, inform each other and what new artifacts can be designed in this space. We will experiment with combinations of traditional crafting techniques and physical computing approaches. The course is informed by critical making principles and more focused on a lively debate than on purely technological implementation.
Sections of the course will be held at the Paper Institute on campus and include an introduction into papermaking and its context. Readings for the course will include texts on craft research as well as interaction design and other disciplines. We will experiment with proof-of-concept-prototypes throughout and each student will develop one project over the course. Please note that apart from the focus on paper, the course is not limited to any single digital interface technology.
Students are expected to experiment with paper production crafts, to discuss the critical theory underlying our field, and to apply their understanding in the design and implementation of a final proof-of-concept prototype that combines the established craft practices with digital media in a transformative way.
It should be interesting for students who want to explore crafting techniques in connection with digital media in a critical and explorative way.

Focus points for this course will be overlapping and conflicting practices in these fields and experimental work with actual materials. How does one create these hybrid artifacts that include crafted material qualities, interface functionalities, and digital media components? What new artifacts are possible in this space?
The long-term goals of this agenda are to 1) understand the conditions of digital craft in theory and practice 2) expand them through practical experimentation.

Learning Outcomes

The learning outcomes of this course for MS students should be:

- Demonstrate the ability to devise, design, create, and assess prototypical digital media artifacts, services, or environments and to contextualize them within recognized traditions of practice.
- Can analyze digital media as cultural objects.
- Can summarize their work orally and in written form using formal terminology.
- Can communicate, coordinate, and work productively as a team member.

Additional learning outcomes of this course for PhD students should be:

- Students can formulate original interpretations and design original prototypes that reflect an understanding of the humanistic context of digital media.
- Students can formulate and explore the answers to critical questions in the domains of Arts & Entertainment, Public & Civic Media, and Knowledge & Creativity as related to new media.
- Apply theoretical concepts to specific digital media works.

Required Texts

There will be no single textbook but core books include:

- Adamson, Glenn. (2007). *Thinking Through Craft*. New York: Berg Publishers.
- Adamson, Glenn, ed. 2010. *The Craft Reader*. Oxford, UK, New York Berg.
- Alfoldy, Sandra, ed. *NeoCraft: Modernity and the Crafts*. Halifax, CAN: The Press of the Nova Scotia College of Art and Design.
- Dormer, Peter, ed. 1996. *The Culture of Craft: Status and future*. Manchester, UK: Manchester University Press.
- McCullough, Malcolm. 1998. *Abstracting Craft: The Practiced Digital Hand*. Cambridge, MA: MIT Press.

Other references:

- Bennett, J. Vibrant Matter. A political Ecology of Things. The Duke University Press, Durham, London, 2010.
- Buechley, L. and Perner-Wilson, H. Crafting technology: Reimagining the processes, materials, and cultures of electronics. ACM Trans. Comput.-Hum. Interact., 19, 3 2012), 1-21.
- Coelho, M., Hall, L., Berzowska, J. and Maes, P. Pulp-based computing: a framework for building computers out of paper. In Proceedings of the CHI '09 Extended Abstracts on Human Factors in Computing Systems (Boston, MA, USA, 2009). ACM, New York, 2009.
- Heidegger, M. The Question Concerning Technology and Other Essays. Harper & Row, New York, 1977.
- Hertz, G. Critical Making. Telharmonium Press, Hollywood, CA, 2012.
- Ingold, T. The Texility of Making. Cambridge Journal of Economics, 34 (2009), 91-102.
- Ingold, T. Towards an Ecology of Materials. Annual Review of Anthropology, 41 (2012), 427-442.
- Karagozler, M. E., Poupyrev, I., Fedder, G. K. and Suzuki, Y. Paper generators: harvesting energy from touching, rubbing and sliding. In Proceedings of the Proceedings of the 26th annual ACM symposium on User interface software and

technology (St. Andrews, Scotland, United Kingdom, 2013). ACM, New York, 2013.
- Koizumi, N., Yasu, K., Liu, A., Sugimoto, M. and Inami, M. Animated paper: A toolkit for building moving toys. Computers in Entertainment (CIE), 8, 2 2010), 7.
- Laughlin, Z. Beyond the Swatch: How can the Science of Materials be Represented by the Materials Themselves in a Materials Library? , King's College London, London, 2010.
- McCarthy, J. and Wright, P. Technology as Experience. MIT Press, Cambridge, MA, 2004.
- Mellis, D. A., Jacoby, S., Buechley, L., Perner-Wilson, H. and Qi, J. Microcontrollers as material: crafting circuits with paper, conductive ink, electronic components, and an "untoolkit". In Proceedings of the Proceedings of the 7th International Conference on Tangible, Embedded and Embodied Interaction (Barcelona, Spain, 2013). ACM, New York, 2013.
- Morris, R. Some Notes on the Phenomenology of Making: The Search for the Motivated. Artforum, 8, 8, 1970.
- Rosner, D. K. and Ryokai, K. Reflections on craft: probing the creative process of everyday knitters. In Proceedings of the Proceedings of the seventh ACM conference on Creativity and cognition (Berkeley, California, USA, 2009). ACM, New York, 2009.
- Saul, G., Xu, C. and Gross, M. D. Interactive paper devices: end-user design & fabrication. ACM, City, 2010.
- Sennet, R. The Craftsman. Yale University Press, New Haven, CT; London, UK, 2008.
- Zufferey, G., Jermann, P., Lucchi, A. and Dillenbourg, P. TinkerSheets: Using Paper Forms to Control and Visualize Tangible Simulations. In Proceedings of the TEI'09, Third International Conference on Embedded and Tangible Interaction (Cambridge, UK, Februar 16-18, 2009, 2009). ACM, New York, 2009.

