Investigating User Experiences Through Animation-based Sketching

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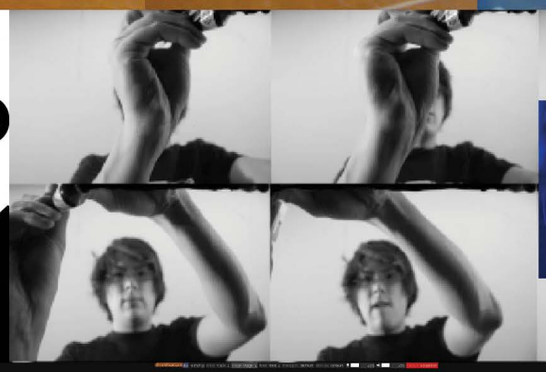

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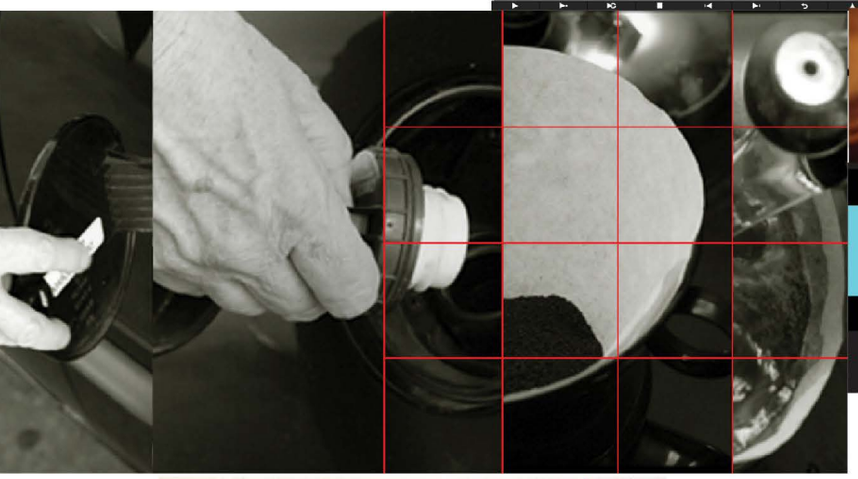

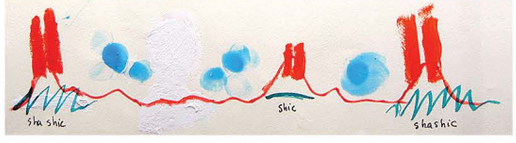

A **Focal Press** Book

ROUTLEDGE

Edited by Andre Murnieks, Gretchen Rinnert, Brian Stone and Rebecca Tegtmeyer

MODE

Motion Design Education Summit

2015 Conference Proceedings

About MODE'15

From The MODE Organizing Committee

The University of Notre Dame, The Ohio State University, Kent State University and Michigan State University jointly presented the 2nd MODE Summit. This international event brought together motion design educators from different areas of expertise to present work and discuss motion and how it enhances, affects, changes messages, meaning, and communication. The conference took place in Dublin, Ireland, 03-05 June 2015 at the O'Connell House and the Royal Irish Academy.

MODE gathered design educators who specialize, research and teach in the area of motion design. We see this event of particular interest and relevance to graphic design, visual communication design, typography, cinema, theatre, animation and storytelling. Together we explored the growing field of motion design and the need for scholarly driven literature and examples to support and challenge educators.

We accepted papers that explore different aspects of Motion Design education and practice. Upon acceptance, the work was destined to be part of a peer reviewed anthology of motion design materials to be published in the conference proceedings. Keynote speakers for the conference are also featured through editorial reviews by the MODE organizing committee.

The 1st MODE Summit took place at the University of Notre Dame in South Bend, Indiana. Conference attendees came from a wide range of academic institutions and international locations. We are building on the momentum created in 2013, as motion design educators continue to discuss, share, and examine the field collaboratively.

Curriculum Case Studies

These presentations share an overview of a course, the work that is produced and an analysis of the impact it has on the student experience. Papers should be between 2000 and 4000 words, citing references and student contributions. The student outcomes will be presented in a gallery showing with other curriculum artifacts.

Professional and Creative Work Case Studies

Professional and creative work case studies push the limits of motion design and provide a reference for designers and students. These examples should are accompanied by a short paper that explains the process, influences and collaborators.

Conference Themes

Information, Navigation and Interaction

Typography & Message Making

Abstraction, Patterns, Repetition and Rhythm

Storytelling, Narrative, and Empathy

Motion Design Pedagogy

Theories, Strategies, Methods

History and Future of Motion Design

Motion Design Characteristics

Other Suggested Categories

8x8 Format

MODE'15 featured 8 peer-reviewed research, case study, or professional application presentations. These carefully selected abstracts will provide insight about new, innovative, cutting edge and/or current in-progress work. Each contributor shared their work in a concise, energetic, rapid-fire 8 minute presentation.

Motion Design Education (MODE) Summit

Companion web site:

https://vimeo.com/channels/mode2015

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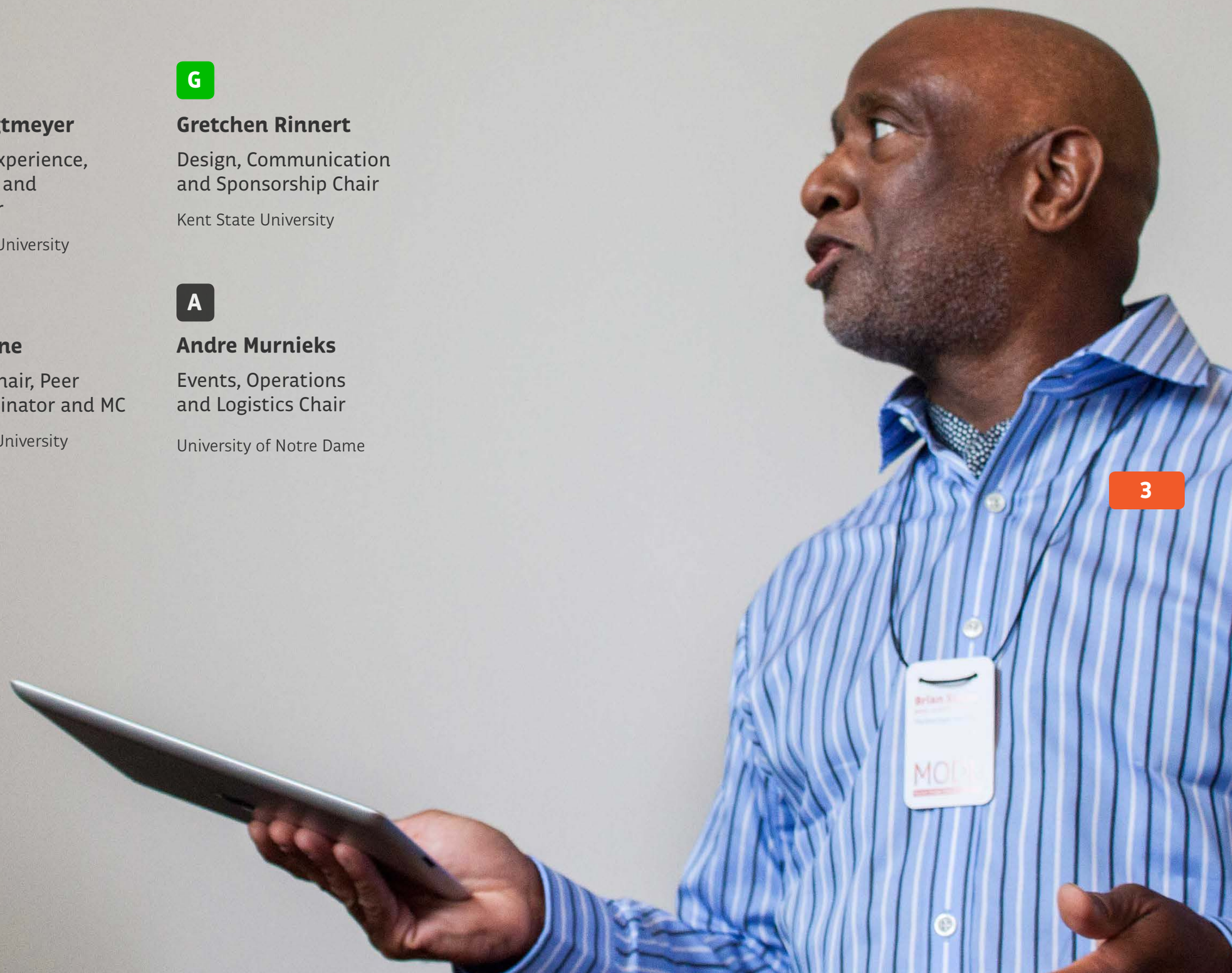

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Making Brands Move

Keynote by Guy Wolstenholme and Jon Hewitt of Moving Brands

Summary by R. Brian Stone

Guy Wolstenholme co-founded Moving Brands in 1998. He heads up their moving offer, including all film and video, 2D and 3D animation across all stages of production, and is a leading force in innovation creation and experience design. He has created technologies for remote broadcast with system integration patents and has created and led moving work for clients including British Gas, Capgemini, Carat, Jamie Oliver, Mindshare, Nokia, Nortons & Sons, Swisscom, Telewest, Ovi and Vodafone.

Jon Hewitt joined Moving Brands in 2006. Jon is a Creative Director at Moving Brands, specializing in brand identity and interaction design. Jon was an integral member of the design team on the brand transformations for both Swisscom and HP. He also led the creative development of several Invesco Perpetual work streams, and has worked with clients including Nokia, University of Arts London, Nokia Siemens Networks and Norton & Sons.

To begin the 2015 MoDe conference, our first keynote presentation came from Guy Wolstenholme and Jon Hewitt of Moving Brands. Based in London, with offices in Zürich, New York and San Francisco, Moving Brands works with both established and emerging businesses to design and transform brands to thrive in a moving world.

Moving Brands is a mix of motion designers, composers, musicians, writers, and film makers. As a creative service provider, Moving Brands has provided clients with Branding and Identity Systems, Digital Products & Services, Interactive Environments, and Brand Transformation. Guy and Jon both noted that they found themselves fortunate to have had the opportunity to work with global companies such as Apple, Google, and the BBC, as well as with some pretty interesting bay area start-ups. At the core of these professional activities was the communication of brand values through Motion Design.

The origin of Moving Brands goes back to 1998 with Guy, his brother Ben, and James Bull. With formal graphic design backgrounds and their love of film and technology, they set out to solve problems bigger than just bolting on a logo at the end of a commercial or advertisement. They wanted to tell stories for their clients in a thoughtful, consistent, and holistic manner. They set out to go beyond the question of "can an identity move?" to "how should an identity move?". Their investigations and ideas of how things can and should live on screen has been at the center of their growth.

In the early days of 'Moving Brands', the name itself was a bit in question. The founders viewed brands as more than just placing an identifier or stamp across a series of applications. They believed that brands should have character and tell stories that resonate deeply with people. Everything should be connected through visuals, mood, feeling, and even sound. Motion became an integral part in showing these ideas to their clients. As a result, Moving Brands began to pitch through the use of moving mood boards that exhibited a rich, coherent, and connected layer of expressive communication and ideas. Thus the company's name 'Moving Brands' was permanently adopted.

They began their presentation by showing their promotional reel which exhibited a range of masterfully executed projects. Jon and Guy went on to show a detailed case study of the Swisscom brand build. Based in Bern Switzerland, Swisscom is a major telecommunications company that provides broadband, mobile, television, and IT services. Swisscom wanted all their touchpoints connected, from the products and services they offer, the way they sell to people, even what the experience is like when walking into one of their stores. Moving Brands engaged Swisscom stakeholders in a co-create workshop to create a narrative around their core principles of oneness, closeness, openness and

simplicity. The narrative evolved to Swisscom being a trustworthy companion and an enabler of new possibilities for their customers. Moving Brands knew that to capture this feeling, the identity had to go well beyond the consistent and predictable use of a logo. It needed to exhibit the embodiments of a mood and feeling unique to Swisscom's values.

Moving Brands used motion as a means to sketch ideas on how these values would be portrayed. This process led to a language and identifier that is inherently kinetic. It facilitated a visual treatment, unique to each application, but threaded through the kinetic language Moving Brands developed. The result is a dynamic, living mark that moves and acts natively across a wide range of current and future applications. Guy and Jon spoke to the importance of the mark, or as they refer to it, a 'life form', be fixed while at the same time have flexibility. The multisensorial identity was considered from various angles to determine how it would look and behave. The final identity was designed to interact with sound, movement, and data, while inspiring the ideas of progression and oneness.

Figure 1: Swisscom experience.

"Moving Brands is a highly inspiring and supportive partner to work with. Their strategic understanding and commitment to innovative design brings out the best of a brand. Working with them to evolve our brand into a living identity was one of the most exciting and challenging experiences of my career."

—Sascha Weisshaupt: Head of Corporate Identity, Swisscom.

Many of the programs developed by Moving Brands originate from a culture of experimentation. Many of these studies are done in a make-shift studio and sound stage in Guy's garage in London. Jon and Guy shared several discoveries that inspired the eventual developed of brand marks and visual languages for a whole host of companies. Jon noted that things in our analogue world have very specific motion aesthetics. These behaviors inspire innovative ideas. Corollary to this notion was a study done for Italian Sports Car maker Maserati. Guy described how the use of flour and water, shot at a very close angle, mapped to the iconic sound of a Maserati engine shifting gears, yielded interesting forms of vibrating and undulating peaks and valleys. Guy admits that many of these studies never see the light of day, but do inspire their team to move in interesting directions.

The idea of using motion as a sketch and discovery tool was quite evident in Moving Brands portfolio of projects. I found an additional point of inspiration when Jon and Guy talked about "gesture as identity". Everyone can relate to the act of gesturing to communicate and express ideas. Moving Brands continues to investigate the idea of behaviors embodied in identity or as a means to define brand essence. We saw this concretely when our speakers shared the case study of Flipboard.

When first setting up operations in San Francisco, they were engaged by Flipboard, a small start-up who wanted to aggregate a person's social channels into a beautiful, personalized magazine experience. Bear in mind, the iPad was fairly new at the time and no one was really certain of its level of

adoption. Moving Brands knew at the outset that they had to develop an experience that amplified the iPad's inherent set of behaviors. Emphasizing the 'flip' gesture as a way to navigate and explore content ensured that the application would become a powerful and distinctive attribute of the brand.

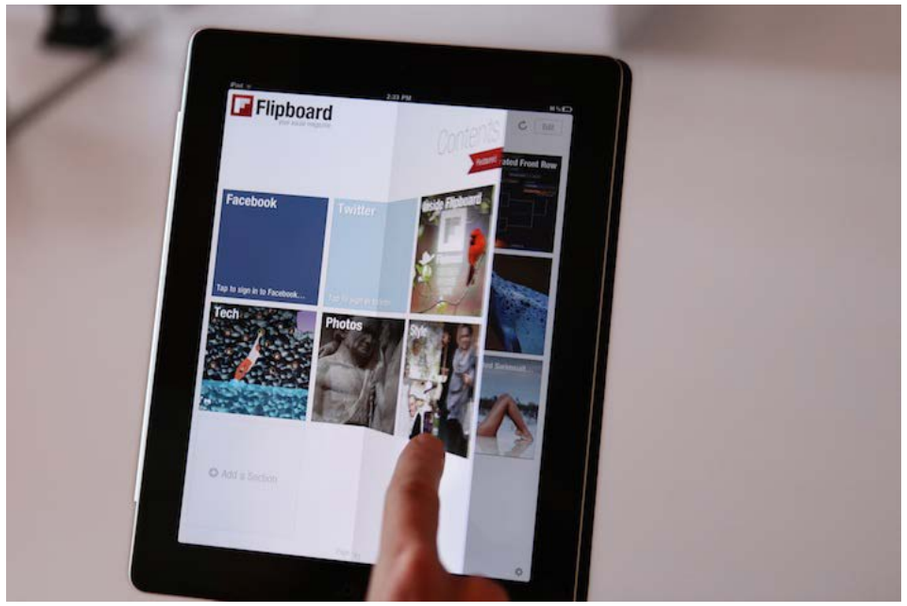

Figure 2: Flipboard page flip on iPad.

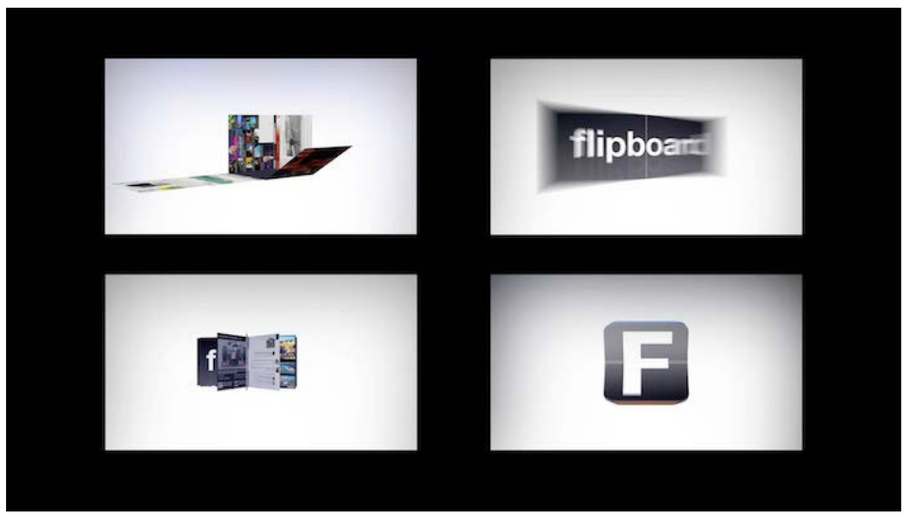

Figure 3: Flipboard sketches case study.

They went on to develop the logo, word mark and visual language, leveraging the idea of the flipping gesture. The mark literally comes to life in the app and across other digital platforms as a moving identity. Flipboard has gone on to receive a myriad of awards and accolades including one of Time's 50 Best Inventions of 2010, and iPad app of the year 2010.

According to Guy and Jon, designing with motion in mind brings brands to life, whether the application state is static or kinetic. The work of Moving Brands continues to evolve and we look forward to seeing what's next. There were many parallels to drawn from as we continue to expand and elevate the teaching of Motion Design. In seeing their results, we have been motivated to further explore, experiment and take risk. We all aspire to have a deeper understanding of movement and how it aids in shaping an experience. Moving Brands has provided a platform in which many of us may continue to build upon. Moving Brands thrives in a collaborative environment by bringing together people and ideas in interesting combinations. An idea very much in-line with the objective of the 2015 MoDe Summit. Thanks Moving Brands for getting us off to a great start.

See more at: http://www.movingbrands.com/

Additional Supporting Media

https://vimeo.com/channels/mode2015

CURRICULUM CASE STUDY

Activating Space: Using Physical And Digital Prototyping To Teach Principles Of Motion And Interactivity

Heather Shaw

Associate Professor of Design Lesley University College of Art and Design, U.S.A.

Abstract: Designing motion for the physical environment has been mastered by dancers and choreographers for centuries. A dance colleague defined choreography as a conceptual system of gestures to activate the physical (or negative) space around the body. This definition is analogous for teaching undergraduate design students how to activate negative space on a page or screen. However, today's undergraduate design curricula need to embrace literacies for interactions outside of page and screen space. How can we educate students to design for dynamic physical interactions beyond traditional constraints?

Keywords: motion, interactive, prototyping, choreography, gesture, space, interface, user experience, wireframe, design, construction, simulation, composition, algorithm

"Just as one can compose colors, or forms, so one can compose motions."

— Alexander Calder, 1933

This paper features the curriculum from an undergraduate Interactive Projects course at Lesley University College of Art and Design (LUCAD), designed to introduce students to principles of motion and interactivity through prototyping and simulation. This paper emphasizes two multi-part assignments that utilize motion in the creation of arcade games and generative drawing tools.

Curriculum

Interactive Projects meets once per week for approximately four hours during a 14 week semester. It is a beginner elective course with the purpose of introducing students to issues of human/computer interaction. The course is housed within the school's Design BFA, a program currently transitioning from traditional graphic design roots towards integrating dynamic media at the core. Currently, Introduction to Web Design is the only prerequisite. Therefore, most students enrolled in Interactive Projects have limited practical skills designing for interface and user experience. The course engages students in the complete interactive design process, including research, user scenarios, information architecture, wireframing, navigation, prototyping, user testing and feedback. Project frameworks require students to move seamlessly between digital and physical constructs, challenging them to conceptualize "beyond the screen" in order to create immersive and participatory user experiences.

Course objectives are framed around research, conceptualization, design and prototyping user interfaces (UI) and user experiences (UX) for various media and devices. Respectively, two key elements of the interaction design process are emphasized in curriculum:

1. **Prototyping and simulation.** Students engage in highly iterative process of "making" for both analog and digital environments. Coursework utilizes several prototyping and simulation tools to teach students how to communicate their ideas beyond technical mastery of software, coding, and/or programming.

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Shaw's pedagogy borrows planning technique from the choreography of dance and translates it to game design and user experience.

—A. Murnieks

2. **Choreography for composition.** Christopher Pullman's essay Some Things Change states that "Once the designer's art was composition; Now it is choreography." (109) These requirements set the foundation for design using a rules-based system, transitioning students to value a range of unexpected outcomes associated with algorithm.

1. Prototyping and Simulation (Arcade Game)

The first assignment is a gaming project inspired by the short film Caine's Arcade, a documentary about a 9-year-old boy who "spent his summer vacation building an elaborate cardboard arcade" inside his father's used auto parts store in East Los Angeles, California. (Mullick, "Caine's Arcade") The first phase of the project requires student teams to design and build a physical construction of a lo-fi cardboard arcade game. Individual teams are assigned a specific user with unique challenges that the game's mechanical design must accommodate. Phase two of the project requires students to re-imagine and redesign their games for a digital platform of their choosing.

Phase One: Mechanical Arcade Game

Students working in teams of two or three are tasked with designing and building a lo-fi cardboard arcade game for a specific user. Teams are provided with ping pong balls to approximate their game's scale and proportion. A variety of materials may be used in the game's construction, including (but not limited to) cardboard, chipboard, rubber bands, balsa wood, paper clips, tape, straws, pipe cleaners, Popsicle sticks, paper, string, and hot glue. Teams are provided with a user persona, each having a unique constraint that their games should be designed to accommodate. Below are persona examples in brief:

"Mitch," a 48-year-old male with red-green color blindness. He likes to solve puzzles and play games that involve problem solving and strategy.

"Eddie," an energetic 5-year-old boy with a short attention span and inability to focus for long periods of time. He cannot read yet but can identify colors, letters and numbers.

"Pearl," a 75-year-old female active senior with osteoarthritis in her hands. She would like to play a game that engages both herself and her two preteen grandchildren.

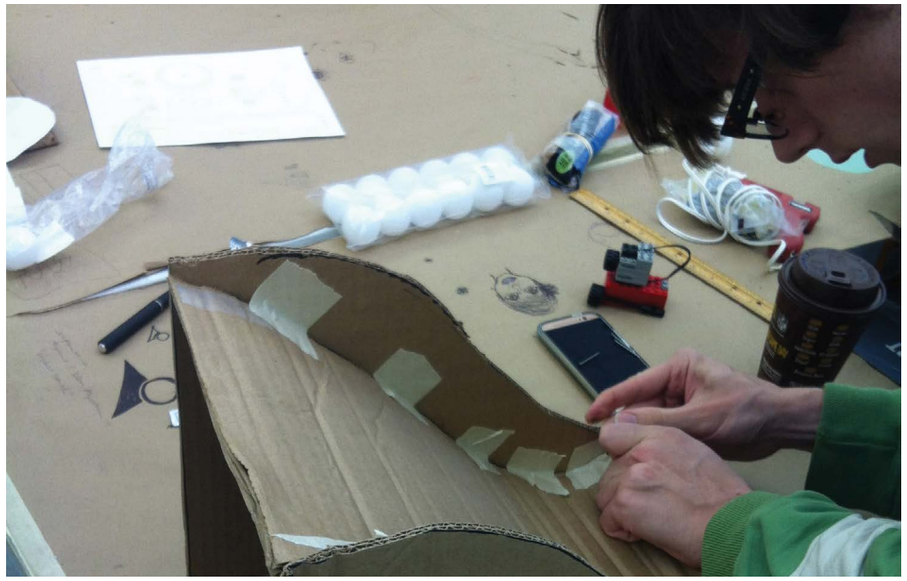
"Martha," a 35-year-old female with a toddler and infant. Her time is limited with an active toddler, and the infant prefers to be carried, so she often uses one arm for accomplishing physical tasks.

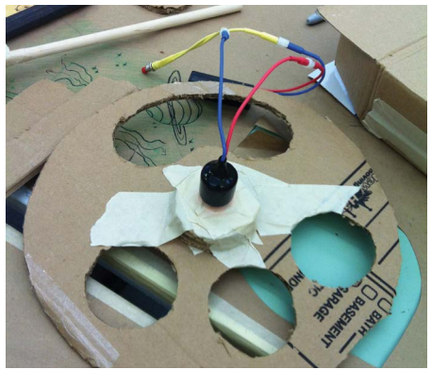
"Aidan," a 15-year-old male with dyslexia. He learns best through repetition and kinesthetic experiences, and enjoys physical activities such as long boarding and snow boarding.

Motivating the User. Teams must ask themselves: what will motivate the user to play their game? Prior to construction, students brainstorm the goals and objectives of their games specific to their user. The following guidelines are provided for the conceptual development process:

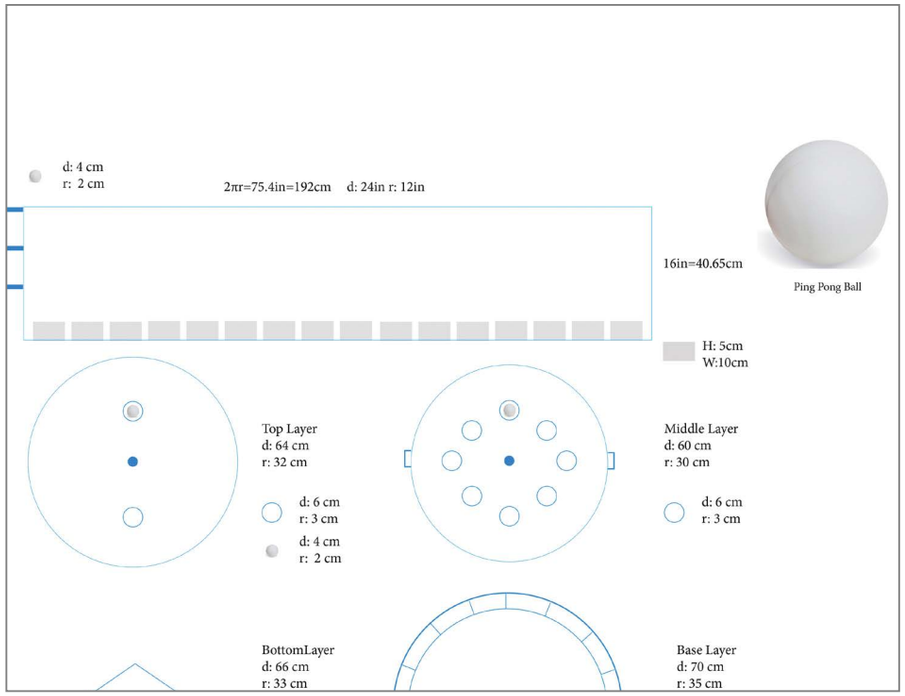
- Define goals the players will try to achieve.
- Define a set of rules that players have to follow.
- Provide feedback. This enables players to understand their performance. Reward systems such as points and "bonus rounds" encourage a person to continue playing.

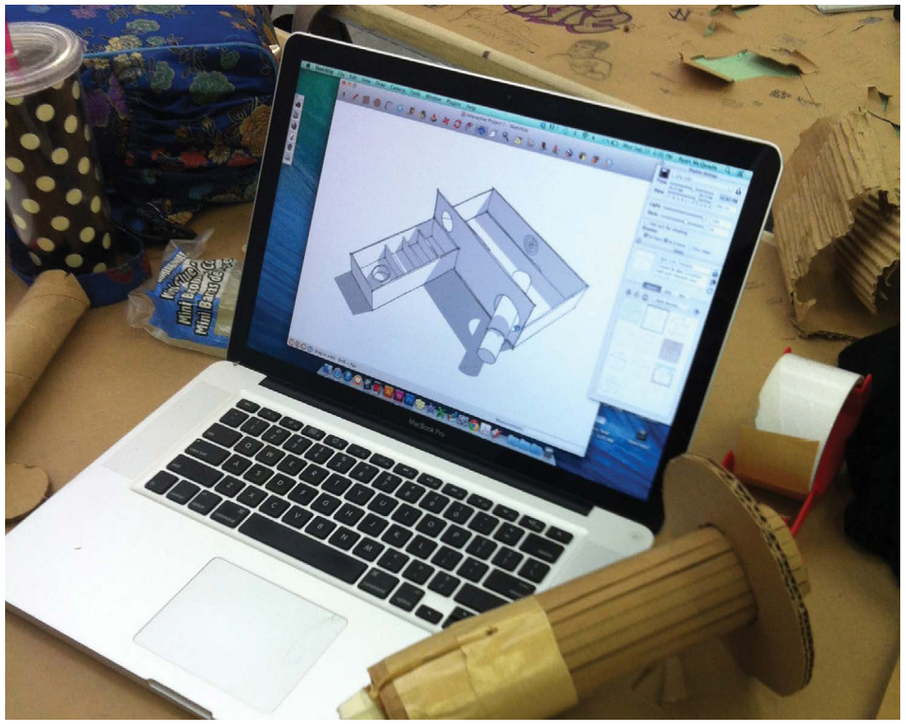
Planning and Building. Once the game's goals and objectives are defined, students begin sketching the game's construction. This includes the game's scale, mechanics and functionality. Several smaller "raw" prototypes are created to test and refine various aspects of the game's mechanics. A variety of digital tools such as Google SketchUp and Adobe Illustrator are used to draw and define characteristics of the game's components. Final game constructions must exhibit impeccable material skills and embody craftsmanship in the design, regardless of the project's lo-fi, "raw materials" approach. No specific requirements are provided for the game's physical scale, but it's size and height are tested for ease of use.





Figures 1 – 3: Students from Interactive Projects used a variety of materials and tools to construct their prototypical arcade games.





Figures 4 – 6: Some students used Illustrator and Google SketchUp “blueprints” for drafting their game’s construction.

Testing and Feedback. A scheduled "game day" invites students and alumni from various disciplines to test the arcade game prototypes. Student teams prepare the following for game day:

- Short brief explaining their user persona, and how the game addresses the persona's needs
- Rules for game play, and goals for winning
- Scoreboard/points systems prepared
- Survey questions to gather player feedback
- Recording methods (audio, video, photography) to document game play

Capturing user feedback is essential for the teams to move forward with the second phase of the assignment, as this involves translating the mechanical construct and gestural interactions to a screen-based experience.

Project Assessment. Assigning user personas to each team was key in the curriculum design. The personas — each with a unique constraint — provided a framework of designing for a single user with a specific need. This focused each team's design process, thus avoiding nebulous ideas and arbitrary decisions in the game's conceptual development. Phase one of the assignment inspired students to use imagination and creativity in the process. Class time primarily functioned as a lab for students to build and test their ideas, creating a playful working environment. Students used a combination of physical prototypes and digital tools for making. The finished lo-fi constructs embodied sensitivity in design, functionality and craft — but also entertained and delighted the players during user testing. Team preparations for game day enabled them to capture valuable feedback for Phase Two of the assignment.

Phase Two: Digital Translation, Arcade Game

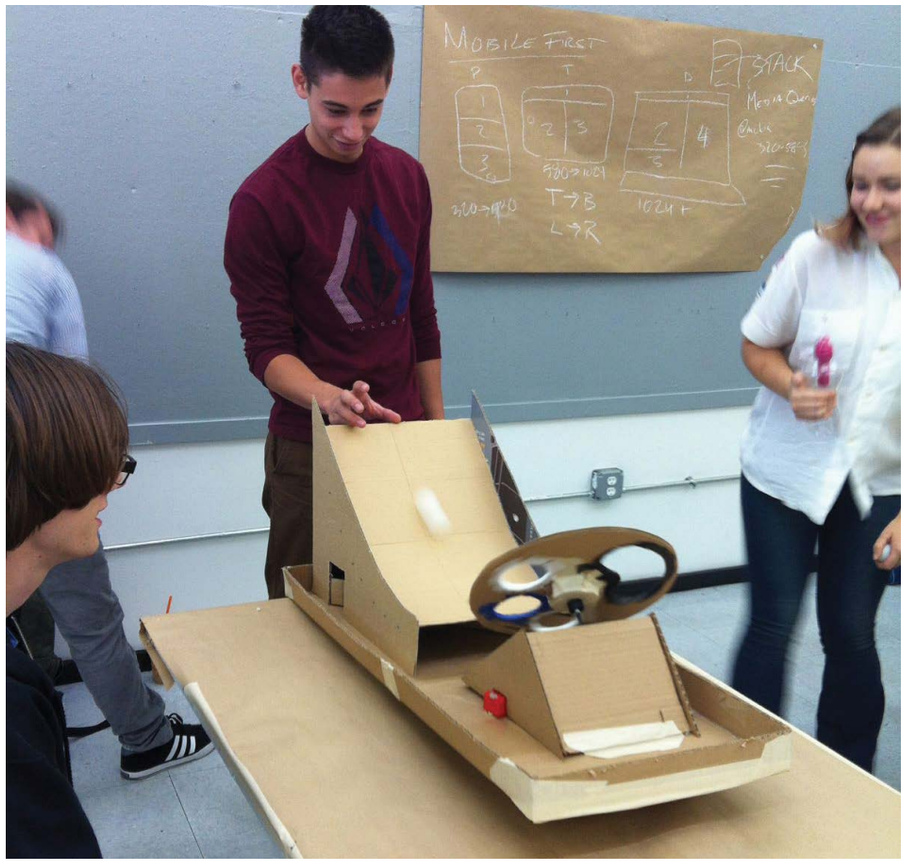
The second phase of the assignment requires students to translate the physical interactions from their mechanical game design to a digital environment, involving:

Physical Environment > Screen Space

Game Construction > Gaming Interface

Human Gestures > Digital Interactions

Mechanical Physics > Interface Behaviors



Figures 7: "Martha's" game is inspired by Skeeball and can be played with one hand. Users roll a ball down a ramp in attempt to get it through one of the game's motorized targets. Each target earns the player a specific number of points.

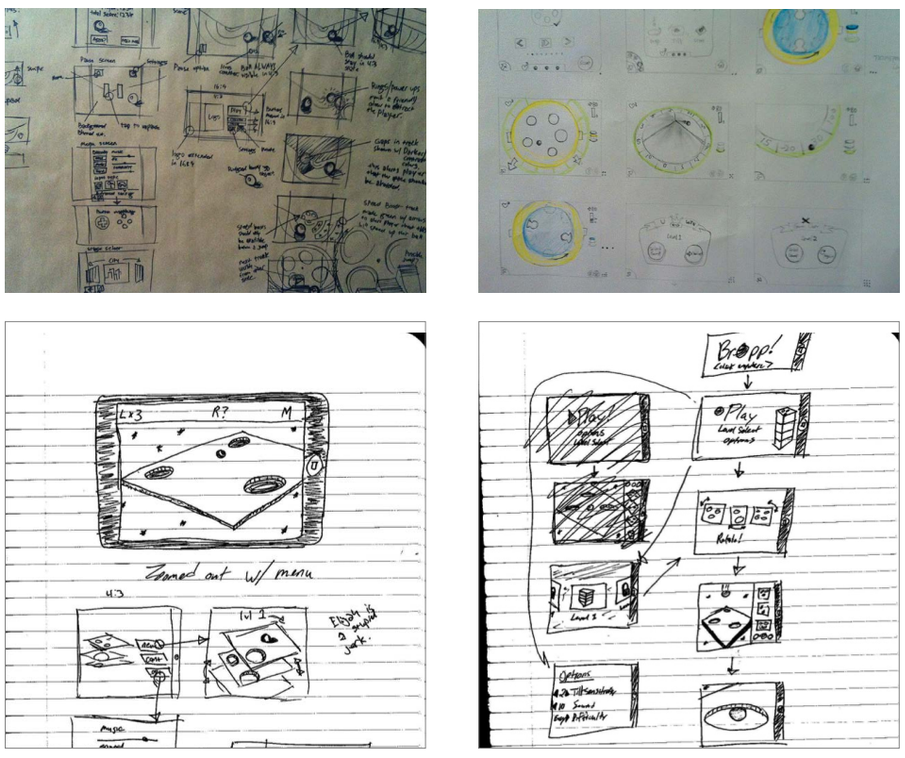
Figure 8: “Eddie’s” prototype requires a single player to “shoot” ping pong balls into the game’s targets within a one minute time frame. The game’s mechanics includes a sophisticated “sling shot” that can be repositioned horizontally for aiming. Each target earns the player a specific number of points.

Figures 9, 10: “Mitch’s” game is designed as a puzzle. A single player can slide the various hole templates into the sides of the tower. The goal is to get the template combination correct in order for the ball to land in a “winning” cup at the bottom of the game. Players are given three attempts to rearrange the templates to accomplish the goal.

Figures 11, 12: The game designed for “Aidan” requires players to throw and hit moving targets from a series of specified distances (taped lines on the floor). When the player reaches a certain number of points, the game enters a bonus “Yeti” round to continue playing for an additional high score.

Starting the project as a mechanical lo-fi arcade game (Phase One) intentionally frames the project around the digital adaptation of physical behaviors to interface, whereas a video game would necessitate a deeper dive into game theory and nonlinear narratives. The user testing and feedback from Phase One is applied to the conceptual development for Phase Two. Students are given the option to continue to work in their established teams or individually, and can choose to prototype their digital games for screen (tablet or mobile).

Storyboarding. Working loosely on large sheets of craft paper, students sketch all of the possibilities that a user might encounter in a single round of game play. Through this process, several of the game's original rules and goals need recalibrating in the adaptation to a digital context. The addition of user feedback via sound and visual cues adds another level of complexity. Students must also factor other aspects of game play, including quit, pause, resume, and the ability for the user to go back to start.



Figures 14 - 16: Storyboarding the digital interpretation of the arcade game.

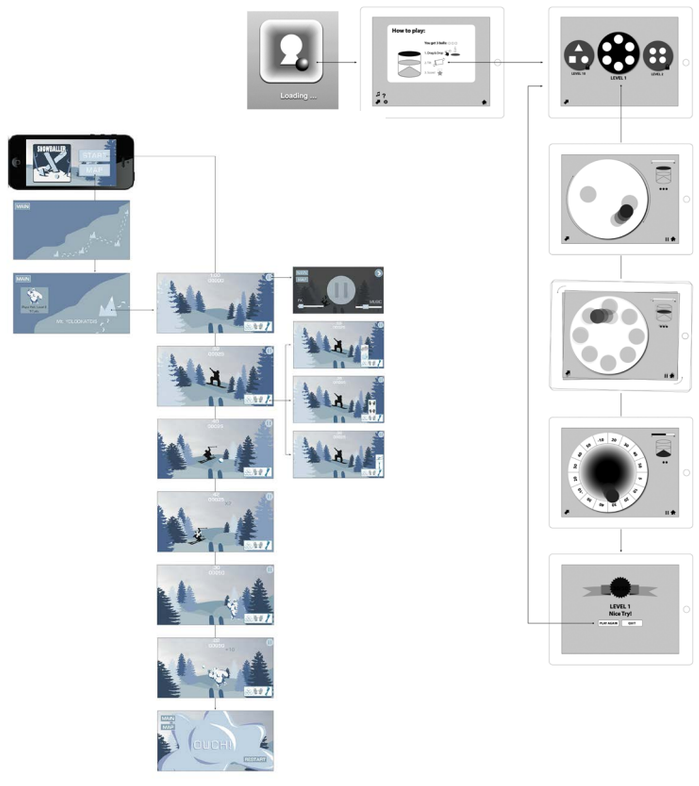
Defining the Essential Components of Interface. Gaps or unresolved paths in the storyboards are flushed out during group critique. Articulated storyboards enable students to identify the essential components in the interface, and begin wireframing their user's path through the game. The following list serves as a guide for the students' interface design sketches: (Saffer 170)

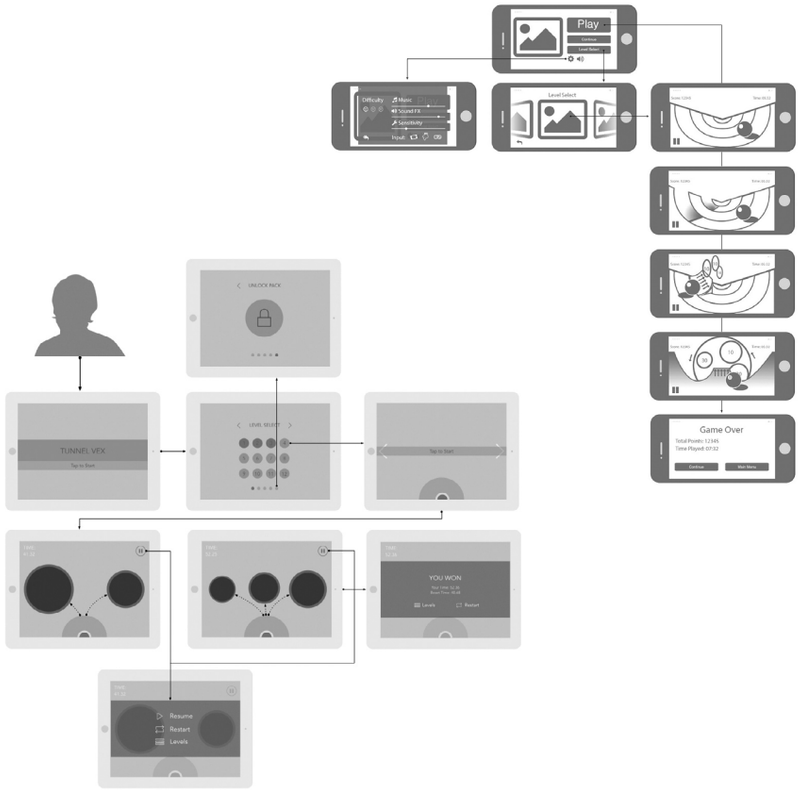
1. **Motion.** The gestural properties attached to the objects in the interface that move. This includes direction, gesture, kinetics/physics and velocity (speed) and essentially defines the behaviors in interface.
2. **Space.** The boundaries of space can be fixed or implied, and handled as a frame or a window. Transitions provide visual cues for users to understand their location or context digital space.
3. **Time.** Time can be real, implied (such as a dream sequence), abstract, linear or nonlinear.
4. **Touch.** Includes human gestures and haptic feedback. Tablets allow for taps, double-tap, long press, large swipe and pinching. Unlike tablets, mobile phones contain haptic feedback from a motor or actuator within the device. Haptic feedback can also indicate pressure sensitivity.
5. **Affordances.** The visual properties of an object that provide an indication for how it should be used.
6. **Sound.** Audio cue used to denote actions and information. Sound is defined by its pitch, volume, and timbre/tone.

Paper prototyping is required for students to refrain from getting caught up in the visual attributes of the gaming interface too soon. Emphasis is placed on elements involving motion, space, time, touch and sound. Students need to translate the human gestures from the physical gaming experience through defining the necessary actions for touch (such as swipes, taps, etc.) in the digital environment. The mechanical actions and physics from the lo-fi game also need to be thoughtfully adapted for the digital space through motion and interface behaviors. Prototypes include gestural notations for the things that can't be seen, such as audio cues and haptic

feedback. Students are reminded to review the feedback they received from the lo-fi user testing and include any necessary revisions in their digital version. Paper prototypes are tested using FluidUI and Prototyping on Paper (POP).

Designing the Interface. The game's visual design materializes from testing and refinement of the paper prototypes. Students are encouraged to reverse engineer the design process, starting with the most complex screen and working backwards towards the home screen icon. Designing the most complex screen first establishes the visual system that will span the majority of the game's interface. Typography is tested for screen legibility based on the game's intended device. Color is handled as content, offering visual cues for essential, recurring elements during game play. Student's final interface maps show a user's path through a single round of game play.





Figures 17 - 20: Students' interface maps show a user's path through a single round of game play.

Simulating Interactivity. Designing for complex interactions without back-end development and/or programming experience requires students to effectively simulate a user's flow through comprehensive storyboarding, click-through prototypes, and motion. Teaching students how to simulate their ideas enable them to articulate interactive work with little to no programming experience. A variety of tools are used for simulation, including Unity, Augment, PowerPoint, Keynote and GIF animations. Specific functions of the game's interactions are identified for motion based on assessment of the student's click-through prototypes. Students create short animated "clips" for showing interface behaviors and key interactions. Project deliverables include click-through screens and short animated and interactive clips to convey the digital adaptations of their arcade games.

Project Reflections. Phase Two of the Arcade Game assignment posed several new challenges for the students. Translating human gestures in physical space required

students to consider the limitations of interactions for screen space (swipes, taps, double-taps, etc). One student prototyped his game in Augment to better replicate the physical gestures for game play. The original games' mechanics needed to be adapted for interface behaviors, resulting in the creation of short motion-based simulations to better illustrate a game's intended physics. Lastly, mapping physical space to a screen-based interface required students to reinterpret some for their games' key functions. Another student prototyped his game with 3D modeling and augmented reality to mimic the player's position within the gaming environment.

This assignment (Phases One and Two) facilitates working with a variety of materials and tools across various media, and this diversity motivated the students throughout the duration of the project. This range also reinforces physical and digital craft. In retrospect, more time should be allotted for the animated simulations. Several students chose to simulate their games using transitions in Keynote and PowerPoint, and several created stop-motion GIF animations, as these options are less time intensive than animating in After Effects. Future developments will emphasize more fluid animation tactics for game simulations.

2. Choreography for Composition (Generative Poster Project)

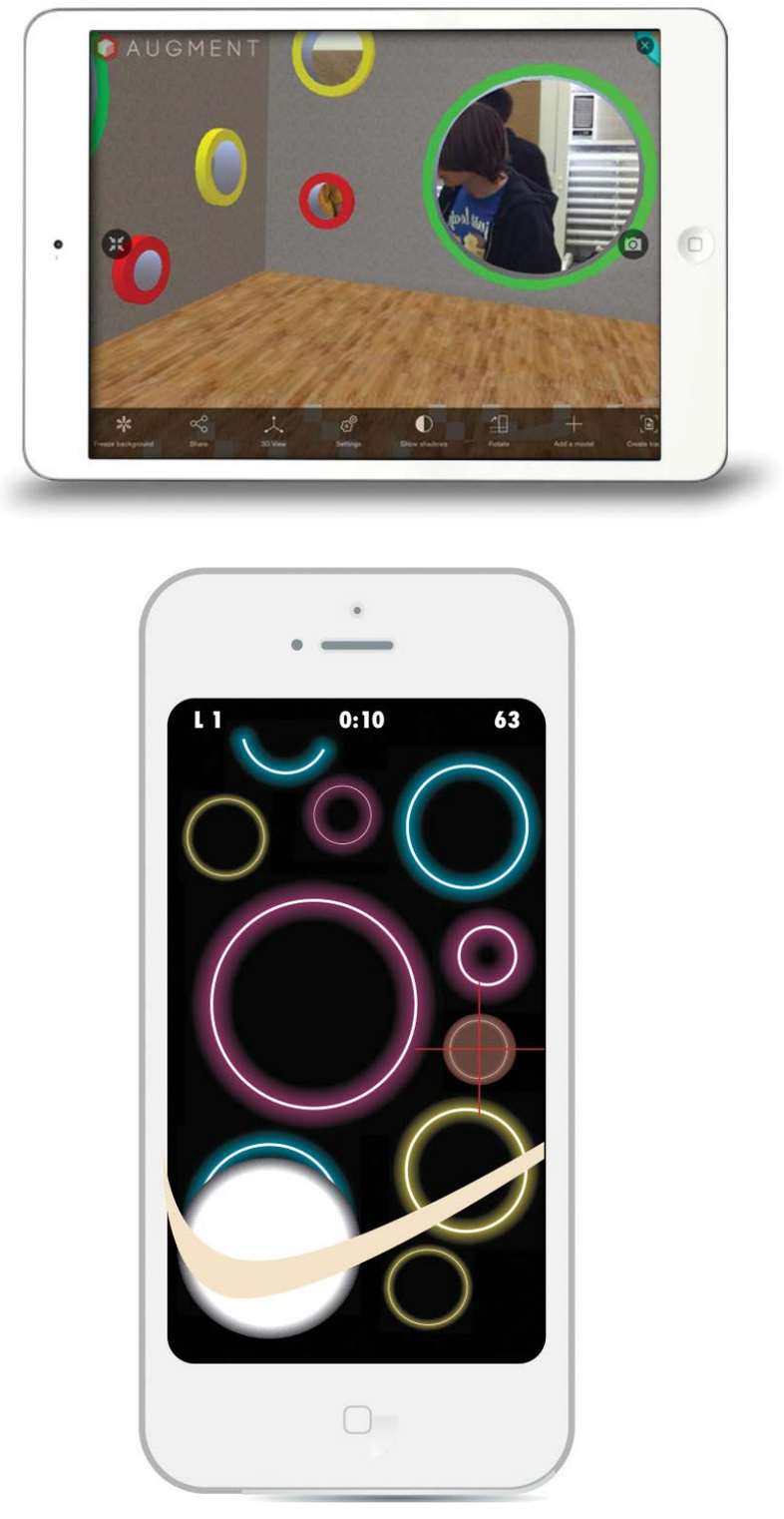
This assignment is inspired by John Cage's Aria (1958), a visual composition designed for singing. Cage's handwritten gestural notation represents time horizontally and pitch vertically. Color designates singing style. His notations can be sung by a voice of any range; each vocalist's interpretation of the rules creates a different "song" each time. (johncage.org)

This assignment challenges students to create a generative drawing tool that enables anyone to contribute to an expressive visual mark-making process. Tools can be approached as analog or digital contraptions, but must be defined with the following parameters: the object, its properties, behaviors, space, function(s), and variables:

1. **Object(s):** The components that enable mark-making (markers, mouse, light, string, paint, etc.)
2. **Properties:** The visual attributes of the individual marks; this includes shape, color, surface (weight, texture), size, scale.
3. **Behaviors:** The actions or motions attached to the tool that determine how it works — including direction, gesture, displacement, kinetics/physics, velocity and speed of movement.
4. **Space:** The boundaries for mark-making. Tools can be designed for use in physical or digital (screen) space.
5. **Function(s):** The specific purpose and role of the mark-making object. For example, one component of the tool might only draw lines; while another component might only draw ellipses.
6. **Variables:** The values assigned to a specific function. For example, a variable would allow a tool designed to draw straight lines to also draw curves.

