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29 Stasis in Motion: Teaching Balance of Craft and Technology in Animation

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Animation is a field steeped in the tradition of both handcraft and technology; its origins begin with handheld devices that spun drawings into motion. As photography developed, film (and eventually digital) captured changes in hand drawn layouts and defined animation. In stop motion animation, handcraft endured via clay, paper, and puppetry. Now animators have the capability to create fully digital 3D worlds.

This presentation will provide an outline of how a current undergraduate design educator has approached integrating hand skills, such as clay sculpting, paper cutting, and drawing, with technological components, such as laser cutting, 3D printing, and both 2D and 3D rendering programs, into a general Visual Arts curriculum via a course in animation. Students enrolled in the course varied; most were seeking a general Visual Arts degree, some were focused on graphic design solely in their studio courses, and a few were taking the course as an elective for a degree in Communication. As a result, the projects had to consider the role animation plays in contemporary art, graphic design, entertainment, and advertising, while actively focusing on storytelling, handcraft, and technology.

Students formed strong relationships to their characters, especially when created utilizing hand skills, and yet were deeply engaged in a full design skill set (technology, communication, typography, photography, composition, etc.). Those students enrolled in animation were willing to take more risks, both creatively and technologically, in their other courses. Animation will continue to be used in this Visual Arts curriculum to bridge the gap between traditional fine art and graphic design courses through integration of handcraft and technology.

Stasis in Motion:
Teaching Balance of Craft & Technology in Animation

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Abstract

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Animation is a field steeped in the tradition of both handcraft and technology; its origins begin with hand held devices that spun drawings into motion. As photography developed, film (and eventually digital) captured changes in hand drawn layouts and defined animation. In stop motion animation, handcraft endured via clay, paper, and puppetry. Now animators have the capability to create fully digital 3D worlds.

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Introduction

The University of Illinois Springfield is a small Liberal Arts University and in the Visual Arts Program students may earn a B.A. in Visual Arts. Those interested in the studio arts and digital media get the same degree. They take same core courses, but their upper division art studio and art history courses change depending on their interest. After taking Introduction to Digital Media, students may take any of the other digital media studio courses (Print, Typography, Web, and Advanced Digital Studio) in any order. Additionally, the courses are cross listed in the communication department for those students majoring in Journalism and Media Studies.

As the only digital media professor, I had been feeling like there were no changes within my courses (despite re-tooling my syllabi every semester) and that the rotation was stuck. I felt like I was in stasis and then the opportunity presented itself to teach Digital Media: Animation. The course has previously been offered, but

not been in a long while and risked being cut by the registrar due to lack of offering. It was the answer to my feelings of stasis, but I had neither taken nor taught animation previously.

As I approached teaching this new course I was interested to see the educational significance animation would serve for a design curriculum and I pushed my students to explore new material while exploring how animation could be relevant to graphic design, contemporary art, entertainment, and advertising, while actively focusing on storytelling in the combination of handcraft and technology by going back to the origins of the craft.

What I Thought It Would Do

- Increase Sketching:
  As storyboarding would come into play and we would explore Drawn Animation, I assumed the number of sketches my students would create and come to expect as needed would increase.

- Laser Cutter & 3D Printer Use
  Our program owns a laser cutter and two 3D printers (a Makerbot Replicator and a FormLabs Resin) & and I assumed that this class would increase their use, particularly as we explored Stop Motion.

- New Technology Learned
  I knew they would need to branch out from the basics of Illustrator, InDesign, and Photoshop and learn some new programs, including but not limited to After Effects, Dragonframe, and iMovie.

- 12 Principles of Animation
  Since I planned to structure my course around the 12 Principles of Animation, created by the Disney Animators Johnston and Thomas in the quintessential book The Illusion of Life: Disney Animation, I assumed they would master these ideas: 1. Squash & Stretch, 2. Anticipation, 3. Staging, 4. Straight Ahead and Pose to Pose, 5. Follow Through and Overlapping Action, 6. Slow-out and Slow-in, 7. Arcs, 8. Secondary Action, 9. Timing, 10. Exaggeration, 11. Solid Drawing, and 12. Appeal.

Harsh Realities

While I was entering the start of the course optimistic, there were some harsh realities that I had to come to terms with. While drawing is required for the major, it is not required at any particular stage, and it is not a requirement for the Communication students, so there was the chance my students would have no more familiarity with drawing than the sketches required in my Introduction to Digital Media course. The labs that house the laser cutter and 3D printers are run by student workers, who only work for 20 hours a week. Their hours overlapped with my own availability outside of classes and meetings, so students would have to work around 20 hours of access to the facilities. And lastly, all my upper division studio courses are 3.5 hours only once a week for the 16 week semester, so flipped classrooms are a necessity. Students were going to be responsible for learning these new programs we were using outside of the classroom context.