Readings will be online as .pdf.

Grading

	Percentage	Some relevant elements
Participation seminar + participation lab	25%	active in discussions, active in example sessions; active in design meetings, teamwork, homework
Paper Presentation	15%	Presentation of text and project; critical review with clear argumentation; clarity; presentation; depth and precision; ability to answer questions
Midterm project	20%	Creative design; clear focus; well developed; well presented; prototype operational
Final project	25%	Imagination, courage, technical skills, teamwork(!), work with compromises without loosing quality; ask questions with your project
Final project paper + documentation	15%	Clear documentation; ~2 min video; clear argument in write up; referencing of texts

		used in course and beyond; critical analysis and productive break down of the project;
For PhD students only: Critical paper on digital materiality	8% (overall percentage will be adjusted to include extra assignment)	Referencing of texts used in class and beyond; clear argumentation; clear presentation in style, grammar, visuals; clear structure

100-90% = A
89-78% = B
77-64% = C
63- = D

Grading of individual pieces will be in percentage. Late submissions are automatically reduced unless the student provides an appropriate excuse before the deadline. A one day delayed submission automatically has a 10% reduction of the grade; 2 days: 20%; 3 days 30% and so on.

Schedule

Into Material		
1/6 1/8	Intro to paper making How did we get here?	
1/13 1/15	Intro to paper making (collecting materials to make our own shop) Material Consciousness	 Sennet Ingold
1/20 1/22	Intro to paper making How did others get there? **DUE**: Paper presentations	 Ratto Coelho et al. Buechley Kantola et al. Saul et al. Zufferey et al. Karagozler et al. Koizumi et al.
1/27 1/29	Installation of paper maker in TSRB To Make Tools and Stuff	 McCullough
2/3 2/5	Intro to paper making Use and Experience	 McCarthy/Wright
Midterm project: an adaptation of an existing story – told through a paper object		
Define your project		
2/10 2/12	Intro to paper making Question concerning Technology	 Heidegger

2/17 2/19	Work on Midterm project TBC (TEI conference)	
Project		
2/24 2/26	**DUE**: Midterm project presentations	
3/5 3/7	Critical Materials	Hertz; Ingold Laughlin?
3/12 3/14	Vibrant Materials	Bennet
3/17 3/19	Spring break	
3/24 3/26	Catch up session + Work on final projects	
Outcome: your basic project working		
Reflection		
3/31 4/2	**DUE**: final project with presentation	
4/7 4/9	Project reflection + documentation	
4/14 4/16	**DUE**: papers on the final project + video documentation	
4/21 4/23	Review session of course **DUE**: digital materiality paper (PhD only)	
Outcome: your final project + documentation + reflective essay		

Graded Assignments

Paper presentations: you will receive an academic paper/ project on the meeting point of paper and the digital and present it to the class; if feasible: can you try parts of the project or illustrate the functionality otherwise? Do not remain on the level of your own first impression; this is not only about the fact that somebody has done something – ask critical questions; how did the project relate to the material? How to the social, historical, technological context? You present in class using powerpoint slides; the presentation should be concise, last about 15 Minutes; leave time for discussion
you hand in: your powerpoint slides on T-Square;

Midterm project: based on our discussions and the hands on paper making work you develop an own project; to approach this project: design a paper "thing" that is an adaptation of an existing (and somebody else's) story; step beyond a limitation of paper as pages in books; in the midterm phase, this idea has to be in the stage of a sound design with basic prototyping – but not finished (leave room for future development and changes!); you present your idea to the class in practical form and in a powerpoint presentation; start documentation early and excessively!!
you hand in: your powerpoint slides on T-Square

Final project: you will develop your midterm idea further and probably step outside the story to a proper project; the goal is less to have a shiny demoable piece (although it

would not hurt) – but your project should ask an interesting question and tackle it in an inspiring way; curiosity and exploration well followed through are more important than sheer functionality; you present your project in class as engaging as possible; your project is meant to open eyes and pose questions – let us engage with it
you hand in: rough documentation and a prototype of your project as a physical artifact

Paper on final project + documentation: a critical review of your own project; this is not a mere post mortem but a continuation of the though process that started with the design in the midterm project and continued to the final project; what question did you ask? What perspective did you open? What did your project activate, what did you leave out and why? write a 3 page analysis; use the ACM template
Contextualize your analysis in relation to texts discussed in the course and other research; you also will make a 2 minute video documentation about your project
you hand in: a pdf using the template; and your video + other visual materials/ documentation if needed

Digital materiality paper: (only for PhD students) write a critical review paper about the digital materiality; you can use your project as a jump off point and your final project paper as a basis, but this paper should reach for a wider context and open the more precise point of your final project up to the question of digital media at large; use the ACM style template and use references appropriately; length: approx. 3-4 pages (note that it should be significantly different from the final project paper); this grade will be 8% of your overall grade (all other assignment grades will be adjusted in percentage)
you hand in: a pdf using the ACM template

Attendance Policy
Attendance will count towards the final grade: more than 3 unexcused absences will result in failure of the course. All material must be submitted in order to achieve a passing grade

ADAPTS Information
Notify the instructor in the beginning of the course if you have any disabilities that might need special assistance or consideration. Georgia Tech offers accommodations to students with genuine and documented disabilities. If you need such accommodations, please make an appointment with the ADAPTS office. Verification of a disability may be obtained by contacting the ADAPTS-Disability Services Program, 404-894-2563.
http://www.adapts.gatech.edu

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