These requirements set the foundation for creating a rules-based system, transitioning students to approach design through choreography first and composition later (Pullman 109). This method requires students to value a range of unexpected outcomes associated with algorithms. Visual programming using the open source language Processing (processing.org) is introduced through a series of hands-on tutorials and illustrated lectures. This provides context for the project's language and parameters, and teaches students how to program a simple algorithm. The Processing environment empowers students to "sketch" through code — enabling them to easily test their ideas amongst their peers and gain immediate feedback on their tool's ease of use and visual output. Final prototypes are not required to use Processing, but every tool's construct must operate with a clearly defined rules-set using the parameters defined above.

Students' drawing tools are designed to engage users in a dynamic sketching process, and should be intuitive and fun to use. The visual mark-making process is captured as part



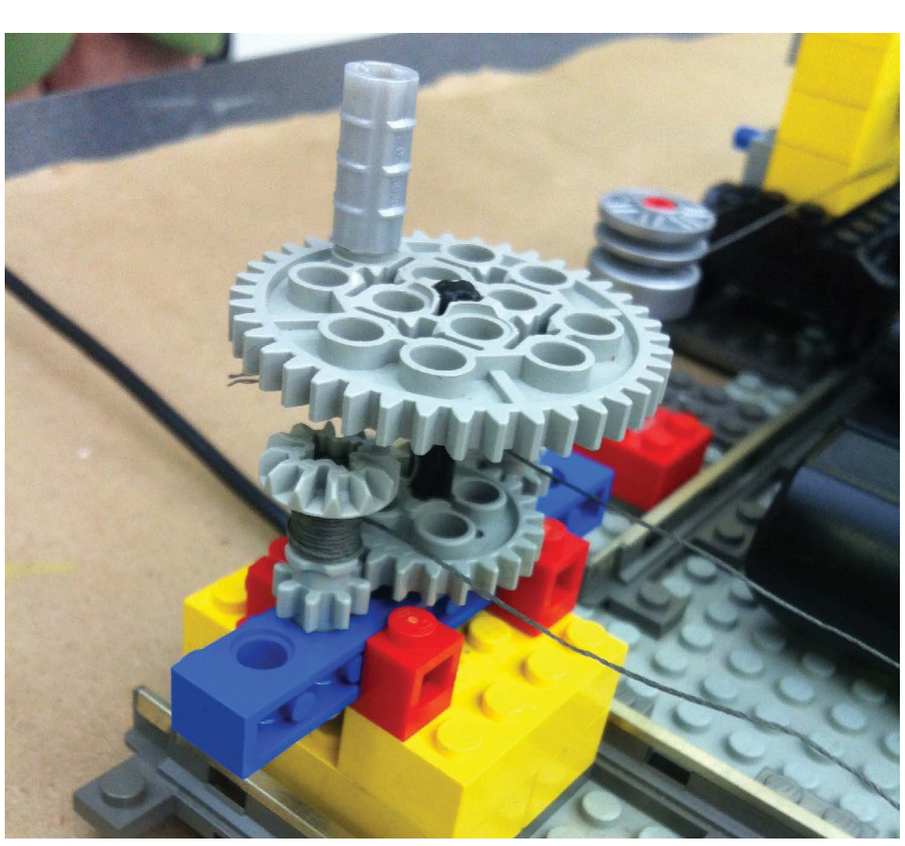
Figures 21 - 24: Students used a combination of Keynote, Powerpoint, GIF animations, and Augmented reality to simulate their games' behaviors.

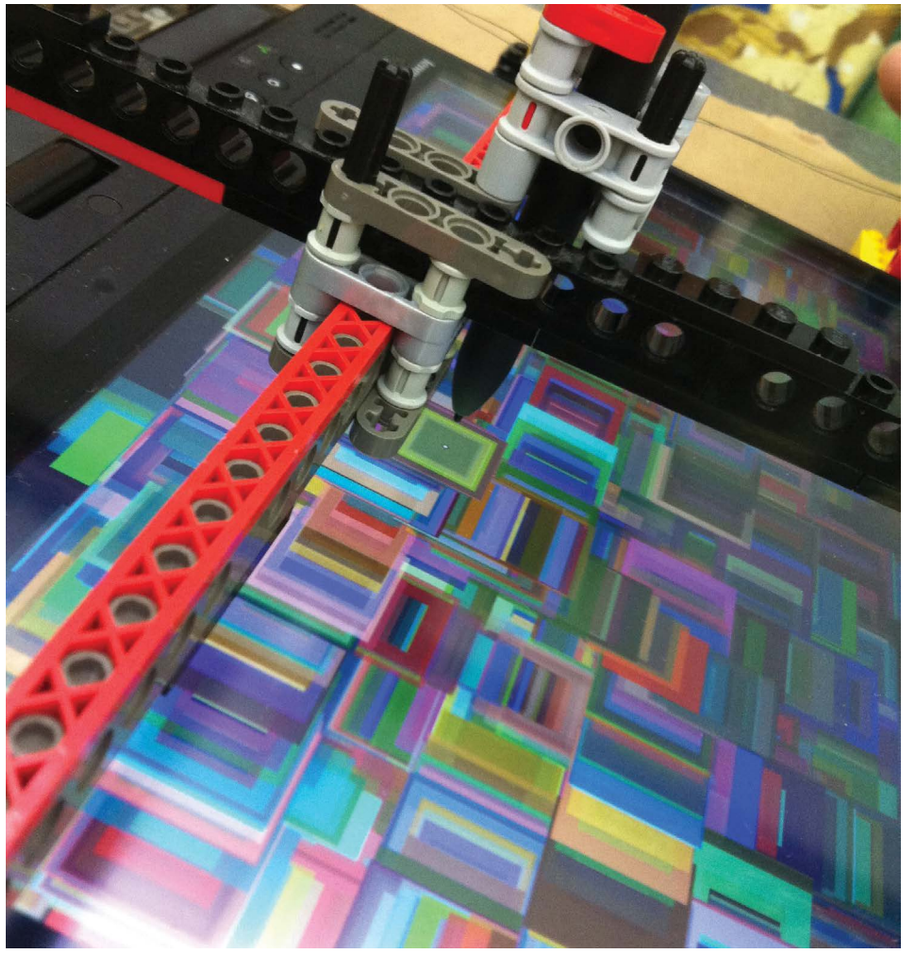
of the project's deliverables. Final tools range from analog constructs — incorporating string, light and Legos — to programmable apps using Processing and Quartz Composer. The "drawings" created by participants are used in the design of a poster series for a mock exhibit of "generative works."

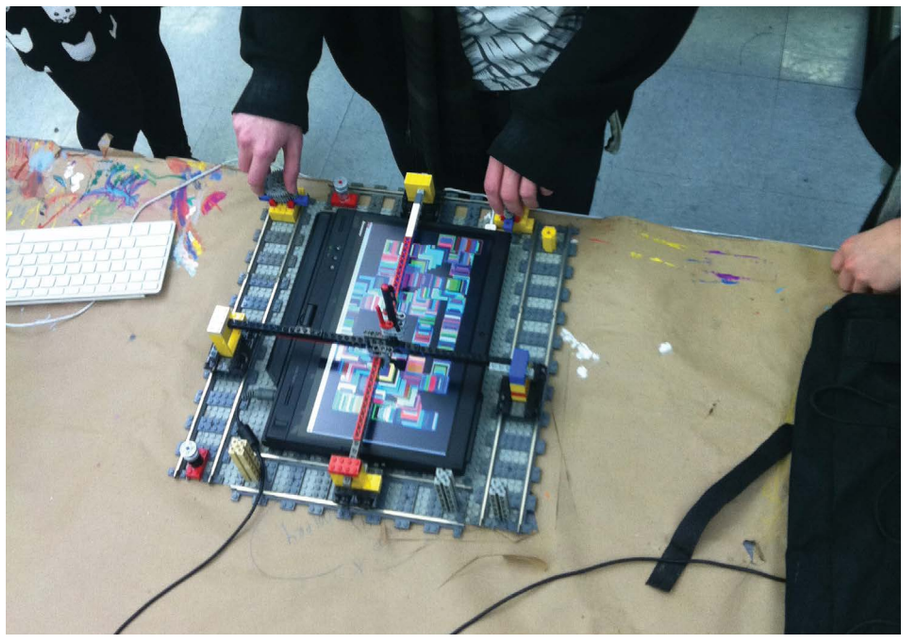
Project Reflections: This assignment introduces students to a rules-based approach to design, by using beginner programming concepts that create algorithms. Incorporating

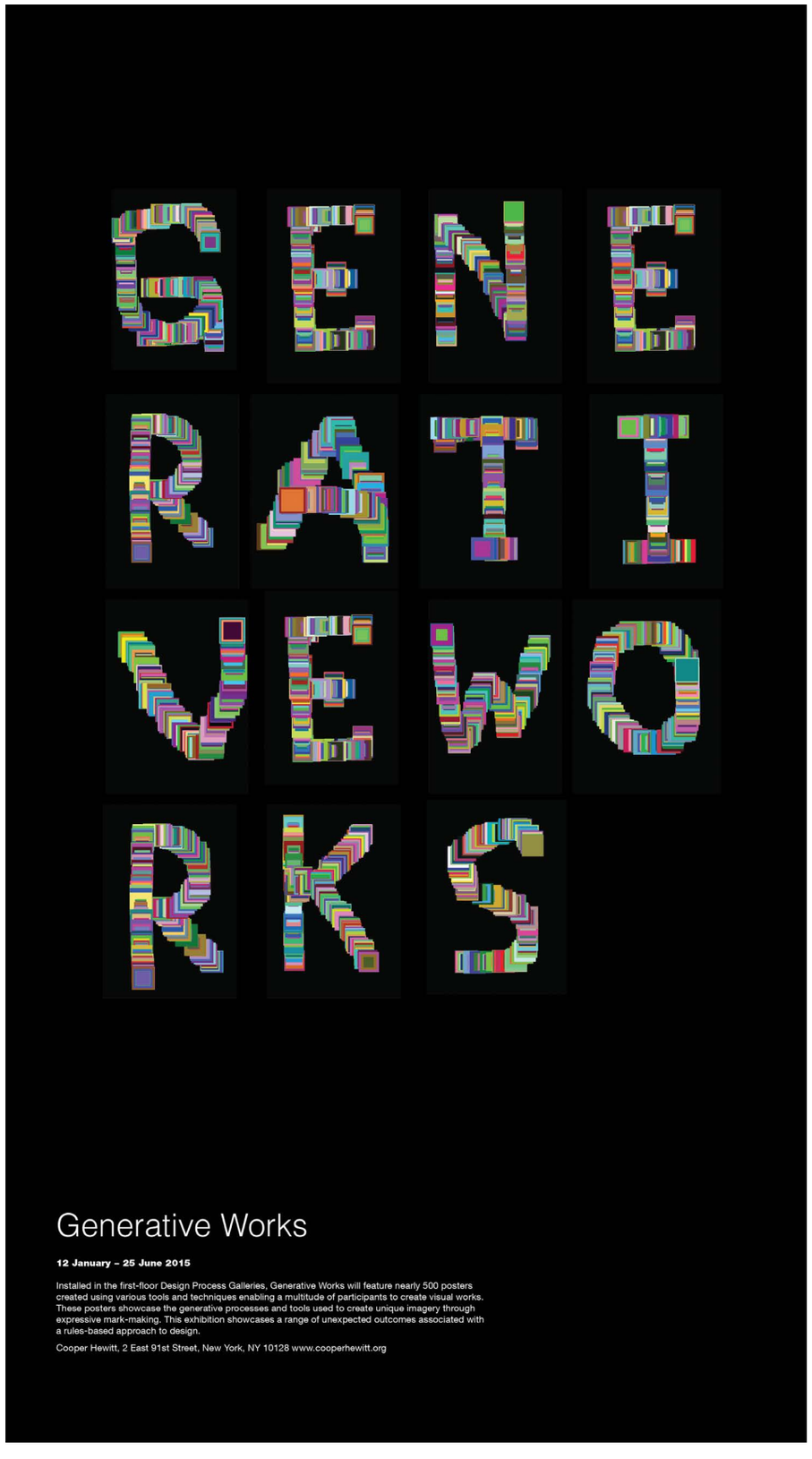
programming into the creative process falls outside many students' comfort zones and challenges their conventional ideas about "graphic design." Concluding the project with a poster composition returns the students to something familiar and comfortable, but incorporates visual content they "choreographed" as the main focal point. Students quickly embraced the idea of working with a Processing "sketch," which allowed them to get messy in as they experimented with code. One student used sound as a the primary mark-making device, creating a visual mixer in Quartz Composer that recorded people saying their names. Each person's name has a unique visual output based upon the volume and dynamics of his or her voice. After completing this assignment, several students have requested that a creative programming elective course be added to the curriculum.

Figure 25 - 29: "Etch" is an "Etch A Sketch" inspired drawing tool made from Legos. The contraption holds a stylus that, through a series of cranks and tracks, enables the user to "draw" on a tablet running a Processing app. Participants using the tool were asked to make a letter in the alphabet. (Elijah Childs)





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Generative Works
12 January – 25 June 2015
Installed in the first-floor Design Process Galleries, Generative Works will feature nearly 500 posters created using various tools and techniques enabling a multitude of participants to create visual works. These posters showcase the generative processes and tools used to create unique imagery through expressive mark-making. This exhibition showcases a range of unexpected outcomes associated with a rules-based approach to design.
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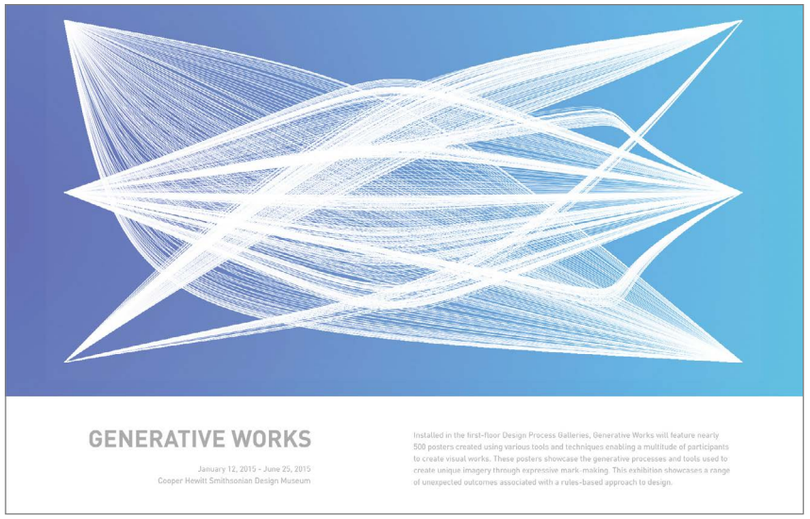
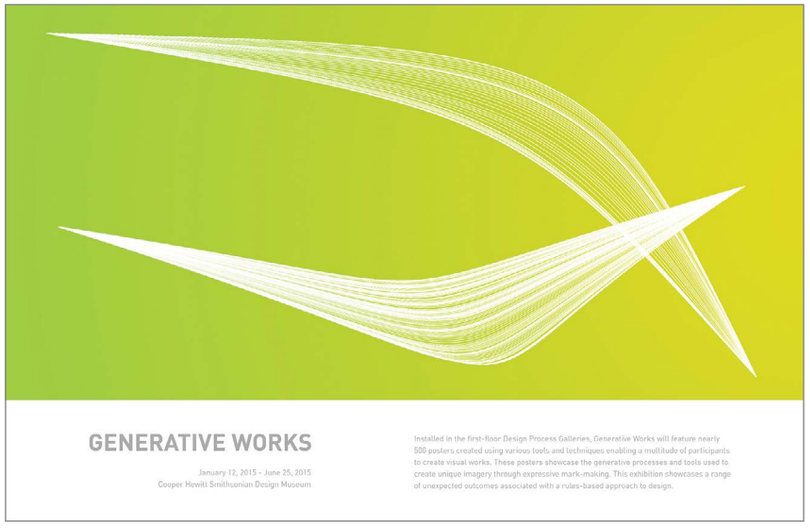
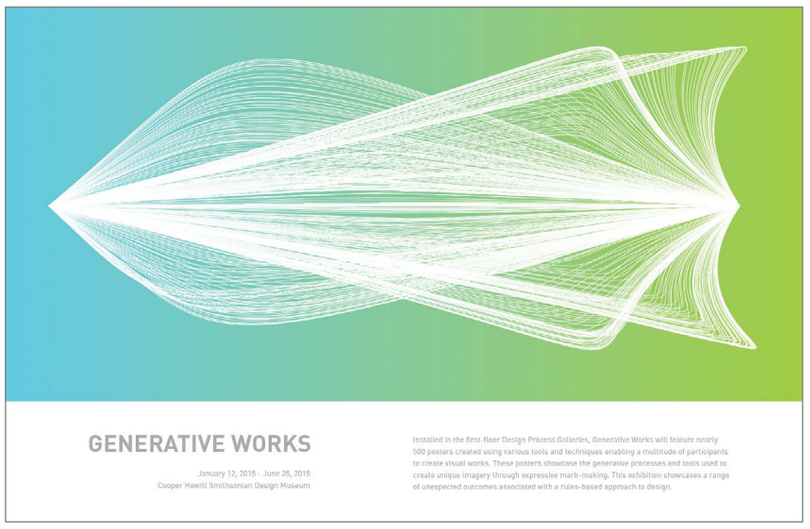
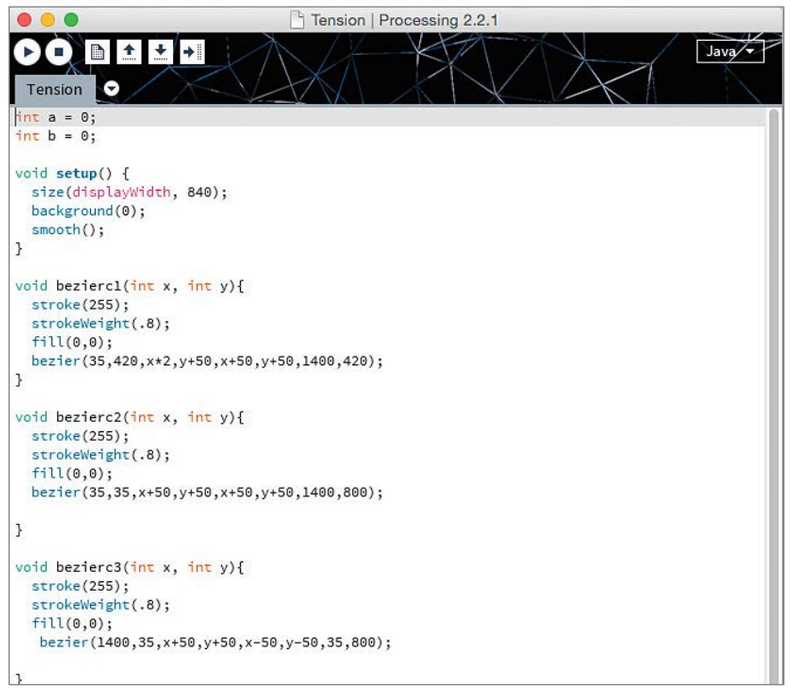
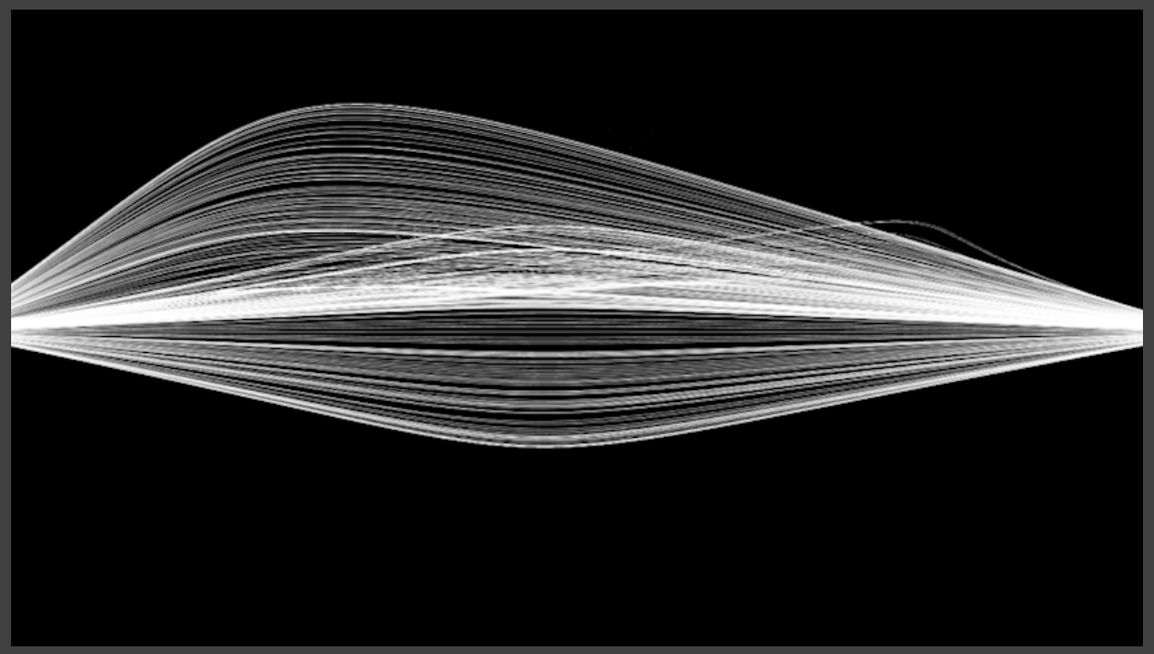
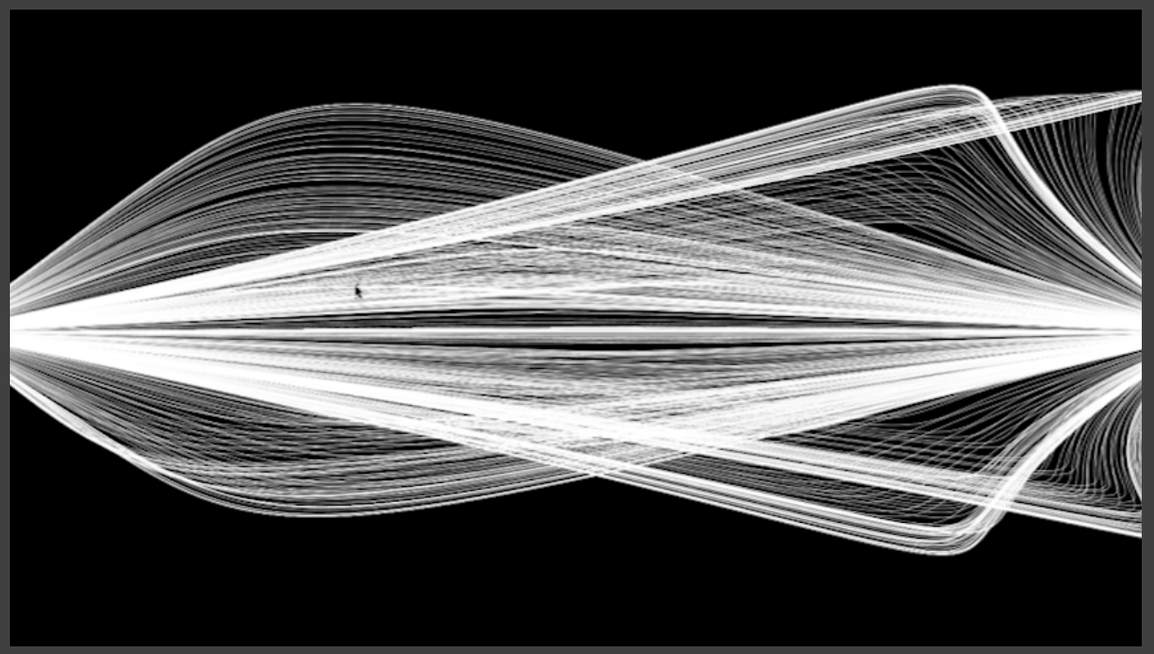
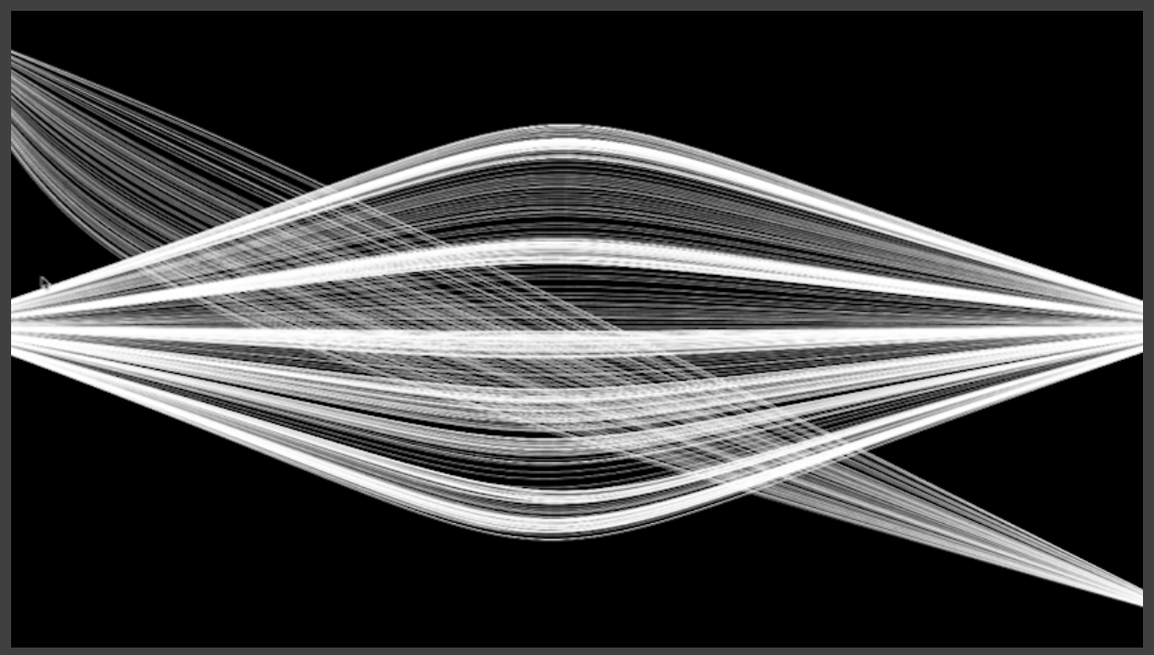
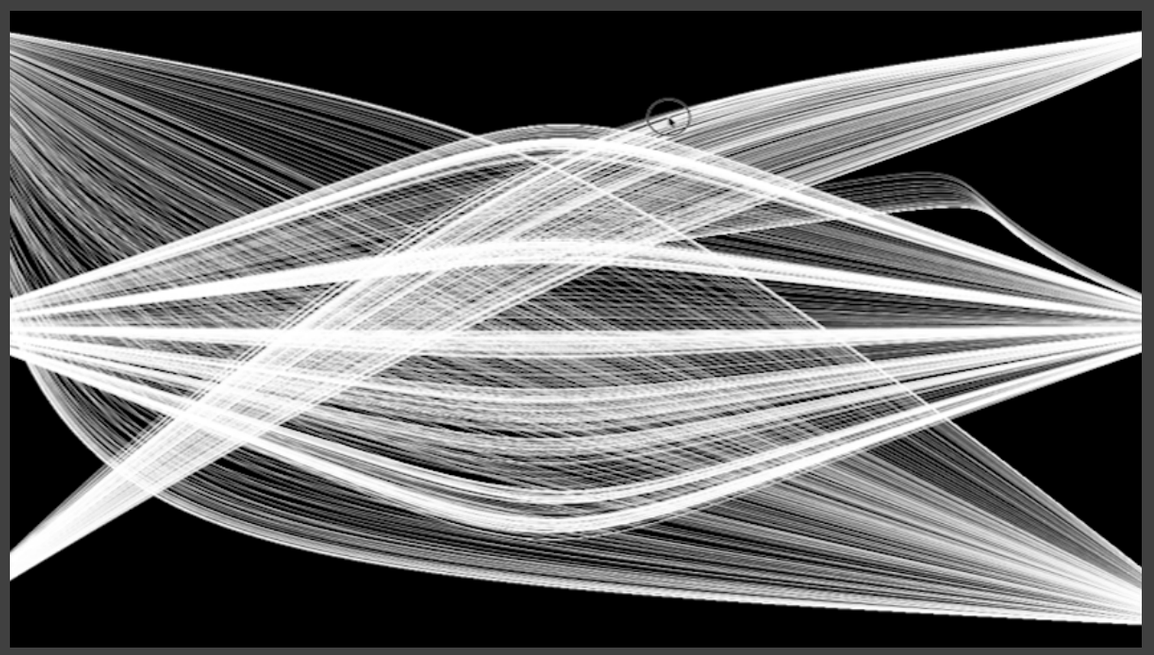




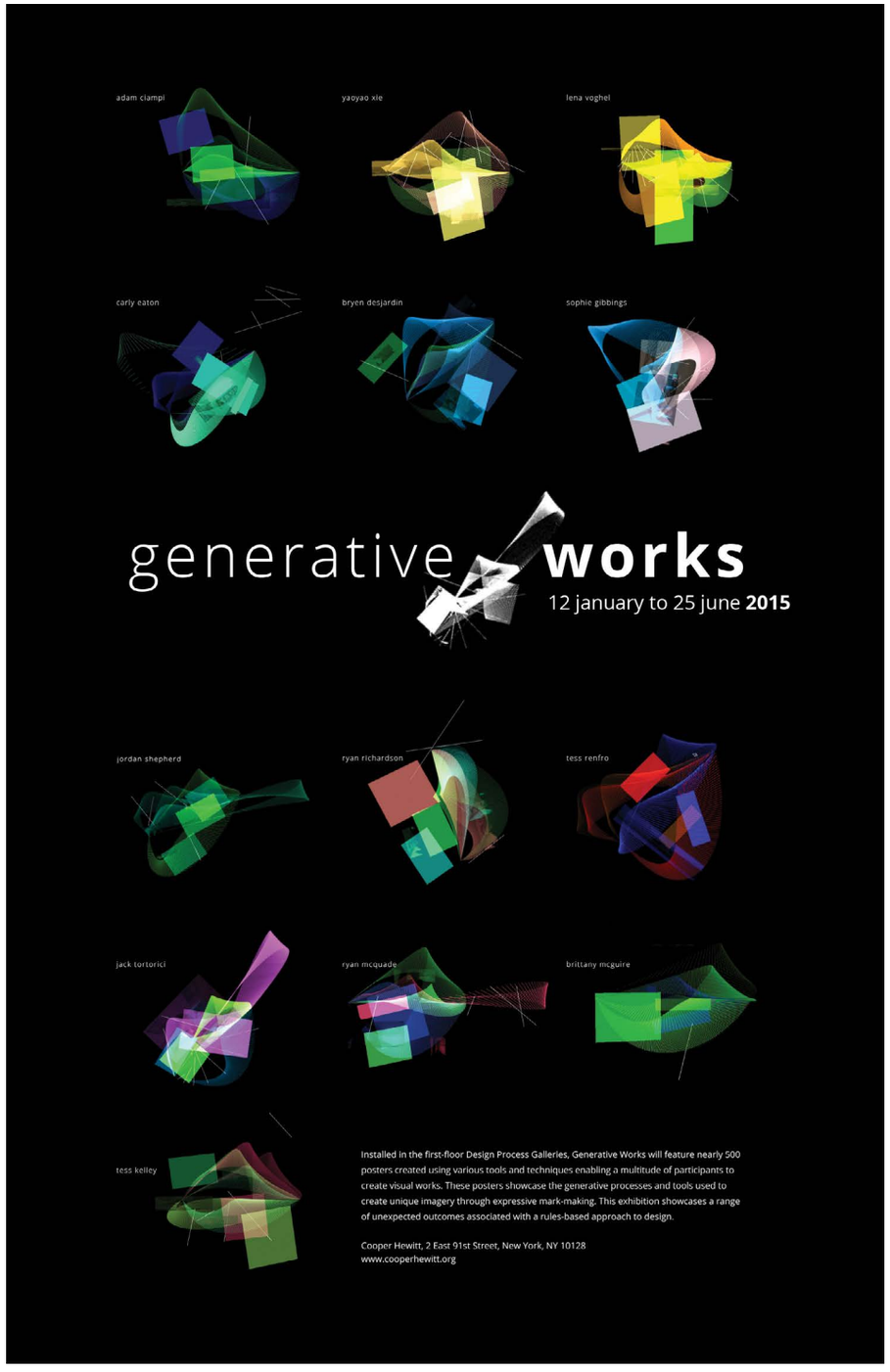


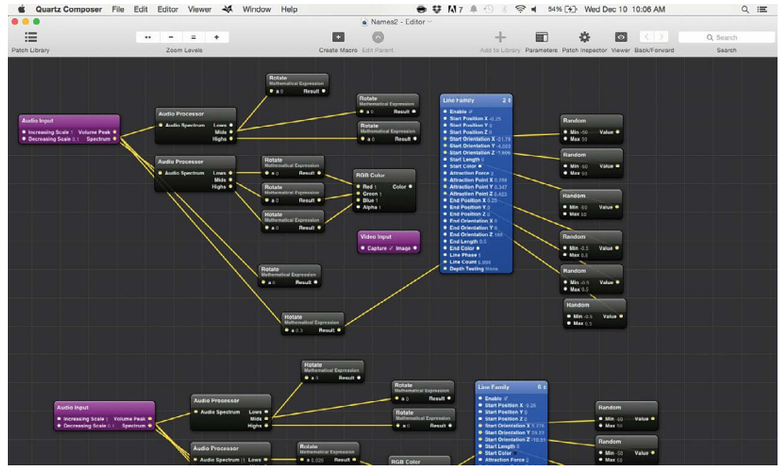
Figures 30 - 34: A processing app enables users to draw using several Béziers, each with unique variables. The poster series showcase the Bezier drawings created by the user. The background color blend seamlessly carries through all three posters when hung together. (Angela McKenzie)

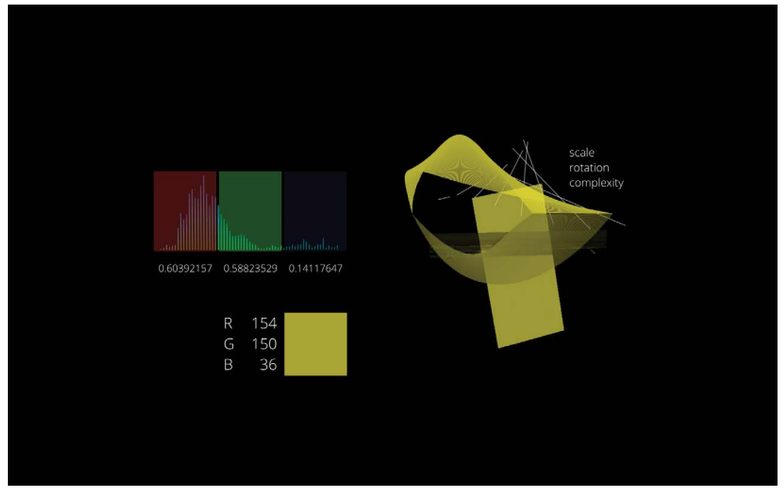


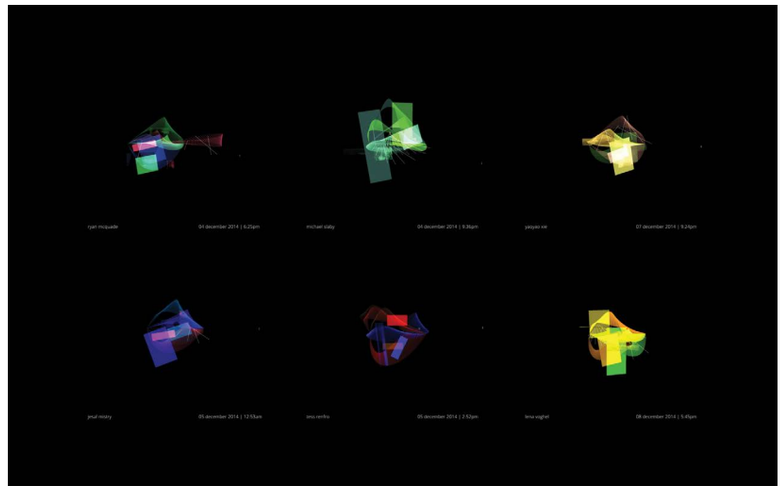





Visuals from presentation *Activating Space: Using Physical And Digital Prototyping To Teach Principles Of Motion And Interactivity*

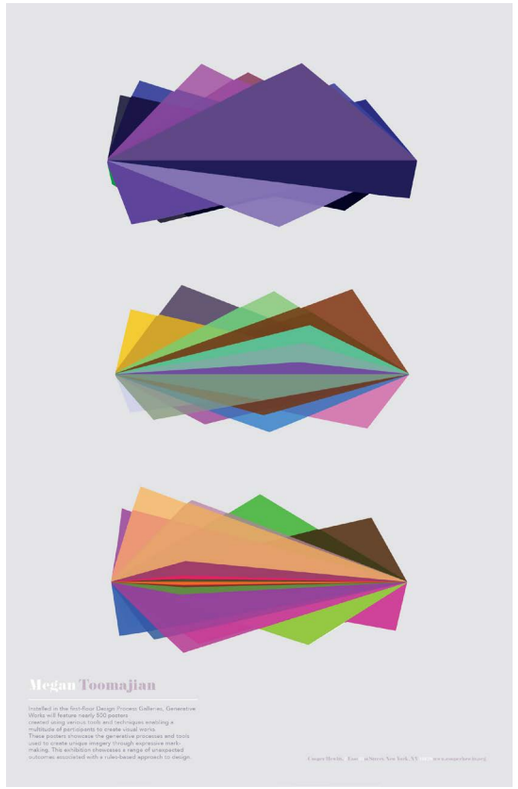


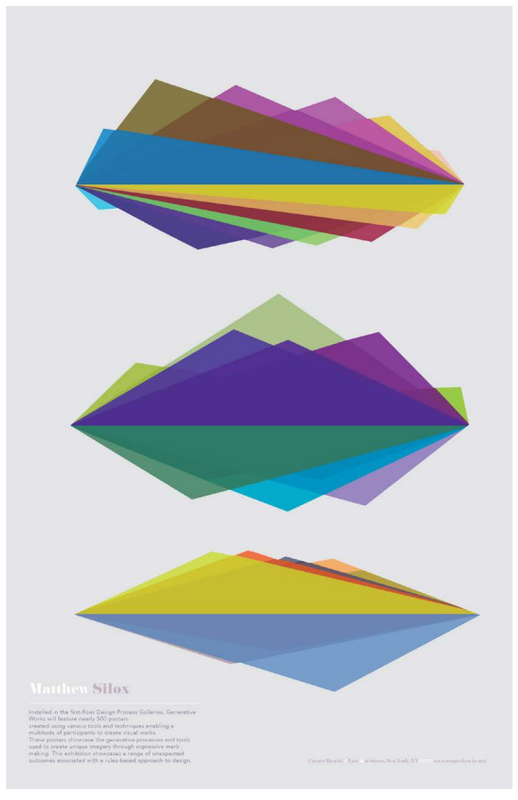




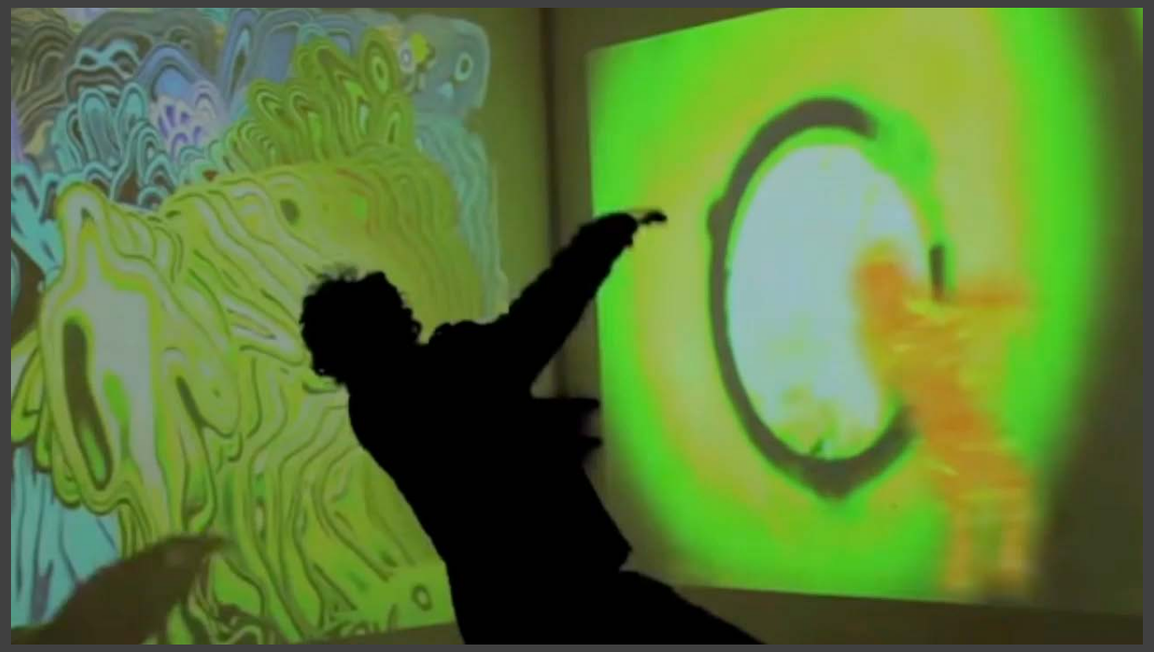


Figures 35 - 38: A visual mixer was created in Quartz Composer. When a participant speaks her name, the app visualizes the volume and dynamics of her voice. The poster features the unique visualization of each person's spoken name. (Ryan McQuade)





Figures 39 – 41: Poster series featuring works created in a Processing sketch that uses the “random” function to generate triangles and specific color values based on the mouse position. (Matt Fahs)



Visuals from presentation *Activating Space: Using Physical And Digital Prototyping To Teach Principles Of Motion And Interactivity*

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Additional Supporting Media

https://vimeo.com/channels/mode2015

Heather Shaw is an Assistant Professor of Graphic Design at Curry College. Prior to teaching at Curry, she was a full-time lecturer at the University of Massachusetts Dartmouth for both the Design and Digital Media departments. Heather is also a visiting graduate advisor at the Dynamic Media Institute at the Massachusetts College of Art and Design. She has lectured nationally and internationally on the integration of dynamic media with traditional graphic design pedagogy.

Recently, she taught a five-day workshop sponsored by the Higher Education Press (HEP) in Beijing for Chinese design educators. The workshop pulled content from her curriculum published in the book: Methodology, Teaching of Visual Arts and Design in the U.S.A. by Yanyan Sun at Tsinghua University. Additionally, her typography curriculum for motion and web-based technologies is featured in the third edition of Type Rules! by Ilene Strizver.

Her lecture: “enCODE / deCODE: What Die Neue Typographie (from 1928) can teach us about web design standards today” was presented at the Imagine IT: Design for All conference at the Accademia di Belle Arti in Bologna, Italy; and additionally at TypeCon: Rhythm in Atlanta, GA.

She co-chaired the National AIGA Design Education Conference: Massaging Media 2: Graphic Design Education in the Age of Dynamic Media in Boston. Her curriculum: “Understanding Visual Narratives” is published in Teaching Motion Design: Course Offerings and Class Projects from the Leading Undergraduate and Graduate Programs edited by Steven Heller and Michael Dooley.

Heather earned her MFA from the Dynamic Media Institute at the Massachusetts College of Art and Design, and BFA in Visual Design from the University of Massachusetts Dartmouth. Her professional experience spans print, motion and interactive media; and clients include MIT, Brandeis University, Perkins School for the Blind, and the Isabella Stewart Gardner Museum.

ACADEMIC FULL PAPER

Investigating User Experiences through Animation-based Sketching

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Associate Professor, Aalborg University, Denmark

Abstract: This paper discusses the use of animation-based sketching as an approach to explore diegetic designs in the fuzzy front-end ideation of the design process. We present the results from a design workshop with more than 200 participating design students, and 16 companies. The participants used motion graphics and animation to sketch design ideas into diegetic design solutions. Through a deep-dive into two cases studies we discuss how animation-based sketching techniques supported the investigation of user experience aspects in design scenarios, and whether the expression is dependent on the visual fidelity or on how animation is applied to support a design narrative anchoring to the context.

Keywords: Sketching, Design, Animation, Diegetic Prototypes.

Introduction & Previous Work

This paper details the use of animated motion graphics as externalisations in design processes. Externalisations has for centuries been a key competence for designers regardless of the subject matter being designed (te Duits 2003). Externalised representations fulfill various functions throughout the design process. They can serve as aids for a thorough analysis, help generate and evaluate ideas for solutions, and function as a distributed cognition between peers (Arnheim 1969). The ability to externalise thoughts in order to create a more operational image of an idea echoes the praxis-based epistemology from Schön (1983) in which externalisations enable us to engage in reflexive conversations with the situation. Traditionally externalisations have been done through various forms of sketching or prototypes - sketching being concerned with reducing the uncertainty of 'the right design' and prototypes dealing with reducing the complexity of how 'to get the design right'.

In this paper we focus on the development and investigation of new ideas through sketching. Traditional sketching approaches in 2D (e.g. paper) and 3D (e.g. mock-ups) are suitable for investigating spatial concepts, but often lack the expressive capacity of illustrating how an idea manifest its temporal perspectives or in interactions with other actors or artifacts. Thus, 4-dimensional forms of expression like video have also been explored as sketching mediums. Video has been experimented with as a sketching medium to a degree of representation where they replace the need for functional prototypes early on in the design process (Ylirisku & Buur 2007). According to Pasman (2012) video, with its ability to capture the richness of life as it unfolds, is a feasible medium to register the world as it is now and visualise the world as it could be. The medium's ability to showcase experiences through time and in context is pointed out by Raijmakers (2009) "film is definitely the most powerful tool to an emotional understanding of the user". Empathy for the user is a central objective for any user-centered design process, and here video can meaningfully be perceived as intermediate artefacts during design, and as means of persuasion and engage people in the design process (Veland & Andresen, 2007). Finally video can be applied as a change agent, functioning "...as persuasion to present complex ideas in a concentrated and exciting way for influencing research directions and decisions," (Chow 1989).

Despite its advantages, video as a sketching medium is by default limited to capturing the world of what is, and is only able to illustrate the world as it might be when the scenario is representation through existing artifacts. Though methods exist to improvise artifacts and services through e.g. props (Brandt 2007) or the body (Oulasvirta et al 2003) the ability

to simulate new technologies or contexts are still somewhat limited due to limited simulative ability of the video medium by itself - thus limiting it's sketching capacities.

An interest has been aimed at animation and motion graphics as sketching approaches to augment the temporal and simulative perspectives of sketching traditional video. These approaches all leverage the qualities of animation, described by Stephenson (1973) as how animation contrary to classic film is able to give 'full control' of the transitional material of which the animation, and thereby also potential sketch, consist of. Löwgren (2004) proposed to use motion graphic elements to create animated use cases to gather feedback, and to explore the fuzzy front end of design ideas. Similar are three workshop accounts in Fallman et al (2012), Fallman & Moussette (2011) and Bonanni & Ishii (2009) in which stop motion animation is applied to early explorations of interaction design and architectural processes.

A second perspective focuses on augmenting traditional video sketching with animated motion graphics effects (Mackay 1988, Vertelney 1989, Bardram et al 2002, Tikkanen & Cabrera 2008). This is the most common approach of sketching studies to include animation as part of the sketching vocabulary, even though the animation techniques themselves are not examined in detail.