Resources

Students were required to purchase the textbook the *Animator's Survival Kit* by Richard Williams, either in print form or as an iPad application. The textbook focused on drawing skills, timing of motion or actions, and traditional techniques used in x-sheet or dope sheet tracking of motion. Students have access to Lynda.com

through the university, so there is unlimited access to the videos for use with the flipped classroom model. I additionally required students to have a video subscription service, be it Netflix, Amazon Prime, Xfinity on Demand, HBO, etc., so they could watch films within the genres during each project.

I did not require students to use any specific technology for any of the projects; I left that to be determined by them and the style or story they were trying accomplish. We had in the lab access to the following programs:

- Dragonframe
- Adobe Character Animator
- Adobe Flash
- Adobe Photoshop
- iMovie
- Adobe After Effects
- Adobe Illustrator
- Adobe Blender

I discussed the following technology as options for use, many of which have a free trial period or student discount, making it a reasonable option for a project:

- Autodesk 3Ds Max
- Autodesk MotionBuilder
- FlipBook
- Pencil2D
- Toon Boom Harmony
- iStopMotion
- Autodesk Maya
- Cinema 4D
- Go Animate
- Poser 11
- ToonLoop
- Animator HD

Course Structure

The class is structured to create a safe space in the classroom via in-class exercises that are low risk and high reward. If students actively participate, attempt to learn the objectives presented, and push themselves to learn the content they get full credit on the exercise. These take place almost every day in class, total 10 points each, and add up to 100 points by the end of the semester, the equivalent of one project total. I structured animation to include exercises that dealt with hand skills, technology, and storytelling:

- Thaumatrope
- Squash & Stretch
- Timing
- Storyboarding
- Clay Stop Motion
- Paper Stop Motion
- Dialogue
- Acting
- Flip Book
- Foley Sounds

Most of the in-class exercises are

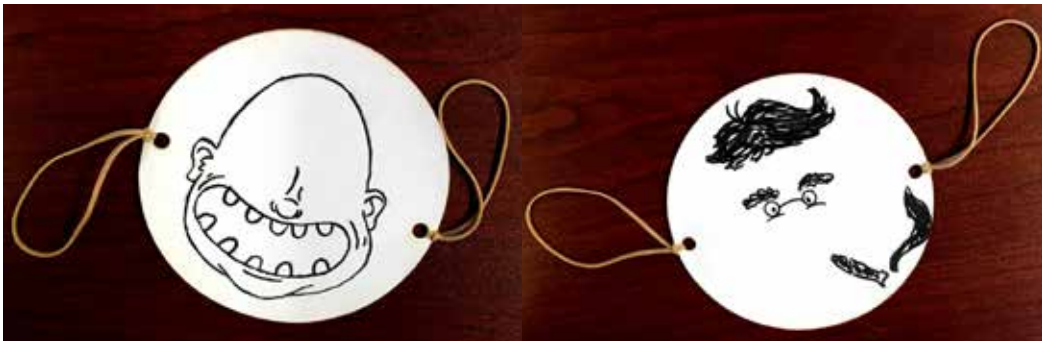

Figure 1
Thaumatrope
Darrin Simmons

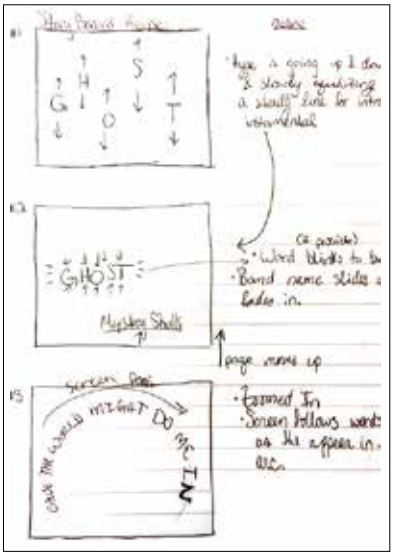

Figure 2
Storyboarding
Amanda Helm

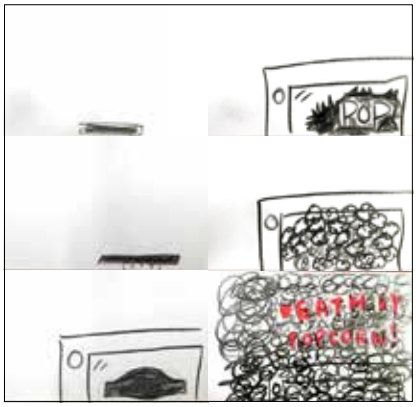

Figure 3
Flip Book
Brytton Bjorngaard

individual, but occasional I will pair or group the class to tackle larger exercises. In the case of learning how to use clay and cut paper to do stop motion, I divided the class in half (groups of 6) and had them work with the materials and technology in a larger capacity. The clay involved playdoh over wire armature and a 3D photography studio with a backdrop and lighting. The paper cut utilized a light table, multi plane animation stand, and a copy stand. Both involved a camera hooked up to Dragonframe live view.