A third area of interest focusing on the enabling technologies of animation has been taken by Fernández & Martens (2013), Davis et al (2008) and Sohn & Choy (2010). Here the goal is not to explore a specific animation technique, but to develop tools to lower the participatory threshold of making animations for design sketching.

How does animation support simulating user experiences?

Even though earlier contributions has shown the potential in using animation for sketching purposes in design, a clear argument about when and how animation techniques are suitable as tools for sketching is still missing. While the previous body of knowledge is an inspiring point of venture, we argue that it is of value to compare how different means of animation and motion graphic elements can be appropriated for design sketching. In doing so, a more clear understanding of the potential and limitation of animation as a sketching approach might be development, in contrast to existing discourse which mainly provides assessments of a single technique in a single case. We hypothesise that the sequential and simulative quality of animations enables the designers create a more clear representation of the scenario in which a given design proposal might work, and thus foster a better foundation for reflecting upon the qualities of the idea. We assess the quality of such representations by evaluating how clear a sketch represents aspects of the potential user experience (UX) of a design idea.

In this study, we focus on the use of animation-based sketching as a tool in the fuzzy front end (Khurana & Rosenthal 1997). In this phase the 'right design' (Buxton 2010) has yet to be established, and the aim is to explore many alternative future solutions and evaluate potential UX. It is not our aim to diminish the importance and relevance of traditional pen and paper sketching, but rather to add to the discussion about how animation and motion graphics may be used to sketch representations of the simulative and temporal aspects of a design idea. In doing so, we focus our research on the sketches as design outcome, and not on the designers sketching process.

Research approach

Empirical observations were conducted in 2014 during a three-week workshop called U-CrAc; the abbreviation of 'User Driven Creative Academy' (Poulsen & Rosenstand 2009). The workshops contain four phases; research, analysis, synthesis and realisation. The research phase concerned unfolding the given case by exploring its dimensions in its context and collecting relevant ethnographic data on video. The analysis phase was directed towards translating the collected video data into information and knowledge by applying the Video Card Game (Ylirisku & Buur 2007), object theatre (Strand 2014) and through creating design fiction scenarios (Sterling 2009). Based on these insights early

concepts were generated through video sketches before the final phase, realisation, where a final concept was formed and presented through animation-based video sketches.

The aim of the workshop was to create a multitude of design scenarios about possible futures for the companies, and help the companies understand their users, and the potential of UX. In doing so, the participants were instructed to use various animation techniques to sketch out their ideas, representing their designs as diegetic elements in a short video scenario. The diegetic element draws inspiration from Kirby's (2010) analysis of the use of 'diegetic prototypes' in films and narratives to showcase the potential of new technologies. "Diegetic" is from film and theatre studies (Elam 1980). A movie has a story, but it also has all the inherent scene-setting, props, sets and gizmos to support that story, which are called diegetic elements. Diegetic elements in design differ from speculative sci-fi which uses cinema effects to seem plausible, but which ontological rules differ from our reality. The diegetic designs exist to illustrate that a given design could exist in the real world, and has a rhetoric aimed at getting traction - both culturally in the imagination of potential users, and strategically in the plans of business stakeholders.

We examined how these diegetic design elements could be designed through different motion graphic elements and animation techniques, ranging from simple animatics to higher fidelity special effects videos. The evaluative criteria for the assessment of the sketches were based on the notion of how a 'product' can be broadly understood as the combination of three factors: the aesthetic (desirability), the usefulness (utility), and it's user friendliness (usability) (Buchanan 2001). Since the UX of a product is also highly dependent on the use context (Hassensahl & Tractinsky 2006) we choose to also add the contextual integration and representation of the users touch points to the evaluative criteria for the sketches.

To record the sketches we used a participant-generated web-platform (www.urac.dk) as a modified type of technology probe (Hutchinson et al 2003) to gather the participants' sketches at different stages of the workshop.

This resulted in 158 animation-based sketches in total, divided throughout multiple rough process sketches, and one final polished sketch for each group (Web 1).

Thus, a categorisation was made consisting of the UX factors on the one side and the applied animation and motion graphics techniques on the other (Web 1). From a first comparison of the produced sketches we identified that no clear link could be seen between the choice of animation technique, and the resulting expression of the UX of the diegetic design elements. Rather it was evident that the assertion should be based on how a given animation technique was used to express one or more aspects of the UX in the design scenario - investigating the design through the use of some sort of narrative. We were able to identify that the sketches which successfully explored multiple aspects of the UX criteria often used many different animation techniques, and not just techniques with a high visual fidelity. From illustrating an entire scenario in simple stop motion sketches, to using motion graphic overlays on top of video sketches each sketch featured different ways the techniques could be used for sketching design ideas.

In the next section we will further detail how the techniques enabled the creation of diegetic design elements, by detailing two of the cases from the workshop in a qualitative comparison. This deep dive in two of the 36 cases helps to illustrate the observed difference in applied techniques, and helps us narrow down the decisive factors of how animation supported the expression of the UX criteria, through simulating diegetic design elements in context.

Two cases featuring animation-based sketching of the user experience

The two chosen cases from the workshop included a total of 10 sketches, which depicted the process from early ideation sketches to a more refined conceptual sketches. We describe two of these sketches in accordance to which animation techniques they use, and how the chosen technique support the expression of UX in the depicted design scenario.

Case 1: "Wayfinding in the hospitals of the future"

The group collaborated with the Danish wayfinding company 'AskCody' (Case 1, web) in exploring how the hospitals of the near future could reduce wait time, and help their patients navigate their treatment process. A total of five animation-based sketches were generated by the group. The first three sketches used very simple stop motion animation of rough drawings (figure 1) to ideate different patient service ideas in small use case scenarios.

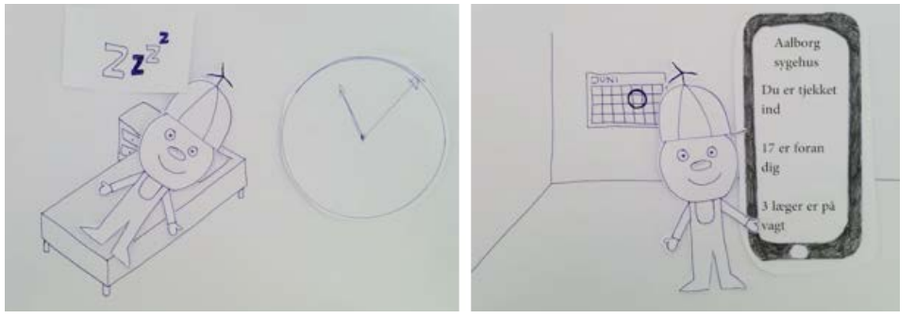


Figure 1: The rough stop motion animation of the user journey in the proposed scenario

In the fourth sketch stop motion was also applied, but zoomed in to animate the interaction design of the interface of a mobile app interface to control the different service options from the scenarios (figure 2).

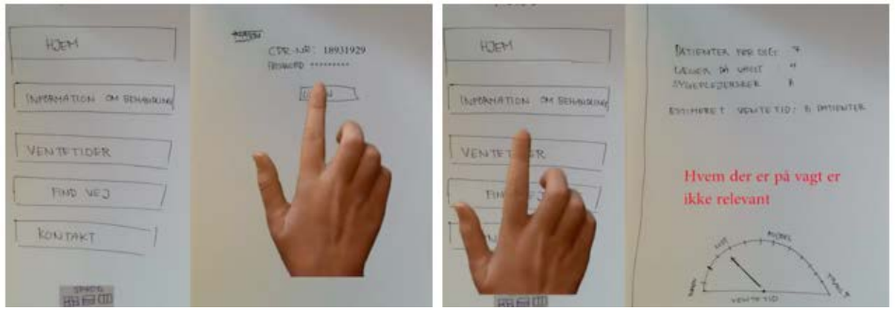


Figure 2: Sketches of the app interface augmented through stop motion animation

Finally, the fifth sketch used the ideas and interfaces from the first four sketches and integrates them into video sketch with the animated motion graphics in layers on top of the actor's reenactment of the scenario (figure 3).

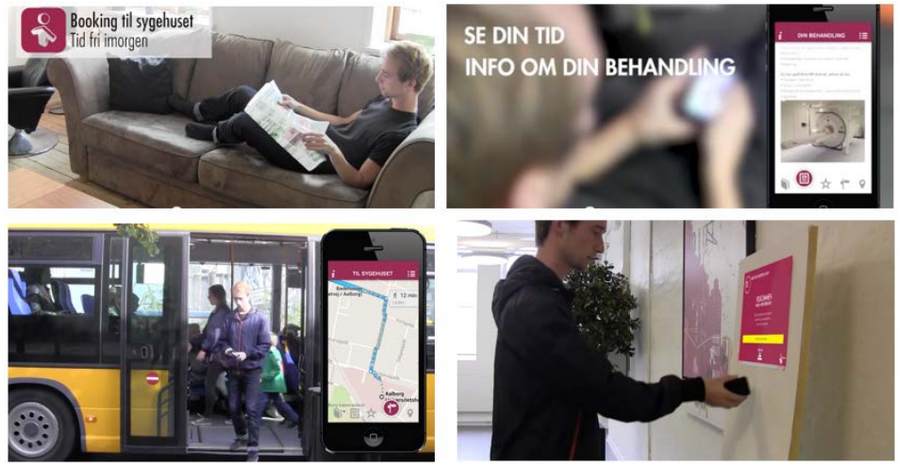
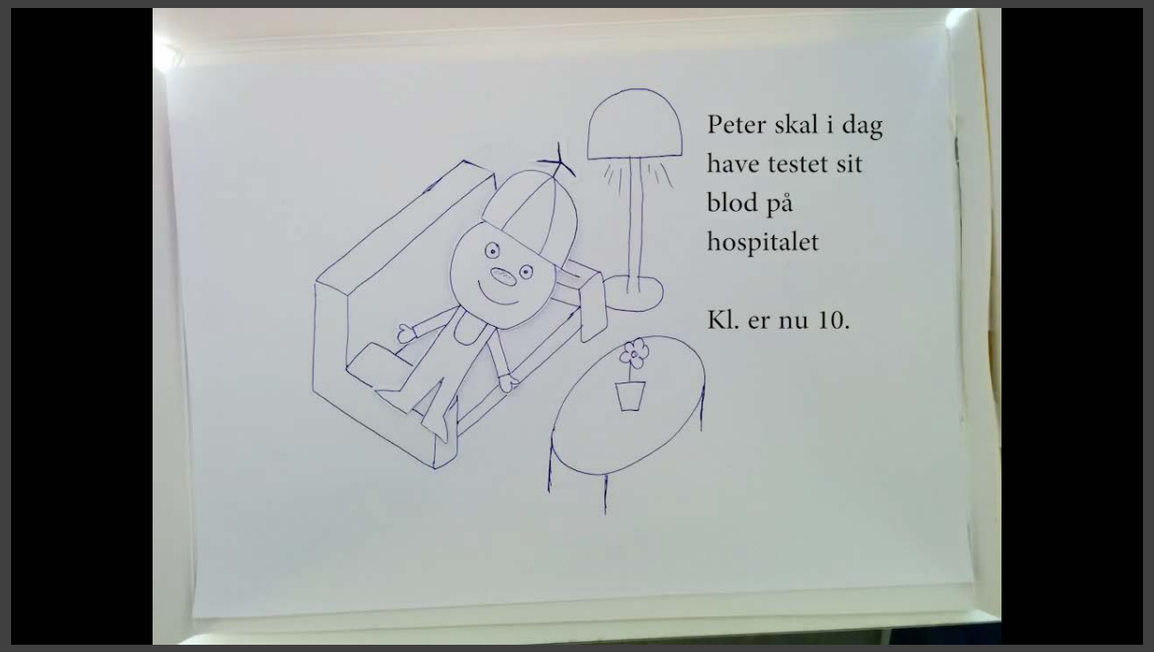
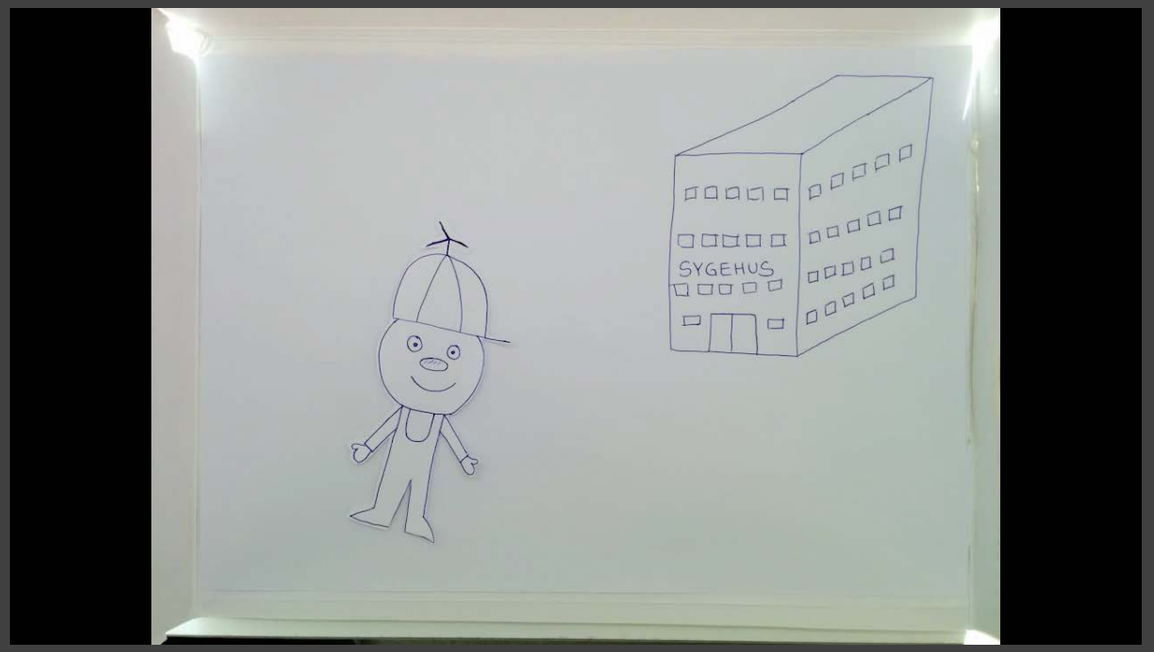


Figure 3: Stills from the final video scenario where animated motion graphics elements were applied on top of the video to illustrate service touch points, interactions, and interfaces in the final concept.

What is interesting is how the five sketches express different aspects of the UX. The first three sketches rely mainly on illustrating the idea as a user journey and uses the stop motion animation to tell the story of the user in a simplified context which mainly acts as a scene to illustrate the utility dimension of the UX. The fourth sketch uses the same animation techniques, but disregards the user journeys context in favour for detailing the usability dimension in detail through the first interface ideas. The final sketch builds upon the insights generated through the other videos and iterates upon them in a more clear user story, with focus on both the utility of the service, the usability and aesthetics of the touch points, and how the multiple touchpoints are tied together through the concept. The visual finish in the motion graphics elements paired with the real video footage certainly add to a higher fidelity feel of the sketch. This led us to ask whether the finalised concept's expression of the UX was so clear due to the fidelity of the animations and graphics, or if it was rather how seamlessly





Visuals from presentation Investigating User Experiences through Animation-based Sketching

these elements were fitted into the narrative of the use case? The next case (Case 2, web) helps to bring clarity to the fidelity vs. narrative integration issue mention above.

Case 2: "The city of Lønstrup - a city on the edge"

In this case we saw sort of a reverse process compared to the AskCody case. The group collaborated with the municipality of Hjørring to create new digitally supported services for the area around the city of Lønstrup. A total of five animation-based sketches were produced to explore different service ideas. However, in contrast to the previous case the first two sketches used higher fidelity renderings of the motion graphic elements than the ones following after. The first sketch used interface and video elements in an animatic sequence, whereas the second elaborated on the interaction with the digital service in a keyframe animated sequence with rather high fidelity graphical elements (figure 4). The later two sketches took a step back and used LEGO and hand drawn props respectively in a stop motion sequence of the user scenario (figure 4).

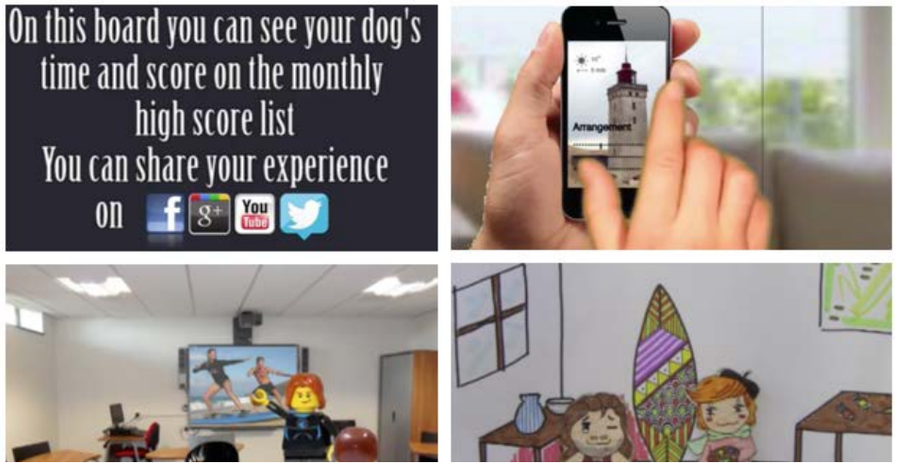
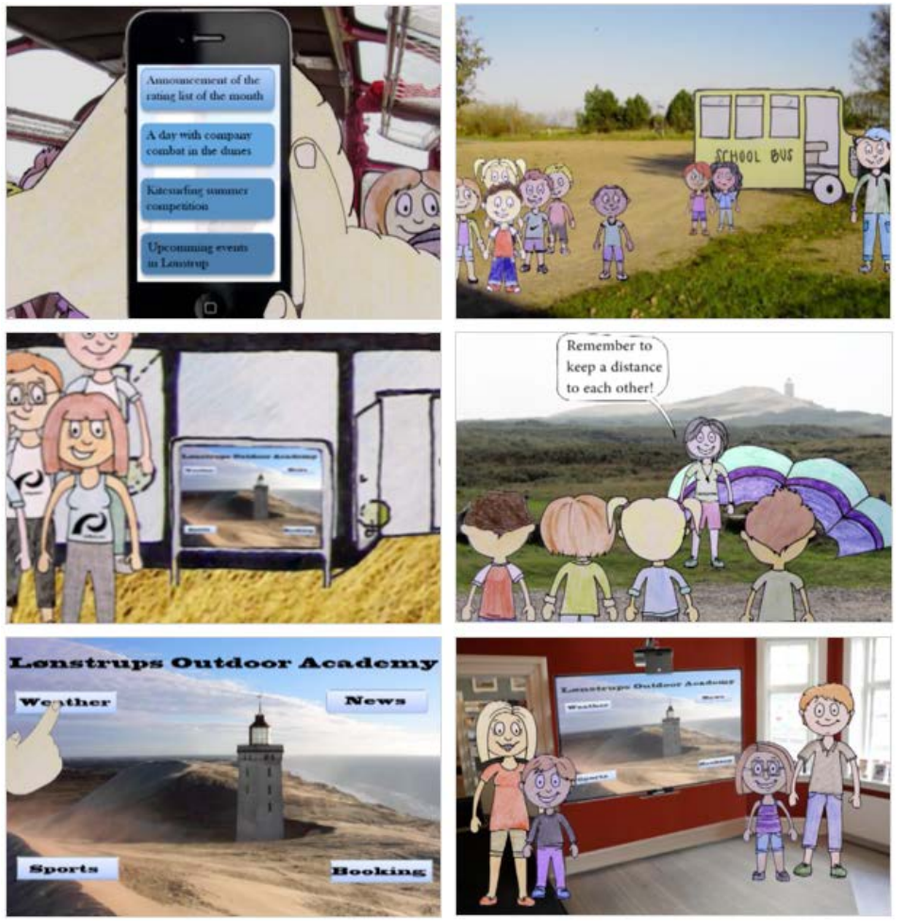


Figure 4: Stills from the four initial sketches. Animatic still image of the interface (top left). Keyframe animated motion graphics of interaction with the interface (top right). Stop motion animation scenario with LEGO's (bottom left). Stop motion animation with hand drawn elements (bottom right)

The emphasis in the first two sketches was centered more around the diegetic designed artifacts than the later two stop motion sketches which changed the focus to the sequentiality of the service. Thus, different aspects of the UX is emphasized in the different concept sketches - from a focus on utility, usability and rough aesthetics in the first two, to a more constrained focus on utility shown in a clear context with aesthetics altered to match the hand-drawn rendering in the latter. The interesting aspect was that the lower fidelity technique of hand-drawn stop motion elements ended up being chosen as the visual format for merging different aspects of the four initial sketches together into the finished iteration of the concept (figure 5).

Figure 5: Stills from the final concept sketch of the user scenario, which primarily uses hand drawn stop motion elements combined with a few animated motion graphics.



The visual fidelity of the final animation-based sketch is clearly lower than the final sketch in the AskCody case. Despite this, the Lønstrup sketch still manages to address more or less all UX aspects of our evaluative criteria. The sketch shows a clear representation of the usability of the interaction with the diegetic design elements (a mobile app, the rental service, and the digital kiosks at each tourist facility), and further investigates a scenario in which the diegetic elements provide utility for the users. The aesthetics are elaborated to a degree where it is fairly easy to perceive the relation and relevance to the context and users - even though the fidelity is evidently not the final look and feel. The context is easy recognizable as well, through using still footage from Lønstrup as backdrop for the hand-drawn animations. In this way, the UX in the fifth sketch is expressed at a comparable high level to the more realistic animations and motion graphics in the AskCody sketch. In the next section we will discuss this revealed tension between visual fidelity and the ability to illustrate the UX.

Discussion: visual fidelity vs. telling a story about the user experience

In our evaluative criteria for the sketches produced in the U-CrAc workshop we regarded the expression of UX as a synthesis of usability, utility, aesthetics and context. A sketch investigating what is useful takes us to the question of which functions and features the concept consist of, and how they help solve a problem or create positive feedback from the user. Usability addresses the fact that functionality is not enough, it has to fit into the users abilities and motives at the right time. The fit between user and product is however ultimately shaped by the aesthetic dimension of how the concept helps the user identify one self with values and intentions behind the product. In the use context the three issues come together in the investigation of the complex lived experience through time and space - together forming the user experience.

In the two presented cases we have seen quite different ways of investigating these four UX criteria. The AskCody case iterated from low fidelity animations investigating only a few UX factors in each sketch before combining the insights into a video sketch using animated motion graphic with high visual fidelity. The Lønstrup City case took a different approach by starting a higher visual fidelity than the final concept sketch, which used primarily hand drawn stop motion graphics. Thus, no clear connection between the visual fidelity of the chosen animation technique, motion graphic elements, or other visual effects can be made. In terms of expressing aspects of the UX, the hand drawn stop motion showed to be equally effective at conveying the idea compared to the visual richer and more 'real' expression of video augmented with animated motion graphics.

The main difference is evident in the way the two cases address the aesthetic aspect of the UX. Both cases clearly investigate the utility, and usability of the final concept sketches, and also places them in a clear representation of the use context. On the aesthetic front however, the two cases differs greatly in both 'finish' and in how clear the visual vocabulary of the users identification with the product is portrayed. The final AskCody sketch leaves no doubt about the choices, while the Lønstrup sketch leaves holes to fill by the viewer. This echoes traditional sketching guidelines about leaving room for re-interpreting the sketch in a reflective feedback-loop (Buxton 2010), and also feeds into a discussion of how much information we are able to 'fill in' by our selves when seeing something represented - whether or not it is represented in high fidelity. In this sense, the AskCody sketch might show a visual fidelity, which is too high for reflecting upon the intended aspects of the idea because it almost looks too real to qualify as being a design sketch - the focus is not about the overall structure of the idea, but more about the finer details which are more concerned with iterative prototyping.

Instead of a full investigation of the aesthetics alongside the other UX factors as being the explanation for what still makes both cases work, we might turn to the narrative of the scenario. When considering the narrative aspect we see that the higher fidelity in the AskCody sketch helps integrate the elements into a clearly understood narrative, and enable reflections upon the use-case of the concept. Thus, by it's integration in a narrative the reflective quality of a sketch

is preserved by moving focus from the product in itself into it being a diegetic element in a broader scenario. The same goes for the stop motion sketch in the Lønstrup case, where the unfinished aesthetic support the perception of the video as focused on telling an animated story, starring both users and the diegetic touch points of the new digital service.

By comparing the sketches in the two cases we might now reframe the discussion. Instead of focusing on how animation and motion graphic elements can express the UX aspects as much as possible, we should discuss how the techniques help express an appropriate amount of UX aspects to enable reflection, and more importantly, integrate them into a narrative. The anchoring in a narrative points towards a broader issue of using sequential mediums like video and animation to express ideas, but also shows why the illustration of the context showed to be just as an important aspect to illustrate as the more product-oriented aspects of utility, usability, and aesthetics.

Because of this, the aforementioned comparison between the aesthetics of the two sketches makes sense. As long as the aesthetic UX dimension is used to support the connection to a narrative it becomes a strength, but when aesthetics alone are represented to create a high visual fidelity of the diegetic products appearance, without supporting the narratives anchoring to the context, it may become a limiting factor for reflections upon the sketched use case for the product.

Finally, the examples from the two sketches show traces of a larger trend in the totality of our categorized sketches from the workshop (appendix 1). The sketches, which successfully convey the potential UX of the proposed concept, also has a clear representation of context, and is set in clearly articulated narrative. As we have seen in the comparison of the two cases, there are a variety of ways this contextual and narrative anchoring might be achieved. In this regard, the common dominator seems to be way the application of animation and motion graphic elements augment the simulation of the diegetic design elements of the scenario. Whether animation is used to express other aspects such as characters and effects, or are used to portray more realistic renderings on top of traditional video the result is the same: The sketch makes a more or less clear representation of the proposed UX when the animation techniques are used to connect the simulated diegetic elements to the context, and integrate them into the narrative of the use case. Furthermore, it is important to note, that the use of animation to express an idea does not merit anything about whether the UX is good or bad, but expresses the proposal in a manner for the quality of the UX to be evaluated by the stakeholders.

Thus, the results from the comparison, and the categorization as a whole, indicates that a broad range of animation techniques can support the evaluation of the potential user experience of diegetic designs in video sketches. However, as we have argued the principal strength of animation as a sketching tool is the ability to simulate not yet existing designs in a sequential and narrative contextual setting.

Conclusion

In this paper we have presented a review of the current research into using animation and motion graphics as tools for design sketching. We contributed to the existing knowledge in this domain by experimenting with the relationship between animation techniques and their ability to investigate user experience aspects in diegetic design concepts. From our initial categorization of the sketches in the U-CrAc workshop we saw that no clear link could be made between the visual fidelity of the chosen animation technique, and their ability to illustrate the user experience. Instead, by detailing two very different cases from the workshop, we saw that the core quality is how the use of animation and motion graphics enable the designers to simulate a scenario with diegetic design elements which does not yet exist, and use a narrative to anchor them to the use context. In this way the full potential of animation and motion graphics in design sketching is not only in its ability to investigate a product in itself, but rather to support the creation of an easy perceived narrative in which the proposed design stars as a main component. This realization points toward further studies into the narrative structures of the animation-based sketches to investigate whether a set of narrative mechanics can

be identified as being especially suitable to be represented through animation based sketching. Finally, our contribution is to argue that the scope of animation-based sketching needs to be broadened. From a focus on assessing whether high vs. low visual fidelity is appropriate, to how the different fidelities support the evaluation of the potential user experiences to come within a certain use context - supported by animations ability to portray sequential narratives.

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Art of the Title

Lola Landekic and Wil Perkins of Art of the Title

Lola Landekic is Managing Editor at Art of the Title, where she has overseen the site's expansion and redesign, and tackled large retrospective features on the work of title designers Pablo Ferro and Richard Greenberg, as well as articles on the titles of Mad Men, Moonrise Kingdom, The Sopranos, and many more. Lola is also the graphic designer for OCAD University and a freelance illustrator. She has an undergraduate degree in English literature from the University of Toronto and a master's degree in design from NSCAD. She has been an in-house graphic designer with news organizations and publishers, and her illustrations regularly appear in newspapers and magazines, and on book covers. She is based in Toronto, Ontario.

Will Perkins is Senior Editor at Art of the Title, where he has helmed some of the site's biggest features such as True Detective, Iron Man 3, Captain America: The Winter Soldier, and Game of Thrones, as well as much of the site's video game coverage such as features on Deus Ex: Human Revolution, Alien: Isolation, and The Last Of Us. Will is a freelance film and game journalist and public relations professional based in Toronto, Ontario. He studied Political Science and Cinema Studies at the University of Toronto and has contributed to such outlets as Yahoo! Movies, Maxim Magazine, Empire Movies, and Ain't It Cool News. He has interviewed the likes of Quentin Tarantino, Peter Jackson, Guillermo del Toro, Scarlett Johansson, Alfonso Cuaron, Miss Piggy, and others. He is also editor-in-chief of genre culture site Dork Shelf.

An area of high visibility and opportunity for Motion Designers is the area of film and title sequence development. Lola Landekic and Will Perkins from Art of the Title presented a highly stimulating presentation which took us through a brief history of title design, and some of the genres that make it such a diverse and stimulating area.

Art of the Title, for many, is the go-to online resource for best practices in title sequence design for film, TV, and other presentation media. Each week, they take an in-depth look at a title sequence and the designers, filmmakers, animators, and craftspeople behind it.

Over the years, the site has had tremendous growth and visibility. Amazingly, it is curated by a very small team, including Lola who is Managing Editor, where she has overseen the site's expansion and redesign, and Will who is Senior Editor, where he has directed some of the site's biggest features.

Figure 1: Wil Perkins and Lola Landekic on film title sequences


The End
KEOUGH NAUGHTON
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ACADEMIC FULL PAPER

Humanizing Interactivity Through Storytelling

Tyler Galloway and Marty Maxwell Lane

University of Kansas, USA, University of Arkansas, USA

Abstract: Storytelling conventions are widely used by user experience designers throughout our process to help better connect with user's goals, motivations and emotional responses. In interaction design, we use personas rather than void titles like 'user' to increase empathy and avoid making assumptions during our research and design. Many times these personas are robust, including photos, family structures, visual and verbal tendencies, etc. We create task-based scenarios for the personas to experience, rather than focusing on isolated features to ensure a meaningful user experience. This transition from cool objectivity to the empathy needed for true human-centered design is effectively embodied through storytelling, where research, wireframing, and design decisions allow interdisciplinary teams — who may speak very differently — to understand the shared goals of the audience and project.

However, these successful storytelling approaches that are used in our research and design process rarely make it to the proof-of-concept pitch; a pitch that may occur while physically in a room with a client, but may also occur online to a variety of audiences in places like KickStarter. In this digital world, how can we convey complex interactive systems in a way that makes sense and resonates with audiences? How can we make these complex pitches in a concise way that acknowledges audiences' short attention spans? We are pitching much more than isolated ads, we are often pitching entirely new ways of carrying out familiar tasks and experiencing our world.

In addition to the use of storytelling in the research and design phase, interaction designers may find guidance for their pitch in the conventions of motion design. Interaction can't be fully or properly communicated in a single image, and image sequences often don't do the complexity justice, particularly as interactive transitions become more animated: swiping, shifting, dissolving, receding, the absence of buttons to convey interactivity, and other emerging tactics. Transition and motion allow viewers to understand the inherently time-based nature of interaction design.

Consistent with Donald Norman's notion of "reflective design," the pitch, presented in a linear narrative form — utilizing transitions, motion, personas and scenarios — allows the non-linear narrative form to become understandable, contextualized, and user-focused. Norman asserts that reflective design "is all about message, about culture, and about the meaning of a product or its use…it is about the meaning of things, the personal remembrances something evokes." This approach is different than looking through the lens of behavioral design, which is all about use and functionality. Our proposed pitch format strives for conditions that produce a reflective state with audiences, a state that allows them to contextualize the interactive design concepts and achieve big-picture thinking. During our presentation, we would like to expand on these points, and share the shift from single image mock-ups to comprehensive videos that we have advocated for in our teaching of interaction design.

Keywords: Interactivity, User-Centered Design, Design Pitch, Storytelling, Digital Video, Personas, Scenarios

Storytelling conventions are widely utilized by designers throughout our process to help better connect with user's goals, motivations and emotional responses. For example, we create personas and scenarios that focus on human experience, rather than isolated product features. However, these successful storytelling approaches that are used in our research and design process rarely make it to the proof-of-concept pitch; a pitch that may occur while physically in a room with a client, but may also occur online to a variety of audiences. In this digital world, how can we convey complex interactive systems in a way that makes sense and resonates with audiences? Interaction

designers may find guidance for their pitch in the conventions of motion design and narrative. Interaction can't be fully or properly communicated in a single image, and image sequences often don't do the complexity justice. Transition and motion allow viewers to understand the time-based nature of interaction design. Narrative allows the proposed technology to be contextualized and brought into daily life. This combination of motion and rich human-centered storytelling can create the conditions for a pitch that will produce a reflective state (Norman 2004, pg 83) with audiences, a state that allows them to contextualize the interactive design concepts and achieve big-picture thinking.

Creating the Characters

Early in the research phase of design, we use personas rather than void titles like 'user' to increase empathy and avoid making assumptions. Personas are not actual, singular, users of the design product, they are archetypes. Personas are profiles created to inspire and guide design. After heavy use in '80s and '90s advertising, they were popularized for technology design by Alan Cooper in his book "The Inmates are Running the Asylum" and are best utilized for tightly targeted or homogenous audiences. (Ireland 2003, pg 28) These archetypal personas, allow design teams to group and identify potential user goals and motivations that move beyond reductive demographics to reveal the audience's relationship to the design problem.

Many times these personas are robust, including photos, family structures, visual and verbal tendencies, and other relevant social or cultural details. Why is this approach important and worth doing? Below you see poster examples (figure 1) of two personas created for a speculative online learning community focused on middle school students who are participating in a class-crossover curriculum. Through these personas, we begin to understand the broad range of values, limitations, and motivations. Charlie works well in small groups, is expressive online, quiet and shy in class, and competitive. He values privacy, time with friends and "chill time." In contrast, Evelyn speaks up in class, is preparing for high school, enjoys discussion, and is intimated when confused. She values being social, good grades and making friends. We see the contents of their backpacks and glimpses into their language. Charlie: "If I'm not out skating with my friends, I'm at home owning them at one game or another on my xbox 360." Evelyn: "I love hanging with my friends and if I'm not with them in person, I am texting them. My phone is never off!" These rich discoveries are far more helpful than a simple demographic based description that may read something like "middle schools teens." Personas are based on comprehensive study in which first- and second-hand research from multiple users will be analyzed and redistributed into archetypes that represent the diversity — and different subcategories within — in the audience.

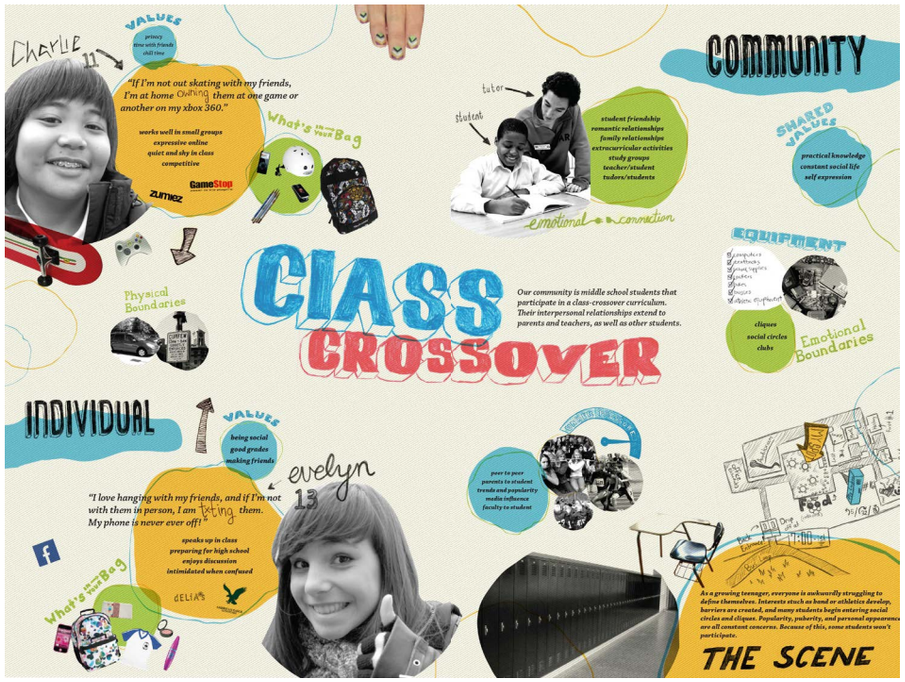

Figure 1: Class Crossover Persona Posters. Source: Student Designers: Kelsey Anderson and Brandon Lyon, Instructor: Marty Maxwell Lane

Design students engaged in this creative research process at the front end of a project are taught, either implicitly or explicitly, that this is part of the process and design begins with people who have stories to tell and needs that we can

Figure 2: Video documentation of audience research. Source: Student Designers: Sam Mak, McKenzie Marston, Jessie Ren, Jessica Rojas; Instructor: Tyler Galloway

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Scenarios are frequently referred to as "user pathways" or "user journeys" by UXD professionals. This concept offers context and specifics and helps to generate value for the design by explaining both how and why an audience would use the product.

—G. Rinnert

Figure 3: Research documentation booklet. Source: Student Designers: Abby Carr, Patrick Drake; Instructor: Jamie Gray

meet. This research may be visualized in poster form, as in the above examples, or any number of other formats including booklets, short films or animations (figures 2, 3).

Planning the Plot

After personas have been created design teams will brainstorm scenarios. If personas are the characters, scenarios are the plot in the story. Scenarios describe how a persona may engage with a product or designed space. These often start off unspecific and focus on an identified task. For example, a beginning scenario might be that "Persona A needs to find a reading partner for a group study assignment." This broadness opens up the brainstorming to include a wide range of design interventions and move beyond expected solutions like a list of friends in thumbnail form. Even if the design solution ends up being a friend list, the design is driven by a meaningful need as opposed to a generic features list. As the design and research evolve, the scenarios will begin to respond to challenges or obstacles users face in each task as we consider context, other participants, variables, etc. For example, "Persona A needs to find a reading partner for a group study assignment, but they are 1) new to the school and don't know many people 2) speak English as a second language and 3) have limited availability and transportation." This specificity then forces teams to hone in on features that will assist a multitude of user challenges. Creating stories helps to guide the design and keep teams focused on creating meaningful solutions that reflect a rich understanding of audiences.

Connecting through Story

Jonathan Gottschall, author of "The Storytelling Animal," and "Why Storytelling is the Ultimate Weapon," discusses how recent scientific research is proving the power of storytelling, "Results repeatedly show that our attitudes, fears, hopes, and values are strongly influenced by story. In fact, fiction seems to be more effective at changing beliefs than writing that is specifically designed to persuade through argument and evidence." Further he states, "The best way to emotionally connect other people to our agenda begins with 'Once upon a time…' " (Gottschall 2012) This new research supports the trend in design research in which decisions are being made not only based on hard data, but on more qualitative strategies such as personas and scenarios. This transition from cool objectivity to the empathy needed for true human-centered design is effectively embodied through storytelling, where research, wireframing, and design decisions allow interdisciplinary teams — who may speak very differently — to understand the shared goals of the audience and project. It allows teams to quickly connect with audiences that may be very different from themselves.

To put a finer (media-based) point on the notion of story, digital video is the most effective way to convey the full human-centered experience—more so than the single image or image sequences commonly seen in portfolios. As film director John Huston (The Maltese Falcon and other classics) says, “To me the perfect film is as though it were unwinding behind your eyes, and your eyes were projecting it themselves, so that you were seeing what you wished to see. Film is like thought. It’s the closest to thought process of any art.” (Murch 2001, pg 60) The affordances of video go beyond other media in their simultaneous — or sequential — display of image, text, voice, music, and sound effects (Metz 1976, pg 586). Only in digital video can this number of communication channels be leveraged to approximate our thinking when we interact with designed artifacts. Digital video also offers the closest approximation of the affordances of interactive media in its ability to show a person’s paths through a product, on-screen animated elements, and interactive transitions in real time. If this storytelling approach works so well in the research and design phase, and we know the power of video to emotionally connect, shouldn’t a time based pitch be the most effective? Why do we go to great lengths to utilize storytelling in our research and making, and then abandon it when it’s time to sell the idea?

Preparing the Pitch

The contemporary problem with visualizing interactive ideas—whether they be within a portfolio, a client pitch, or online for a Kickstarter campaign—is how to accurately visualize, contextualize, and humanize the work in a way that makes sense and resonates with audiences while addressing online attention spans.

Interactive designers are continually creating new digital ways of carrying out familiar tasks and digitally enhancing the ways in which we experience our embodied world. Online banking, online film viewing, and online shared documents are all commonplace now, each a complex and chronological sequence of digital interactions. Even Apple, with their “app previews,” (figure 4) is acknowledging the effectiveness of demonstrating interactive experiences through digital video.

Their primary claim is that “by showing the experience of using your app, app previews can help customers better understand your app and encourage more downloads.” (Apple)

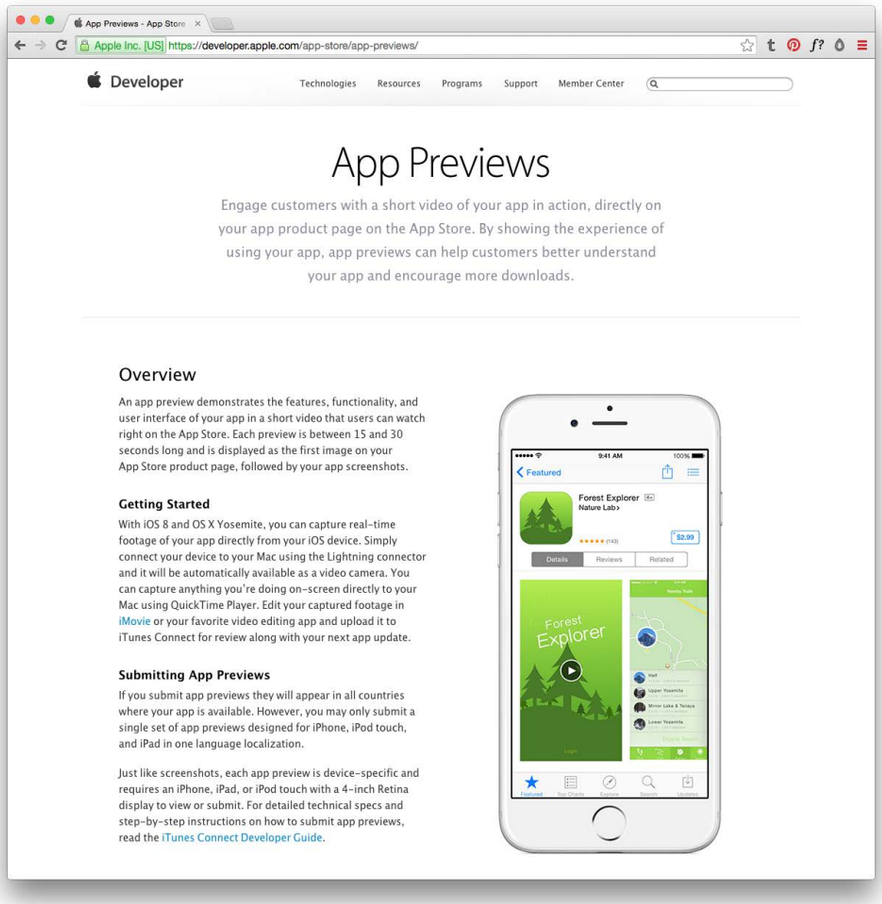

Figure 4: Apple Preview. Source: Apple.com

The oft-cited “web attention span” should be acknowledged in the length of a proof-of-concept video, as people online tend to scan for information. Web usability expert Steve Krug describes three primary online behaviors: scanning (or skimming) content, “satisficing” rather than making optimal choices, and “muddling through” without knowing exactly how something works online (Krug 2014, pp 22-27). Videos should be as short as possible to convey the necessary ideas within this scan/satisfice/muddle-through mode of operating.

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This information is very insightful, providing clear and specific factors for how to design motion sequences that meet the criteria in which an audience will watch a message. We live in a society of short attention spans. This type of content truly helps design students hone and perfect their message. I plan to use this information in my interaction design classroom.

—G. Rinnert

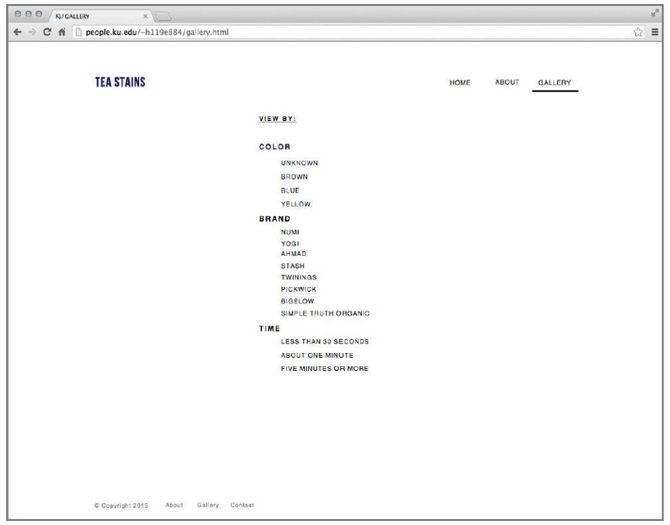
Figure 5: Collectivity Home Page Design. Source: Student Designer: Sam Small; Instructor: Tyler Galloway

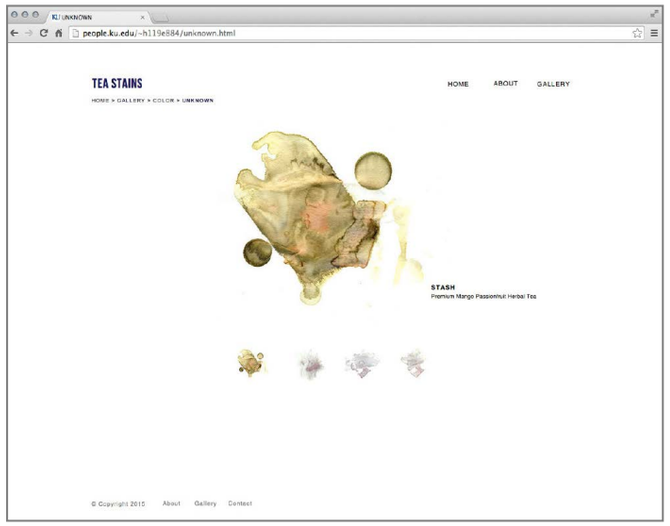
Filmmaker Yoav Hornung suggests that web-based tutorial or explanation videos be kept as short as 45-90 seconds, based on his assertion that the primary determiners for whether people hit the "play" button are video length and the thumbnail image (Hornung 2014). Wistia video analytics, based on millions of data points, shows that the shorter the video, the more likely it is to be watched in its entirety (Ruedlinger 2014). Apple's app previews are between 15 and 30 seconds. These short attention spans prove to be very problematic for design students who are creating videos to demonstrate an idea that they may have worked on for an entire semester that contains a dozen different scenarios. How do you determine what stays and what goes? If we look again to storytelling, one could propose that we present a few key big ideas and hint at the other features and scenarios, which allows viewers to put the story together in their minds.

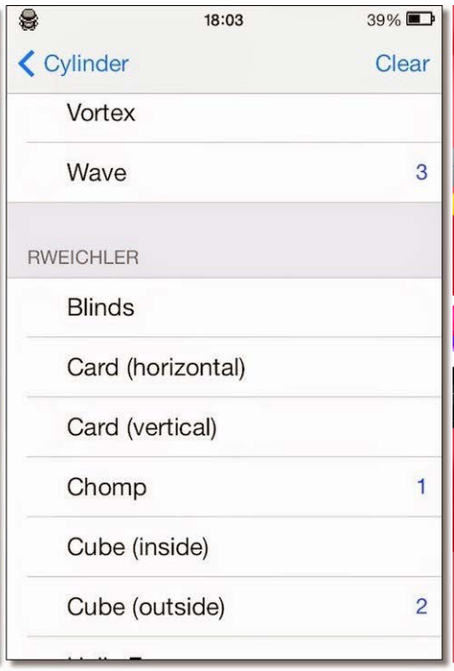
Visualize

The inherently time-based nature of interaction design can't be fully or properly communicated in a single image. Take, for example, this extended scrolling homepage for "Collectivity" (figure 5) a proposed online collaboration space. A single, screen-captured image of the project gives us clues about the layout and focuses our attention on the aesthetics and visual structure of the artifact but fails to communicate much of anything beyond that. What is lost is the cropped view through the web browser and how the user scrolls through the information section by section.

Thoughtfully-constructed image sequences have the potential to show user paths through a site, visually charting the changes from section to section or layer to layer within a site. Final deliverables for the Tea Stains online collection website included a series of screens replicating a simple user path (figure 6). A narrative structure with a beginning, middle, and end develops at this point — an improvement over the single representative image. The focus, however, remains largely on the artifact itself at the expense of foregrounding an individual's needs or tasks to be completed in relation to that artifact. Motion-related cues such as mouse movement, rollovers, and screen refreshes are lost, making the narrative difficult to follow without labeling of screens.







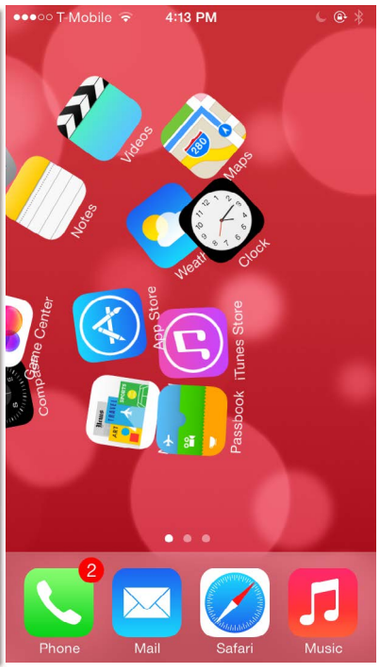


Figure 6: Tea Stains Website. Source: Student Designer: Hanan ElShoubaki; Instructor: Tyler Galloway

Figure 7: Cylinder Icon Animation app for iPhone. Source: Developer: Reed Weichler

Contemporary interactive projects increasingly make use of snippets of animated sequences initiated by the user — the swipe is becoming ubiquitous on touch screens. Add to this a growing number of innovative and engaging transitions — shifting, receding, and dissolving sections of screens or the absence of conventional buttons to convey interactivity — and much more difficult representational problem develops (figure 7). Doing representational justice to animated transitions means animating them to fully communicate the time-based dynamics of interaction design. Demonstrating these ideas in a medium that allows for transition, duration, and motion is essential.

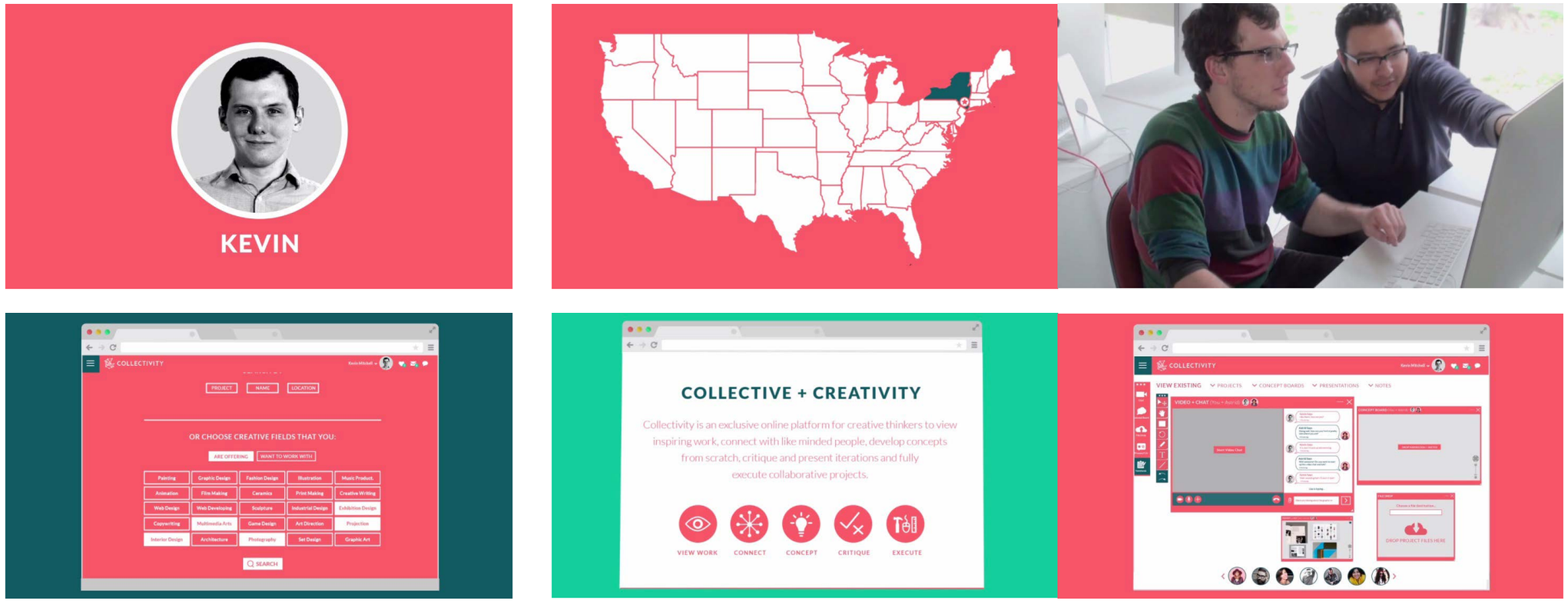


Figure 8: Collectivity Proof of Concept Video. Source: Student Designer: Sam Small; Instructor: Tyler Galloway

Contextualize and Humanize

Through the storytelling affordances of video, the "Collectivity" project gains an added dimension of context and human-centeredness. The story begins with a persona, a creative person who desires collaboration and quickly moves into how the "Collectivity" site can facilitate that collaboration. Through this story, the designer is able to demonstrate their understanding of and empathy with the audience at the outset, and further humanize the work by showing how each of the site features are geared toward serving the audience's needs (figure 8). This early connection with a persona allows for the designer to present an online system that includes the ability to: view work, connect, develop concepts, present and critique iterations, fully execute collaborative projects and at least 8 additional site features in a mere 3 minutes. Audiences don't get lost in 'feature land' and can stay focused on how the web-space supports the user's desire to creatively collaborate.

Resonance

What is it about these storytelling and time-based strategies that work so well? Donald Norman, a cognitive scientist and founder of The Neilson Norman Group, a human-centered consulting firm, has written extensively on why audiences have the reactions they do to the designed world. Norman's research about visceral, behavioral and reflective design is a useful lens to look through in regard to this discussion. While this research is not new, his book Emotional Design was written in 2004, perhaps the application to a proof of concept video is. "Visceral design is all about the immediate emotional impact." (Norman 2004, pg 69) Visceral design taps into our biology, our hard-wiring, to leverage aesthetics that humans naturally connect with. A classic example of visceral design is the vintage Coca-Cola ads in which all that was featured was a large frothy, icy, glass of Coke, in hopes that the moment someone sees that image, they will feel the

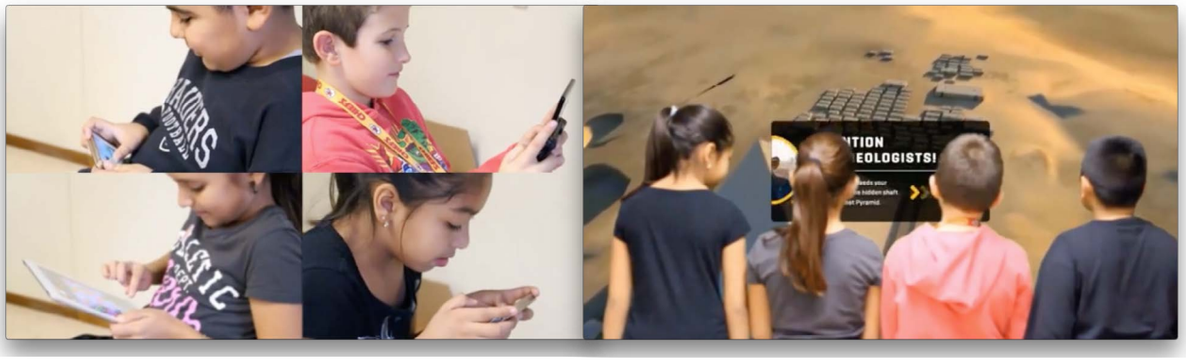
desire to have their thirst quenched. This approach and level of processing is very basic and straightforward, and would not be particularly useful pitching complex interactive systems.

Behavioral design focuses on use and less so on appearance. “What matters here are four components of good behavioral design: function, understandability, usability, and physical feel.” (Norman 2004, pg 70). Tapping into behavioral processing is a common approach to explaining interactive systems as we explain features, functions and use. This is extremely useful in the design and planning stages to ensure that products are developed that are ergonomic, useful, and address real world challenges. In his book, Norman states “That’s the real design challenge — to discover real needs that even the people who need them cannot yet articulate.” (Norman 2004, pg 74) The requirement in our student projects of personas, task scenarios, and user-centered proof-of-concept videos forces students to bring their audience to the forefront of the design process. Using digital video to show how people use the interactive product in various ways and how that product serves user needs is what Norman would call good behavioral design because it is human-centered, rather than product-centered.

While a behavioral approach is very beneficial, necessary even, during the design phase, it does focus solely on use and functionality. During a pitch, audiences do not have the luxury of holding devices in their hands and experiencing products’ use in real-time. Designers are creating simulations of these experiences and the challenge becomes how to hold audiences’ attention long enough to convince them that the functionality and usefulness is successful.

Consistent with Norman’s notion of “reflective design,” the pitch, presented in a linear narrative form — utilizing transitions, motion, personas and scenarios — allows the non-linear narrative form to become understandable, contextualized, and user-focused. Norman asserts that reflective design “is all about message, about culture, and

Figure 9: Loop! Proof of Concept Video. Source: Student Designers: Jessie Ren, Ashley Einspahr; Instructor: Marty Maxwell Lane



about the meaning of a product or its use...it is about the meaning of things, the personal remembrances something evokes." (Norman 2004, pg 83) An ideal pitch format strives for conditions that produce a reflective state with audiences, a state that allows them to contextualize the interactive design concepts and achieve big-picture thinking.

Good Work Takes Time

To create these emotionally resonate videos that visualize, contextualize and humanize takes great effort. When planning interactive projects for students it's vital to allow extra time in the research and pitch phase. During the research phase, students need time to thoughtfully explore audiences, to reflect and create accurate personas. They need time to analyze behavior and identify appropriate interventions via scenarios. During the pitch phase, faculty may want to consider this as an entire second project with a focused timeline allowing for storyboarding, writing, filming and editing. "Loop!," a social network based learning community that connects 3rd - 5th graders with their relevant world, demonstrates the extra time required for these reflective pitch videos (figure 9). The design students contacted a local elementary school to gain permission to use a classroom and students, created parental permission waivers, filmed using a green screen, found relevant and supportive video game material, wrote a script, edited and edited again. While an incredible amount of work, the result is powerful, resonates with audiences and clearly demonstrates the broad range of skills mastered by the design students.

Powerful digital tools for desktop video editing and compositing are readily available in nearly all college computer labs and design studios, as are a multitude of tutorial videos and resources for how to operate the software. The media is rich and makes connections between audience, context, and designed artifact in a way that resonates with viewers more so than other visualizations of interactive work. Tightly edited digital video-based storytelling can accurately demonstrate behavioral design characteristics—bringing to life personas and human-centered scenarios—and initiate a reflective state in viewers. What's more, it shows what is possible, proving the concept and allowing for iterations before even a line of code has been written. Design professionals and students alike ought to take advantage of the resonance motion and storytelling affords throughout our design processes—during research, the concept pitch, and beyond.

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Additional Supporting Media

https://vimeo.com/channels/mode2015

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Marty Maxwell Lane is a graphic design educator, maker, researcher and writer. Her research is focused on design pedagogy, media literacy, collaboration, and speculative interactive spaces that facilitate learning. Her active role in the design community has led her to present at conferences in Berlin, London, Rome, Toronto and the United States. Marty served as a regular writing contributor to the design journal, Parse. Her work has been published in books such as Creative Anarchy, Failing Forward and Type Rules! The Designer’s Guide to Professional Typography. As a long time AIGA member, Marty has served on numerous boards, including the Director of Education for the Kansas City chapter. Prior to joining the University of Arkansas, Marty taught at The Kansas City Art Institute. Marty received a BFA in Graphic Design (honors) from the University of Illinois-Chicago and a MGA from North Carolina State University’s College of Design.


BALLYGOWAN

ACADEMIC FULL PAPER

The Potential of Motion Graphics as a Tool for Journalists in a World After Newspapers

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Letterkenny Institute of Technology, Ireland

Abstract: This is a project to explore whether skills in motion graphics might be a useful acquisition for journalists in the digital age, and whether this is a practice that could fit within an environment of tight deadlines and professional- and budget-constrained priorities, particularly in Ireland. Production methods and rationale were tested via the creation of a short motion piece that told the story of Ireland's asylum seekers in the system of Direct Provision. What would it take to equip future journalists with the skills to present stories in this way, and is this something that is already being explored in journalism schools? This paper surveys the current international environment for motion graphics in journalism, with a view to establishing where the field is headed and how we might get there with journalists as the authors of this kind of work.

Keywords: Journalism, Multimedia, News, Explainers, Interdisciplinary training

Introduction

"The word people now must become word people, numbers people and visual people."

(Newton, 2013, Chapter 1.2)

The discipline of motion graphics might be said to have its roots in rather more abstract artistic and philosophical ideas than the daily practice of journalism would readily relate itself to. In *The History Of Motion Graphics From Avant-Garde To Industry In The United States*, Betancourt paints a complex picture of a form that emerged out of the abstract films of the Futurists in 1909, coloured by a contemporary obsession with synaesthesia and attempts to create 'visual music' (Betancourt, p11). This background is highly relevant when considering the psychology of how image, movement, sound and colour can combine to produce particular emotional and cognitive responses in viewers - but for the practical purposes of unpacking the function of motion graphics to the world of journalism it might be more useful to see the field as being 'graphic design in motion' (Cone).

Graphic design already makes some sense to the newspaper journalist - 'colour theory, photography, illustration and typography - all working harmoniously together to communicate messages' (Cone) - and most journalists would have at least an awareness of the techniques at work when rolling out this arsenal to produce an effective print publication. Familiarity with the language of graphic design, however, does not necessarily translate to fluency. While some journalists will be tasked with having basic layout and image editing skills, for the most part there has traditionally been a clear 'separation of powers' that has made good sense for getting the newspaper's different jobs done and done well. So, if journalists have little more than an incidental knowledge of graphic design as it relates to news in print, then motion design (already a great leap of imagination for the print designer) is likely to be a significant challenge if it's to be a hands-on pursuit for journalists. - 'Adding motion to the mix doesn't simply broaden the skillset of graphic designers, it redefines it. Photography becomes cinematography. Illustration becomes animation. Even the essential skill of layout morphs into something else, something more akin to understanding the rhythmic structures of music than the solid forms of print. Motion design is, in other words, a new language.' (Cone, p1). However - drawing a logical line from print

graphics to active graphics for an online space - it should at least be straightforward for journalists to see where the discipline might be situated within the digital publishing arena.

Rationale

In this paper, I will outline some possible contexts for motion graphics within contemporary journalism; and explore whether it might be possible or even useful for journalists to incorporate this new set of skills into their practice. I would also like to consider briefly where motion graphics might be situated within contemporary Irish journalism. In the course of my extended research on this topic, I learned some motion graphics tools and techniques and made a short piece telling the story of Ireland's asylum seekers under the current system of Direct Provision. This paper will allude briefly to that process and the conclusions it helped me to reach.

Research

Motion Graphics Within 'Explainer Journalism'

The classic understanding of the journalist - as Irish Times Digital Development Editor, Hugh Linehan, set it out in his lecture to Galway's Huston School of Film and Digital Media on The Death Of Print In A Digital Age - is as a detective: 'It's Woodward and Bernstein... You find out a fact and, like Columbo, you keep turning round to say: "Just one more thing!" You get that ... nugget, and you turn that into a story.'

Linehan went on to describe how things have shifted: 'That is a huge part of what journalism is about. But it's not the only part. If you're now producing a print newspaper, and on the news side you've just got a bunch of facts that happened before half past nine the previous evening, that's not much of a sales pitch...You need to be bearing witness, so you need to be in the places where things are happening; but you also need to be giving context ... It's more the journalist as content creator. You're sense-making, story-making, creating narratives that make sense to people in their lives.'

This imperative to provide added value and a step-back function is one clear opportunity for bringing in motion graphics - a (largely) missed opportunity in the Irish media landscape to date. The example that Linehan gave of where Irish journalists had borne a responsibility to clarify and contextualise but had comprehensively failed, was in its explanation of the 2008 economic crash and its aftermath. Few braved the 'blizzard of data' that the crisis whipped up, to make it real and digestible for the public.

However, as an averagely mystified reader of the crisis literature, there was one Irish column of the period that did offer me clarity on what the exact dimensions of the national rage ought to be - and the key to its success was a visual metaphor (Kerrigan, 2009). The text plays out in the mind almost as a motion piece - with the camera panning back on its key players as events scale up. Taking the visual device of former Ireland goalkeeper Packie Bonner standing at 7ft tall in a top hat, alongside the towering Spire on Dublin's O'Connell Street (and multiplying the height of the Spire many times over), Kerrigan demonstrated the scale of Ireland's bank bailout in comparison to the minuscule investment the then government was refusing to make to provide a cervical cancer vaccine for schoolgirls. More writing like that was needed - or, if the goal is to speak to the widest audience amid the 'visual web explosion,' maybe they could also have given us the visuals, straight. The key is having the best tools to explain the whole story, to quickly connect the dots in the reader's mind.

International digital-only publications such as Vox and FiveThirtyEight have skillfully stepped into this space in recent months. The movement — which is chiefly American and includes the Washington Post's Storyline and New York Times' The Upshot - is being referred to as 'explanatory journalism'. It differs from much of what is published in a 'first-to-the-facts' environment in that it zones in on the how-and-why rather than just the who/what/when/where (Doctor). The entrance of all of these competitors into the fray within a few short months in 2014 has been heralded as the 'wonk wars' (Doctor).

While FiveThirtyEight, The Upshot and Storyline seem so far to give preference to clear, often conversational, written texts and impressive interactive data visualizations, Vox has created a meaningful niche for motion graphics. Some of these - often the ones that are 100 per cent illustration based, slick and appealing 2D infographic style pieces - are 'presented by' a sponsor, General Electrics (who are also responsible for light-hearted science and psychology animated explainers on buzzfeed.com). Titles have included 'The economic benefits of being beautiful' and 'Why you should vaccinate your kids in two minutes' (this one makes visual allusions to the Vox house style of using yellow highlights on top of text, but it's very much its own yellow within a colour scheme and typographic approach that is set apart from what you experience elsewhere on the site). Pieces that have been made without corporate support are often branded in Vox house style and have more of a templated, slideshow feel. These segments often are sold under a banner of a hot topic 'explained in under three minutes' and link back to Vox's renowned 'Card Stacks', which offer information cards on a story's history.

This kind of mapping of a story or distillation of the context has always been part of good journalism, but has rarely been the priority in a print publication where limited space and time have meant that the bare, most current information comes first. As Doctor points out in his Nieman Journalism Lab piece, The Newsonomics Of How And Why, the 'key to the connect-the-dots phenomenon [is] the death of the traditional news cycle'. Everyone gets the news instantly now, so people want greater insight than just headlines. Lack of space, too much space, or a rigidly defined space are no longer issues either, as Micah Cohen points out, in outlining for Wired Magazine the need and the place for FiveThirtyEight, where he's a Senior Editor: 'The development of more niche, online-only outlets should help remove one of the worst incentives in journalism: the need to fill space. There are many outlets - The New York Times, AP et al - who do a great job covering breaking stories. We'll cover the stories where we can add value. When we do it'll come in all formats - from text, dataviz and podcasts to video - and either be a comprehensive, big-picture examination or home in on a sliver of a topic.'

Adding value is something that motion graphics do tremendously well - their relative scarcity gives them an air of exclusivity and novelty, aside from the fact they do the job of explaining more efficiently and engagingly than most other media. They are high up among the visual arsenal that is drawing people deeper in to news than text alone can do. Randy Bennett, of University of Florida College of Journalism and Communications offered this outlook in the Huffington Post: 'While the written word will continue to be a powerful form of expression, visual storytelling using a mix of media forms will drive engagement and deeper understanding in a world of six-second messages.' And Joe Breen, production editor of the Irish Times for 30 years, Society of News Design delegate and journalism academic, asserted in correspondence exchanged as part of this research that motion graphics carried a particular weight: 'Motion graphics may stay pretty marginal in newspapers, video is the current buzz. But in bangs per buck, motion graphics makes a very strong argument.'

Motion Graphics To Augment A Feature, Bookend A Collection, Or As Hub For Wider Coverage

The motion graphics pieces that came to mind immediately for Joe Breen were the Guardian's Lego World Cup pieces - value-adding at its best and a nice visual entry point to the newspaper's extensive World Cup 2014 coverage. This kind of offbeat angle on a major story is gold for newspapers - a motion graphic of this sort will be hugely shareable, with potential to bring in lots of new readers. Motion pieces can be used, similarly, as the piece of cheese to tempt readers in to features articles, or to reawaken interest in archive pieces or collections. For instance, the New York Times turned up the volume on its popular Modern Love column by introducing a monthly animation to complement the essay. The challenge, as articulated by series producer Zena Barakat in an interview with Mashable.com in August 2013, was: "No one wants to watch a video that's exactly the same as what they just read... The idea was to do a video that can stand alone, but also talks to the column."

From the point of view of considering reasonable deadlines and resource allocation to produce a piece of this kind, it is interesting to note the timescale worked to by New York-based designer, Joe Donaldson, who interpreted a Modern Love column entitled Under His Misspell. He told Motionographer.com: “I received the VO and a copy of the column and had three and a half weeks to develop the story, design and animate it all.” The fact that this series forms part of a broader strategy (as NYT head of video production, Rebecca Howard states it in an interview with Mashable) to enable more journalists and columns to benefit from the addition of ‘sight, sound and motion’, is an indication that motion graphics are being trusted by legacy publishers to the job of bringing better attention to ideas that live more extensively elsewhere in text.

As an aside, it’s worth noting that in the Mashable interview Howard delivered a line about what a great opportunity this presents for ‘brands… to get more connected on site’. She said it was an objective of the company to attract sponsorship for similar initiatives across the publication. Of course, commerce is a key driver for a media business striving to stay afloat and on top - and the proposition is alluring for brands that want to project a certain image by supporting creative content on a prestige title. Clearly it’s a production model that many media owners are happy to pursue - as noted before, both Vox and Buzzfeed feature GE-sponsored motion pieces. It’s a big debate, however, in terms of preserving journalistic integrity. ‘Native advertising’ is becoming more pervasive, and it’s becoming less obvious what’s paid-for and what’s real. (HBO’s John Oliver made a robust critique of this practice in his comedy news show, Last Week Tonight, which was picked up by news and marketing outlets including AdWeek, which noted Oliver’s remarks on how native advertising was ‘deceptive and antithetical to the idea of journalism’. (Thielman, Sam).) If motion graphic pieces are proving too expensive to produce without the helping hand of a compromising corporate, is it disingenuous to do them at all? Perhaps if journalists had the skills to produce them in-house, this could be less of an issue.

In the leaked New York Times Innovation Report, 2014, it was noted that the paper needed ‘to do a better job of resurfacing archival content’ (Nieman Lab, 2014) - this is another instance where motion graphics could effectively open up a library of timeless articles to new readers by providing a new entry point that sparks the curiosity. This is what US multimedia nonprofit, Blank On Blank, has done quite beautifully for a collection of old PBS radio interviews with iconic actors, writers and musicians.

Motion Graphics As Polemic Or Political Cartoon

Another site for motion graphics in digital publications is as a polemic or to pass political comment. A good example of this - albeit that it exists in a more longform, standalone format, is Coalition Of The Willing. This film’s form - a patchworked collaboration between 77 artists - makes its own argument. Made collectively and native to the web, its narrative argues for collective online action as a way to solve the climate crisis. A wide variety of styles converse across the piece - stop motion with fresh fruit and veg meets live action and inky animation. The script is what binds the segments rather than a flood of slick transitions. The imagery is clever and captivating - and the mélange of styles makes for a visual treat. Simon Robson, who instigated the project, is very articulate on the subject of how motion graphics can add muscle to a message of public interest. Twinning a polemic with motion graphics is his specialty - a practice that he terms ‘issue animation’. In an interview for Good Magazine about Coalition Of The Willing in 2010, he explained:

You’ll always be able to get more detail from a written article, a Naomi Klein book or George Monbiot newspaper column… [But] we can go further in evoking a response in the audience… We can pair provocative visual sequences with the spoken polemic. We can spend a long time thinking about the voice we want to deliver our message. We can play with witticisms that work between the visual and the spoken. We can offer a second level of meaning.

This echoes the more general argument of Stanford academic and advocate for visual literacy, Robert E. Horn, that: ‘When words and visual elements are closely entwined, we create

something new and we augment our communal intelligence ... visual language has the potential for increasing 'human bandwidth' — the capacity to take in, comprehend, and more efficiently synthesize large amounts of new information.' (Horn)

A lengthy talk that is available on Vimeo (http://vimeo.com/5581091), given by Robson and Rayner at F5 creativity festival in New York about Coalition Of The Willing, has lots of great information from Robson on how he produces meaning and makes an argument through certain motion graphics techniques and transitions.

News publications seeking to use motion graphics as a means of editorializing on a hot topic could also learn a lot from the incredibly successful non-profit fundraising series, The Girl Effect. Begun back in 2008, its style and narrative arc have now been copied to the point of cliché, but when these pieces were introduced as a means to move people to donate to Girl Effect projects supporting girls in the developing world, this way of speaking felt truly fresh and genuinely moving. Justin Cone relates why he feels it's so successful in an article on Motionographer.com. He credits the restraint in framing and layout, pacing, colour and in the decision to animate only a select few elements and adds: 'This is a study in visual perception and cognition as much as it is a study of design. I love that many words are on screen for only a fraction of a second, and yet they are entirely readable.'

The Girl Effect videos proved massively shareable - with the more recent video sitting at around 1.5million views on YouTube and the views translating into millions of dollars in funding for the foundation's programs. Matt Smithson's work was bound to travel - it has all the ingredients in abundance. (Of course having the $90milion dollar weight of the Nike Foundation behind you cannot hurt, but setting that aside...) It appeals directly to the motivation for sharing material online that 84% of participants in a New York Times Customer Insight Group study identified as 'a way to support causes or issues they care about'; as well as to the vanity-linked motivation cited by 68% of sharing being 'a way to give people a better picture of who they are and what they care about'. It also ably ticks every box on the list by Jenkins, Ford and Green in their of-the-moment text, Spreadable Media, which holds that 'material that spreads is producerly, in that it leaves open space for audience participation, provides resources for shared expression, and motivates exchanges through surprising or intriguing content'. (p227)

Motion Graphics Within Rich Multimedia Presentations

The other principal home for motion graphics in digital journalism is as a component part in longform multimedia narratives. Some of the best examples of this form are the New York Times' Snowfall; Firestorm by the Guardian; The Verge's For Amusement Only; and Over Water Under Fire from graduate students at University of North Carolina, Chapel Hill. These are all beautiful pieces of design as well as storytelling - and all must have been quite resource intensive, with elements including high-end photography, documentary footage, audio segments, lengthy texts, graphic elements, interactives and motion graphics. It's unlikely there would often be budgets set down in Irish publications to produce this sort of sprawling, glistening masterpiece. However, there are publishing platforms such as Odyssey and Medium that provide appealing templates for individuals and groups to produce their own multimedia stories or 'appumentaries'.

Is This Possible For Journalists?

There are a number of barriers or, at least, challenges to journalists being able to produce motion graphics. There might not be adequate funding; the culture of slowly modernising newsrooms discourages this kind of cross-over role; plus a lot of re-educating would be required. Potential stumbling blocks noted by Adam Westbrook - a prominent commentator on multimedia journalism - in correspondence for this research included the following:

> *Unless you've got some experience, motion animation is time consuming... does a reporter have time to tweak easy ease curves when they should be checking facts? I have been training reporters in video for quite a few years, and although many take to editing software quite easily, for some it is like learning a new language. I think the input/output system that television news has used*

for decades is probably the most effective - you have reporters whose job is just to report (input) and they pass stuff to producers (output) who make that into television. Like you say, it will probably remain a specialism that only bigger newsrooms can afford to accommodate.

Westbrook's concerns about the knowledge gap for journalists were shared by Joe Breen, who noted that 'combining the respective skill sets of journalists and designers has some way to go'. Brian Vaughan, an academic at Dublin Institute of Technology, wrote to say that student journalists there were now learning a range of skills including some motion design:

I teach some basic After Effects skills on the Journalism MA in order to enhance students' videos and stories ... In this day and age I think it a necessary skill, along with the usual Photoshop, Premiere Pro, etc. There is no official strategy in DIT but most of the faculty have a proactive approach and do as much as we can to skill students in a wide variety of areas, directly and indirectly related to the core journalism skill-set.

This approach from DIT is encouraging, however, a glance at the prospectuses of some other colleges in Ireland suggests that the curriculum elsewhere is much more traditional. Lessons in innovation could definitely be learned from the States, from the likes of University of North Carolina, Chapel Hill, and the Reynolds School of Journalism at University of Nevada, Reno.

Personal Findings

In making a motion graphics piece myself (see https://vimeo.com/102921400), I found I was more able to learn new skills than expected, and I found ways of working at a decent pace. As to Adam Westbrook's advocating of a producer/reporter working model, the relationship, it seemed to me, would need to be more of a director/researcher one, given the level of editorial judgment that would be required to create the visual story design. Having an overview of both angles will undoubtedly be useful - especially in light of opinions such as that expressed by industry expert, Joe Breen, saying that a place now exists for 'a new form of graphic design journalist who would combine the strengths of both disciplines'.

During the time I was working on the piece, I noticed a marked increase in jobs advertised in the area of 'visual journalism'. While most were US and UK based, there were positive signs for the field in Ireland, too. Data and coding, as well as social sleuthing seemed to be competencies that were in demand here more than motion graphics - especially with companies like Storyful and NewsWhip being based here - but the Irish Times was developing its video arm and the Irish Independent was publishing more native infographics (static, mainly) and making several high-tech and design hires.

The US-based Poynter Institute has identified a lengthy list of 37 key skills for aspiring journalists in a country where traditional newsrooms have shrunk in size by almost 30percent. Director of Partnerships and Alliances, Howard Finberg, said: 'It is time for newsrooms, regardless of platform, to value journalists who have a depth of proficiencies and a broader vision of the media world they work in. These skills are not just for the future; these skills are needed today to create dynamic, engaged and audience-driven publications and broadcasts.'

In an Irish context as much as in an American one, all this might mean a reconsideration of the structure of journalism degrees and postgraduate courses - as well as a significant investment by news organisations in staff development.

In conclusion then, it might be said that skills in motion graphics will be ever more important, amid an expanding arsenal of storytelling tools, for journalists seeking to connect and communicate, and to find employment, in a world after newsprint.

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Additional Supporting Media

https://vimeo.com/channels/mode2015

I have worked as a writer and sub editor in national and regional newspapers in Ireland for more than a decade (most recently in the Irish Daily Mail), with intervals working as copywriter in a creative agency for non-profits, and providing freelance editorial services for clients including DK Travel Guides. In 2014 I returned to college to study for an MA in Motion Graphics. I focused on exploring this field as a storytelling medium and my thesis research examined ‘the potential of motion graphics as a tool for journalists in a world after newspapers’.

I have produced a number of animated explainers and infographic segments and am very interested in continuing to make visually engaging work that clarifies complex or overlooked news stories; that simplifies educational concepts and makes them memorable; or that helps organisations to illuminate their story and purpose.

In my new role as Social Designer at WHPR (the PR division of Ogilvy in Ireland), I am creating visual content in this vein for the social channels of major brands including Guinness, Central Bank of Ireland, AIB GAA and the SSE Airtricity Dublin Marathon.

CURRICULUM CASE STUDY PAPER

Type On Wheels: Brief Comments on Motion Design Pedagogy

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Abstract: In the past few decades the communication design profession and its supporting educational programs have been required to shift their focus — and vocabulary — to remain relevant in the context of new technologies. Fixed became fluid, passive became responsive, and what was once composed must now be choreographed. In the same spirit of these Platonic dichotomies we should recognize the necessary shift from Motion Design to Dynamic Media Communication. Most design educators agree that the subject of motion should be taught. The real question is how to integrate the language of motion into the wider ecosystem of design education.

At the Massachusetts College of Art and Design, motion design is not taught independently, as we do not consider motion an "end product." We aim, instead, to deeply embed the concepts of motion across the entire design curriculum. Motion is inherent in the media through which we communicate every day. Motion defines modern communications. This makes motion a property integral to all design and an element to which all other elements must relate.

Following the model of our MFA program, the Dynamic Media Institute, in which the language of motion is omnipresent in the graduate curriculum, our BFA Graphic Design Department introduces motion language on all levels of undergraduate program. This paper sites many aspects of motion continually explored in our curriculum and reviews several types of projects, through which our students are challenged to understand motion as a language of communication connecting multiple domains: From text to sound, to sequence, to narrative, to experience.

As design products move from passive to increasingly responsive, the paper concludes that educators must insist on a transition from teaching motion as a "product" towards seeing it incorporated within the broad context of dynamic media communication.

Keywords: Design Pedagogy, Dynamic Media, Language of Motion, Motion Typography, Cinematic Language.

Type on Wheels

The phrase Type on Wheels has a sarcastic, and perhaps even derogatory, connotation. The term is often applied to the work of programs that teach motion typography as a means to an end — animated type that lacks a broader context of the language of motion and communication design.

The phrase was coined more or less a decade ago during a period of explosive demand for motion graphics programs at colleges and universities across the United States. The trend continues to this day. Unfortunately, such curriculum does not reflect the current situation in the professional motion graphics industry. While the industry is fracturing, which has led to a chilling impact on motion graphics studios, why does there remain so much demand for higher education programs to teach motion graphics and motion typography?

For those of us who have labored to make communication design programs broad and multidisciplinary, the rise in importance and popularity of motion design and motion typography can be seen as a rejection of the very real need for curriculum covering multiple aspects of dynamic media communication, including interaction and experience design.

Defining Dynamism

How do we define dynamic media? Or an even broader question: How do we define dynamism?

1. Dynamism is related to or is caused by motion

We all experience motion almost every moment of every day. In fact, it would be difficult to point to a human experience that does not involve physical motion directly or indirectly. The verb "to experience" itself implies the context of motion. In terms of communicating in the language of motion, the term involves issues of what is moving and how that something is moving. The how question refers to the kinetic form and its grammar defined by space and time dimensions. Kinetic "behavior" contributes an additional layer of meaning to the objects that already convey messages expressed in their own native languages of pictures, words or numbers.

2. Dynamism is characterized by continuous change or progress

In a broader social sense, motion can also be understood as a process beyond physics: a process, which changes one situation into another with reference to the system of human values. The motion of transferring information in a learning experience takes a person from one point to another on a difficult path to knowledge. In a social context, motion can be seen as transformation.

3. Dynamism is related to interactive systems or processes

Lastly, the term dynamism in the context of communication is related to interactive systems and processes. The term "interaction design" (or broader term "dynamic media design") describes an interdisciplinary field encompassing those aspects of design, science and engineering that are involved in bringing meaningful experiences to people. Dynamic media systems mediate the process of communication and therefore augment the participant's experience as well as the environment where communication occurs.

What We Teach

Motion is not taught independently at the Massachusetts College of Art and Design, as we do not consider motion an "end product." We aim, instead, to deeply embed the concepts of motion across the entire design curriculum. Motion is inherent in the media through which we communicate every day. Motion defines modern communications. This makes motion a property integral to all design and an element to which all other elements must relate. Therefore, we have rejected the idea that motion typography be taught separately, and have placed it within a wider curricular context.

Following the model of our MFA program, the Dynamic Media Institute, in which the language of motion is omnipresent in the graduate curriculum, our BFA Graphic Design Department introduces motion language and motion typography within several required courses as well as multiple electives on all levels of undergraduate program. There are a few aspects of motion continually explored in our curriculum.

1. The Articulation of Motion in Static Media

Static renderings compress our living three-dimensional physical experience onto a fixed two-dimensional surface. One of the most notable effects of this compression is the removal of "verbs." With the loss of the passage of time we lose the ability to show action. Instead, we must visually allude to the concepts of time and motion so the work connects to our experience and understanding of the natural world.

A variety of techniques have been developed to convey motion and time through graphic form: multiplication, sequencing and the manipulation of images to list a few. A system of symbols — arrows, lines, and icons — is also often relied upon to convey motion, force, and action with clarity and brevity. The meaning of these symbols varies based upon culture and context, however. If not used carefully, they can cause more confusion than clarity.

2. Motion as It Relates to Information Design

Integration of motion with information graphics, in many cases, seems to be the only practical solution for managing and understanding complexity of large-scale information structures. Understanding is a result of a communication process that can only be completed within an individual's mind through the process of comparison, explanation of structure, and/or causality.

There are many case studies that demonstrate a great potential of the brain in processing complex sequential information in motion. Sophisticated computational imaging tools require new conventions and strategies for dynamic visualization, since very often the solutions adopted from traditional information design do not work successfully in dynamic and interactive environments.

3. Motion as It Relates to Interface

Interacting with complex data is a special kind of motion. The visual logic of interfaces creates for the user a unique way of interacting with information. By viewing, reading, and scanning visual patterns — static and dynamic — and by selecting subjective paths through the content, users learn in their own unique way. This unique path to knowledge is a result of action and reaction, a stimulus-response loop repeated ad infinitum.

The history of dynamic visualization seems to accelerate. It is difficult to realize that widely accepted concepts and metaphors of dynamic visualization and interaction with data — such as manipulability, transparent intersecting planes, infinite zoom, zero-gravity 3-D space — were only developed in the last two decades.

4. Cinematic Language

Cinematic language refers to content on screens. Originally in movie theaters, today screens are of all sizes and locations, both private and public, from smart phones to Time Square's large-scale displays. The flatness of a screen can be defined by its dimensions: X, Y, and T for Time. Perception of time on screen results in kinetic, live, multi-sensory experiences of narrative. Humankind's ability to create narratives has always been a powerful communication model. The sequence of events in time — moving images and sounds — is perceived by the human brain as somehow organized.

It is our cerebral cortex — with its neural networks of complex pattern recognition — trying to make sense out of sequencing of images in motion, changing colors, shapes, sizes, and sound. The result of that process is narrative. As defined by Aristotle, narrative must have a beginning, middle, and end. Though, as Godard proclaimed, narrative need not necessarily be told in that order. Godard refers here to storytelling — which may bend time and distort chronology in order to deliver the story in a memorable way. A designer's awareness of these two distinct timelines — one for the story, another for the storytelling — is essential.

In its more than hundred-year history, the language of cinema has evolved into a complex, near universally understood system of communication, capable of translating a multi-sensory human experience into a sequence of audio-visual events where motion serves to integrate all other channels of communication.

Pedagogy: How We Teach

The assignments documented below were crafted with the intent to integrate the four aspects of motion, as defined above, into our undergraduate communication design program with the goal of broadening the scope of the program to cover dynamic media communication.

1. "Instructional Diagram" Project: The Articulation of Motion in Static Media

One way to challenge students to think about motion is to make them aware of the absence of it. In the first project of their second year curriculum, students are asked to contemplate the limitations of a static medium by using it to represent an action or procedure over time.

A

Motion is not a discreet course at Massachusetts College of Art and Design. Rather than an "end product," motion is integrated into all levels of the program with specific assignments tailored to its applicability.

—A. Murnieks

This assignment begins with students observing and documenting a complex physical action. Using photography, they break down the movement into important moments in time and capture those moments from many different points of view. This parallax matrix of photographs provides a visual reference that assists them in "flattening" the three-dimensional experience onto the printed page.

All of the content in the final diagram must be conveyed through visual form. Use of words or numbers is forbidden. Composition must guide our eye through the diagram in the correct sequence. Students may choose to use symbols to clarify action or represent force, but each use of these graphic shortcuts is challenged and must be justified during critique.

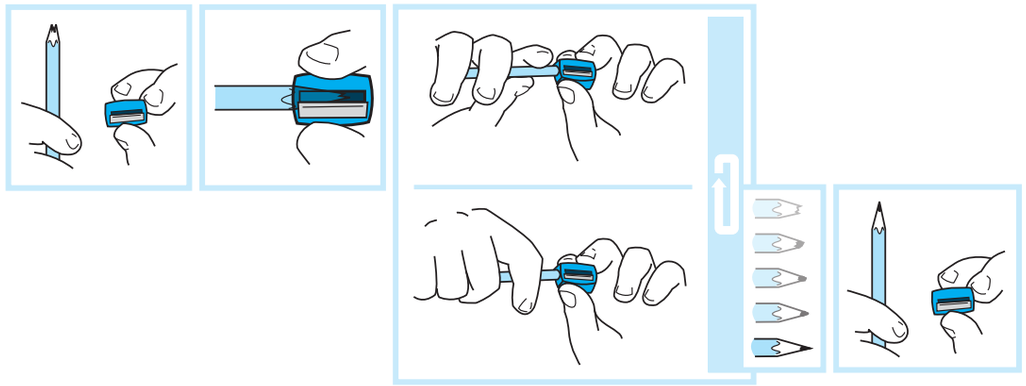


Fig. 1: How to Sharpen a Pencil by Kimber Couzo, 2009.

2. "Onomatopoeia" Project: The Articulation of Motion in Static Media, Cinematic Language

Onomatopoeia is a MassArt design student's first experience working with time. It is assigned in the first year of the major in a required typography course. Onomatopoeia asks students to consider how the formal characteristics of typography can be systematically applied to interpret the structure and experience of a musical composition.

Students choose a short sample of instrumental music to work with and visualize their listening experience using traditional media.

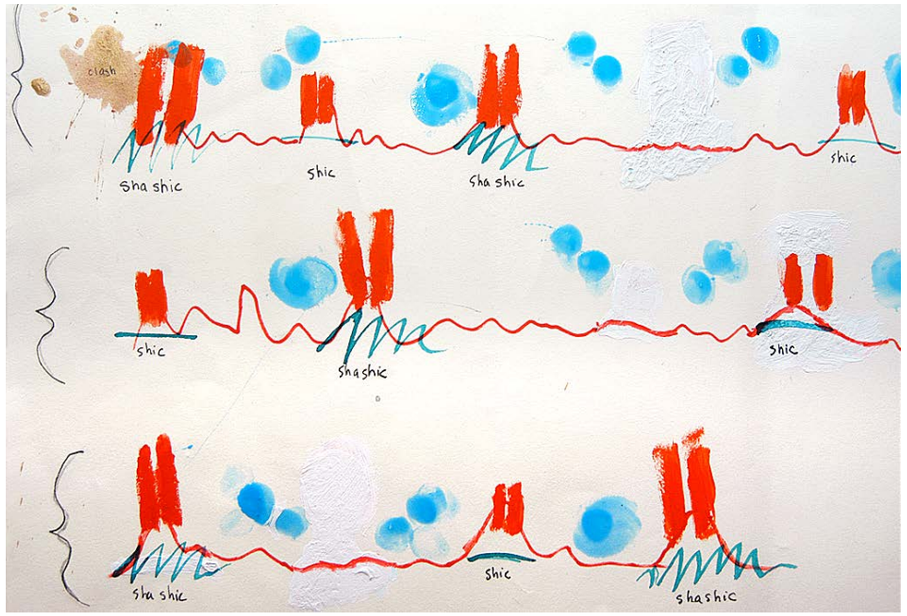


Fig. 2: Onomatopoeia Sound Analysis by Marianne Schoucair, 2008

They are then pushed towards more rigorous forms of diagramming, mapping the instruments they hear to one or more measurable properties of sound such as frequency, duration, or amplitude.

Once the structure has been identified, the students visualize it by composing a typographic score using onomatopoeic syllables as substitutes for the sounds they hear. Onomatopoeia are words that imitate the sound they describe. Students are required to work with onomatopoeia because it forces them to focus upon the meaning generated from the formal and compositional treatment of their letterforms — not meaning embedded in words and phrases. The only textual content is time and sound, keeping the work closer to the structure of music. Sonic properties are systematically mapped to the formal characteristics of typographic elements. Letterform size, for example, could be mapped to amplitude while weight is mapped to timbre. Students determine the rules for their system, and are required to explain those rules in detail.

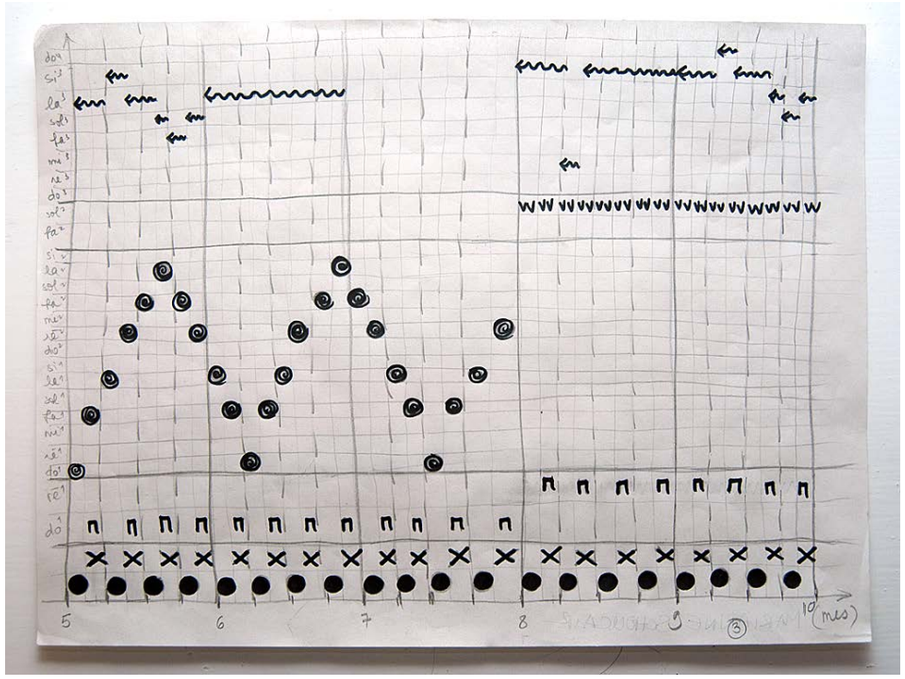


Fig. 3: Onomatopoeia Sound Analysis by Marianne Schoucair, 2008

Once their static score is complete, the students are challenged to take their typographic systems and re-combine them with the original musical selection to create a short motion sequence. [see work cited]

Fig. 4: Song for Dot by Laura Harrington, 2010

While kinetic typography is an element of this project, its focus is on understanding, defining and applying typographic systems in the context of time-based structures. The language of motion serves as an organizing principle of all the components within a sequential continuum.

3. "One Hundred Items" Project: Motion as It Relates to Information Design

One Hundred Items is a second-year required project undertaken by all students in the program. The first phase entails gathering a simple data set and defining methods to bring structure and order to that data. The second phase involves extracting findings from the data and conveying that information clearly — through numeric representation — and engagingly — through design and metaphor — via time-based media.

Students begin the project by identifying and cataloging a collection of one hundred items that share similar properties or attributes. A detailed record of the collection is made by creating a custom database that contains unique values for those attributes that are shared by every item in the collection.

Once cataloged, this database is then visualized in the form of a poster. The poster must represent each object in the database while revealing that item's unique attributes to the viewer using some type of visual system.

Like in the "Instructional Diagram" project, this assignment was written specifically to challenge the student's perception of a medium. The poster format, lacking both a temporal axis and the ability to interact with users, is not the optimal medium for this content. Students are forced to make difficult editorial decisions to reach an understandable and coherent hierarchy for the collection. Additionally, the poster format challenges students to consider ways to keep each attribute visual, separate and glance-able. With each element needing to display five or six properties, this quickly becomes a challenge.

Student Phil Pham surveyed two hundred participants across the United States and India about how they personally define happiness. Every response is included in his poster.