Figure 4
Cut Paper

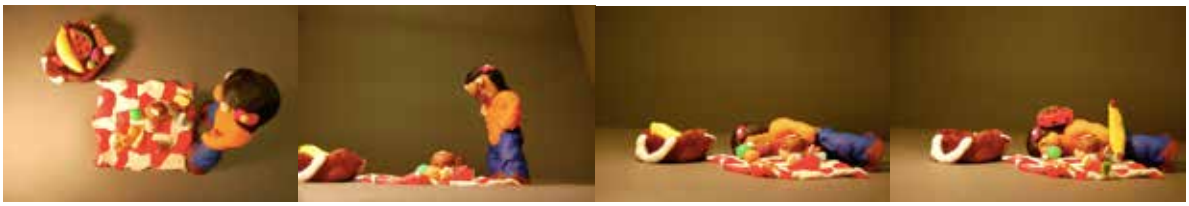

Figure 5
Playdoh

The Real Work

Due to the mix of students (fine arts, graphic design, and communication) taking the course and that I allow students to use any technology to complete their projects, I posed loose questions for each animation genre.

We started with Kinetic Type and I asked: How can web banners be used to promote something within 30 to 60 seconds? I received projects that promoted TV shows (Little Einsteins), Music Albums, Podcasts, Movies (Misery), etc. Student used a variety of technologies, but favored After Effects for its ability to really mess with all the varieties of rotation, timing, scale, etc. very quickly.

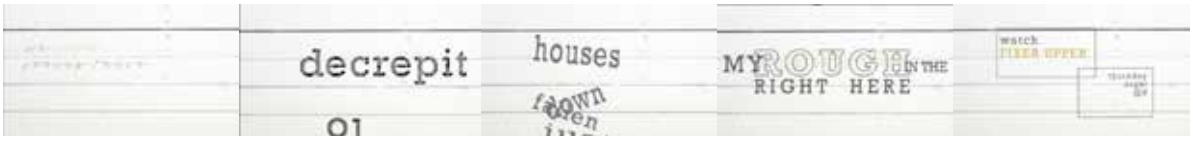

Figure 6
Kinetic Type
Tristen Sitko

For Stop Motion I asked: How can stop motion animation be used to shed light on a contemporary problem? Students could use a wide variety of methods, including clay, puppets, paper, painting, objects, pixelation, but the animation had to last from 2 to 2.5 minutes, which would result in 1,440 to 3,600 photographs depending on frame rate. I received a project that shed light on campus sexual assaults by the retelling of Little Red Riding with cut paper, another used objects (including Frozen figurines) to highlight poverty and oppression, and another that hinted at Alzheimer suffering via a lost snail using clay.

Figure 7
Stop Motion
Jerica Griffen

I next moved us to Drawn Animation and asked the question: How can drawn motion animation be used to tell a story that has a pun / metaphor / hyperbole / deeper thinking? I gave the students a time frame of 35 to 45 seconds (with the minimum of 420 drawings). Students got punny with ads promoting coffee with the tagline "our coffee gives you the runs" featuring a running man, a story of fish and pollution asking us "is this the real life or just a fanta-sea," and a smoking hot dot campaigning us to stop smoking.

Figure 8
Drawn
Darrin Simmons

I wrapped up the course moving into Digital Animation. I asked students to expand upon and refine their story from the drawn animation to simply tell a story in 1 to 1.5 minutes. Students showcased the typical can't reach what they desire and then it is stolen by others parable, played with the idea of bullying words bouncing off of the bullied to decapitate the bully, and showcased a printer jam dance party.

Figure 9
Digital
Amanda Helm

Outcomes

This course was challenging. It started out with 16 students, ended with 11, and had the full range of grades (2 A's, 3 B's, 2 C's,1 D's, 2 F's, and 1 Incomplete). The benefits were that students formed strong relationships to their characters, especially when the characters were created utilizing hand skills, and yet were deeply engaged in a full design skill set (technology, communication, typography, photography, composition, etc.). Those students enrolled in animation were willing to take more risks, both creatively and technologically, in their other courses that they took from me. Specifically they:

- Learned How to Sketch
- Mastered Drawing
- Paid Attention to Craft
- Became Better Photographers
- Created More Interesting Personas
- Took a Multimedia Approach to Other Work
- Had Better Time Management

Future Changes

The next time I teach the course I would require shorter length on projects, as some of the timing prohibited students from doing better work as they focused on meeting the time requirement. Additionally, I would demo more methods for completing Stop Motion projects. Students were willing to try cut paper and clay because we had done them in class with exercises, but despite discussing puppets and the 3D printers to create them, students did not try this method.

Conclusion

I highly recommend adding Animation to all design curricula. If it can't be integrated into a full course, at least 2 projects throughout the curricula would be beneficial, particularly the Stop Motion and Drawn Animation. Tech often comes easy to the students, but the focus on hand techniques within these two genres pays off with the aforementioned benefits in the classroom.