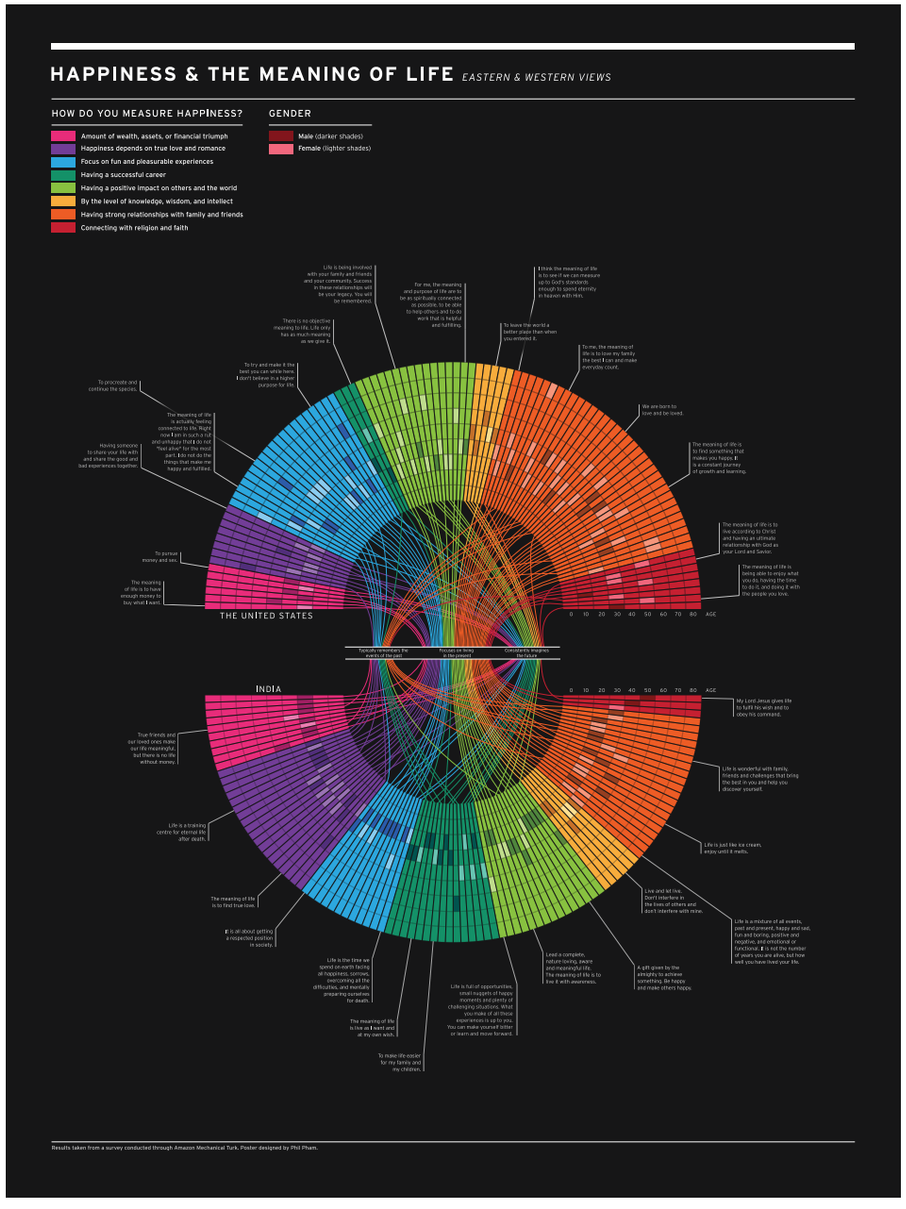


Fig. 5: Happiness and the Meaning of Life by Phil Pham, 2012

The interviewee's primary response is grouped by color. Lighter shades are female respondents, darker are males, and the position of that mark defines the respondents' age.

Many patterns or findings are revealed through the process of organizing, structuring and visualizing the database. Once identified, students are asked to reveal those findings via an animated sequence. The animation that grew from the happiness data is titled Happiness and the Meaning of Life. [see work cited]

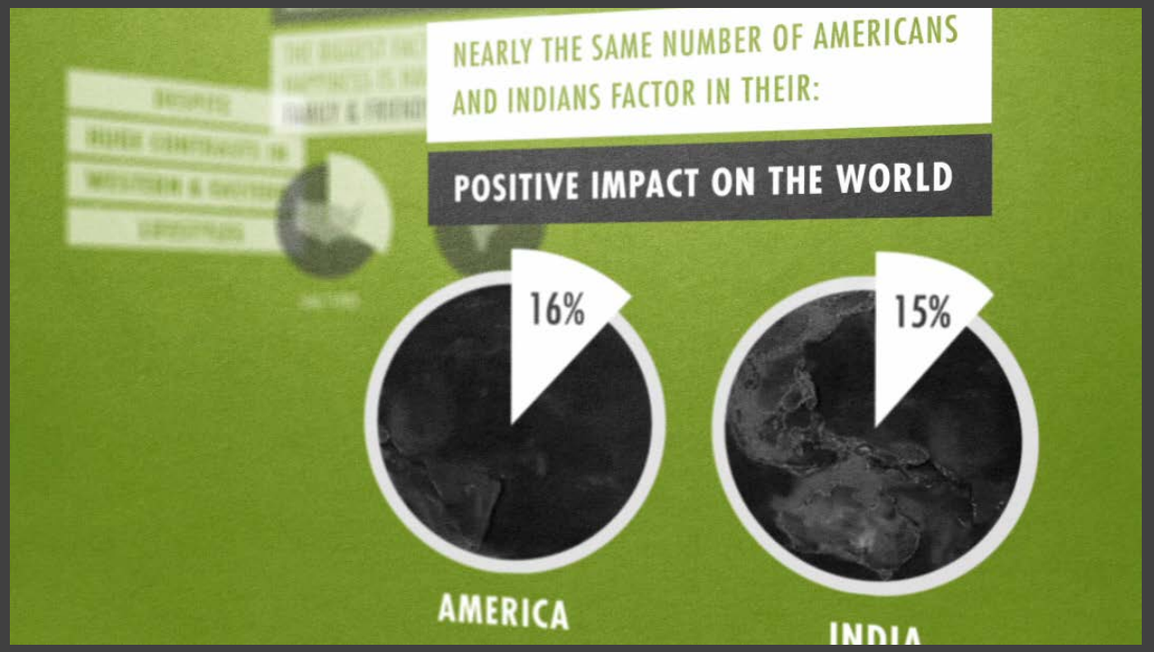
Student Matt Kaiser worked with a collection of clothing he owned. He was interested in how much he paid for it, where it was made, and the hourly rate of the employee who made it. His animation documents his findings. [see work cited]

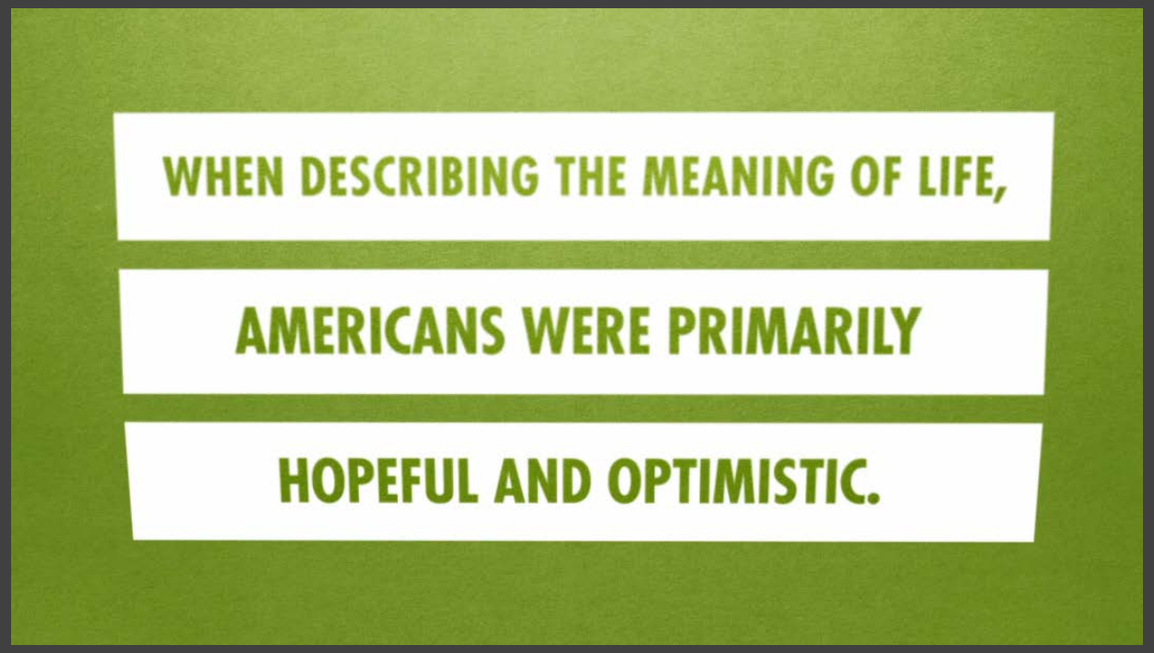
4. "Data as Narrative" Project: Motion as It Relates to Information Design, Motion as It Relates to Interface

Data as Narrative is a required collaborative project undertaken by students at the end of their second year. It asks teams to identify and shape stories from large pools of abstract data. Students begin the assignment using data analysis tools to interrogate public data sources available on the Internet. They clean, transform and visualize the data to find patterns, and then edit those patterns into stories. Students labor to tell the stories they have revealed with clarity and accuracy while making the underlying information visual, relatable and comparable.

One team chose to work with the data within the U.S. Congressional Record. In looking at the data, the team discovered a pattern of declining productivity in the United States Congress from 1947 to today. After introducing viewers to the U.S. congress, and explaining a few important terms and concepts so that the data in the congressional record can be understood, their video explains Congress' inaction by creating visual comparisons between situations in American history to recent events. [see work cited]

As is common in data journalism, the narrative storytelling is coupled with an interactive experience that allows viewers to inspect the original data and come to their own personal understanding of it. Students are challenged to map their data to appropriate interface tools to best facilitate exploration and ease of use.





Visuals from presentation *Type On Wheels: Brief Comments on Motion Design Pedagogy*

100 Articles of Clothing

Who's making your clothing?

Visuals from presentation *Type On Wheels: Brief Comments on Motion Design Pedagogy*

When users drag the slider across the time axis within the interactive diagram of the U.S. Congressional Record browser, they are presented information about the number of measures proposed vs. passed at that point in time, events that were happening at that point in U.S. history and the party makeup of the congress in that given session. [see work cited]

5. "Inception Interactive" Project: Motion as It Relates to Interface, Cinematic Language

This project challenged students with translating the story of Inception, a 2010 science fiction action film written and directed by Christopher Nolan, into a browsable database and to create the user interface to interact with the content. This particular solution of the Inception browser includes dynamic, vertical scrolling that allows the user to navigate through different levels of dream — from reality to limbo. The action of scrolling, which results in moving image and type, triggers short sequences of animated icons in reference to particular moments of the movie narrative. The project was designed and prototyped by Mia Fabbri and Lee House within a second-year required class. [see work cited]

6. "Service-craft" Project: Motion as It Relates to Information Design, Cinematic Language

The service-craft assignment is a collaborative project that grows out of a required third-year design research course. Teams use a variety of quantitative and qualitative research methods to become better acquainted with a community of users they feel are under-served in the digital landscape, and envision a prototypical service that would be beneficial to their selected group.

Once a concept has been developed, teams design and produce a short narrative scenario to explain and defend their service. Narrative scenarios are tools for conceptualizing, prototyping and justifying systems or experiences. A scenario visualizes one way that a system is envisaged to be used by describing the predicted interactions of users. Time-based narratives are frequently used as part of the system development process because when we, as viewers, observe a prototypical character moving from point A to B within a system, we move further down the path to understanding that system.

The first example scenario describes a service that helps college students identify and prepare for possible careers in Mathematics. [see work cited]

The second example envisions a service that brings together creative people from different disciplines to collaborate on projects. [see work cited]

Closing

For your consideration, and perhaps for future discussion among design educators, we offer the following concluding thoughts:

- Motion is a language of communication connecting multiple domains: From text, to sound, to sequence, to narrative, to experience.
- The language of motion is inherent in today's media, and is integral to design. It should be taught at all levels of design curriculum.
- As design products move from passive to increasingly responsive, we must insist on a transition from teaching motion as a "product," towards seeing it incorporated in the broader context of dynamic media communication.

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Jan Kubasiewicz is Professor of Design and Head of Dynamic Media Institute, the graduate program in communication design at the Massachusetts College of Art and Design in Boston. At MassArt he has developed innovative graduate and undergraduate design curricula with emphasis on design research, information architecture, information visualization, motion design and user experience design.

Kubasiewicz has served as visiting lecturer and critic at numerous universities in the USA, Australia, China, Japan, South Korea, Italy and Poland. He has organized exhibitions, workshops, seminars, conferences and publications on the topic of communication, design and media.

As practitioner of design, Kubasiewicz has an extensive experience in information visualization, user experience design and publishing. His clients include science and technology companies, museums, galleries and educational institutions. Born and educated in Poland, Kubasiewicz holds an MFA degree in graphic design and printmaking and his personal work has been exhibited internationally in the USA, Japan, Germany, Poland, Italy and Canada. He is an affiliate of the Minda Gunzburg Center of European Studies at Harvard University.

Brian Lucid is a designer, educator, and consultant whose personal and professional work ranges from traditional communications in static and temporal media to generative design and physically interactive artifacts and experiences. He holds the position of Professor of Graphic Design at the Massachusetts College of Art and Design in Boston, Massachusetts where he also serves as one of the core faculty members of the Dynamic Media Institute, a graduate program focused upon design research at the intersection of technology and communication.

At MassArt he teaches courses across the graphic design curriculum, and has developed innovative curriculum in the areas of typography, visual systems, information design, interaction design, user experience, and service design. Recently, he has been writing curricula introducing visual thinkers (and the math-adverse) to computer programming for creative applications.

Brian speaks at national and international conferences dealing with dynamic media, information design, and design education. He co-organized the 2008 AIGA design education conference entitled Massaging Media 2: Graphic Design in the Age of Dynamic Media.

Writings appear in The Education of the Graphic Designer, 2nd Edition (edited by Steven Heller. Published by Allworth Press), Teaching Motion Design (edited by Michael Dooley and Steven Heller. Published by Allworth Press), The Language of Dynamic Media and The Experience of Dynamic Media (edited by Jan Kubasiewicz. Published by the Dynamic Media Institute).

Additional Supporting Media

https://vimeo.com/channels/mode2015

Student for Life: A Creative Directors approach to Motion Design

Keynote by Chad Ashely of Digital Kitchen
Summary by Gretchen Caldwell Rinnert

Chad Ashley is the Director of Motion Design at Digital Kitchen in Chicago, Illinois. Digital Kitchen (also known as DK or DK Studios) has an impressive reputation as one of the most versatile motion design studios. Digital Kitchen is creative and digital agency behind the acclaimed title sequences for Detxer, True Blood and Six Feet Under. They also work with numerous internationally known brands such as Target, Levi's, Chobani, FX, Whole Foods and AT&T. They have won countless awards and their work illustrates what is incredibly promising about the field of motion design, showing the shear breadth and strength that motion graphic messaging provides. Their work extends from film titles and entertainment into experience design, and comprehensive online presentations and social marketing campaigns.

Chad Ashley's keynote presentation was titled "Student for Life." He delivered a striking message about inspiration, mentorship and personal creative drive. As an educator who has worked with students for the better part of the last decade, his message was insightful and reminded me the reasons I chose an academic career path. Chad may not be a traditional educator but his message sang true to educational philosophy and wisdom. He is a leader who works to inspire his colleagues.

Chad began his speech by describing the talented CG artists he works with on a day-to-day basis at DK. He shared some of the illustrative work completed by his team, specifically the Ehrmann Yogurt commercial that portrayed a magical close up of yogurt ingredients in a surreal dreamlike sequence that showcased impressive 3D modeling in a what looked like a drones perspective on a delicious bowl of yogurt.

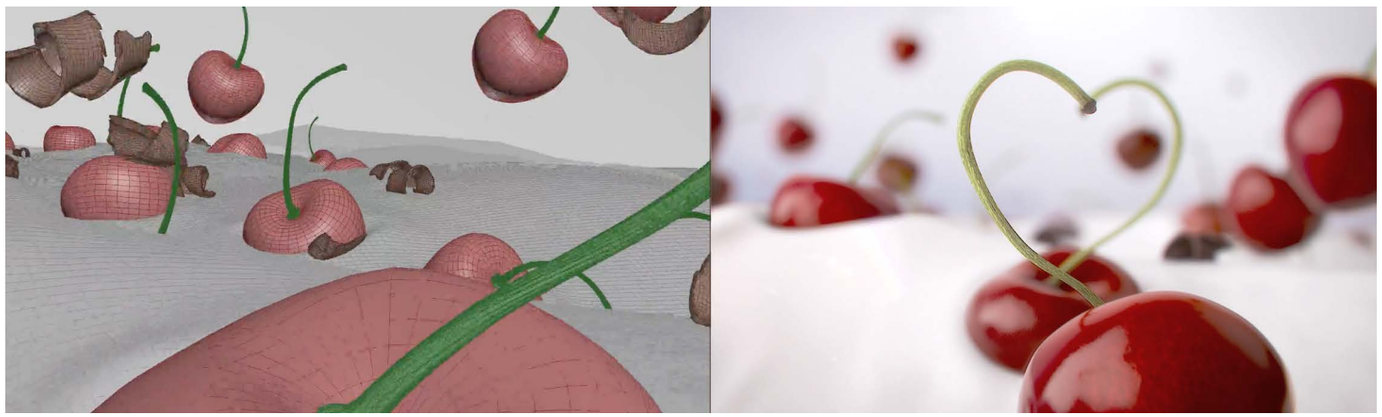

Figure 1: Ehrmann Yogurt development

Chad is a self-proclaimed weirdo, he doesn't work in Cinema 4D, he works on a PC and he lacks a traditional design education. He's an animator and filmmaker with a degree from Columbia College in Chicago. During his time in school he professed to have no interest in 3D animation. Upon graduating he was interviewed at an animation studio. They performed a standard animation test to discover he didn't have the necessary drawing skills. Chad was candid with the audience and explained about how he failed at his dream. He was struggling. Through a contact at the animation department at Columbia he heard about a CG opening at a 3D animation studio. The company saw promise in his work and his understanding of motion. They said they could teach him the technical skills. Chad put himself to work learning the software and hardware as quickly as he could. "The only way to learn was to stay at work 14 hours a day. After failing so hard at what I thought I was suppose to do, I wasn't going to fail at this. I read the manuals, and I was headset on learning." Chad came

to love 3D and described how it brought his interests in filmmaking, photography and animation together. 3D has allowed him to grow in a way he never imagined.

Mentorship is extremely important to Chad and to the atmosphere at DK. Chad described an intern who he referred to as “Day One Creeper.” This young intern started by intently watching, absorbing and learning. The designers and artists were put off by this interns awkward behavior. Chad describes how the office was messaging each other about “Day One Creeper.” Quickly this strange kid proved himself by going above and beyond what was expected. Tim, the interns real name, offered help late on a Friday afternoon and completed the work by Sunday night. He did the job very well and he impressed Chad so much that he earned himself a job at DK. Chad learned a lot from this experience, most importantly to not be dismissive and to never judge a book by its cover. Chad helped Tim to focus his interests and skills into the right direction. Tim has a promising career at DK and he is one of the strongest employees.

Chad’s advice to artists and designers: Get a mentor and embrace that you don’t know everything. Search out mentors. Have mentors in your family, at work. Be willing to listen, but maintain your point of view. Be relentless and respectful. Remember to show appreciation and appreciation will find you. And to the mentors: learn to be patient! Never underestimate anyone. Inspiration is contagious. Dive deep and share! Get people excited and take time to engage and learn their goals and interests. Know where they want to be in 5 years and help them get there.

As a mentor you need to be firm and give hard criticism, while also being able to take it. It’s one of the hardest things you have to do is dish out the ugly news, and tell someone what they may not want to hear. Its all about learning, growing and ultimately improving. Make your students (or colleagues) think for themselves! Chad was very clear that designers need to be objective and take a step back from their work in order to gain perspective. He tells his designers to grab a coffee, take a step back and wait a bit before they show him their finished work. He asks them “is this the best you can do?” If not, its back to work.

Chad described the importance of collaboration. Filmmaking is a collaborative process. Current industry trends are that one person is doing all the work, a lone freelancer. Chad sees this as a serious hindrance to the profession. “There is real value in finding people around you that are really good at what they do. By combining talents you get “The Voltron Effect.” Find experts to team up with and collaborate! Find the absolute best person for the job.

Chad explained his own creative process. He works in two zones - “the getting shit done zone and the creative zone.” Getting shit done entails a lot of coffee and his phone is off, everything is off, email is closed, music is loud and the room is dark. He explained that these are his triggers. He encouraged the audience to think about their own creative rituals. Be reflective and value your time. Schedule work time when you are most productive and make the most of it.

Chad explained his creative zone. He can’t work at his desk when he needs to think. Chad tends to work through ideas on the road, or in the shower, whenever he get in auto-pilot, and zone out. He stated that being alone is pretty therapeutic and triggers his creative thinking process. He encouraged the audience to ask yourself “how can I make that happen?” It’s a frame of mind, not a place. When ideas come do you - stop what you’re doing and write it down and record it!

Chad’s presentation gave us insight into his process, and background. So often keynote presentations are a show and tell of a presenters portfolio. Chad gave us the frank and honest details that define his success. He ended by telling the audience, “Be a great written communicator, and verbal communicator. You have to be able to explain your idea and sell it. Once you’ve done that you can have more fun and be more successful.”

CURRICULUM CASE STUDY PAPER

Throw a Brick Out Your Window: Engaging Students' Intuition, Experience and Senses in Creating Motion

Bonnie Blake

Ramapo College of New Jersey, U.S.A.

What would happen to a brick on impact if I threw it out my fifth floor window?

Abstract: According to Newton's laws of physics, there could be dozens of responses to this question, depending on the external involvement of forces during the time the brick was thrown. The student with common sense knows that the question necessitates further inquiry, and therefore, he/she cannot make an informed conclusion without gathering more information. Still, other students visually construct the scenario in their mind and respond according to their visual imagination. My intention in asking this question is to elicit an "incorrect" response from students, because the wrong response inevitably leads to a deeper understanding of motion design.

Students can memorize and regurgitate the basic principles of physics and animation; however, that doesn't necessarily result in students producing meaningful motion graphics work, especially those with more visual and tactile learning styles. I find that hands-on experimentation with real objects in motion allows for a deeper understanding of the objects themselves and, therefore, can facilitate some compelling results in the beginner's motion graphics work.

During part of the semester, my motion graphics classroom transforms into a creative playground, complete with objects that students haven't picked up and played with since they were children. After they exhaust themselves playing with these "toys," students engage in motion experiments to discover first-hand how different objects react when confronted by forces in different environments. The objects and substances that students experiment with differ in mass, composition, density, texture, and shape and include but are not limited to, balls, feathers, sticks, bubbles and ink. Students are challenged to study the motion of objects and substances as they interact with external forces. They also explore the sensory properties of objects and develop informed conclusions on why these objects react the way they do under certain conditions. From this exercise, students develop a deeper understanding and empathy for objects in motion so when they are challenged to "objectumorphize" a word or simple shape in After Effects, they have a better understanding of how the word, as an object, would react, feel and emote from beginning to end.

Experimenting with objects in motion to better understand animation is not a new concept. Yet doing so in a classroom leads to new discoveries. In this paper, I propose a fresh perspective on learning to animate objects in motion using methods that include play, creation, observation, application, and reflection.

Keywords: Motion Graphics, Animation, Visual Communication Design, Visual Tempo

Arguably, we've all engaged in some form of active play during our lifetime: play that involved bouncing, kicking or throwing a ball, blowing bubbles, jumping, swinging, skipping, tossing games, and any number of other activities that challenge our coordination, imagination and creativity. Frequent play becomes stored in procedural memory so we can unconsciously repeat an activity without having to relearn it. Procedural memory reverts to "automatic" while we perform certain physical tasks, including those that involve interacting with objects.

From procedural memory, we may know how hard we have to throw a tennis ball against a cement wall in order for it to return to us. However, how well do we really understand the

ball's role in this scenario, and why should we have to, unless we're trying to recreate this movement in an animation? If the ball were a living thing, how would it "feel" on impact against a cement wall, and what kind of noise would it make? What subtle changes might transform its physical appearance on impact? What kind of internal or external forces might momentarily change the volume of the ball? What's more, what kind of sound and tempo would be borne from this repetitious throwing and bouncing? It could go something like this: Throw, bounce on ground, return to hand, or to simplify this throw/bounce activity: "Throw, bounce, catch... throw, bounce, catch...," etc. (see Figure 1). The sound made by the ball on impact against different surfaces would elicit a unique pitch for each new surface it came into contact with. As a result, the aural tempo of this rhythmic movement creates a "beat" that accompanies the object in motion.

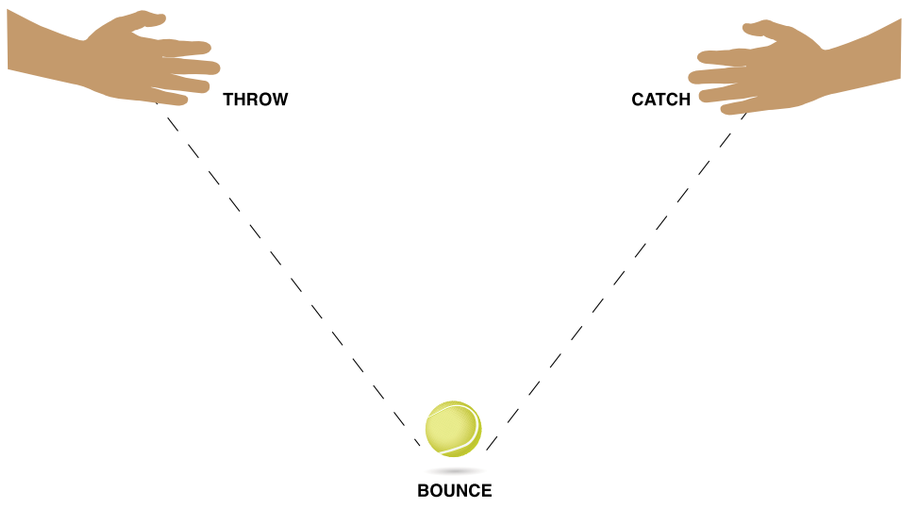

Figure 1. Throw, bounce, catch sequence, illustrated

If we were to watch a muted video clip of this "Throw, bounce, catch" loop, most individuals could intuitively "sense" the aural tempo. The tempo we sense may be different from the real sound that accompanies the action, but we can often predict a scenario such as this with some measure of accuracy, because our procedural memory can imagine what it would sound like. This example represents one of the of the many "play and learn" activities students in my class engage in. Students digitally record the actions of each other repeatedly bouncing a ball on different surfaces such as a rug, linoleum, asphalt and earth. They first play the video clip on mute, and imagine the way it sounds based on the visual cue of the "Throw, bounce, catch." Then they play the clip with audio on to compare what they imagine the bouncing sequence sounds like versus the real sound. Students learn that even when sound is absent from the clip, they still "hear" the silent tempo in their mind. In this example, students learn to understand a hard-to-articulate abstract concept by actively participating in the experience.

The simple exercise of playing with a ball becomes more complex when one considers all the external forces at play during the bouncing, as well as the internal changes that occur within the ball itself. And, understanding the mechanics behind a simple bouncing ball makes for a deeper understanding of the natural world.

So how does all of the above relate to students studying motion graphics for the first time? First, they didn't come to my classroom to learn the principles of physics. Many assume they're in the class to learn how to create explosions, disappearing objects and other formulaic recipes they find on YouTube. What students don't understand initially is that advanced motion graphics, and in many cases, visual effects, necessitates a solid understanding of the basic laws of motion. Most students have a book understanding of Newton's laws of motion and Einstein's equivalence principle from high school or a college Intro to Physics course. However, few, if any, have ever applied these laws to a real problem let alone a visual illusion created on a computer. Arguably, the laws of simple motion are best understood through experiential activities that involve play, which, in turn, facilitates discovery, creativity, empathy, and the ability to apply procedural memory to a motion graphics project.

Background

Ten years ago, I developed an introductory motion graphics course for the visual communication design program at my institution. Because of its popularity, I subsequently

created an intermediate motion graphics course two years later. This afforded me the opportunity to reassess the introductory course and develop ways to make it more effective.

I observed that, after 15-weeks in this introductory course, approximately one-third to one-half of the students were still deficient in what I consider to be the two fundamental motion graphics skills and requisites for grasping Johnston's and Thomas' 12 Principles of Animation (47). These are "dynamic movement" and "visual tempo." I reasoned that students studying in the area of visual communication might learn more and with better comprehension if they were actively "doing" what they were learning about in the classroom. However, these teaching methods don't illustrate a breakthrough method in learning. Howard Gardner proposed the theory of multiple intelligences in his book, "Frames of Mind: The Theory of Multiple Intelligences." His theory is complex but germane to this paper because of his recognition that intelligence is not measured or empowered by a person's single ability. Gardner identified the need to empower learners based on one or more of eight learning abilities. These include rhythmic, visual spatial, verbal linguistic, logical, kinesthetic, intrapersonal, interpersonal, and natural (17).

At various points throughout the semester, students work on projects that address all eight of these learning methods. As students' basic technical skills and understanding of dynamic movement and visual tempo grow, I assign projects that allow them to further develop a style based on their learning abilities.

Dee Fink expanded on Gardner's theories by emphasizing the importance of experiential and active learning skills (doing, observing, reflecting) to nurture critical and creative thinking, critical analysis, and problem solving in the classroom. He closely integrates these methods in his taxonomy of course design (73). Fink's learning theories further inspired me to change my course content and re-examine my teaching process.

What sets one educator's process apart from another's is the manner in which he or she teaches. If educators can identify and share creative teaching methods, then our scholarly research is all the more valuable and broad reaching.

Haikus

The first lesson in my introductory motion graphics class involves haikus. I begin with haikus because they're short and consist of text, which is easy to create in After Effects. A good haiku evokes an emotion, and the students can define the emotion they want to visually convey. Before students engage in this activity, I ask them to silently recite the haiku ten times to "feel" how the words might move across a screen, where emphasis, a pause or a hastening of speech might occur. Additionally, students observe that a haiku's meaning and feeling can change depending on the way their voice drives the verse (see Figure 2).

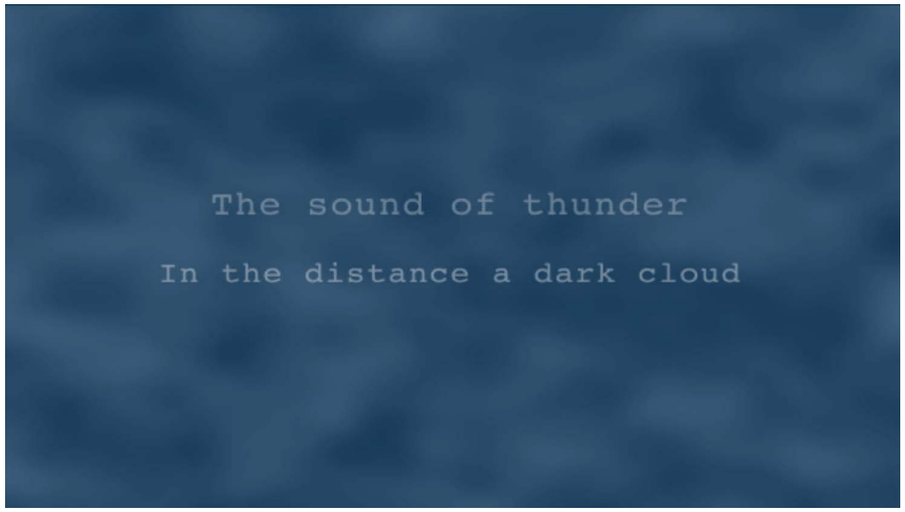

Figure 2. Animated haiku created in After Effects

Students must then determine how the words as objects will move across the screen. This includes the direction, acceleration, velocity, and speed of the words, among other things. But we start small. This simple exercise can yield some dreadful looking animations and ironically, flawed work is the desired result of the exercise. These flawed compositions eventually give way to the creation of dynamic

motion. They also introduce students to the concept of "visual tempo" as in the pairing of words or images with silent movement. The movement of the objects helps communicate to the viewer the tone of the piece; the way they should "hear" it in their mind. Surprisingly, the absence of sound doesn't negate the cadence of silent motion. The haiku exercise provides a solid introduction to this simultaneously simple, yet sometimes difficult concept to grasp.

Active Critical Thinking and Language Development

When students realize that expressing emotion by animating simple words is not as easy as it looks, I move onto active learning exercises. These learning exercises are meaningful because students interact with real objects in a controlled environment so they may better understand motion.

Students alternate their time between live motion experiments in a studio and animating in a computer lab. In these different locations, they attempt to animate objects the way they think they would react under certain conditions, and the way objects actually react based on their observations during active learning exercises. In one activity, students try to imagine that the word "brick" is a living thing that possesses the same physical mass as a real seven-pound brick. They initially try to picture a real brick falling in mud from a height of five feet with no interference other than the gravitational force. In their imagination, the brick is somewhat heavy and the mud is wet, viscous and gritty. When the brick lands, it forms an indent in the ground that in turn, splashes the mud upwards and out. Then, students imagine creating an animation where the word "brick" is composed of the same properties as the real brick they imagined. If this word were animated to replicate the way a brick would presumably fall into the mud, it too would have to assume the same properties of the brick. In this exercise, students have to storyboard their imagined brick-falling scenario and describe in sequence how they imagine it would fall, accelerate, and land upon impact as shown in Figure 3. These exercises help students develop the language of motion graphics so they can begin discuss with others what they observed using a common language.

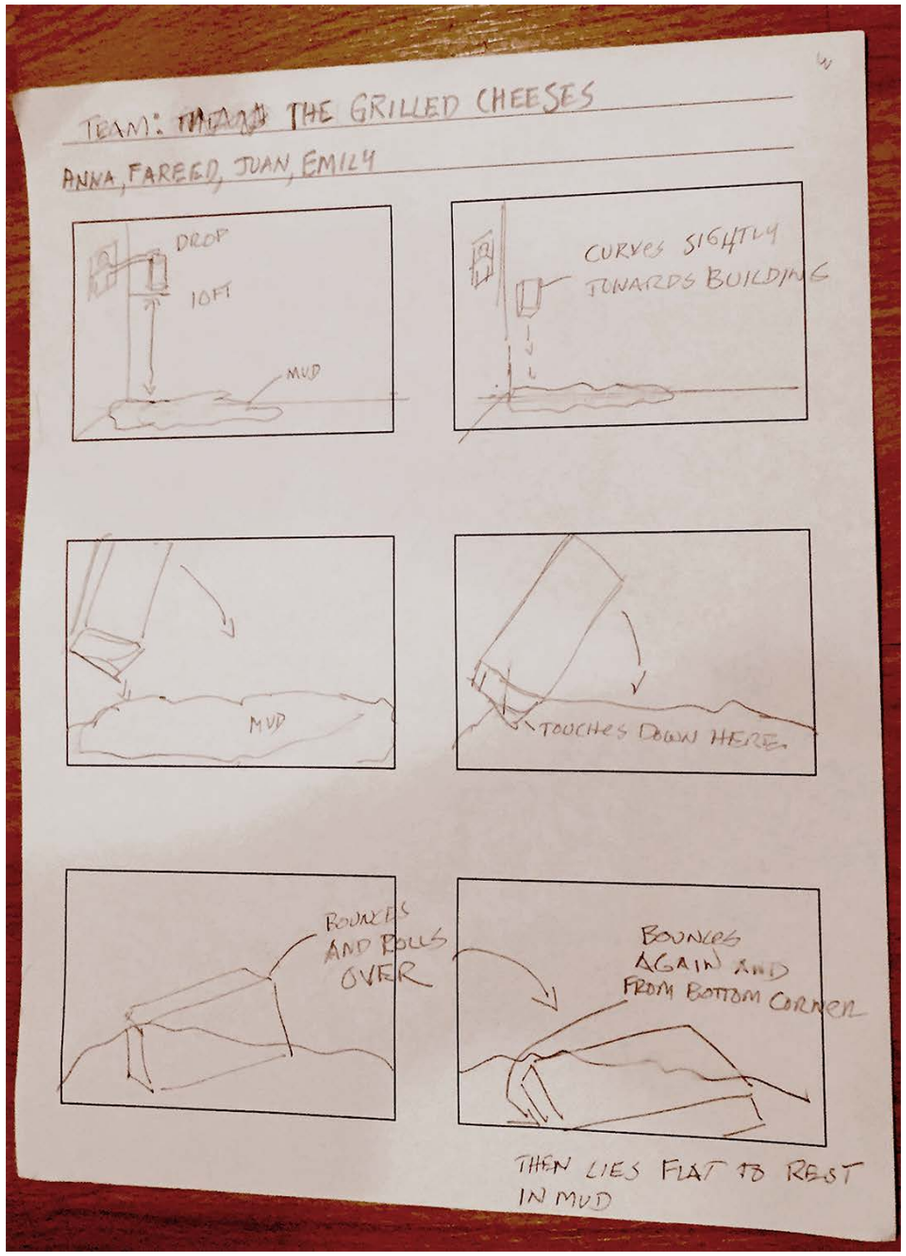

Figure 3. Students imagine the trajectory of a brick dropped from a height of 10 ft. into a pile of mud.

When tested later on by actually dropping a brick into mud and observing it from different perspectives, students imagined scenarios are often similar to their real experiments (see Figure 4).

Figure 4. Live experiment: brick after being dropped into mud

It's interesting that, when challenged to imagine this movement in a controlled environment, students can sometimes visualize the object and its movement in their mind without actually having seen it happen. However, if asked to animate the word "brick" in After Effects, as if it were a real brick as discussed previously, their compositions bear little resemblance to those they saw in their mind's eye. The animations they create after having conducted a live experiment with a brick, yield more accurate results from their "before" animations.

In-Studio Activities

The students conduct their motion experiments with real objects in an all-purpose studio. For messy or potentially damaging experiments, the activities occur outdoors. The studio is where students play with a wide range of materials that vary in mass, volume, viscosity, and density (see Figure 5). At this point, students understand that the purpose of the activity is to see, feel, hear and observe the details of objects as they move under controlled conditions.

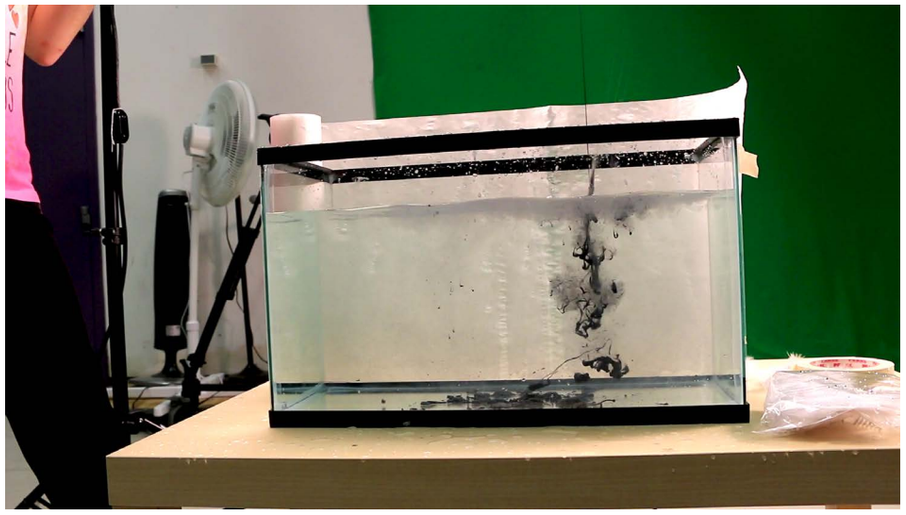

Figure 5. Students dropping acrylic paint into a water-filled aquarium

Although these activities may seem frivolous to some, they are structured, purpose-driven, and connect to the learning outcomes of the course. Contrary to traditional academic teaching principles, learning activities where students are having fun while learning can arguably be more valuable and just as rigorous as a more traditional, less active classroom lesson.

If you were to define this activity from the perspective of Fink's six-point taxonomy of significant learning (36), five of his six points are being applied in this exercise:

- Developing a foundational knowledge of motion
- Applying critical and creative thinking skills through awareness, observation, questioning, and reflection
- Integrating by connecting ideas and realms of life. Developing a deeper understanding and awareness of the world around us and as a result, enriching one's life
- Learning how to learn by conducting research and applying findings to digital animation projects

When told to participate in activities that involve some aspect of free-form play, many students are reluctant to join in. They seem to feel vulnerable in a playful state; however, they need to let their guard down in order to learn effectively in this kind of environment.

After a few minutes of bouncing balls and blowing bubbles, caution is thrown to the wind by all involved. It then becomes my challenge to allow them to play in a childlike manner while simultaneously encouraging them to process the experience as adult observers (see Figure 6).

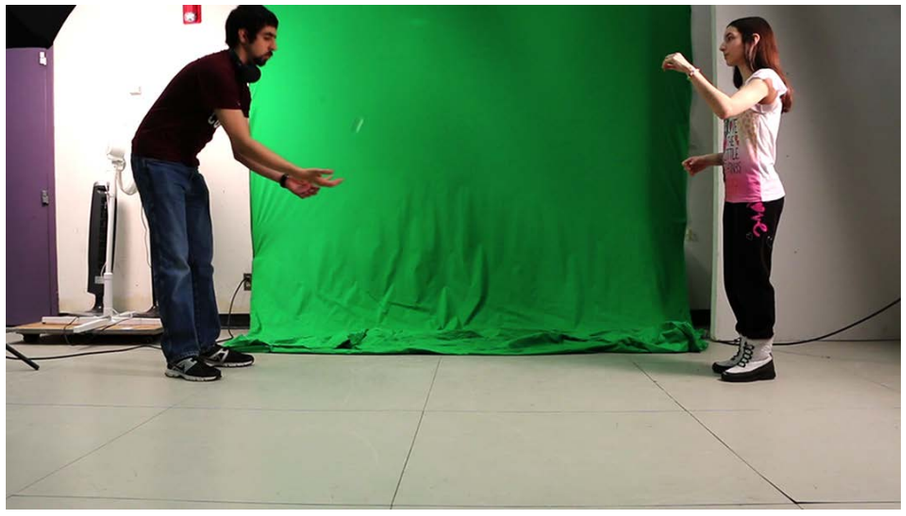

Figure 6. Students bouncing a super ball back and forth in a rhythmic motion

Methods

Students record their observations by taking notes, pictures and/or video of the experiments they conduct. Their recorded observations are later discussed in a post-experiment reflection session. Students are given prompts beforehand to help facilitate critical analysis of the experience. These prompts include:

- Physical description of each object: Approximate mass and volume, characteristics, properties, including how the objects feel when held
- Surfaces: Describe the properties of the surfaces that retard or stop the motion of the objects when dropped rolled, pushed, kicked, and/or thrown
- Range of force and acceleration used when dropping, rolling, kicking, pushing, and/or throwing the objects

Before the activity begins, students form groups in teams of four. Each team is given their own "toolbox" of common objects that include (see Figure 7):

- Balls (rubber, foam, golf, super ball, plastic, tennis, foam, and softball)
- Miscellaneous small items inclusive of paper clips, erasers, sticks, beads, etc.)
- Bubbles
- Magnets
- Brick
- India ink and acrylic paint
- Marbles and small stones
- Students are also encouraged to bring their own small objects to experiment with.

Figure 7. Example of some of the materials contained in the students' toolboxes

They spend 10-15 minutes familiarizing themselves with the visual and kinesthetic properties of the objects and then begin to interact with them in concert with other students, walls, floors and whatever other surfaces might be around the studio, hallway or outside the building. I try to facilitate a playful environment during this activity and we discuss this later during our reflection session.

In order to add more variety to their experiments, I provide a variety of props that include, but are not limited to:

- Fish tank full of water
- Frozen balls of various types (previously placed in the freezer)
- Fan and blow dryer
- Ladder

Using the materials they have at their disposal, student teams search for reactions under certain conditions. Examples of these creative inquiries include:

- How a warm ball falls and rolls on a variety of different surfaces versus a cold ball to test the findings of experiments conducted by Chris Bauer at the University of California, Berkley. In experiments that he filmed, Bauer discovered that the temperature of a ball affects the speed in which it travels ("Out of the Park: The Physics of Baseball")
- How objects of various density, mass and volume fall when interrupted by a viscous substance such as oil or paint. (see Figure 8)
- How viscous substances react when poured in water from various heights
- How a falling feather or paper reacts when an external force such as air creates an interruption
- How various objects fall from different heights
- How objects react when being thrown (force, acceleration)
- How the same type of object reacts when colliding with another

The students are not filmmakers so the video and image quality of their documented research is often out of focus or taken from the wrong perspective. Image quality aside, I make it clear to students that observing, doing, and experiencing the moment of an object in motion is often more valuable than reviewing their sometimes flawed video recordings. However, creating still frames and slow motion video from these digital video recordings allows students to capture split-second object transformations that would otherwise go unnoticed by the naked eye.

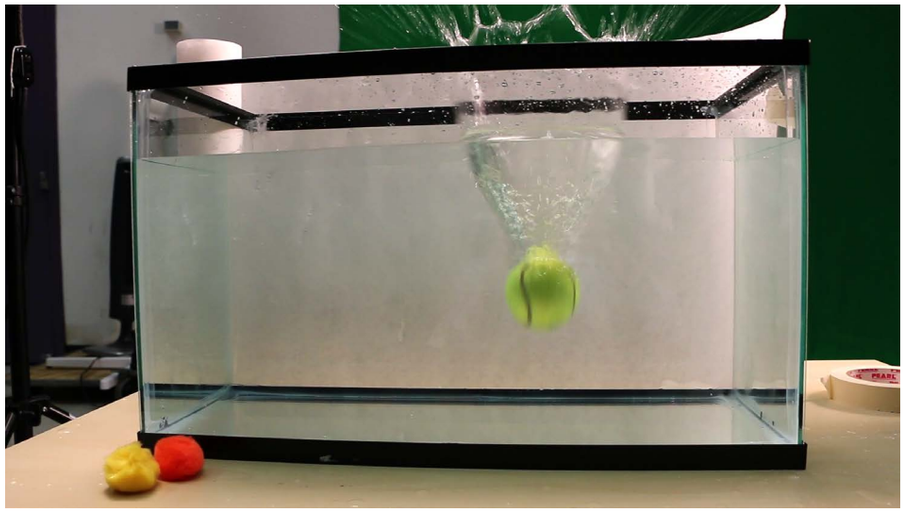

Figure 8. Tennis ball dropped in water

Post- Motion Study

When the active learning experience is complete, students edit their digital video clips and critically analyze the images that document the experiments. In viewing slow motion footage, students are able to see for the first time, the physical transformation that takes place when an object moves faster than what the human eye can take in.

They often forget to adjust their camera settings correctly to so they can later slow down the footage and see details of the frame-by frame motion. For comparison, I show students a number of stock footage clips with objects dropping in slow motion. The stock footage is professionally staged so it doesn't appear as organic as the video that students shoot (see Figure 9).

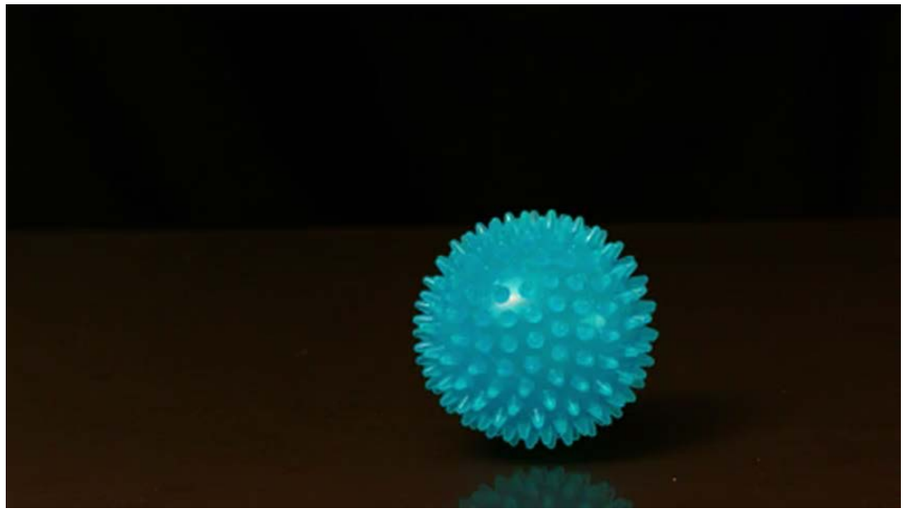

Figure 9. Still image footage of a massage ball falling and bouncing in slow motion (Shutterstock)

It is only by participating in the learning activity themselves—having thrown, dropped an object or spilled a liquid, witnessed objects in action from different vantage points, recorded and played the motion back—that the experience holds significant meaning and memory.

These activities don't transform a beginner level student of motion graphics into an advanced user overnight. The activities do, however, build a more solid foundation, understanding, and appreciation of the mechanics of motion. Furthermore, it allows for a deeper learning experience by nurturing students' learning styles as identified by Howard Gardner and Dee Fink, as previously discussed. Because a number of learning styles are employed in these exercises, students develop a clearer understanding of assignments that require them to visually imagine that a "conceptual" or abstract object such as a word or a number is a living thing that moves. When they are then challenged to "objectumorphize" words or shapes in an animation, they have a process to follow in order to successfully solve the problem.

Reflection

After students conclude their experiments, their teams meet outside of class to compare observation notes, video clips, share findings with one another, and identify ways they can use what they learned in a simple motion graphics project that has been assigned to them.

In the "living word" exercise they are tasked with animating a word of their choice in After Effects. This animated word must convincingly assume the characteristics of an object that the student played with and recorded during their live experiments in the studio. They must also mimic the motion and the conditions of the physical world in which the object moved. The challenge is to visually communicate to a viewer that this animated word appears to be comprised of an organic or manufactured material substance. Based on what this word does—whether it's thrown and bounces or crashes into a solid wall, or it's dropped into water or lands on a soft, fluffy surface, the viewer will instinctively understand the physical properties of the word and the type of force it's exposed to, even in the absence of a visual representation of a surface. The student's charge is to understand how the word as an object would react and feel from the beginning to the end of this quick movement. In Figure 10, a student used a video clip of a brick dropping (filmed by another student) on a semi-transparent layer as a guideline to create her animated word.

After completing the activities discussed in this paper, students have a better grasp on both basic and abstract animation concepts. What's more, they can identify with both real and faux animated objects themselves and explain their feelings and observations using the new language they gradually developed over the course of the semester.

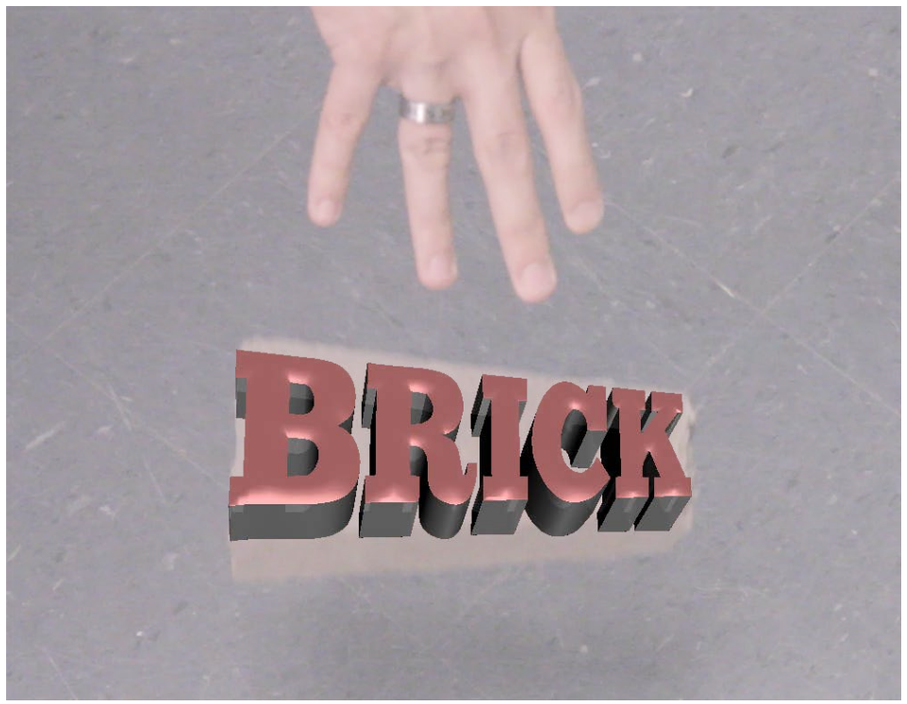

Figure 10. Example of the “living word” exercise

Bonnie Blake is an award winning graphic and multimedia designer, filmmaker, author and co-author of digital media publications and Professor of Design and Interactive Media at Ramapo College of New Jersey. Bonnie develops and teaches classes in interactive media, motion graphics and graphic design theory and practice at Ramapo. Her multimedia work and films that evolve around homeless and consumer culture have been screened and exhibited in both national and international venues. She is also a practicing motion and print designer who specializes in integrated design for healthcare and non-profit organizations, Bonnie holds an MFA from Columbia University in Visual Arts and Design.

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CURRICULUM CASE STUDY PAPER

Exploring Conditional Motion

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California State University, Chico, U.S.A.

Abstract: A curriculum case study in motion design pedagogy, specifically exploring what we call "conditional motion" – the incidental changes in the attributes and properties of visual elements resulting from changes in context, user interaction or the value of data. Though it does include the overt action of movement, conditional motion is focused more on nuances of context, the cause-and-effect nature of gestures and algorithms that generate movement.

We address issues related to conditional motion throughout our BA degree program, but primarily during the last three semesters in five related classes: Basic Typography, Information Design, Advanced Typography, Publication Design and Advanced Graphic Design.

In our Basic Typography course, students learn about the fundamental principles of conditional motion design as they organize and transform typographic information into hierarchical non-linear systems. Concurrently in the Information Design course, they learn about the fundamental principles of interaction and interface design while discovering how to organize, filter, explain and encode data into meaningful visual elements. Students create dynamic visualizations, using conditional motion that enhances the user experience and interactivity that enables users to explore data from multiple viewpoints.

In Advanced Typography, students learn to convey time through type and motion in an interactive timeline project. Based on the principles of cognitive load theory, students create proportional intervals of time, using layers and motion to explain complex ideas. In Publication Design, students use McLuhan's Tetrad of Media Effects to examine the paradigm shift from print to digital media. Students initially design and produce a printed book with InDesign, then redesign and publish a second version for touch-sensitive devices, which enables them to use interaction and conditional motion that responds to gestures.

During their final semester in our capstone Advanced Graphic Design course, students design and code a functional responsive mobile web app with JavaScript. Students continue designing for interaction and conditional motion on touch-sensitive screens, concentrating on creating a user experience that engages, informs and delights.

Keywords: Algorithms, Animation, Apprehension Principle, Causality, Chunking, Conditional Motion, Congruence Principle, Data-Driven Documents (D3), Gestural Interfaces, Interaction Design, Interactive Visualizations, JavaScript, MagPlus, Motion Design, Object Constancy, Preattentive Processing, Scalable Vector Graphics (SVG), Spatial Attributes, Temporal Properties, Tetrad of Media Effects, Time, Transitions, User Experience Design, Visual Properties.

Background

Motion was first introduced to design curricula in the 1990s as a novel add-on. Using basic animation techniques type was made to fly across the page in skewed perspectives and jumpy movements. Jessica Helfand describes the trend as a knee-jerk response to things digital. The goal of which was to do anything, but stand still. These actions, she said, were "a function of the identity crisis we experienced at the hands of new (and increasingly kinetic) software programs" (Helfand 100). "If the function is to keep moving," she said, "then the form probably will not stick around long enough for any of us to ever really figure it out" (Helfand 102).

In the twenty five years since then, we have become more confident with these new tools and learned to integrate the elements of time, sound and motion into our design skill-set. Today, our understanding of motion design has deepened and its function is much more than movement for its own sake. It is no longer a trendy add-on to the design

curricula. We have developed a new language and new forms for motion, and its principles are embedded in myriad ways in design programs that support narrative storytelling, conveying complex information and user interaction.

Though we still live in a world "besieged by fast and furious motion" (Helfand 99), we have figured out how to use motion to communicate visually, structure information and create meaning. Today, as Steven Heller and Michael Dooley describe, motion is "a language skill, every bit as necessary as writing" (Heller xii).

Defining Conditional Motion

In the mission statement for the Graphic Design program at California State University, Chico, we write that "Graphic Design is a process of visualizing ideas and systems, which transforms information into understanding and enhances the human experience with technology. We teach students to communicate with meaningful visual form and space, enabling them to distill complex information into coherent visual interfaces for interactive applications and publications that engage, inform and delight users" (Sudick 1).

We view conditional motion as a fundamental principle integral to the mission and curriculum of our program. Our students learn to approach all motion, but particularly conditional motion, as a language skill. We define conditional motion as incidental changes in the attributes and properties of visual elements that are caused by user interaction, changes in context or the value of data. Though it does include the overt action of movement, conditional motion is focused on nuances of context, the cause-and-effect nature of the gestures and algorithms that generate movement.

Conditional motion is also a fundamental principle of interaction design. In his book Designing Interactions, Bill Moggridge wrote about the inception of interaction design as "an opportunity to create a new design discipline, dedicated to creating imaginative and attractive solutions in a virtual world, where one could design behaviors, animations, and sounds as well as shapes" (Moggridge 14).

Using Conditional Motion

Designers use conditional motion to engage, inform (creating meaning and understanding) and delight users. Since motion is one of the visual characteristics observable during preattentive processing, it allows people to recognize moving objects, which can signal a higher level of importance or emphasis and immediately engage a user (Ware 152). On an otherwise static screen, conditional motion can be surprising and delightful, which affects the user experience.

Jeffrey Heer and George Robertson described four reasons for integrating motion into interactive visualizations, suggesting that motion may improve understanding and the user experience: "First, motion is highly effective at attracting attention, and unlike many other visual features is easily perceived in peripheral vision. This suggests that animation may be fruitfully applied to direct attention to points of interest. Second, animation facilitates object constancy for changing objects, including changes of position, size, shape, and color, and thus provides a natural way of conveying transformations of an object. Third, animated behaviors can give rise to perceptions of causality and intentionality, communicating cause-and-effect relationships and establishing narrative. Fourth, animation can be emotionally engaging, engendering increased interest or enjoyment" (Heer 1).

If a transition is too abrupt or too fast, before and after states are disconnected, which adversely affects a user's understanding. "Ideally, viewers would accurately identify elements across disparate graphics and understand the relationship between the current and previous views" (Heer 1). Object constancy allows a user to comfortably follow objects through transitions, as an arrangement of objects is refiltered, which "lessens the cognitive burden by using preattentive processing of motion" (Bostock 1). It enhances a user's understanding because it requires less dependence on a user's short-term memory by enabling a user to easily recall the locations of objects prior to moving.

Motion can convey information through contrasting temporal properties - making the quality of motion more meaningful for a user. Colin Ware suggested that motion

can also make information more meaningful by demonstrating causality (305). Edward Tufte wrote, “One of the fundamental cognitive tasks in analytical thinking is to reason about causality. Thus one of the fundamental principles of analytical design is to show causality” (1).

Principles of Conditional Motion

A user’s gestures and the consequential motion of objects on screen both happen over a period of time. “Without motion, there is no interaction. All human behavior is motion, colored by attitude, culture, personality and context” (Saffer, “Designing for Interaction” 44-45). We teach students to think through the process of designing sequences of behaviors that are both on and off screen from the perspective of creating an engaging, informative, meaningful and delightful user experience. Our students use interaction design theories and principles to analyze and anticipate probable scenarios and the sequence of events that are required for a user to reach certain goals. They imagine, sketch and create high-fidelity functional prototypes that become the foundation for meaningful time-based user experiences.

About 50 years ago, Jacques Bertin described six “retinal variables” for visually encoding information in static charts and maps: size, value, texture, color, orientation and shape (Bertin 60-61). Today on the Web, a user is able to interact with dynamic documents. Students are able to choose from an extensive number of variables within three groups: spatial attributes, visual and temporal properties. Any of the spatial and visual variables, individually or as combinations, can be changed over time to create motion. Temporal variables primarily determine the quality of the motion but they can also be used to encode data.

- Spatial Attributes: anchor/reference point, coordinates (cartesian, polar), position (x-axis, y-axis, z-axis).
- Visual Properties: context/background, corner radius, fill and stroke color (hue, saturation, value) and opacity, focus/blur, orientation/rotation, shape (dot, line, plane, geometric/organic), size/scale (length, area, volume), skew, texture (shape, density, grain).
- Temporal Properties: acceleration/deceleration (linear/ease), delay, direction/path (straight, curve, polyline), duration/interval, sequence (forward, reverse, loop, repeat/iteration), speed.

Our students learn to structure and sequence information, considering cognitive load theory and principles such as preattentive processing, chunking and feedback. They integrate off-screen user behaviors with the on-screen motion of visual objects. They design affordances that allow users to determine appropriate behaviors or gestural events that cause motion on touch-sensitive screens. Through the design process, they discover the temporal properties, visual properties and spatial attributes that can change as a user initiates an animated transition. Heer and Robertson proposed the following taxonomy of transition types for visualizations.

- **View Transformation:** changing the viewpoint (panning and zooming)
- **Substrate Transformation:** changing or rescaling an axis
- **Filtering:** adding or removing objects
- **Ordering:** resorting on different data variables
- **Timestep:** changing to a different period of time
- **Visualization Change:** changing to a different form of representation (bar to pie)
- **Data Schema Change:** adding or removing a data dimension (Heer 3)

Students learn to transfer their understanding of typographic syntax and semantics to conditional motion. They analyze transforming or moving objects by their syntax (object tracking) and semantics (change estimation). “The challenge of designing animations is to visually interpolate the syntactic features such that semantic changes are most effectively communicated” (Heer 3).

Heer and Robertson suggest the following design guidelines (Heer 3-4), based on Tversky et al’s Congruence and Apprehension principles of effective animation.

Congruence Principle:

- **Maintain valid data graphics during transitions:** ensuring that a user's mental models are congruent with the semantics of the data by avoiding distortions
- **Use consistent semantic-syntactic mappings:** ensuring that similar semantic operators have similar transitions across different data representations
- **Respect semantic correspondence:** ensuring that visual forms representing specific data points are not reused to represent different data points
- **Avoid ambiguity:** ensuring that different semantic operators should have significantly different transitions

Apprehension Principle:

- **Group similar transitions:** ensuring that all semantic operators are simultaneously undergoing the same operation
- **Minimize occlusion:** ensuring that a user can easily track objects through a transition
- **Maximize predictability:** ensuring that the trajectory and destination of a moving object is somewhat predictable, reducing cognitive load and improving tracking
- **Use simple transitions:** ensuring that transitions are simple, direct and alleviate confusion, imposing less memory burden and improving predictability
- **Use staging for complex transitions:** ensuring that each stage of a complex transition is followed by a delay, allowing multiple changes to be easily observed
- **Make transitions as long as needed, but no longer:** ensuring that stages and delays are long enough for accurate change tracking and slow enough to maintain engagement (Tversky 1)

Teaching Conditional Motion

Basic Typography

Basic Typography is an introduction to typographic form, space and syntax, with an emphasis on the organization and visual structure of typographic information. During the first portion of a semester, students learn about typefaces and traditional typographic principles, using InDesign for print-based assignments. After midterm, students learn about web fonts and the fundamental principles of interface and interaction design, writing code for web-based assignments. As they organize typographic information into a dynamic non-linear document, they learn to write basic JavaScript/jQuery functions that target an object, create an event listener and cause an action. These actions might include modifying the spatial attributes and visual properties of a typographic element, dropping down a menu or adding/removing/replacing content. Since all of these actions require an understanding of conditional motion to provide feedback and enhance the user experience, they also learn how to control the temporal properties of objects with CSS (Cascading Style Sheets) transitions.

Information Design

Information Design is an introduction to the diagrammatic visualization of quantitative and qualitative information. Students learn the fundamental principles of information design and interactive data visualization as they discover how to organize, filter and encode data into visual elements. For their first assignment, they design and code an interactive web-based visualization with SVG (Scalable Vector Graphics) and the JavaScript library D3 (Data-Driven Documents) that enables a user to explore data from multiple viewpoints, using conditional motion and object constancy to transition between states. Students learn about affordances to provide visual cues that an object is clickable or hoverable and about providing user feedback following an event. They learn about revealing information at an appropriate time and designing dynamic transformations that help a user to understand relationships. Students also

learn about data types, variables, data arrays, loops that join data to SVG objects dynamically and if-else (conditional) statements - using computational thinking to write algorithms that link together sequences of functions.

The second assignment is a dynamic visual narrative, using SVG, JavaScript and D3 to create motion that responds to conditions embedded within the algorithms. Students learn to be selective and discriminating about animating objects on screen - when, what direction, how many objects and how fast. They learn that any motion should have a purpose: conveying information, enhancing meaning and understanding, providing feedback or simply enhancing the user experience. Students also learn from their own experience that "perceived motion is dependent on its context" (Ware 220). Using an analogy to typographic hierarchy, students frequently consider the correspondence problem: "if too many objects are moving at same rate, a user can't keep track of them" (Ware 218).

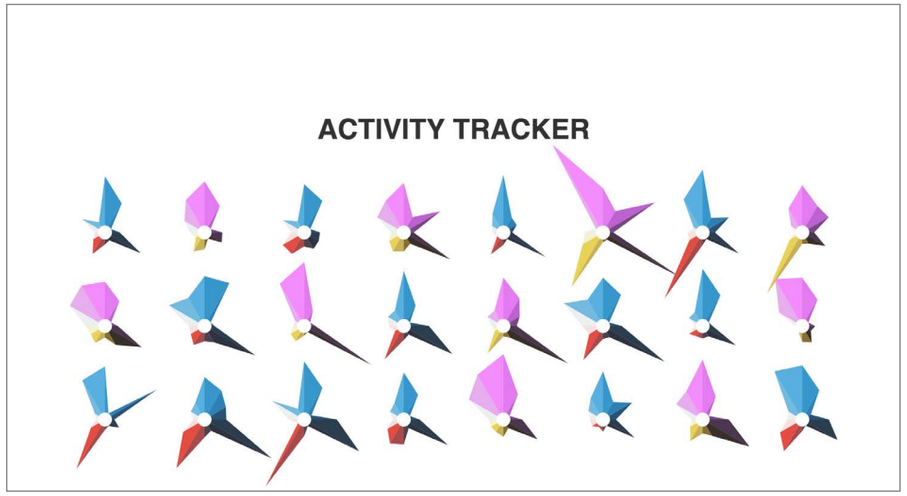


Figure 1: Jon Fink's visualization of 24 people during a 24-hour period of time demonstrates conditional motion and object constancy, as a selected small multiple is translated and scaled. Fink, 2015.

Advanced Typography

Advanced Typography focuses on typographic semantics. Students explore various aspects of contemporary theory and the technological and social changes which drive innovation in typographic form and meaning. They deepen their typographic skills and understanding of type's history in an interactive timeline project that chronicles the development of type and technology. Conveying a sense of change over time helps them to identify important events, recognize trends, and provide context that brings greater meaning to type's past, present, and future.

Information in their timelines is organized using different spatial and temporal scales. "When spatial phenomena have a time span too large to be grasped at once, we need to compress time as well as space" (MacEachren 425). "Time can be scaled at different granularities, affecting the amount of information provided for analysis" (Meirelles 169).

Years are conveyed metrically by uniform mathematical intervals of space (for example, one inch = one century). Zooming in to view another layer and change scale can provide greater detail on events in a specific decade or year (for example, six inches = one decade). In metric time, it's easy to see clusters of events and measure the distance between them to identify trends. Negative space (which denotes the absence of events) can also be particularly helpful in recognizing patterns. Students use basic design principles, hierarchy, chunking and layers, to structure information into smaller nested parts to reduce users' cognitive load, the "amount of mental activity - perception, memory, problem solving - required" (Lidwell 148).

Time is also conveyed in a non-metric method, which relies on duration. This perceived sensation of the velocity of time as long or short, or fast and slow is dependent on conditional motion. Conditional motion can convey the rate of change between nested layers of information. It can also signify the velocity of a change in scale or transition from one event or state to the next. Interactive media works well to articulate these kinds of nuanced conditional changes.

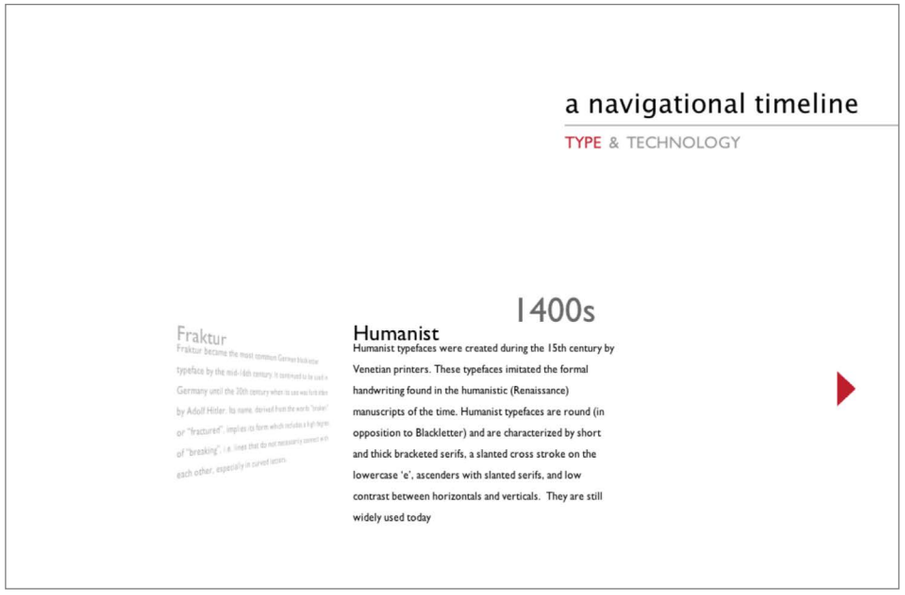


Figure 2: Katie Donahoe's Type + Technology Timeline uses conditional motion to transform the typographic page between two dimensions and three dimensions during transitions between entries.
Donahoe, 2013.

Publication Design

Publication Design focuses on the development of static and dynamic publications. Students learn how to use type, image, format, rhythm, pacing, sequencing and grids to structure complex information across multiple pages and screens. The class helps students understand the constraints and advantages of working with digital versus traditional print media by examining communication theories, principles and processes.

Students initially design and produce page spreads with InDesign, then print, sew and hand-bind the book. As a second project, they design and publish a dynamic edition of the book for touch-sensitive devices with InDesign and the MagPlus plugin, embedding code as needed.

Unlike the timeline, which considers new technology successively or chronologically (one substituting for another), this project utilizes McLuhan's Tetrad of Media Effects, which theorizes that new media exist simultaneously with one way being pushed against another (The Global Village 188-9). "They have no hierarchy or orderly sequence; they subsume, obsolesce, retrieve, extend each other, burrow on each other, hybridize and miscegenate endlessly" (McLuhan, "Laws of Media" 116). Students are encouraged to think of ebooks - not as mere replacements for printed books - but are challenged to experiment with what happens when these two media bump up against each other. "Our time is a time for crossing barriers, for erasing old categories - for probing around" (McLuhan, "The Medium is the Massage" 10).

One of the aspects students explore is how ebooks extend touch into interaction, an expression of conditional motion. With the flick of a finger, they retrieve scrolling as a book form from the past - when text was written on continuous rolls - and enrich content with motion such as jump-links, close-ups and pop-ups.

Virtually every physical action in an ebook is articulated with some sort of natural gesture or dynamic hand motion. Gestures are a form of non-verbal communication in which bodily actions (motion of hands, face, or other body parts) communicate particular messages either in place of or in conjunction with speech (Kendon 95-96). The haptic input and absence of a mediary device (such as a mouse) lets users feel as if they are interacting directly with an object. "The ease and functionality of mobile devices is shifting the way we think about interactivity. Users are finding that the control system of gestures - made viable by animation - are more than merely entertaining, they're useful" (Bank 1).

Gesture also has a relationship to the concepts of chunking and phrasing (Buxton, “Touch” 1). “The most common interface actions are mapped to the most natural gestures, ensuring ease of learning” (Buxton, “Gesture” 11).

“The most intuitive interfaces match the phrase structure of the human-computer dialogue with the cognitive chunks the human should be learning” (Buxton, “Gesture” 3).

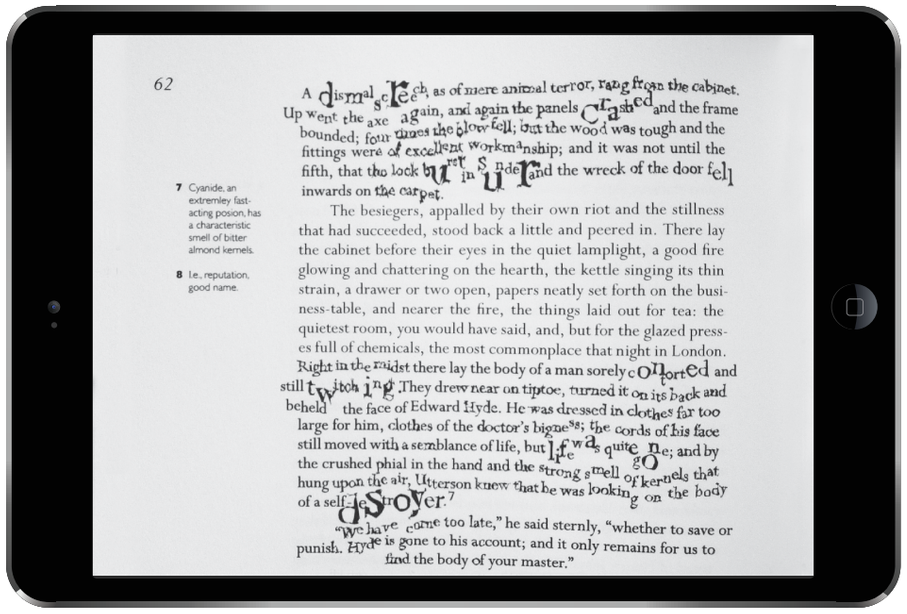


Figure 3: David Nguyen’s ebook uses a shaking gesture to initiate conditional motion in the form of a typographic transformation that brings greater meaning to the text by mimicking the metamorphosis of Dr. Jekyll to Mr. Hyde. Nguyen, 2011.

Students learn that gestural interfaces should be discoverable, trustworthy, responsive, appropriate, meaningful, smart, clever, playful, pleasurable and good (Saffer, “Designing Gestural Interfaces” 19-22). Through gestures and interaction design, students learn that motion is no longer just motion for motion sake. Meaning and intent of the motion is important. Motion, like good interface design, must be “useful, usable, and desirable” - the holy trinity of good Experience Design (Sanders 3)

Advanced Graphic Design

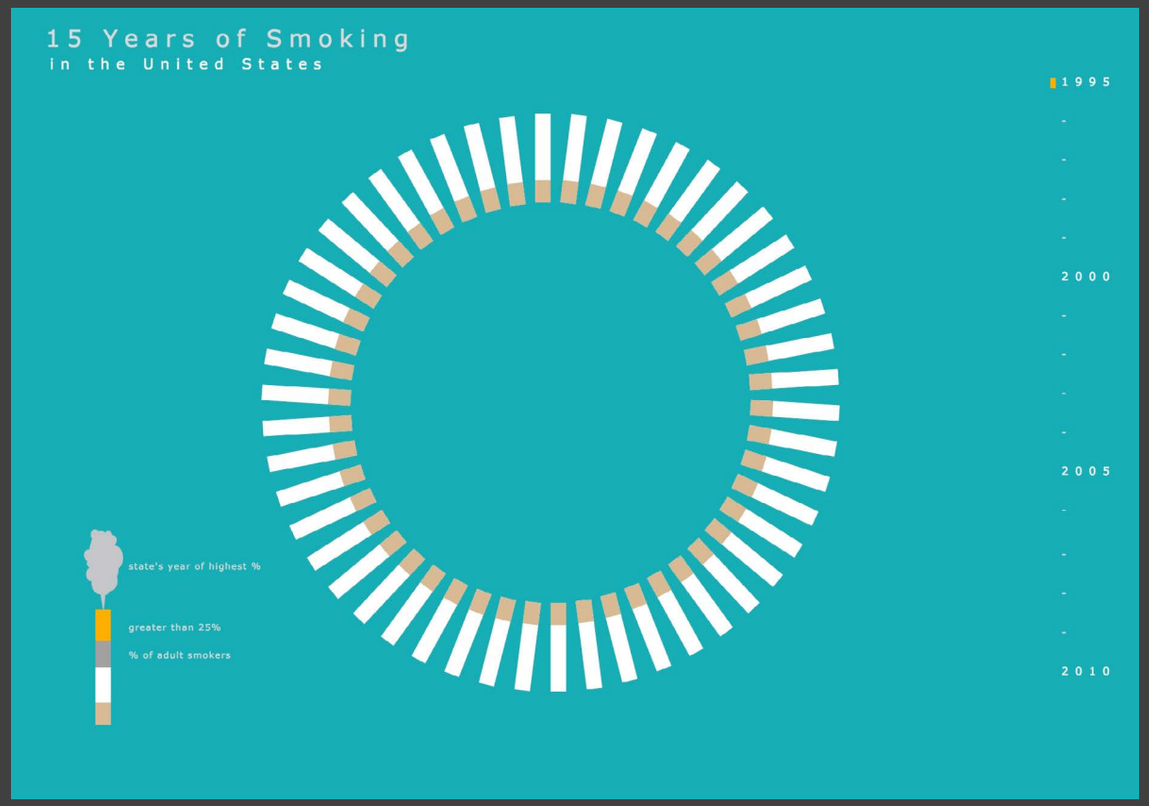
Advanced Graphic Design is a capstone course that integrates existing knowledge with new principles of human-centered design. Students research, design and code a responsive mobile (iPhone/iPad) web app with SVG, JavaScript and jQuery Mobile. They learn principles of user-centered design, ethnographic research, systems design, responsive design and prototyping to create cross-platform apps for gestural interfaces on mobile devices.

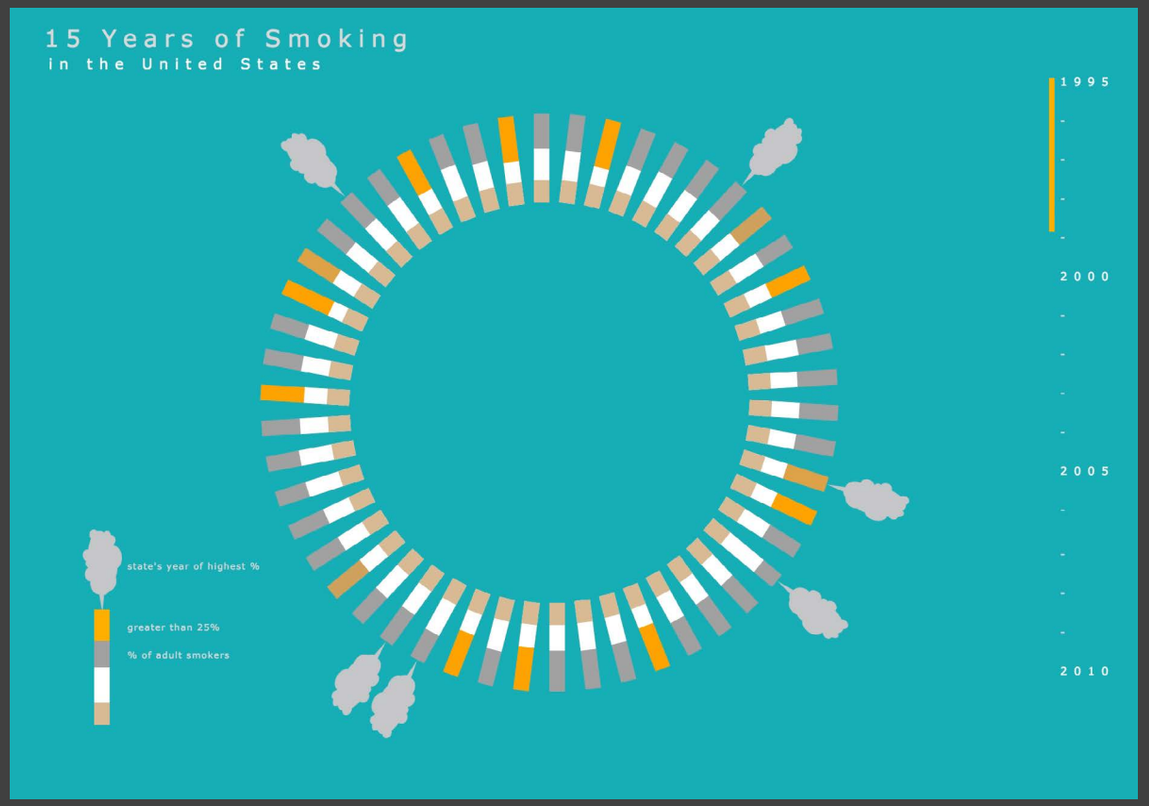
As they discovered in Publication Design, gestural interfaces improve the integration of user gestures with on-screen motion by enabling a user to directly affect objects. Each student learns to minimize the sense of stepping through a sequence of distinct screens by creating a more fluid experience with conditional motion. Students design sliders or create swipe-events that cause other objects to change. Because the screen space is so limited, they also need to design collapsible menu systems.

Outcomes

Our program is structured so that students continually improve their understanding of conditional motion through five upper-division courses during their last three semesters. Students initially learn fundamental principles of interaction and motion in Basic Typography. They learn about helping users in Information Design - providing feedback and using motion to better understand visual relationships. In Advanced Typography, students learn about the nature of time, scale and the semantics of motion. Students in Publication Design learn about hiding and revealing information and integrating user gestures with on-screen conditional motion. In Advanced Graphic Design, students learn how direct-manipulation and motion can help users to improve their understanding of causal relationships.

Visuals from presentation *Exploring Conditional Motion*





Visuals from presentation ***Exploring Conditional Motion***

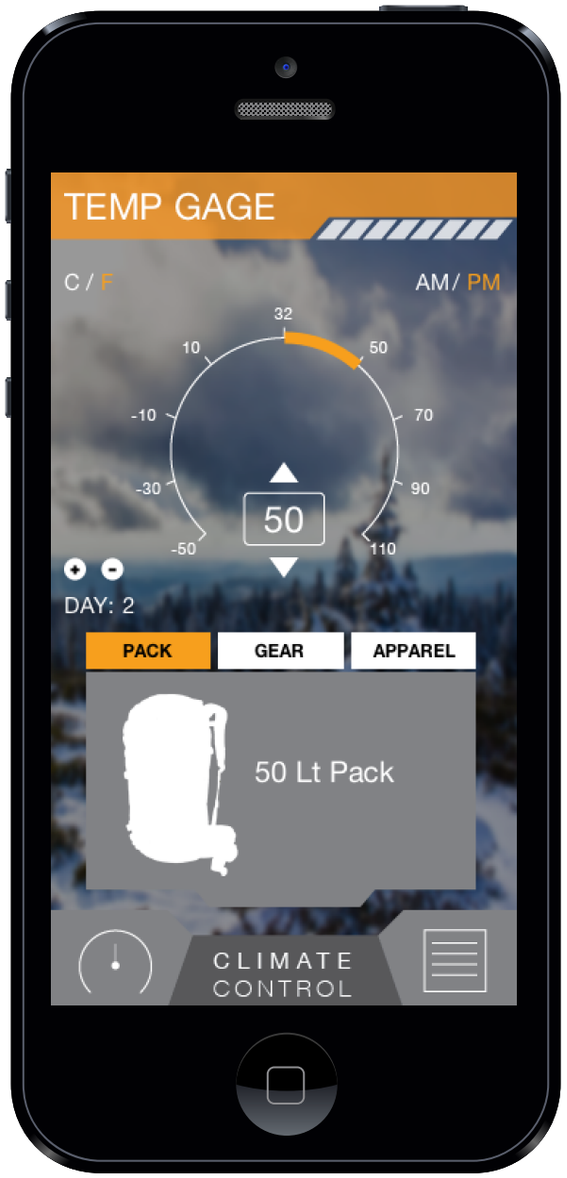


Figure 4: Nick Brugioni's Climate Control web app uses conditional motion to visualize anticipated temperature fluctuations, helping a user to select appropriate equipment for a trip. Brugioni, 2015.

The structure of our program has also been based on the NASAD "Essential Competencies, Opportunities, and Experiences" in design education:

> *[b6] Ability to develop informed considerations of the spatial, temporal, and kinesthetic relationships among form, meaning, and behavior and apply them to the development of various types of visual communication design projects.*
>
> *[b7] Ability to use typography, images, diagrams, motion, sequencing, color, and other such elements effectively in the contexts of specific design projects.*
>
> *[c2] Understanding of design at different scales, ranging from components to systems and from artifacts to experiences (NASAD 15-16).*

The JavaScript programming language is an integral part of the student's experience in our program. The process of writing algorithms and sequencing functions seems to improve their critical thinking and helps them to have a better functional understanding of user interactions and conditional motion.

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Frank Armstrong's research and teaching integrate music, as an acoustic time-space system, with dynamic information visualization and typography. His professional work has been published in numerous books and journals, including Meggs' History of Graphic Design, Typographic Design: Form and Communication and American Typography Today. His essay "Hearing Type" was published in AIGA: Loop, Baseline and The Education of a Typographer. Frank spoke about Dynamic Information Visualization at the first Mode Motion Design Education Summit in 2013. He recently designed and programmed Scale Matters, a responsive mobile web app for information visualization: http://www.farmapp.info/scale_matters

Frank has 20 years of experience as a design consultant, working for clients including Bell Communications Research, Bridgeport Hospital, Champion International, GTE, IBM, ITT, Kenan-Flagler Business School, MIT Press, Oxford University Press, PepsiCo and Union Carbide. He also has 20 years of experience as a design educator, teaching information design, interaction design, motion design and typographic design at Academy of Art University, Boston University, California State University Chico, Carnegie Mellon University, North Carolina State University, Rocky Mountain College of Art Design, University of Connecticut and Yale University.

Frank received a BA degree in economics from UCLA and an MFA degree in graphic design from Yale University. He recently completed a three-year term, serving as a member of the AIGA Design Educators Community Steering Committee. Frank is currently a lecturer in Communication Design at California State University, Chico.

Barbara Sudick is a professor in the Department of Communication Design at California State University, Chico. She was the 2008-09 Distinguished Nierenberg Chair in the School of Design at Carnegie Mellon University.

Working collaboratively across disciplinary boundaries has been a part of Barbara's professional practice and academic research for more than 20 years. She holds an MFA in Graphic Design from Yale University and was subsequently a member of the company of the Yale Repertory Theatre. Her work for the theatre has received design awards from Graphis, Communication Arts, Print and AIGA and others. She co-authored Playing it by Ear, Acting Like a Character, I See Your Voice #@! on theatre and typography with Frank Armstrong. Their essay, Kinetic Typography, is included in the book Teaching Motion Design: Course Offerings and Class Projects from the Leading Undergraduate and Graduate Programs by Steven Heller and Michael Dooley.

Her current research focuses on the contextual aspects of media technology, audience, social responsibility and interactivity.

Additional Supporting Media

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Narrative Form

Steven Hoskins

Virginia Commonwealth University, U.S.A.

"Narrative" often is used in graphic design pedagogy to refer to a rhetorical approach to meaning: placing imagery in symbolic context. To interpret imagery as referring to the "narrative language" of a particular cultural, historical, social or political idea is to affirm deep and significant indexical relationships between meaning and representation.

This approach applies equally well to static imagery, typography and materials in both art and design, as it does to sequences of imagery and type in kinetic or sequential media—to posters and to film, to painting and to book design. However, another way is to approach narrative as a form-based agenda, one that is quintessentially about time-based media itself. This is a formal framework that transcends time-based media, whether book design, or film. It establishes a useful understanding connecting kinetic media to print media, and then back again. Grounded in traditional narrative structure, it forms a strong bridge between design students' understanding of the relationship that exists among all sequential work.

In this paper I detail a curriculum for visual narrative that builds on the foundation of traditional narrative structure (based on Freytag); and later the language of cinema, for the design output of sequential print media. Then, in later projects, I invert this back to output of kinetic time-based media: typographic animation and motion picture title sequences based on audio as well as a highly articulated visual score. Work presented examines a range of dimensional printed books, animation, and video, from undergraduate to graduate graphic design projects, referencing lectures that frame the project, final results, and the usefulness of skills and knowledge acquired.

Introduction

Narrative Form is an amalgamation of many courses I have taught at Virginia Commonwealth University in the past 10 years. This includes junior level courses titled Sequential 1 and 2 (later retitled Visual Narrative 1 and 2), and Graduate Workshops for both first and second-year students in our MFA program. The paper significantly prunes some supportive projects and content that fills out a trajectory of study towards more advanced motion work.

I ground this coursework in fundamentally dealing with sequence: an order of images, words, and/or sounds experienced in a time-based arrangement. As a sequence unfolds over time, a story emerges. Even in short sequences patterns emerge that create a sense of progression, continuity and a fundamental story line.

This applies to a sequence of static images, multi-page documents, as well as kinetic media (video and film—as sequences of shots and scenes). Watching a movie, flipping through a magazine, listening to music: as different as these time-based media are, significant similarities exist in their creation and experience.

As in many design courses, important emphasis is on planning, thinking about planning, and how that becomes an internalized methodology aligned with a project's realization in time-based media, whether print-based or screen-based. In addition, much of the work I describe depends on thinking broadly about the nature of photographing images and, later on, the subtleties of motion and sound. I make very clear connections to photographing individual sequences of images and the filming of individual shots, as an elementary component of the photographic sources that students might use. Editing then becomes an activity that structures students' relationship, both formally and conceptually, to their communicative intent.

Fundamentals: Progression and Continuity

By definition, images in a sequence change and images in sequence are usually different from what comes before, and what comes after. The change between images is important in visual narrative. Students begin to explore the nature of that change early on, taking photographs, later assembling photographs into formal relationships to introduce progression and continuity.

Progression is marked by the difference between images. While two images can imply a progression, it is not clearly seen until three or more images are included, and larger patterns of development can be recognized. These changes can include scale, orientation, angle, number and so on. Continuity goes hand-in-hand with progression. It is a connection between images in a sequence. It is what is the same, or similar, as well the linking of forms.

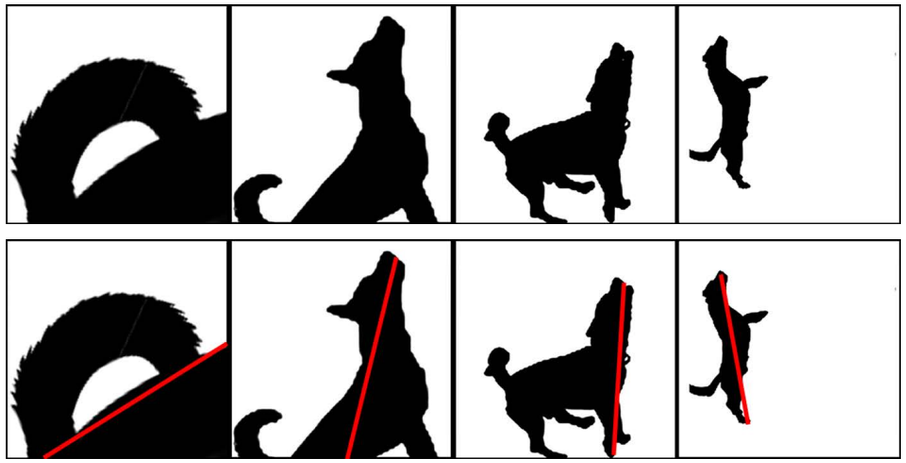


Figure 1: Progression. Image Source: Dimyadi 2008.

That connection can be quite literal: images, or parts of images, may repeat, or even merge into each other—connecting through visual alignment of forms within the image, sometimes achieved through cropping and re-orientation. The effect of the later is to extend and amplify continuity that may already exist.

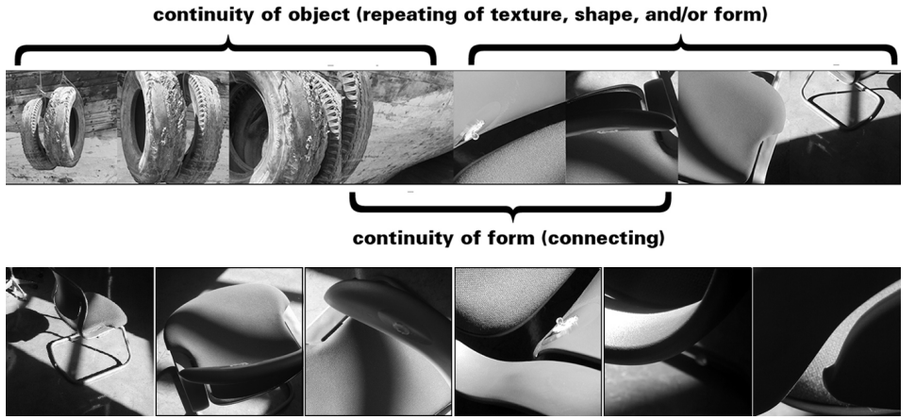


Figure 2: Continuity Studies. Image Source: Author

Switching from one camera angle to another can produce substantial difference from one image to the next: typically through abrupt switches between sequences, or cropping, or orientation, or a combination. This affords a wealth of opportunity; including breaking continuity for specific emphasis.

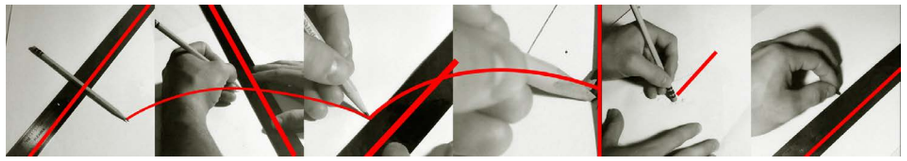


Figure 3: Progression and Continuity Studies

Anthony Roberts, VCU Student, created a short formal narrative based on breaking the tip of a pencil, and the unique solution to continue drawing with the point, 2008.

By focusing first on such formal attributes of progression and continuity from one image to another—concerned with what comes before and what comes after—students encounter the learning objective of a sequence leading the viewer through the work as a form-based story unfolds.

Traditional Narrative Structure

Most students of graphic design come to such coursework with only vaguely defined notions of narrative that are informed by lay use in popular culture and academic use in literature and writing, fine art and cinema.

The term narrative is commonly used to define the conceptual structure in literature. Synonymous with plot; it is what students commonly think of as story lines from children's fables to comic books to great literature and movies. It is not difficult to understand the basic notions of a protagonist, a catalyst, a climax, and several other story components. Knowing this specific definition of narrative is useful, but graphic designers are seldom involved in authoring such elaborate and detailed story lines within their work.

However, narrative in a broader sense can be widely applied to performing art and visual art, and design: graphic, architectural, fashion, interior, industrial, and product. All designed experiences, viewed through a narrative lens, reveal the story that unfolds in a cultural context; and this includes posters, books, advertisements, PSAs, documentaries, painting, sculpture, furniture, billboards—the list seems endless as the language used, and the way it is used, signifies the narrative.

For example, a phone book is an alphabetically-arranged story of who lives in a community, street signs and traffic markings are a story about how to drive and where to go, and to do so safely. A package of hand soap is a story about hygiene and (occasionally) beauty and social norms.

While these narratives are not literally scripts about actors, settings, and events, they do share the same characteristics with traditional narrative: they are contextual to, and often symbolic of, that to which they relate—society/community, transportation, and cleanliness. Within their cultural existence, these stories do unfold over time and often are as structured as traditional narratives.

For students in these courses, traditional narrative structure is useful to understand. German playwright and author, Gustav Freytag developed a useful analysis of narrative structure in the 19th century. Referring to classical dramatic structure, Freytag proposed 5 parts in what would later become known as the Freytag pyramid:

1. Exposition (opening, inciting incident)

2. Rising action

3. Climax (or turning point)

4. Falling action

5. Dénouement or catastrophe (Resolution); depending upon whether the drama is a comedy or a tragedy (Freytag 19-27)

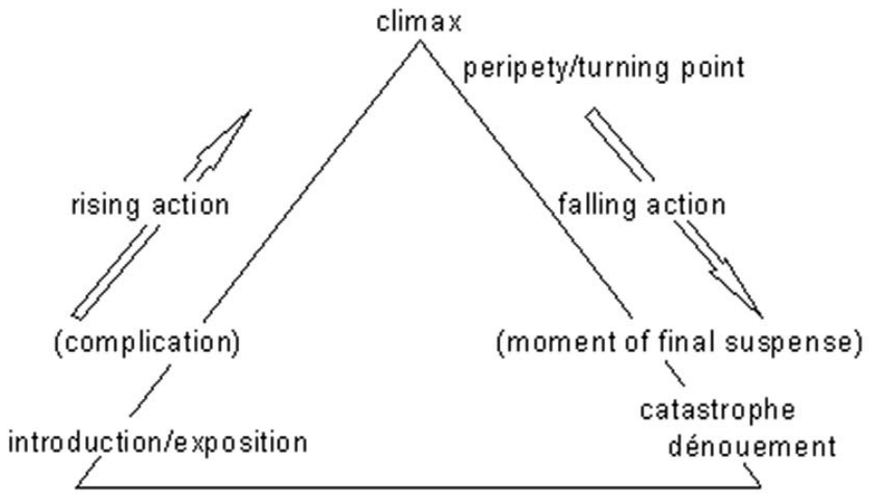


Figure 4: Freytag's Pyramid. Source: Jahn 2003

This is hardly a model to use precisely to create a visual presentation. But within it is some useful guidance. The exposition is the opening. Much like the opening shot of a scene in a movie, it provides context: a setting and mood—what the audience should focus on and how to think about it. Rising action refers to a catalyst: establishing a conflict, obstacles, friction, discordance—anything that carries forward from the introduction by presenting unease. Climax is a culmination that reaches a breaking point and marks some kind of significant change for better or worse.

These are the basic components of a simple narrative: opening, rising action, and climax. Dramatic stories are generally considered incomplete if there is not at least a forth component: the resolution.

A resolution, or conclusion, perhaps preceded by falling action as a result of the climax, is usually expected to bring the storyline closure and, as a result, define the story as a tragedy or comedy in the classic sense, often by using a kind of closing shot in response to the opening shot.

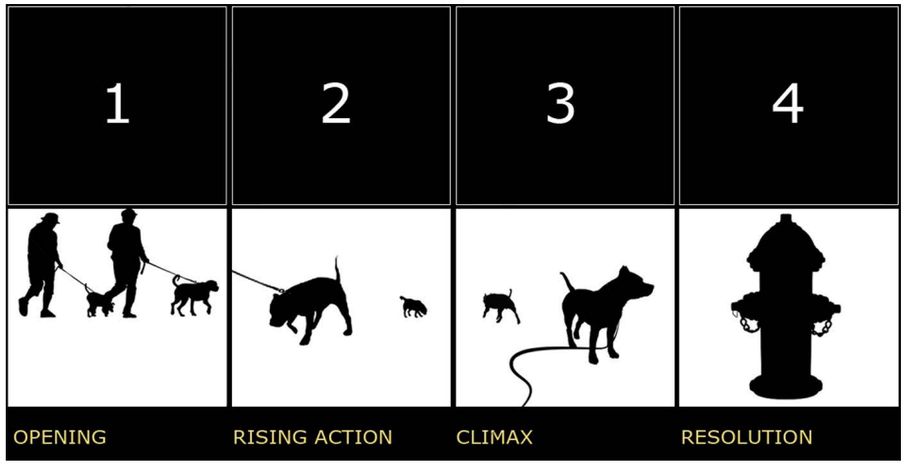


Figure 5: Four-Part Narrative Derived from Freytag's Pyramid. Image Source: Dimyadi 2008.

In considering this basic model students may see beyond progression and continuity between images—not as an alternative—but specifically that this formal joinery can support and advance a storyline.

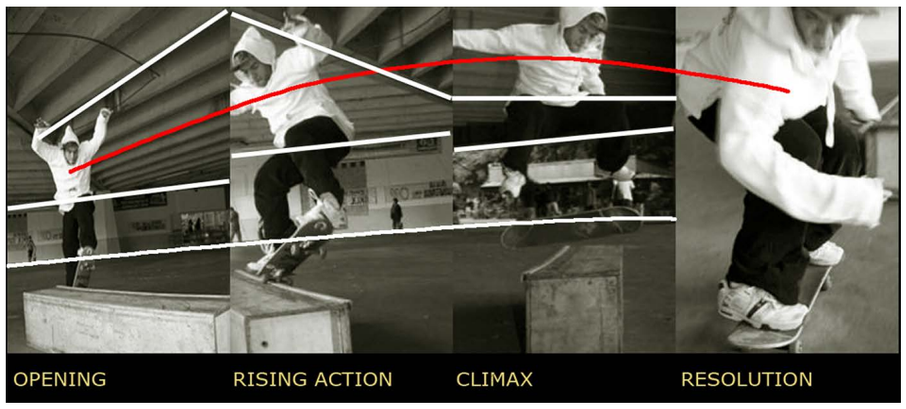


Figure 6: 4 Four-Part Narrative Plus Continuity. Image Source: Eisenhour 2011.

The Shot and the Shot Sequence

I regularly assign students to photograph a task or activity from beginning to end. This means there is an objective, or conclusion at the end, and there is a starting point serving to open the sequence. At the start they focus on a single camera position and consider carefully options for framing the action, capturing the full chronology.

I ask them to consider common or not so common everyday activities or tasks that are interesting. If they choose a subject that they find or presume to be boring, chances are the photographs will be boring as well, unless a way to "see" it differently can be found. I do remind them that seeing even the mundane differently is an important skill in design.

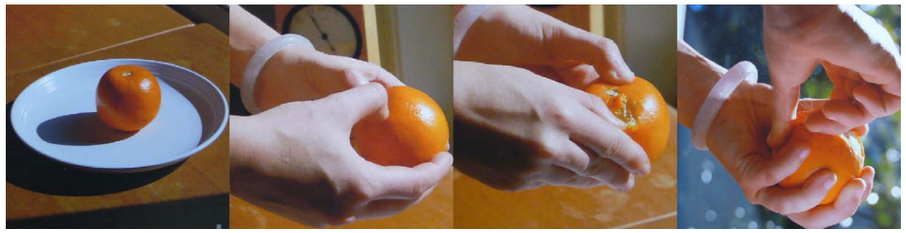


Figure 7: 4 Images from Peeling an Orange. Karolina Bassi, VCU Student, 2011.

Tasks (for example, running a fifty-yard dash) have an objective, a defined beginning and end, and lend themselves very well to this study. Non-tasked oriented activities (for example, swinging on a swing) may be far less "goal" oriented, but still have starting and ending points with actions in between.

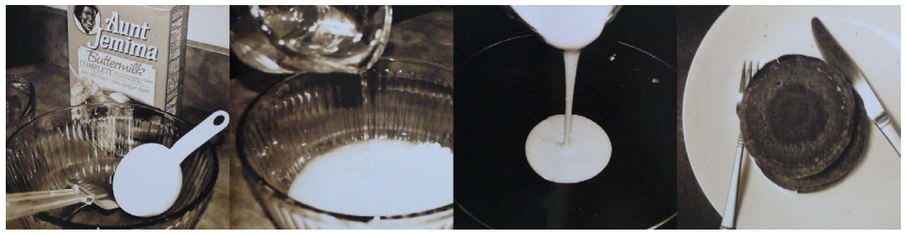


Figure 8: 4 Images from Making Pancakes. Monique Taylor, VCU Student, 2010.

Students photograph 20-30 images and present these, editing out only obvious mistakes. When taken in chronological order these already form sequences. Sometimes these are very deliberate and prescriptive, such as a progression of a basic physical property, a rhythm of repetitive movements, or precise intervals useful in understanding the subject as a study of motion.

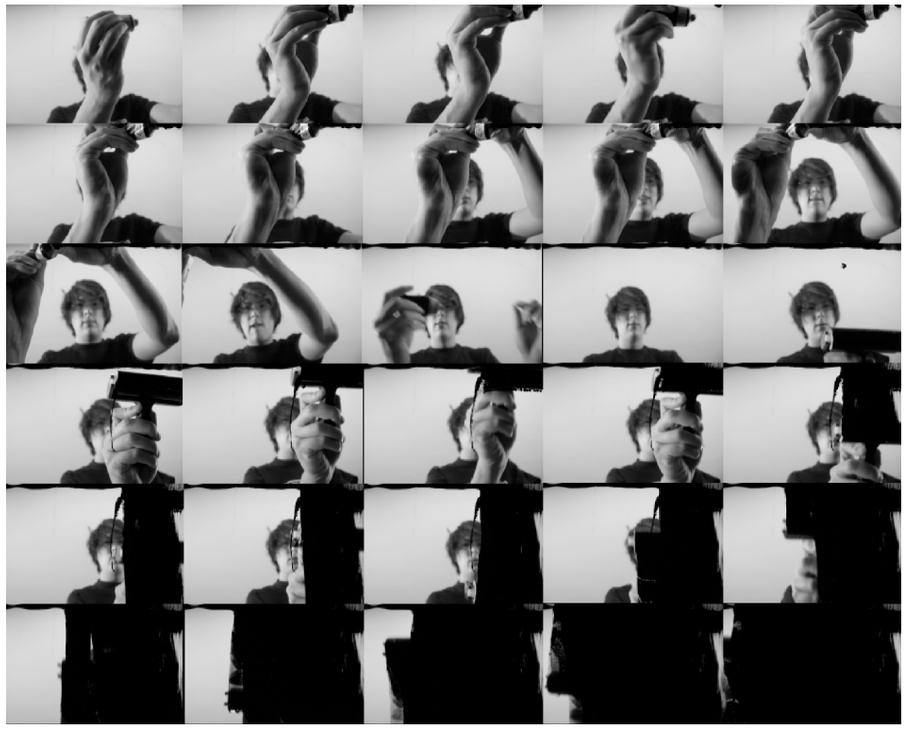


Figure 9: 4 Shot Sequence on Rhythm. Sage Brown, VCU Student, photographed inking a glass plate, from below, 2006.

Another prescription would be to photograph two paired tasks or activities. The pairing could relate formally (for example, involving similar shapes) or conceptually (building things, painting things, etc.), or both. These pairings are particularly useful when combined with telling a story. The story may be simple and abstract or more elaborate or metaphorical. Often times this is to be an interpretation of introduction, rising action, climax and resolution.

Figure 10: Paired Tasks in Narrative Sequence.
Laura Kang, VCU Student, 2006.

In all cases, students photograph their own images, gaining control over the camera, distance to subject and background. Factors such as lighting, whether a subject is moving against a background, and the camera's own movement are either addressed prior to shooting, or afterwards (as students discover that an overhead florescent light, holding the camera at eye-level, or using a high-shutter speed might not have been the best choice). There are of course other factors that influence the feasibility of the assignment.

In re-taking photographs, I recommend additional considerations. Among them: Consider the possible alternative camera angles for the subject: high, low, eye-level, and how close the camera is to the subject; the possible positions of the camera to the subject—that is, if the camera could move with a moving subject (trucking), or towards/away (dolly or zoom), pan (left or right) or tilt (up and down) following a moving subject; or be completely stationary with a stationary subject/background. Setting a white balance (if shooting in color) and determining focal range may be among the most important things to remember.

Anticipating the possibility of editing multiple shot sequences together, I often precede this step with a presentation about editing techniques common in film. Editing, I tell them, is literally based on the act of cutting up, re-arranging, and splicing together. It was originally

used to describe this process in motion pictures, but it applies to any similar act in composing a sequence—in film, video, graphic design, sound, and writing.

What is being cut up and rearranged is, in film, the shot: the basic unit of editing in cinematography—a continuously framed duration: a multitude of single images in rapid succession that give the illusion of motion. A shot is the equivalent in graphic design to a single image. However, it is also a progression of two or more images presented in succession: a shot sequence. Shot sequences are generally from the same camera and angle: they are from the same point of view.

A cut is a change between one shot, or one shot sequence, to another. Each change to a different shot or shot sequence is another cut. Cuts may show contrast or connections between shots (recalling progression and continuity).

The most obvious contrast is the camera angle, or angle of shot. It means, literally, the position of the camera: the direction and height from which the camera takes a shot. Cinematographers use the terms high angle and low angle, as well as eye-level (straight-on from subject-level-height). Any camera angle imparts significant meaning on how the viewer sees himself/herself in relation to the subject, e.g. a distant observer, from the subject's point of view, or perhaps as a participant in the action.

Figure 11: Changes in Camera Angle, and Parallel Editing Between Analogous Scenes. Source: Fricke 1992.

While not strictly the cinematographic definition, cross-cutting is a change from one image sequence to another and back again, typically of different subjects, orchestrated into a single sequence. An insert shot represents different camera angles, typically a close-up.

Parallel editing, or parallelism, means editing between different subjects by comparing and/or contrasting them through the lines of action.

To illustrate this in principle, I show a variety of these editing techniques in motion pictures, including some of the more famous references to cross cutting and parallel editing. These include the following:

The Godfather, Francis Ford Copula

Strangers on a Train, Alfred Hitchcock

Baraka, Ron Fricke

Star Wars, Episode IV, George Lucas

Many of these directors regard Vsevolod Pudovkin as an inspiration. Pudovkin was a lesser known, early 20th Century Soviet film director who introduced relational editing techniques, among them: contrast (a forced comparison between different yet metaphorical scenes, or between similar forms in very different contexts); parallelism (connecting two scenes visually often by matching formal elements within scenes, especially when location or time may be different); and simultaneity (cross-cutting between scenes unfolding at the same time) (Pudovkin 26).

For students about to edit images into a final sequence, and depending on what they have photographed, they could apply some of these techniques. For those with two or more subjects, the opportunity exists to apply parallel editing in a sequence of images of two subjects. For those with changes in cameras angles alone, simple cross-cutting between shot sequences can be the focus.

In all cases, students "play" with ordering a final sequence of close to 20 images. I prefer this be done with printed images so students focus first on the shot sequences and the

changes they create when cutting between different subjects and/or camera angles. Later digital manipulation allows them to focus on progression and continuity, refining the sequence.

Only later do I inform the students they have created a storyboard.

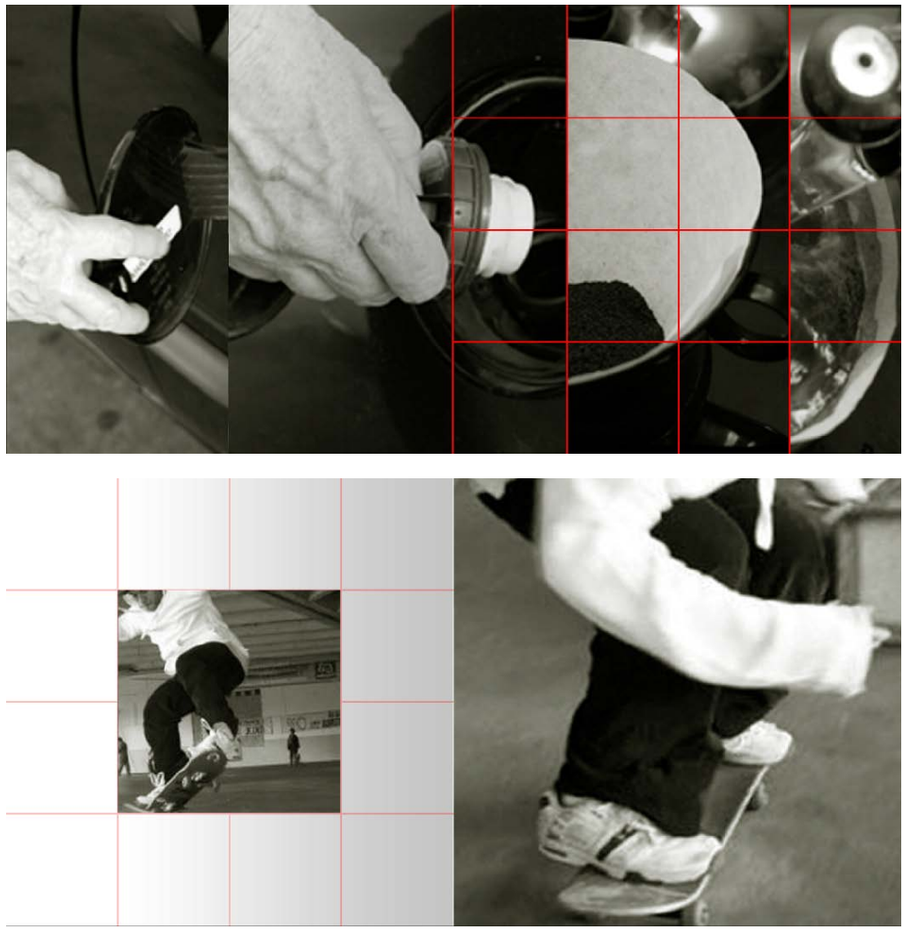


Figure 12: Framing the Page. Laura Kang, VCU Student, 2006. Eisenhour 2011.

The Book, a Time-Based Medium

The outcome of this project is aimed towards one of the oldest time-based media in the graphic designer's arsenal: the book. Over the years I have evolved this from traditionally linear saddle-stitched or accordion publications to complex dimensional books. Even in traditional book structures, more opportunity exits in sequencing images as they share space on a page and across spreads, even jumping across the spine or other folds. Rather than arbitrary subdivisions of the frame, these are more significant to the re-presentation of the shot sequences when proportional divisions of the page (and of the publication spread) allow repeatable (and therefore consistent) image proportions and cropping control.

As a dimensional book, I encouraged students to think broadly on the structure of their book as a means of augmenting the carefully edited shots into a structure that extends or magnifies their intention. The edited image sequence(s) from previous work acts as the basic storyboard for this project; however, the dynamics of multi-image pages, double-sided pages, dimensional pages based upon a saddle-stitch binding—and in some cases the integration of parallel editing—open more opportunities and challenges than the "one-image-per-panel" of traditional books.

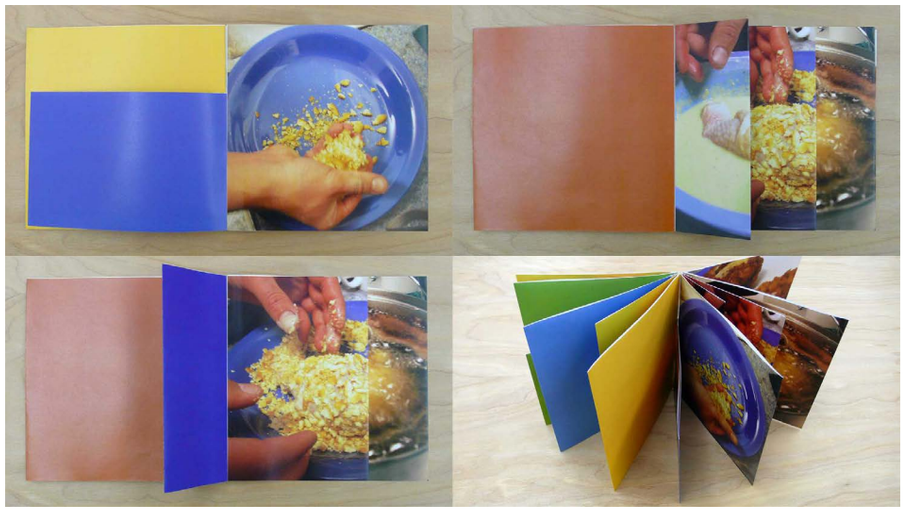


Figure 13: Making Fried Chicken: Dimensional Book. Catherine Gilboy, VCU Student, 2011.

Figure 14: Peeling an Orange: Dimensional Book.
Source: Karolina Bassi, VCU Student, 2011.

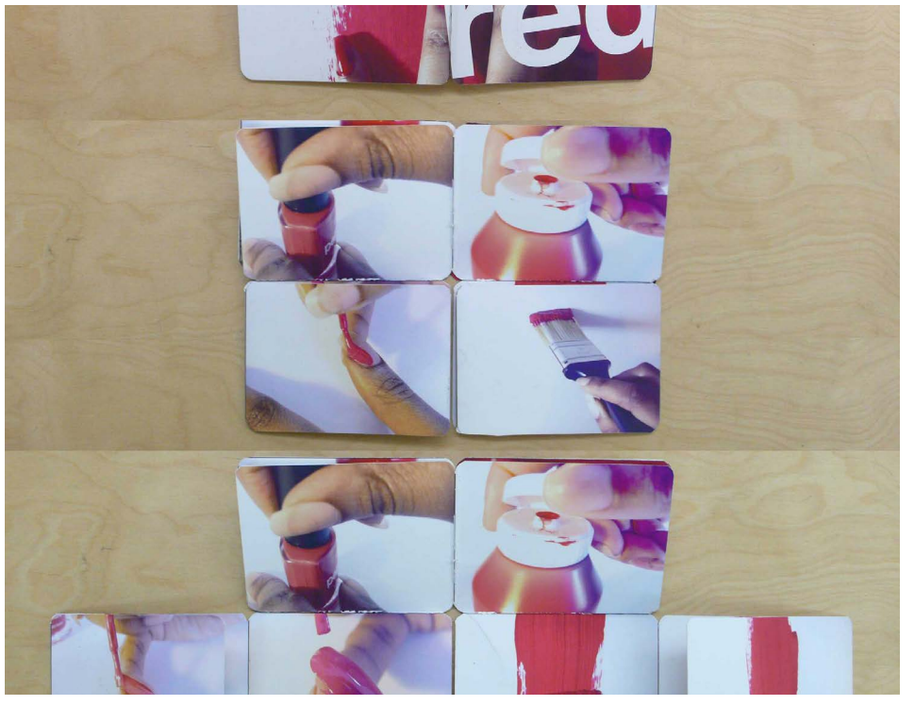


Figure 15: Painting/Painting: Dimensional Book.
Rachel Topping, VCU Student, 2010.

Figure 16: Letter/Gift: Dimensional Book. Christina Gleixner, VCU Student, 2008.

The Bridge to Kinetic Media

The switch from printed sequences to digital media can be abrupt simply because of the difference between the technological underpinnings for print versus video. One logical approach would be to bridge that division by continuing to work with the image sequence developed previously. The few times I have done this produced elaborated slide shows, few of which could properly challenge the inventiveness and experience of the dimensional books. Even the students tired quickly of the "Ken Burns" effect.

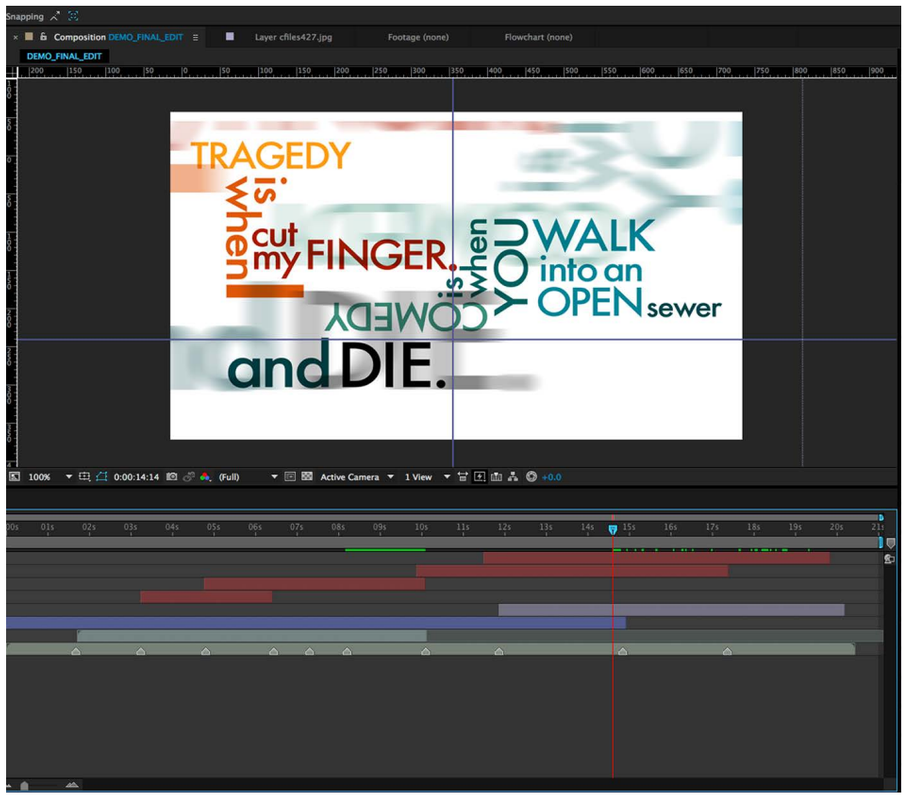


Figure 17: Timeline Construction Based on Audio Events (Adobe AfterEffects). Jason Mamaril, VCU Student, 2010.

More successful is to soften that switch by injecting a normative type-in-motion project to stand in contrast with the image-only approach of the books. Such projects have been common fair for at least 15 years as students interpret verbal material—such as a dialog or monologue—into motion. The manner I have students approach this work is different from my colleagues, and is in stark contrast to the storyboarding I have often seen. It lays the foundation for later work. I have students focus on the timeline as the place to develop the work. I often tell them not to storyboard, at least in the traditional way.

While students focus on the syntactic segments of the language as written, the main aim is to use a sound loop, anywhere from 4-10 seconds long, to structure the sequential presentation of the reading. This permits a focus on sound as the driver of the work: it establishes a pacing for all movement, a conceptual continuity for motion and reading. Because it is a short loop, they study it, internalize it, and apply it as a structure with the timeline. The degree students internalize the planning, or simply build from beginning to end of a timeline, can be a useful lesson, and foreshadow the more intense planning needs later.

Visual Score for The Design of Opening Titles

Film titles are also common fair for visual narrative and motion-oriented graphic design education. The visceral appeal to students of both typography and cinema makes it a popular "go-to" project. The language of film titles has continued to change exponentially over the last 30 years. In most regards, it is still a suspicious design project as the typographic component is exceedingly prescriptive. The parameters of film permit little flexibility (being governed by industry convention and production contracts) and seldom challenged. There is also the nature of what the film title is with respect to the film it introduces.

Designing titles for a film, students have to consider that the film already exists. They are in search of a proper representation for its "cover." Although designers have more control over aspects of time when designing a title for a film versus the cover of a book, the functions are very similar.

Film-titles act as a moment for the audience to change modes from the everyday (life outside the movie theater) into the actual film. Aside from the dimming of lights right before the beginning of the movie, film-titles offer a moment of transition from the outside world to the inside; a very intimate and fragile moment created by the filmmaker. The designer's job is to retain—possibly elaborate on—the intimacy or other special characteristic of the film.

Film-titles should create curiosity for that which is about to come. The student's aim is to give only a hint of that. Such hints can be an elaboration on one single moment in the film as well as an abstract visual notion of the entire story or plot; of course it can also be a combination of both. When searching for soundtrack, visuals or treatments of type, I remind students to not design a trailer for advertisement purposes, and to not overtly give the story, plot or outcome of the film away.

It is with this premise I introduce the film title in visual narrative, but it is the approach to this in a distinctly structured manner that is the actual focus. It is organized planning that is more useful to students of design. It renders a design plan that transfers easily to more sophisticated technology. It permits wide latitude for interpretative kinetic play. As a direct extension of the previous kinetic work, it is fundamentally based on sound as the driving structure.

We first watch the film. Students watch it twice: first as a member of the audience, secondly as a critic of the storyline and editing. Films they have not seen yet are notable for their production and editing (The 400 Blows, Night of the Hunter). Films that are ingenious for their non-linear chronology (Memento). Ample background information on the director as well as critical reviews of the film when it was released.

Students then develop a conceptual approach to the title design, one that relates to the plot. They search and edit, and sometimes can create, a soundtrack, as well as a visual image sequence. Image media permitted include photography, digital video, and/or illustration/animation.

The most important step of this project develops a "visual score" as a planning and production tool. The visual score is the rough plan for the sequence. It is a timeline-based visual diagram that uses the soundtrack as pacing for text and image(s). Students are familiar with idea of a score, especially musical notation. But they are also familiar with similar design modeling tools. An interaction diagram that details user experience design, thumbnails for a publication design, even storyboards are similar in many regards.

I describe the visual score as a production storyboard; it shows chiefly the "in" and "out" points of visual and audio elements in a kinetic media project. The score shows the duration of these elements and where changes, or cuts occur between them, all in relation to a timeline.

The visual score contains the timeline, noted or annotated sound track audio events, sound visualization, on-screen typography, and visual imagery (as stills). The timeline is shown in half-second increments. Labeled soundtrack audio should be reasonably accurate, and specify frame number in accordance to the video coding required (such as 25 or 29 frames per second).

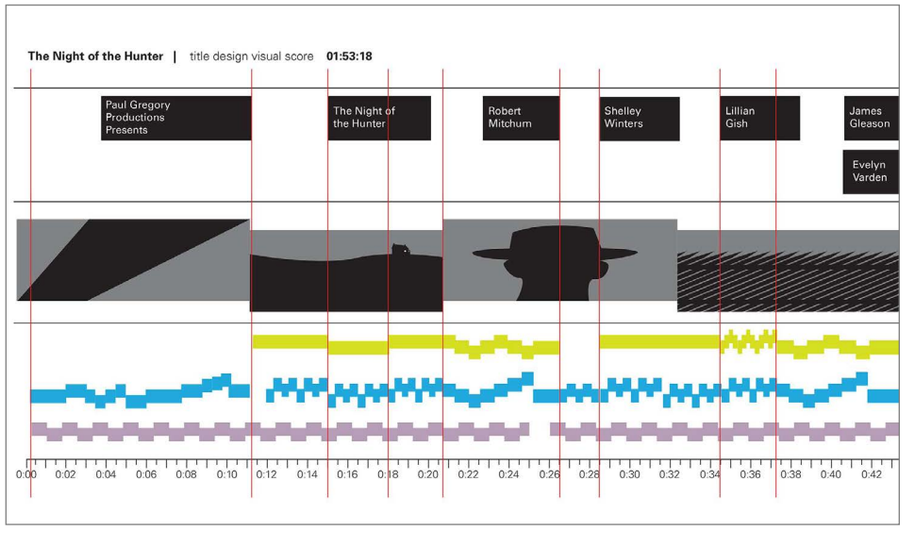


Figure 18: Visual Score for First Part of Opening Titles for Night of the Hunter. Lauren Puga, VCU Student, 2013.

Most importantly, this is an “open” storyboard. It is not a finished time-based composition, only the framework to place elements in a sequential relationship to each other and the timeline. Students do not indicate transitions (fades, wipes, etc.), the motion of typography, nor anything other than basic composition on the screen. This allows them to make these decisions later after completing a rough edit, accompanied by the recurring type-in-motion concerns that would have been introduced previously.

The most striking aspect of the visual score is the sound visualization. While audio waveforms are useful to understand basic sound structure and amplitude, it falls short of showing the timbre, quality, richness of an audio track, and significant changes and events within the audio. Instead, students visually interpret the sound based on preliminary labeling of the waveform, paying close attention to chord changes, percussive rhythm changes and any other notable audio events. Absolute precision is not needed.

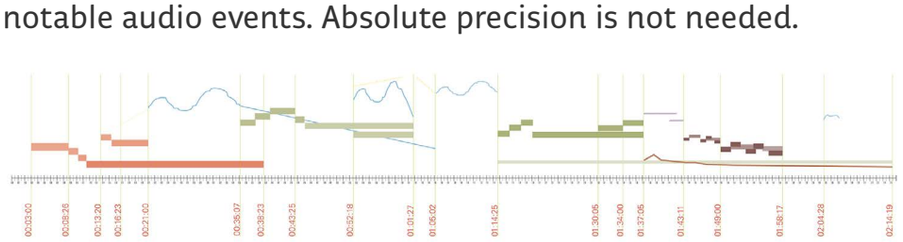


Figure 19: Sound Visualization. Cara Herchenrother, VCU Student, 2011.

The project’s development is centered on this soundtrack as it relates to the students’ approach to their communication concept (a concept they must be able to verbalize when discussed). The chosen soundtrack should fit, support, or amplify the concept, and be the “driver” of the pacing of all visuals, and later on the refinement of motion qualities of both image and typography.

Students develop an image sequence (of either stills, video, or both) simultaneously, and continue to evolve this during the first weeks of this half-semester project. Both images and soundtracks are previewed in the visual score when it is first presented on paper. It next becomes the basis for building a “rough edit” of the title design (often in Adobe AfterEffects).

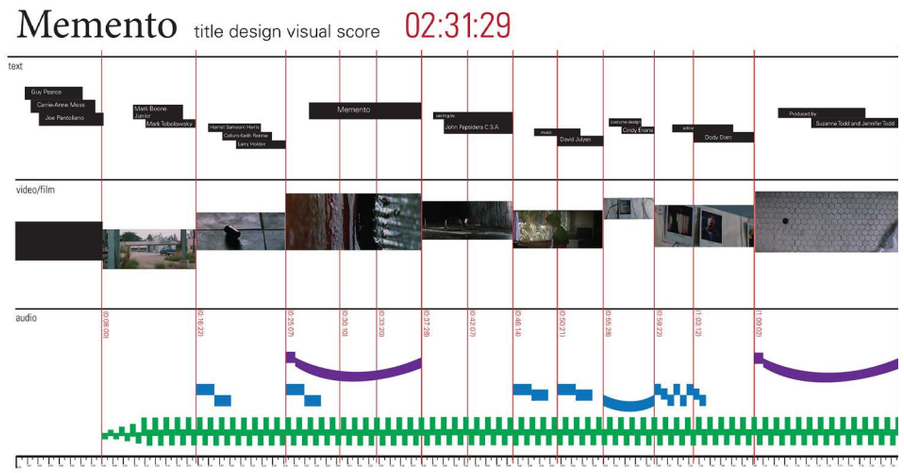


Figure 20: Visual Score for First Part of Opening Titles for Memento. Daniel Stovall, VCU Student, 2012.

After a careful review of the rough edit, students finalize the title design, adding or improving motion and other effects, for a finished piece due on the last day of the course.

Figure 21: Screens from Opening Title Design for Memento. Daniel Stovall, VCU Student, 2012.

Mr. Stovall focused on the slow, seeping movements of blood-like stains dropped into water lying on top of selected images in a glass tray.

Figure 22: Screens from Opening Title Design for Night of the Hunter. Lauren Puga, VCU Student, 2013.

Ms. Puga appropriated the formal language of German Expressionist cinema found throughout the film and photographed dimensional cutout scenes, foreshadowing numerous key moments to come.

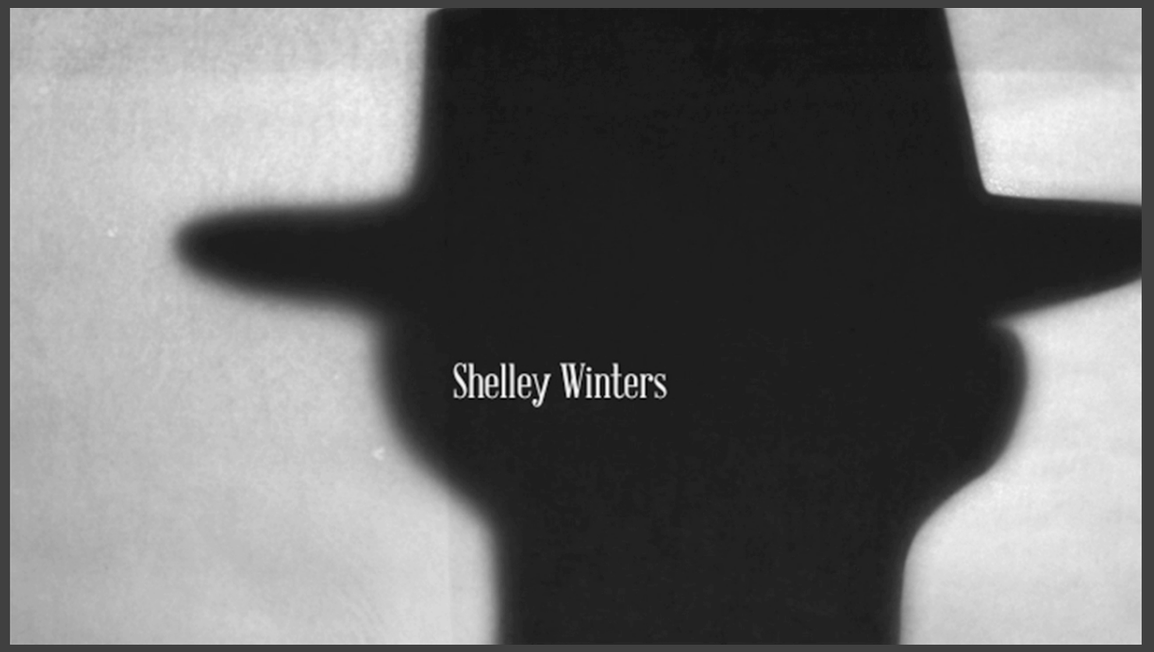
Not The End

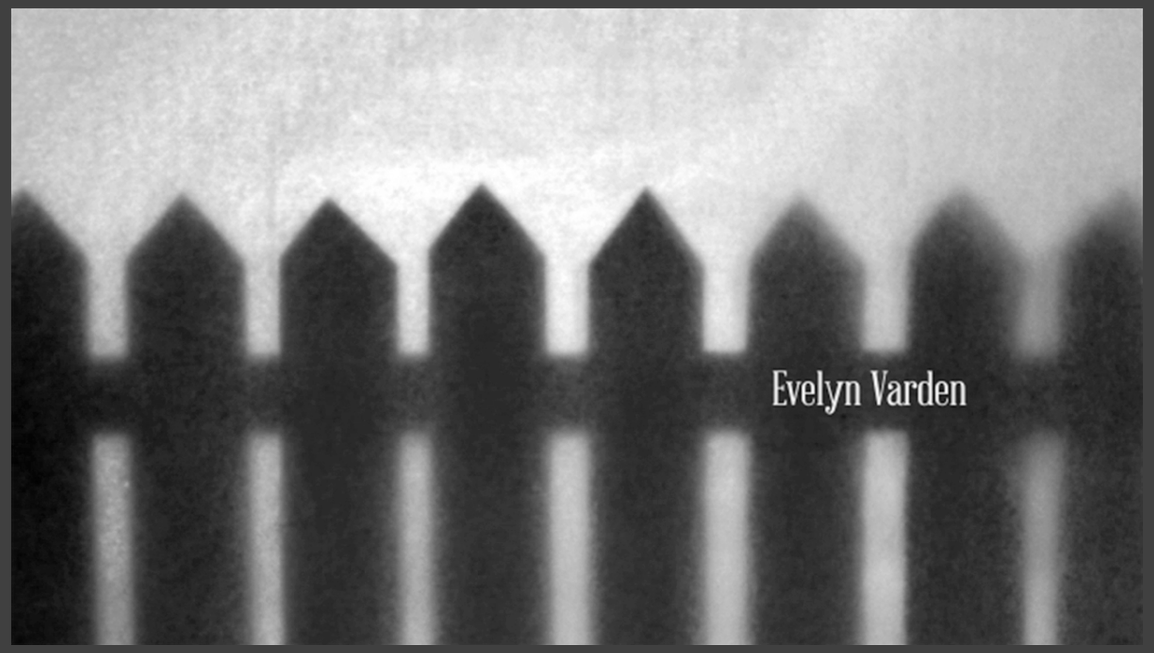
I use the visual score similarly in many kinetic projects that are not film titles: often to support a cap-stone or culminating complex motion project. While not every aspect of every visual narrative project comes back to inform the student in these final works, the understanding of the relationship between printed and digital time-based media is internalized by the end of 15 weeks. More importantly, the planning process—one that allows for changes in the plan once launched; then using the plan to coordinate the overall structure of motion work, with refinements to progression and continuity, is what students take away from the coursework.

I repeatedly return to the overlap between print and kinetic time-based work, and the aspects that transfer from one medium to the other. Those who appreciate movies know the end of a movie is not the end; just as closing the book does not end the experience. The story and the way it is told through the editing and photography persists, and influences how we consider the narrative long afterwards.

Additional Supporting Media

https://vimeo.com/channels/mode2015





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VCU STUDENT MOTION WORK

Stovall, Daniel, Title Design for *Memento.* GDES 346 Visual Narrative 1, 2012. Digital Video.

Puga, Lauren, Title Design for *Night of the Hunter.* GDES 346 Visual Narrative 1, 2013. Digital Video.

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His professional career spans nearly 30 years and includes web interface design, print/book/publication design, illustration, and for the last 6 years, video.

His work has been exhibited, published, screened, and broadcast internationally. He has taught in the design programs of VCUQatar, Rochester Institute of Technology, Rhode Island School of Design, Towson University, University of Maryland Baltimore County, and the Corcoran School of Art.

Motion as a Fundamental Design Strategy in a 2D Foundations Program

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Artists and Designers have referenced the illusion of movement and motion in their work for centuries, but with the technological advances in the past few decades, durational motion has become an essential and foundational tool for artists and designers. While a moving graphic is two-dimensional, it defies the limitations of a flat graphic as it allows for expanded visual strategies through the addition of duration. Moving images grab attention, unfold a narrative, and exhibit visual change through time. Through advances in digital motion design software and cultural relevancy and demand, teaching motion design at a foundational level is both accessible and necessary. Foundational design courses are offered at colleges and universities as a foundational, gateway course for studio art and design majors, and at times an arts elective option.

Keywords: 2D foundations, Motion Design Education, Elements and principles of art, 4D

Art and design programs all offer some version of a two-dimensional foundations course as well as a three-dimensional foundations course for students in the first year or two of study. There is a growing trend in art and design schools to also require a four-dimensional foundations course. Another approach is to teach 4D as a strategy within a 2D and/or 3D foundations course. Teaching 4D could encompass any media or technique that considers time/duration as a key strategy- video, animation, interactive design, time-lapse, performance, sound, etc. Launching the Imagination by Mary Stewart is a widely used textbook series in Foundations courses. In Stewart's A Comprehensive Guide to Basic Design, the book is divided into four parts: Two-Dimensional Design, Concepts and Critical Thinking, Three-Dimensional Design, and Time Design. While we have yet to build a 4D foundations course into our curriculum, we are incorporating time-based strategies within our 2D and 3D courses. This curriculum case study demonstrates the necessity and benefit of introducing motion design as a component of a two-dimensional design curriculum.

Course Description

The fundamentals of two-dimensional design consists of the strategies and tools an artist or designer uses to execute a composition on a flat picture plane. In our foundations course, we identify these design strategies, research the history of their usage and recognize their contemporary applications including their symbolic, cultural and aesthetic influences. The objective is to understand the advantages gained from these tools in order to utilize them in one's art not as a formula but as an aspect of the intuitive process. As artists and designers, intuition can be a tremendous ally, but conceiving of a strategy to organize and execute those impulses can make a good work of art or design become great. A foundations curriculum focuses on the elements (space, line, value, texture, shape, form, color) and principles of design (harmony, variety, balance, proportion, dominance, movement, economy, unity) to understand how to make the most effective works of art and design. This course places a strong emphasis on understanding the power of color— the properties of color, theoretical approaches to color interaction, symbolic and psychological

impact of color, the ability to control and engage the viewer with color placement, and how to mix and master color in order to use it to full advantage in a composition.

Curriculum Overview

In our two-dimensional foundations course, composition is explored and applied through concept development and craft. The students build concepts by responding to triggers and prompts that they research and explore. Their emerging concepts are then strengthened through their application of compositional strategies and media. Throughout the curriculum, students exhibit their understanding of these skills in six projects that focus on elements of art and principles of design using hands on media and digital software. The motion project discussed in this case study is the fifth project. The four projects leading up to it establish the compositional, conceptual, and technical foundation that allow the students to build a complete animation.

Figure 1: Roseline Odhiambo, Dandelion Study, pen and ink, acrylic paint, and mixed media paper collage, 2014

Project 1: Manipulating the Elements

In the first project, students are introduced to five of the elements of art (line, shape, space, texture, and value). The students choose an object of interest, and research the cultural, historical and symbolic content loaded within that object. Simultaneously, they research contemporary designers' and artists' uses of these elements. They find two art and/or design examples for each of the five elements that push and inspire their own exploration. Pulling from their visual and contextual research, they develop ten small black and white compositions that highlight and manipulate each of the five elements twice. We begin with hands-on media explorations using pen and ink, paint, collage or mixed media. A variety of media applications are demonstrated, and students choose the technique that best fits their concept and composition. This project introduces the students to media exploration, creating multiple solutions to a single prompt, and the power of using the elements of art as a compositional and conceptual tool.

Project 2: Transformation with Color Harmony and Color Contrast

Color is a significant and powerful elemental tool, therefore we dedicate the second project wholly to it. After a loaded but concise introduction to color's properties, theories, and applications, students start to consider color beyond it's first impression. They see that a color's physical property is imbued with emotional and symbolic content. They begin the project by directing their composition through photography. First, students insert an object of their choice into an environment and photograph it. Or they may choose to strategically angle or position the camera to capture the interruption of an object within the frame. We ask them to consider how their insertion or interruption changes the agency of the object and/or the scene. We ask them to continue to transform expectations through color scheme explorations of their image. They create four individual color scheme "paintings" of their photograph, using acrylic paint for two compositions and Adobe Illustrator for two. In the acrylic paintings, they apply distinct schemes while learning color mixing, placement and paint application. In Adobe Illustrator they transform their photos into vector graphics using Image Trace and apply chosen color schemes and strategies through Live Paint Bucket, Swatches and Recolor Artwork tools. This is the first introduction to using digital software.

We introduce them to Illustrator's interface and tools, and focus their attention on Illustrator's ability to quickly recolor vectorized photographs, scanned drawings, or shapes. During

critique we discuss the differences between using additive and subtractive color and hands-on versus digital media.

Figure 2: Quinn O'Connell, Color Studies, acrylic paint for the two on the left and Adobe Illustrator for the two on the right, 2014.

Figure 3: Sophia Hooper, Color Wheel, Adobe Photoshop, 2014 (above) Erin McAuliffe, Color Wheel, Adobe Photoshop, 2015 (right).

Homework: Digital Color Wheel

In addition to the color project, they are also given a color related homework assignment. Using Adobe Photoshop, students create a digital color wheel from twelve photographs they have taken. After a brief introduction to the Photoshop interface and key tools, students work independently outside of class to complete the wheel. Having the students explore Photoshop through an independent project teaches them how to strategically navigate complex software by using basic knowledge combined with online tutorials, chat forums and helpful websites. Upon completion of the assignment, students present their final wheels to their peers and have the opportunity to share any struggles or techniques uncovered throughout their process.

Project 3: Illustrating the Principles

The third project introduces the students to the principles of design (harmony/unity, variety/contrast, balance, rhythm/movement, proportion/scale, dominance/emphasis, and economy). Students begin by defining a subject matter, concept or theme that they research and visually explore through purposeful compositional application of the principles of design. They create a series of eight small compositions that promote their concept while illustrating a principle. Using harmony and variety as compositional framework, they connect their content/subject with a specific principle. For example, one composition will illustrate harmonious balance while the other illustrates contrasting balance. The elements of art help push their compositions towards harmony or variety along with their application of media. At this point in the semester, the students have been exposed to acrylic paint, pen and ink, cut paper collage, Adobe Illustrator and Photoshop, and mixing any of the before mentioned media. To strengthen this exposure, during this project we give more in depth demonstrations with the hands-on media, along with more in depth tutorials of digital media. With this foundational knowledge in digital design tools and hands-on media, students are much more confident in choosing an appropriate vehicle to execute their concept, aesthetic style, and/or exploratory desires. This project produces a series of well thought out small studies that show their understanding and exploration of composition, concept and craft.

The first three projects in this curriculum introduce the students to compositional strategies and asks them to consider and use those strategies purposefully in their work. Although somewhat dictated, each of these introductory projects encourage individual choice and aesthetics to emerge through concept, composition, and craft. The students' knowledge, application and approach gradually builds, giving them confidence in their work and awareness of their aesthetic. This marks the middle of the semester and the transition to projects that require more compositional direction on the part of the students. They will apply their knowledge to the remaining projects strategically to push the media and concept. Project one through three are completed by mid-semester after which, students transition to projects four, five and six that require a more individualized approach to concept development and strategic media choices.

Figure 4: Lindsay Huth, Perceptions of America, acrylic paint, cut paper collage, pen and ink, Adobe Illustrator, Adobe Photoshop, and mixed media, 2013.

Project 6: Reflection of Art/Design Statement: Personal Visual Economy

For the final project, we ask students to reflect on the work they have produced throughout the semester- keying in on their compositional, conceptual, and material trends and strengths. The final project is open concept, open media and open scale. The hope is that they have established the foundation of a personal practice that they could continue without outside direction. In order to guide them, we have the students research professional art and design statements, which introduces them to the way artists and designers write and reflect about their practice as a whole. After this reading and reflection, the students create a piece, and write a statement that best represents their personal visual economy.

Memory as Conceptual Prompt

We ask the students to explore a personal memory to conceptually feed the fourth and fifth projects— the fourth, a painting, and the fifth, an animation. Using memory as a conceptual prompt works well for these two projects because it's durational and has an inherent narrative which provides multiple facets for exploration and research. Because memory is affected, changed and/or enhanced over time, it has numerous characteristics that can be multi-layered, multi-dimensional, abstract, disjointed, blurry, imaginary, constructed, repressed, etc.

First, we have the students spend time researching their memory. They begin by writing a journal entry that logs any and all aspects of the memory that could include sight,

sound, geography, time period, emotion, dialogue, inventory of people and things, etc. Next, we ask them to dig deeper and to investigate aspects of their memory that they have not considered such as: going through photo albums, interviewing friends and family involved, engaging in social media platforms, researching the location and looking at news articles from that day. The purpose of this is to find out more, and also, to discover less personal aspects of the memory that may make more universal imagery.

Project 4: Memory Meets Research Painting

For the remaining projects, the students make their own compositional choices as to which elements and principles will best express their concept. But to help them navigate the suddenly wide-open waters, we lead them through a connection seeking exercise. We ask them to connect aspects (emotions, time, place and people) of their memory to each of the elements and principles. For example, "If your memory was a color what color would it be? Would it be bold, saturated reds or cool, detached blues?" They end up with lists of compositional and color strategies that they could pull from and utilize in their projects. We emphasize collecting, writing, listing, concept mapping and connecting as much as possible to their memory. The more they content they gather, the more they have to pull from for each of these projects.

Once they have journaled and researched their memory, students begin sketching the composition for their paintings in

their sketchbooks. We emphasize using a layered technique for their paintings in order to incorporate the many aspects of their memory. They break their memory into layers of images, moments and meaning- considering compositional strategies, representation and abstraction, and the hierarchy

Figure 5: Anna Bourbonnais, Memory Painting, acrylic paint, 2015 (left) Madeleine Yemc, Memory Painting, acrylic paint, mixed media collage, and image transfer, 2015 (right).

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Stop motion is truly a basic strategy in motion design as it takes images and allows them to be sequenced in time in order to tell a story. It's easy to render and execute with low technological know-how involved it becomes a fun beginners project that produces a rough but fun aesthetic quality. It tends to be playful. Stop motion is easy to teach and it forced students into thinking sequentially.

—G. Rinnert

of each layer. Some students create digital sketches, using Photoshop and Illustrator to help them visualize their layered composition before they begin painting. Using acrylic paint and mixed media on large gessoed paper or canvas, they begin to visualize their memory. The painting they create may capture their entire memory in a multi-layered construction, or may focus on a specific aspect, moment, or emotion.

Project 5: Space, Motion, Time and Tell: "Story" telling through motion and memory

Once the research and compositional layout is well under way on the memory paintings, we introduce the fifth project. We ask the students to create a thirty-second animation of their memory, using the research initially gathered from their painting as a starting point. We unfold this project slowly, beginning with the notion of time. Durational works of art and design have the ability to let the visuals unfold, build, move, change, pass, approach, descend, interrupt, disappear, reappear. We ask the students to consider their memory in relation to time. Time is clearly a component of their memory, but they may choose how to use it as a strategy. For example, they may choose to use time to unfold a linear narrative, telling the story of their memory from start to finish. Others may choose to focus on an emotion or feeling from their memory that they illustrate as non-linear and non-narrative. Some abstract or derivate from the memory, letting fantasy and imagination invade, which may result in a non-linear narrative, or a linear narrative.

We introduce the technique of stop motion first—a technique that is over a hundred years old and still widely practiced today. Stop motion allows the students to have complete control of the tempo, transitions, scene shifts, and duration. It also allows for greater passage of time over a shorter period. And it is technically achievable based on their material skills with hands-on and digital media (more on this later). To introduce the students to the possibilities of stop motion animation we show them a range of professional designers, animators and artists who create stop-motion shorts for commercial use, music videos, narrative animations, television and movie intros, conceptual projects, etc.

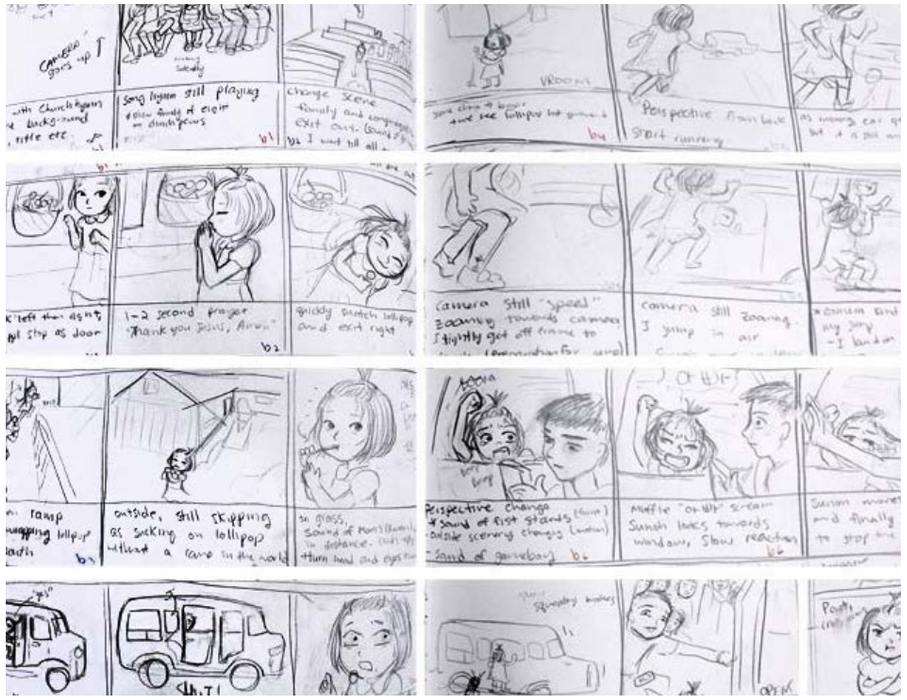


Figure 6: Joy Choe, Storyboard for Church, 2015.

After introducing the students to the possibilities of time and stop motion animation, we discuss storyboarding. In a storyboard, one can quickly visualize the narrative or non-narrative layout and shifts of the animation. Creating 20 small sketches (of potentially 200+ frames) allows them to consider the major scenes and motion strategies they will use. We discuss different durational animation strategies such as: zooming, panning, point of view, backgrounds and scene shifts. Using the storyboards as a foundation for mapping their motion piece, we ask the students to determine what aspects of their animation change or remain constant in the foreground and/or background. Additionally, they consider what is happening within that "change" related to scale, direction, placement, and/or opacity. As they plan and layout their animation strategies, we encourage them to determine the hierarchy and compositional qualities for the animation, considering their overall concept and focus. The storyboard provides opportunity for them to determine an aesthetic or style that best represents their concept, and choose the appropriate media (whether hands-on or digital). They consider how many frames it would take to create the transition

from one sketch to the next and the strategies necessary to complete that transition. The storyboard acts as a production schedule and technical reference for their animations.

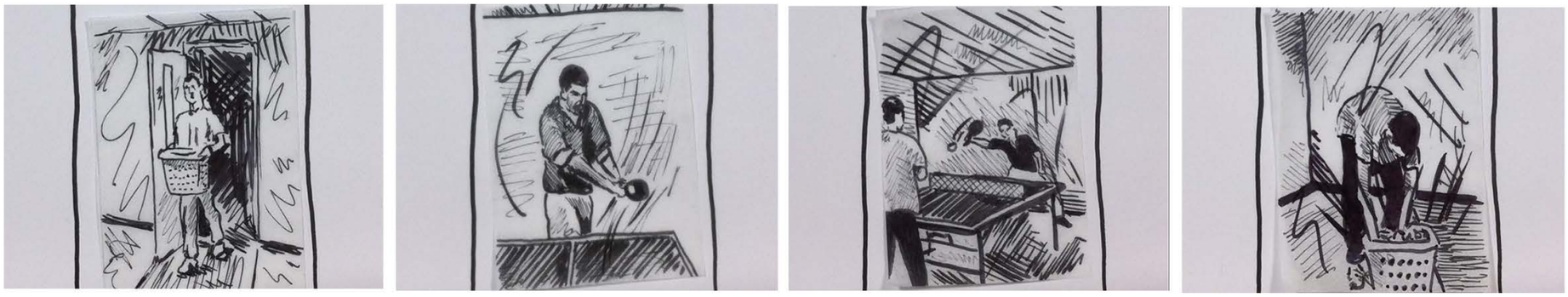


Figure 7: Jackson Wrede, Take Me On, Film Stills, 2014, Tier One Student Example.

Animation Strategies and After Effects

Although briefly discussed prior, we wait for the students to complete their storyboards before diving deep into the technical components of using Adobe After Effects in combination with hands on and digital media. We give a demonstration highlighting each technique and combination of techniques along with a detailed handout and list of online tutorials to reference. The handout and demonstration introduces them to the After Effects interface and the potentials within the program. At this point, the students have a general idea of what they want to animate and during the demonstrations, determine which techniques they will use. All students will eventually import their media into After Effects, but have options on how they build their animation prior to import.

Tier One: Hands-On Stop Motion Method

The first option is to create their scenes and components out of paper. They can cut, paint, draw, and construct their backgrounds, objects and characters. They make multiple sizes, expressions, angles, and colors of objects appearing in the animation. Once all components are made, they use a digital camera mounted on a tripod or copy stand to photograph each shift in motion. We use six frames per second as a standard measurement of time/motion to determine how many frames they need for a 30 second animation (roughly 200).

Tier Two: Digital Stop Motion Method

The second option is to build their "frames" in Photoshop or Illustrator. They may choose to digitally draw or collage their scenes and objects. After making their scenes and components, they record their shifts and changes by saving their individual "frames" as .psd files in numerical order. This method has the stop motion "look" as they are manually moving digital objects before each save. They likewise end up with roughly 200 "frames."

Figure 8 : Erin Reily, Campfire, Film Stills, 2015, Tier Two Student Example.

With either option one or two, the frames are created, and then quickly imported into After Effects using Image Sequence or Photoshop Sequence. Students choose the frame rate that works for their animation and within moments after import, have a complete stop motion animation. Either of these methods could also easily be brought into Adobe Premiere, Final Cut Pro, Quicktime Pro, or iMovie to make an animation. However, we choose to use After Effects so that we

may also introduce them to fluid motion strategies and animation of type. At the very minimum we require all students to animate their title and credits pages using in After Effects.

Tier Three: Digital Fluid Motion Method

The third option is to animate components completely in After Effects. We demonstrate importing a multi-layered Photoshop or Illustrator file or creating objects and text in After Effects and using the Transform tool to create shifting positions, scales, and opacities using the Timeline Indicator and Keyframes. We briefly introduce using the Anchor Point and Parenting Tool to create a more complex animation of a character or object, as well as the Puppet Pin, Effects and 3D options. Each semester the number of students that choose to build their entire animation in After Effects increases. And many students choose to use a hybrid of stop motion and fluid motion- importing their frames as a sequence and then animating their type, images, shapes and objects on top of or in between sequences.

Figure 9: Joy Choe, Church, Film Stills, 2015, Tier Three Student Example.

Once their animation is built, students import found or recorded sound clips that they edit and layer into their animation. Adding sound is like putting the period on the sentence. It adds to the fourth dimension by enhancing and even creating a more believable and engaging animation. For example, one student had her characters walk off scene. While looking at the same empty scene, we hear the sound of a door close and a car ignition turn. In the next scene, we see a car driving away and we believe that the characters are in the car even though we didn't see them get in.

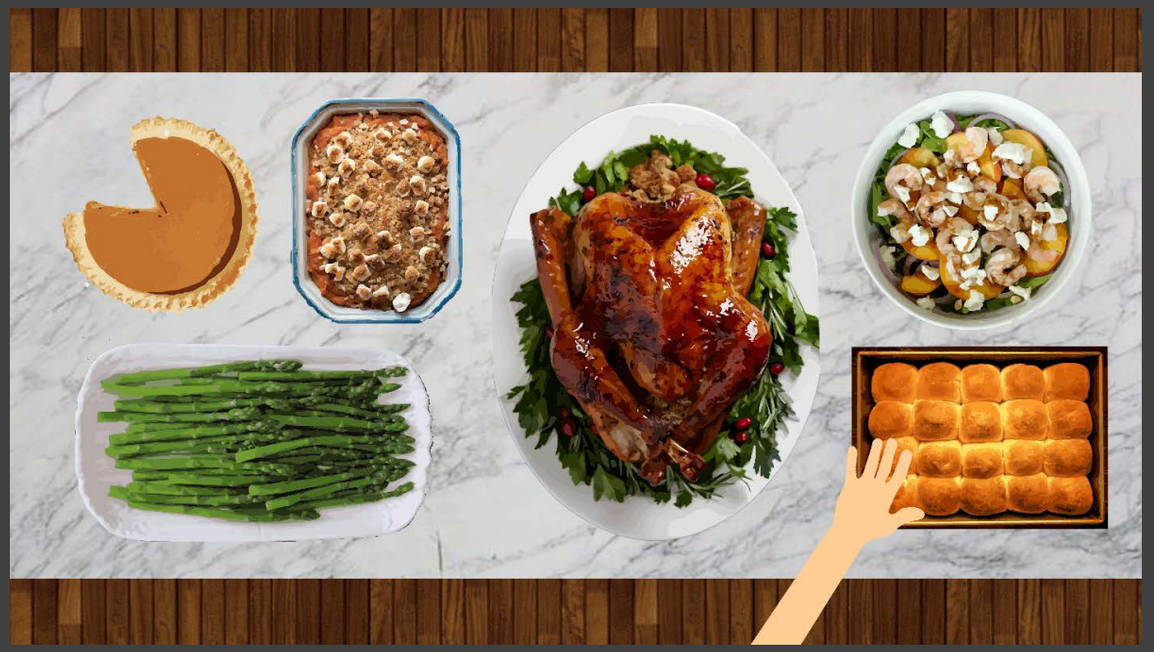
Reflection and Impact

Teaching multiple methods or "tiers" of animation can be a bit chaotic at times, however giving the students a variety of access points is what makes this project a possibility at the foundational level. The students begin with the method that they are the most confident with technically and excited about conceptually. Along the way, they push themselves by learning and discovering new techniques for creating motion. They inevitably combine multiple methods, diving deeper into the strategies and software than they originally anticipated. There are many moments of "how do I make this action or gesture?", and then the triumphant discovery of the solution. During the critique, the students see and discuss each others' results and methods. This critique is one of the most influential learning experiences of the semester. They are so engaged in one another's animations' and are excitedly asking. "how did you do that?" They all understand the time and effort involved in creating a thirty second animation and truly appreciate each others' technical, conceptual and compositional accomplishments. We also discuss the way the memory functions as an animation in contrast to or in conjunction with the paintings. There is an acknowledgment that each medium offers a specific access point and level of engagement with the memory.

Student Reflections

"I thought that working with motion brought a new layer of creativity and technicality to art. We see things and experience things in 4D, so adding that dimension challenged me to make the viewer enter into that experience through my work. I also think that using motion is more interesting to our nature. Just like we are drawn to looking at human faces in paintings, we are drawn to motion. I mostly enjoyed the sound part though. It brought another sense you can't otherwise use in things like 2D art." (Lucinda Kral, Junior, BS, Computer Science and Theology double major)

"Using motion in my work allowed me to express a specific narrative that I struggled to contain in a simply static image. While the process was challenging, it forced me to



Visuals from presentation *Motion as a Fundamental Design Strategy in a 2D Foundations Program*

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I have recently been very interested in how we implement motion into the foundations level course offerings. This paper outlined interesting basic projects that use images and storytelling with traditional 2D foundational art and design work.

—G. Rinnert

"unpack" my idea further. I enjoyed the process of watching the moving images in my head become something my peers were also able to see and believe the added element of movement created a new and exciting dynamic for my project." (Anna Bourbonnais, Sophomore, BA, Visual Communication Design and English double major)

"I really enjoyed working with the fourth dimension because I felt like it gave me the ability to fully immerse the viewer in my work and allow them to understand where I was coming from. It really brought my painting to life and I'm glad I had the opportunity to re-create my personal experiences and sentiments for other people. It was also nice getting to see other people's paintings come alive through their digital animations because I could understand a larger extent of what each person wanted the viewer to see/feel. The only complaint I have is that it was tedious and time consuming, but in the end it really paid off seeing the final project." (Erin Reilly, Freshman, BBA, Visual Communication Design and Marketing double major)

"As someone who really wants to become an animator for movies, this animation project was the most exciting for me. I was eager to touch on my ability to narrate a story and evoke emotion, or communicate emotion. The most difficult part of this project was problem solving how to execute a motion and also figuring out the tools and panels of After Effects. The process was tedious and frustrating, but I learned a lot of how to use the program, manipulate images and time my movements in more complex steps- all for the sake of making transitions look smooth and effortless. I focused on keeping it childlike, bright, cute, innocent and comical. Basically, I tried making my own Pixar short film. I've got a long way to go, but I'm overall happy with my first animation ever." (Joy Choe, Freshman, BA, Visual Communication Design or Film Television and Theatre major)

"Working on this animation project gave me the opportunity to learn so many different things. I practiced basic Photoshop and Illustrator skills while building my initial scenes and objects. When it came time to pull everything together, I had to think about motion, timing, and sound effects. It was hard work, but I was really happy with the final product!" (Amanda Schoenbauer, Sophomore, BBA, Marketing Major)

Teaching motion design at the foundational level helps prepare studio and design majors for a more rigorous study in motion and interactive design by introducing them to the fourth dimension (time). Students are challenged and excited to expand a concept to include duration, build a storyboard, and execute an animation. This ignites energy and expands potentials in both majors and non-majors by exposing them to introductory knowledge in motion and animation.

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Penina Acayo holds a B.A. in Art from Goshen College, and received her M.F.A. in visual communication design from Kent State University in 2013. She works as a research associate in visual communication design at the University of Notre Dame and continues to focus on projects that utilize a human-centered approach to solving social problems.

Emily Beck holds a B.A. in Art and Art Education from Meredith College and received her M.F.A in Studio Art from the University of North Carolina at Chapel Hill in 2010. She is the Foundations Coordinator and Assistant Professor at the University of Notre Dame. As an interdisciplinary artist, a focus on art as a powerful tool for visual communication is a common thread between her studio practice and her teaching.

Last year, Emily and Penina worked together to restructure and enhance motion design instruction within the 2D foundations curriculum at the University of Notre Dame.

Additional Supporting Media

https://vimeo.com/channels/mode2015

ACADEMIC FULL PAPER

The Future of Motion Design as a 21st Century Skill in Irish Classrooms

Joseph Roche, Katriona O'Sullivan, and Brendan Tangney

Centre for Research in IT in Education, School of Education and School of Computer Science & Statistics, Trinity College Dublin, Ireland

Abstract: As Ireland strives for the position of "Silicon Valley of Europe" it is becoming ever more important for institutes of higher education to provide teaching and learning in the key skills that students and graduates will need to compete in a rapidly changing technological environment. Motion design represents one of the most exciting and underused digital design skills in Irish classrooms that could enhance learning through innovative visual communication. We outline the background to Ireland's move towards 21st century learning and how, through initiatives like Bridge21, the TA21 project and a Postgraduate Certificate in 21st Century Teaching and Learning, Trinity College is at the forefront of driving educational and social change in Irish schools. We present initial results from our research into teacher attitudes and their willingness to facilitate students digital creativity in the classroom in order to provide an assessment of the readiness of Irish classrooms to embrace 21st century skills like motion design. 21st century learning in Irish classrooms could lead to motion design becoming a cross-disciplinary medium facilitating creativity in art, storytelling and technology to help develop key skills among the upcoming technology literate generation.

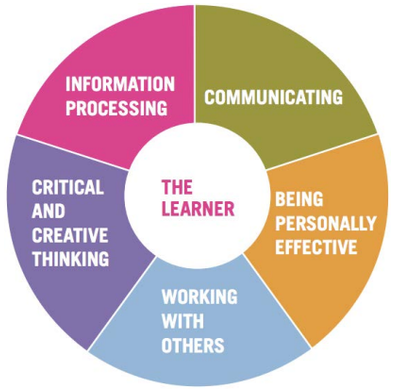
Keywords: Education, Motion Design, Irish Classrooms, 21st Century Skills, Teaching & Learning

21st Century Learning

There is an increasing amount of emphasis being placed on students learning key skills in the classroom with governments keen to prepare young people to live and work in a rapidly changing society (Quinn 123). These key skills, or "21st Century Skills" as they have come to be known, are the skills that learners need to develop in order to fulfill their potential during their time in school. They include, but are not limited to; information processing, critical and creative thinking, working with others, communicating and being personally effective (NCCA, 2009). In Ireland, educational reform has long been touted as the solution to addressing the need for key skills and making education more relevant to the challenges of 21st century living as well as empowering students to think critically, communicate effectively and work collaboratively (Johnston 1).

Motion Design as a 21st Century Skill

Research with teachers and learners has shown that skills like communication, problem-solving, and accessing and selecting information will contribute to literacy and numeracy development, improve the learning experience and are relevant to all subjects. Crucially, working with digital technology also forms part of each of these 21st century skills (NCCA, 2012). Krasner describes the field of motion graphics as a discipline that has captured the imagination of designers and viewers alike in the 21st century as it has evolved to incorporate a range of communication technologies including film, animation, interactive media, and environmental design. He goes on to explain how designing in time and space leads to a unique set of creative challenges that combines graphic design with the dynamic visual language of cinema into a hybridised system of communication. Finally he concludes that the merging of composition and choreography, when applied to image and motion, can communicate visual messages with meaning, expression and clarity (Motion Graphic Design: Applied History and Aesthetics, xiii). From this interpretation it is easy to see how motion design has the potential to become ubiquitous in the classroom as a mode of incorporating communication, information processing, creative thinking



and digital literacy in all school subjects as well as being a 21st century skill itself. However, significant barriers remain in integrating 21st century learning into the classroom.

The Bridge21 Model

Currently the Irish education system places much importance on the acquisition of content knowledge and not enough on the development of the key skills that are required to succeed in a 21st century knowledge society. Bridge21 is a model of 21st century learning that is currently being trialled in a number of post-primary schools as part of a systemic reform process in Irish education (Conneely et al, 2015). The core components of the Bridge21 learning model are:

- "Technology as an integral tool in the learning process.
- Delivery of content through student-led cross-curricular, thematic projects.
- A physical learning space designed and configured to support team-based learning.
- A pedagogical approach which focuses on key skill acquisition and content knowledge.
- A focus on the social context of learning to increase student motivation and engagement
- Adult support that seeks to guide and mentor, with teachers orchestrating and scaffolding team activities.
- Incorporation of team and individual reflection as a regular part of the learning."

Figure 1 shows how the 21st century skills identified by the National Council for Curriculum and Assessment can be brought into Irish classrooms using the Bridge21 learning model.

Figure 1 (Left): Some of the key skills identified by the National Council for Curriculum and Assessment (NCCA) as being essential in a 21st century society. Source: NCCA. "Key Skills Framework Document" (2009). Figure 1 (Left): The Bridge21 Learning Model which equips students with 21st century skills in Irish classrooms. Source: Conneely et al. "Case Study Report for the NCCA." (2012).

The TA21 Project

In 2014 Trinity College launched the TA21 project which aims to affect a significant long term change in science and technology education through a range of interventions focused on the second level system. The TA21 project will help bring the Bridge21 learning model into schools through an innovative new postgraduate certificate course in '21st Century Teaching and Learning'. This course will give teachers the skills and confidence to embrace technology in the classroom and will be crucial in providing the platform needed if motion design is to be integrated into the education system. More than 80 teachers from 16 schools are participating in this year-long, part-time study course aimed at supporting cultural and pedagogical change within schools and building teacher capacity to leverage technology in creating an active, engaged classroom (See Figure 2).

Figure 2: Teachers participating in the postgraduate certificate course in '21st Century Teaching and Learning' undertake modules in a range of 21st century skills taught through the Bridge21 learning model. Source: TA21 Project, Trinity College Dublin (2015)

Initial Teacher Attitudes

All of the teachers taking part in the course are also part of a research project that will track the changes in their teaching and attitudes and compare them with a control group of teachers from similar schools that will not participate in the project. The research aim is to build an evidence base for national implementation of similar projects. Over the three year lifetime of the project, it will measure teacher's confidence with technology, college going culture, teaching philosophy, and 21st century teaching practices. In this way the project will demonstrate the readiness of the current

education system in Ireland for 21st century skills like motion design to be brought into classrooms and gauge how much educational reform might be needed. The methods of data collection include qualitative interviews throughout the lifetime of the project as well as quantitative surveys twice yearly. The initial surveys at the start of the project provide an insight into the current culture towards 21st century skills in Irish classrooms. This initial survey of 126 teachers includes teachers that are taking the postgraduate certificate in 21st century teaching and learning as well as a control group that will not be taking part in any modules or activities. In order for the Bridge21 learning model to take root in the Irish education system it will require teachers to be open to embracing new technology and innovative teaching methods in the classroom. Figure 3 shows that teachers are mostly 'confident' or 'very confident' about letting students convey their ideas using media other than paper. This is encouraging for the prospects of motion design in the classroom although Figure 3 also shows that teachers that engage in this practice weekly or daily represent a minority.

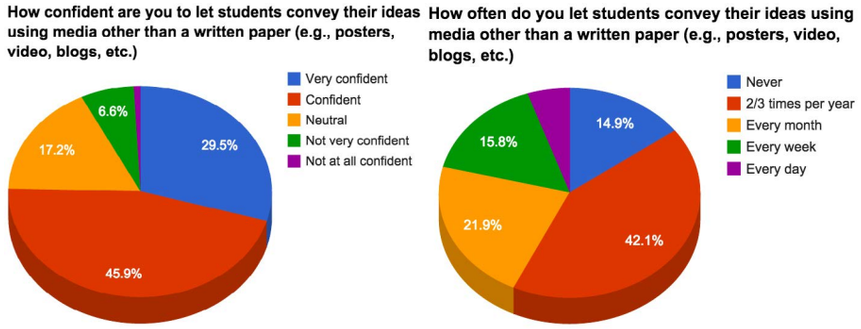


Figure 3: Teacher responses to the initial survey of the TA21 project. The sample consists of 126 participating teachers, of which 64 are in the control group. Source: TA21 Project, Trinity College Dublin (2015).

When it comes to letting the students create original products or performances to express their work, Figure 4 illustrates that although almost half of the teachers surveyed were confident about this practice, the vast majority did not engage in it more than a few times per year. This is where the TA21 project can make a real difference. By empowering teachers through the Bridge21 learning model to feel confident about new technology and new teaching techniques in the classroom, a 21st century skill like motion design can be introduced to school students as a mode of expressing their ideas and nurturing their creativity.

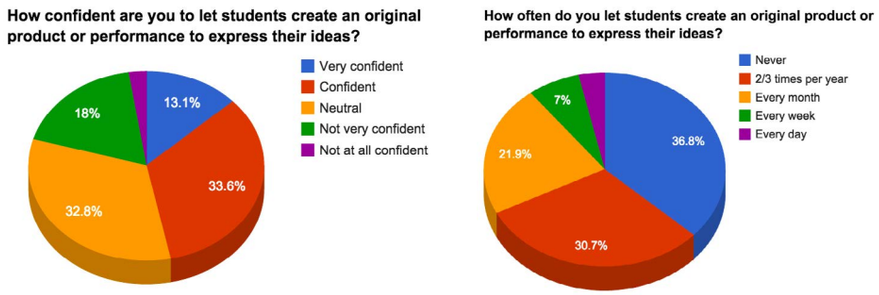


Figure 4: Teacher responses to the initial survey of the TA21 project. The sample consists of 126 participating teachers, of which 64 are in the control group. Source: TA21 Project, Trinity College Dublin (2015).

Motion Design in Irish Classrooms

It is clear from our initial assessment of teacher attitudes among participants in the TA21 project that Irish teachers are confident about letting their students convey their ideas using media other than paper and to express those ideas using original products or performances. However in both cases the number of teachers that regularly engage in such activities represent a small minority. This is the benchmark for assessing the current environment for motion design in Irish classrooms. In order for motion design to be incorporated into curricula, teachers must be willing to embrace its potential as a presentation and communication medium for their students. It is clear that Ireland hopes to position itself at the forefront of the movement to bring 21st century skills into the classroom. The TA21 project has provided a means of bringing the Bridge21 learning model to an even wider audience and shows how technology, education and design collaborations can lead to exciting breakthroughs in teaching and learning. In order for motion design to find itself on secondary school curricula then it will take designers and educators working together to demonstrate to policy-makers how motion design represents a cross-disciplinary

medium that can bring art, storytelling and design to a technology-literate generation, empowering them with the skills needed to live and work in a rapidly changing society. Motion design is already a principal part of our contemporary visual landscape with integrative technologies merging television, the Internet and immersive environments (Krasner, xiii) but it now has the potential to also emerge as a key 21st century skill in classrooms, if we are ready to embrace it.

Acknowledgments

This work would not be possible without the support of the Google Ireland Education Team and the ongoing collaboration between Trinity's School of Education, School of Computer Science & Statistics, Centre for Research in IT in Education, Bridge 21 and Trinity Access Programmes.

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Joseph Roche is an astrophysicist and lecturer at Trinity College Dublin. He has worked at NASA and his PhD involved using the Hubble Space Telescope to observe symbiotic stars. While at Trinity's School of Physics he helped bring the European Space Expo to Dublin and has also served as Education and Learning Manager for Science Gallery Dublin. He is now Assistant Professor in STEM Education in Trinity's School of Education and his research includes citizen science and nonformal science education. He holds an Associate Certificate in Graphic Design from Dublin's Institute of Design and integrates creative design processes into his undergraduate and postgraduate teaching. He is Course Coordinator for Trinity's new Postgraduate Certificate in 21st Century Teaching & Learning which, with the support of Google, aims to provide 1,000 Irish secondary school teachers with modules in continuing professional development in the next 3 years.

MK12's 26 Inspirational Things

Keynote by Timmy Fisher of MK-12
Summary by Rebecca Tegtmeyer

Timmy Fisher is an artist and co-founder of MK12, a design and filmmaking collective whose work constantly challenges the boundaries between narrative structure and experimental storytelling. MK12 has been sought after to direct numerous commercial and network-based projects and has provided graphic design, animation and film titles for feature films such as Quantum of Solace, The Internet's Own Boy and Particle Fever. MK12's experimental & short film catalogue has been featured in many international film festivals and exhibitions over 15 years, including Sundance, South by Southwest, The Sao Paulo Biennial, The Zurich Design Museum, The Walker Arts Center, Art Basel & Prix Ars Electronica, amongst others. Their film Overload — a collaboration with NY-based painter Brian Alfred— was inducted into the Guggenheim's permanent collection.

Timmy Fisher closed out day two of the MODE Summit at the Science Gallery in Dublin. He entertained and enlightened the MODE participants by sharing 26 things that inspires the authentic and amusing work of MK12. He opened the keynote presentation with a motion reel highlighting 13 years of MK12 dynamic logos. The logos represent the collective's years of growing into themselves, constantly reinventing and readjusting who they want to be and what type of work they want to do. Their work balances both self-initiated and client-driven efforts and blends methods, techniques, and theories from both design and art.

The original four founding members of MK12 met in the 1990s while they were students at the Kansas City Art Institute. They began to collaborate on short films, experimenting with narrative and challenging the methods of motion design. In an effort to make their practice lucrative, they took their motion art form into the business space. Short films became motion reels that primarily showcased what they were interested in. Their work quickly gained the attention of people outside of the Kansas City area and they landed many large-scale commercial projects in the film and music industries. After 16 years, their main mission remains to be the same, to make new things. In order to do this, they look to the world for influence rather than their peers in the industry. Their 26 inspirational things is presented via the alphabet and offers insight into what makes MK12 tick. The summary of each inspirational thing follows and links to various MK12 pieces follows chronologically.

A: Archigram Collective

An avant-garde architectural group practicing in London during the 1960s. This group of futurists used visual space in ways that created false hyper-realities. This inspired MK12 to deconstruct and reconstruct kinetic typography as seen in most of their work.

4D Softcore Sweater Porn
http://mk12.com/MKXII/portfolio/4d-softcore-sweater-porn/

B: Brazil

A dystwopian science fiction film produced in 1985 that experimented with visual storytelling and melded different mediums.

C: Chichicastenango

An indigenous town located in the highland mountains of Guatemala. The beautiful colors and people are the reason MK12-ers frequently visit this inspiring place. On one such trip a couple of books were purchased during their travels, "How to Get a Date" and "How to be a Ninja". The two books along with the amazing experiences of Chichicastenango inspires the chaotic juxtaposition of ideas and elements their work.

Ultralove Ninja
http://mk12.com/MKXII/portfolio/ultralove-ninja/

D: Drive-ins

An classic American experience that is quickly vanishing provides a cultural community hangout for those that attend. The animations typically shown during intermission moments between double-features inspired MK12 for their festival piece, *Follow the Sun.* It offers their own wild and odd alternative to these intermission animations.

Follow the Sun
http://mk12.com/MKXII/portfolio/follow-the-sun-3/

E: The Elegant Universe

A 1999 non-fiction about theories of physics written by Brian Greene. Inspired the 4D space used in their kinetic piece, *Infinity.*

Infinity
http://mk12.com/MKXII/portfolio/untitled-01-infinity/

F: Found photos

MK12 has consistently used found photos as a source for quick experimental storytelling.

Sunkenlust
http://mk12.com/MKXII/portfolio/sunkenlust/

G: Gordon Matta-Clark

A New York artist of the 1970s that made site specific installations by cutting into building structures and removing the pieces. He then photographed the results of the physical deconstruction. MK12 practiced this technique on a digital level.

H: Hunter S. Thompson

Famous author of *Fear and Loathing in Las Vegas.* He puts himself in his own work, much like MK12 does frequently.

I: Iginio Lardani's

The title designer for *Fistfull of Dollars* and *The Good Bad and the Ugly.* His Italian perspective took westerns into a new space. This, along with the work of Gordon Matta-Clark and Hunter S. Thompson inspired the MK12 self-financed, psychedelic, western short-film, *History of America.* The short-film gained Sundance attention and blurred the lines between motion graphics and animation.

The History of America
http://mk12.com/MKXII/portfoliomk12-the-history-of-america

J: Jim Woodring

A Seattle-based comic book author and surrealistic artist. He was the creator of the anthropomorphic cartoon character Frank.

K: Komposition in Blau

A 1935 Oskar Fischinger classic that was produced when he was running from the Nazi's in Poland. (Timmy suggested sharing this fact with stressed out art and design students.) The work influenced MK12 in their animated abstraction of a painting by Brian Alfred, *Beauty in Danger.* The piece references the obsolete animation techniques of color theory and pattern not typically used in contemporary motion design practice.

Beauty in Danger
http://mk12.com/MKXII/beauty-in-danger/

L: La Jetée

A French science fiction short film made by Chris Marker in 1962. The short film uses still photos to tell a story about a post-nuclear war experiment in time travel. Timmy highly recommendations checking it out: https://vimeo.com/46620661.

M: Mutual Musicians Foundation

An institution in Kansas City formed in 1917 by Kansas City's Local 627, African-American Musicians Union. Jazz musicians go here to play after their gigs and remains active and open to those that can find it in the 18th and Vine historic KC jazz district.

N: NASA

Timmy believes that any US tax-payers money going to telescopes and satellites is really going to CG artists in a basement somewhere for them to create the beautiful and amazing space images we frequently see today. These images inspire a lot of their work but specifically what they did for the documentary about CERN's Large Hadron Collider and the Higgs boson, *Particle Fever.*

Particle Fever
http://mk12.com/MKXII/portfolio/particle-fever-fvx-reel/

O: Otto Messmer

The creator of Felix the Cat, which was technically the first animated character for the screen.

P: Patrick McGoohan

The actor for the 1960s British television series, *The Prisoner.* Timmy's father introduced him to these secret agent shows at the young age of 8. The series was his first glimpse into narrative storytelling.

Q: Quality Comics

An American comic book publishing company that was in operation from the late thirties through the late fifties, they influenced the Golden Age of comic book era. The company was committed to figuring out the next step in comic and sequential art forms. Their commitment inspired MK12's opening game intro for Green Day Rock Band video game.

Green Day Rock Band Game Intro for Harmonix
http://mk12.com/MKXII/portfolio/harmonix-green-day-rock-band-game-intro/

R: Robert Brownjohn

An American graphic designer who is most famous for his two James Bond title sequences, *Goldfinger* and *From Russia with Love.* Following in his footsteps, MK12 had the opportunity to create their own James Bond title sequence for Quantum of Solace.

Quantum of Solace
http://mk12.com/MKXII/portfolio/quantum-of-solace/

S: Science Fiction Digest Magazines

As a kid, Timmy was enamored with the painted collage covers of these magazines. These covers later were an inspiration for the illustrated, painterly aesthetic for the short film MK12 started producing in 2012. *Man of Action! II Ashes of Vengeance,* is a work in progress that merges live-action and animation techniques.

Man of Action! II Ashes of Vengeance
http://www.whoissteveelvis.com/

T: Tommy Fisher

A teacher, cartoonist, collector, and most importantly, Timmy's dad. He's the main source of Timmy's pop culture knowledge to date.

U: Ubik

A 1969 science fiction novel by American writer, Philip K. Dick. Introduced shifting concepts of reality.

V: Vertigo

The Italian one-sheet, designed by Saul Bass. John Whitney did the spiral image on the poster, which was is an early example of CGI simulation imagining.

W: Will Eisner

He was one of the earliest cartoonists to work in the American comic book industry and was popular for his experiments in content and form.

X: Xylophone Players

Because...what else?

Y: YJs

A local Kansas City snack and coffee bar located in close proximity to the MK12 studio. It offers the local community a place where people can go to relax or have fun. Live jazz and frequent weird parties liven up the area. "I feel like I can be an adult and wear a cape, that's totally cool and we should all be doing that," says Timmy.

Guided by Voices—Back to the Lake
http://mk12.com/MKXII/portfolio/guided-by-voices-back-to-the-lake/

Z: Z-transformation

A mathematics concept, Z-transformation is a conversion of discrete time domain signals, which is a sequence of real or complex numbers. This concept led MK12 to Dr. Francis S Cooper's early pattern playback talking machine created in the 40s. The machine converted patterns of speech into other versions of audio. This machine influenced, *The Alphabet Conspiracy,* a show produced for PBS television in the 50s. All of this led MK12 to *Telephone Time,* an American drama series that featured plays by John Nesbitt who hosted the first season. Which eventually inspired their piece, *Telephoneme.*

Telephoneme
http://mk12.com/MKXII/portfolio/telephoneme-3/

PROFESSIONAL CASE STUDY PAPER

From “Pure Cinema” to Immersion

Jon Krasner

Fitchburg State University, U.S.A.

“Had we taken the aesthetic qualities of sound as much for granted as we have taken those of motion, we would not now have music. But now, in kinetic art and animation, we have begun to compose motion.”

—Len Lye

“We spend a lot of time trying to change people. The thing to do is to change the environment and people will change themselves.”

—Les Watson, Vice-Chancellor, Glasgow Caledonian University

Abstract: The experimental aspects of fine art animation during the early Modern era allowed filmmakers to investigate how movement can be choreographed through the use of non-representational imagery. These experimental pioneers—inspired by personal drive to make art, rather than commercial gain—combined the principles of design with cinematography to invent “pure cinema.”

I will examine how the aesthetics of ‘pure cinema’ that film animation pioneers introduced to the early twentieth century have evolved and have been utilized across media including film, television, interactive technologies, and immersive environments.

Key Words: Motion Design, Immersive Environments, Pure Cinema

The Emergence of Pure Cinema

During the early twentieth century, technological advances, Capitalism, and the horror of World War I fueled artists to abandon the laws of beauty in an attempt to demolish conventional standards of art. Revolutionary Cubist and Futurist painters began choreographing space in strong, geometric terms. During the early 1900s, the introduction of temporality into painting brought about when artists attempted to express movement in their static canvases at the time of the invention of film. Russian painter Leopold Survage produced hundreds of abstract watercolor sketches representing key ideas for orchestrating motion.

> *The perceptual effect of shape and color became the basis of visual experience during the early Modern era. Geometric, abstract form became the subject matter, and its compositional qualities were often developed from intuition. The emphasis on form is evident in avant-garde films from the 1920s that made the transition from nonrepresentational painting to animation.*

During the 1920s, when huge movie palaces, fan magazines, and studio publicity departments projected wholesome images of stars, experimental filmmakers in Germany, France, and Denmark adopted a more personal attitude toward film through the medium of animation. Motivated by a personal drive to create art rather than commercial gain, their abstract animated films were referred to as “pure cinema,” winning the respect of the art community that viewed film as an expressive medium.

Contributing to the Cubist movement, Fernand Léger expressed his love for city life, common people, and everyday objects in painting. By 1911, he had become identified with tubular and curvilinear structures that differed from the angular shapes produced by other cubists such as Picasso and Braque. During the 1920s, Léger began to pursue abstraction in film and composed his classic, *Ballet Mécanique* (1924). Produced without a script, this masterpiece married the energy of the machine with the elegance of classical ballet by juxtaposing fragments of reflective metal, disembodied

figures, and camera reflections—all orchestrated into a seductive, rhythmic dance. Conceptually, his film has been interpreted as a personal statement of technological advancement and sexual liberation. Artistically, it represented a daring leap into the territory of kinetic abstraction.

Figure 1: Frames from Fernand Léger's *Ballet Mécanique* (1924).

Swedish musician and painter Viking Eggeling established a universal language of symbols by emphasizing musical structure and avoiding representation. The nihilistic tendencies of Dadaism liberated him to break away from traditional constraints and establish correlations between music and painting in his film, *Symphonie Diagonale* (1924). This masterpiece demonstrated a painstaking analysis of positive and negative interplay between moving and changing linear forms.

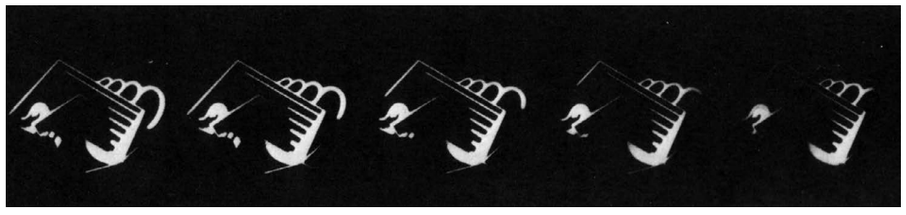


Figure 2: Filmstrip from Viking Eggeling's *Symphonie Diagonale* (1924).

After World War I, artists became impatient with the static qualities of their canvases and saw film animation as the next logical step. Influenced by the hard-edged geometric qualities of Neo-Plasticism and the De Stijl and Blue Rider movements, Robert Breer felt restricted by the boundaries of the static canvas and began producing animations that attempted to preserve the formal aspects of his paintings. His technique of rapid montage allowed him to juxtapose frames of non-representational imagery in quick succession.

"By simply limiting the viewer of a painting to 1/24th of a second I produce one unit of cinema and by adding several of these units together I produce a motion picture."

—Robert Breer

German Dadaist painters such as Walter Ruttman also expressed the power of form and motion through the medium of film. Ruttman's playful, animated film series entitled Opus investigated how converging abstract shapes could exhibit playful, kinetic qualities. *Opus IV* (c. 1924) expressed a minimal graphic style characteristic of the Bauhaus period. *Opus I* (1919-1921) was one of the earliest abstract films produced and one of the few that was filmed in black and white and hand-tinted.) The technical process that Ruttmann employed remains uncertain, although it is known that he painted directly onto glass and used clay forms molded on sticks that, when turned, changed their appearance. Ruttmann's later documentary, *Berlin: Symphony of a City,* gives a cross-section impression of life in Berlin in the late 1920s. The dynamism of urbanization in motion is portrayed in bustling trains, horses, masses of people, spinning wheels, and machines, offering an intimate model of Berlin.

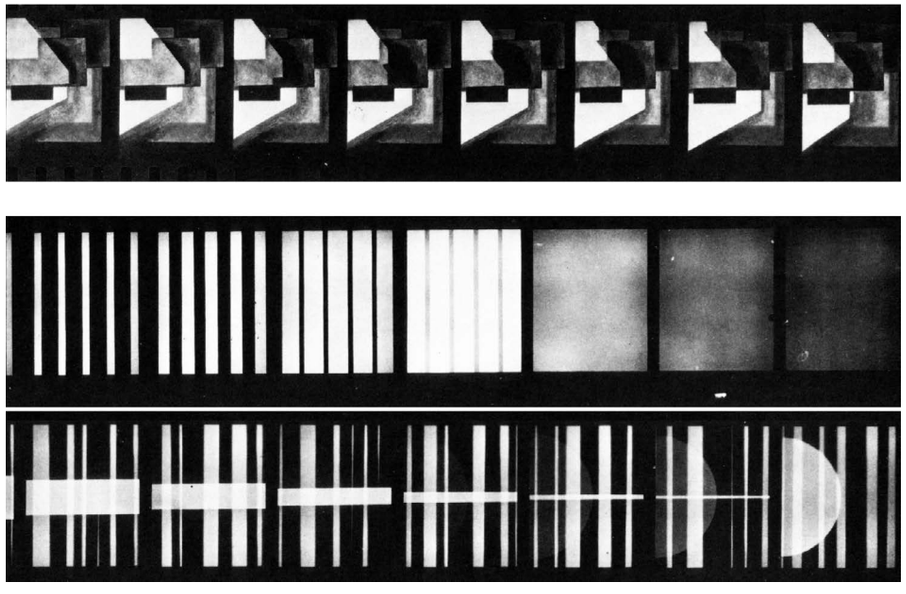


Figure 3: Frames from *Opus III* (c.1923) and *Opus IV* (c.1924), by Walter Ruttmann. From *Experimental Animation*, courtesy of Cecile Starr.

Hans Richter saw abstraction as a vehicle for exploring the linguistics of elemental form by using negative reversals and crisscross patterns in films such as *Rhythmus 21* and *Rhythmus 23.* In collaboration with Viking Eggeling, Richter's scroll drawings arranged straight and curvilinear structures into linear progressions across a long scroll of paper to show them in a temporal context. Richter's silent films demonstrated a more surreal approach of combining animation with live-action footage to defy the laws of the natural world. His shocking imagery and experimental effects such as reverse movement and fast-motion photography challenged artistic conventions. His film *Ghosts Before Breakfast* (1927), for example, shows people and objects staged in bizarre settings, engaging in unusual behavior. Flying hats disappear and reappear, teacups fill themselves up, objects move in reverse, and a man's head becomes detached from his body and floats inside a target.

Early cinema relied on lengthy shots that eventually became shorter with the practice of editing. By the early 1920s, American films had average shot lengths of five seconds. The advent of sound film stretched this to about 10 seconds.

In addition to exploring motion, pioneers of pure cinema pushed the limitations of the medium to create authentic imagery. Man Ray, an enigmatic leader of the Dadaist and American avant-garde movements, produced Surrealist films created without a camera; he described these as "inventions of light forms and movements." Intrigued by the occult, American painter Harry Smith combined hand-painted images with stop-motion and collage. His mysterious compositions employed a wide range of unconventional media including adhesive gum dots, Vaseline, masking tape, and razor blades. Mary Ellen Bute's intricate imagery incorporated found objects such as combs, colanders, Ping-Pong balls, and eggbeaters. After photographing them frame-by-frame at various speeds, she distorted the objects by filming their reflections against a wall in order to conceal their identity. *Rhythm in Light,* from the 1930s, involved filming paper and cardboard models through mirrors and glass ashtrays to achieve multiple reflections. Referring to himself as "an artist for the twenty-first century," Len Lye pioneered his direct-on-film technique of animation by painting and scratching onto 35-millimeter film stock. In *Free Radicals* (1958), Lye scratched imagery onto black film leader with sewing needles and Indian arrowheads. Animators who followed in the footsteps of these pioneers continued exploring various artistic processes including drawing, painting, stop-motion, cutout, and direct-on-film. Stan Brakhage's film *Mothlight* (1963), for example, was produced by adhering moth wings to strips of clear film and duplicating the results on a negative. When projected, the positions of the wings change between frames, producing a flickering effect.

"All of a sudden it hit me—if there was such a thing as composing music, there could be such a thing as composing motion. After all, if there are melodic figures, why can't there be figures of motion?"

—Len Lye

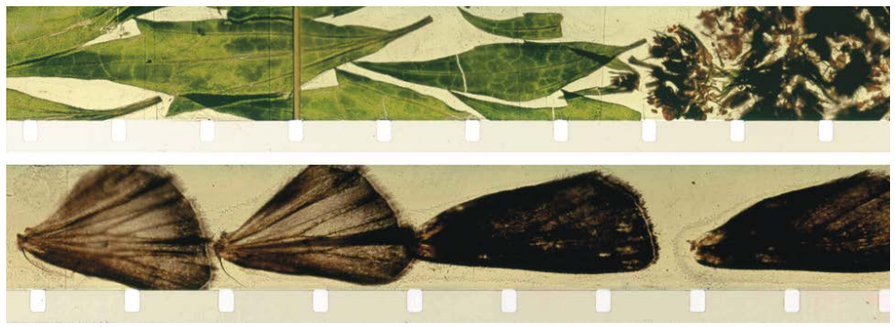


Figure 4: Frames from *Mothlight* (1963), by Stan Brakhage. Courtesy of the Estate of Stan Brakhage and Fred Camper (www.fredcamper.com).

From to Pure Cinema To Motion Graphics

The cinematic language that experimental film pioneers explored had a profound influence on commercial motion designers, opening up artistic possibilities for film title sequences, television shows and network campaigns.

In the compelling, futuristic title sequence to *Clockstoppers* (2002), Creative Director Karin Fong (Imaginary Forces) conveys the theme of time travel by placing us inside a wristwatch to explore its mechanics on a

microscopic level. Footage of clock mechanisms, lights, and rich textures are layered to symbolize the distortion of time in a virtual world, as animated cast names spin in 3D space to form the hands of a clock.

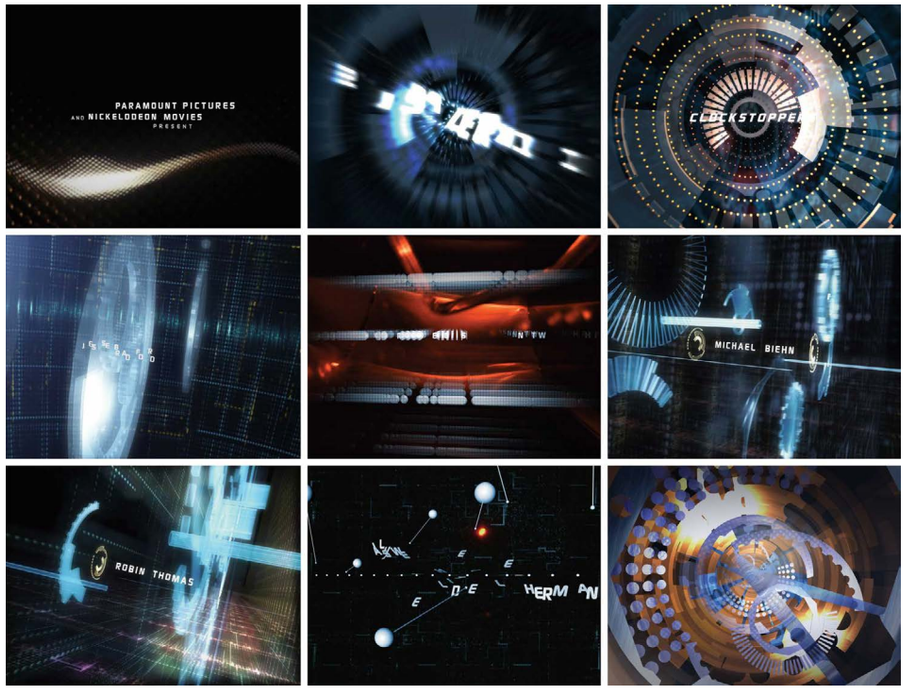


Figure 5: Frames from the opening titles to Clockstoppers (2002). Designed and produced by Imaginary Forces. © Nickelodeon Movies and Paramount Pictures.

Imaginary Forces' haunting titles for Joel Schumacher's psychological thriller, *The Number 23* (2007), portrays the cryptic enigma of the number 23 by showing us coincidental connections and catastrophes throughout human history. Unsettling music, in conjunction with vernacular typography, the movement of a typewriter, and blood seeping into the paper effectively expresses the nightmarish underworld of the film's narrative.

During the 1960s, when most prime-time television content existed in three networks— NBC, CBS, and ABC—Harry Marks, who was employed by ABC, conceived the prospect of the moving logo, and hired Douglas Trumbull, who pioneered the special effects for the film 2001: A Space Odyssey (1968). Trumbull's slit-scan camera, developed as an extension of John Whitney's work, restricted the field of view of the camera to a narrow horizontal angle. This introduced many graphic possibilities into the broadcast world. The opening sequence to ABC's Movie of the Week was a major accomplishment and captivated audiences nationwide. A precursor to modern digital animation techniques, it brought about a major graphic design revolution in the television industry.

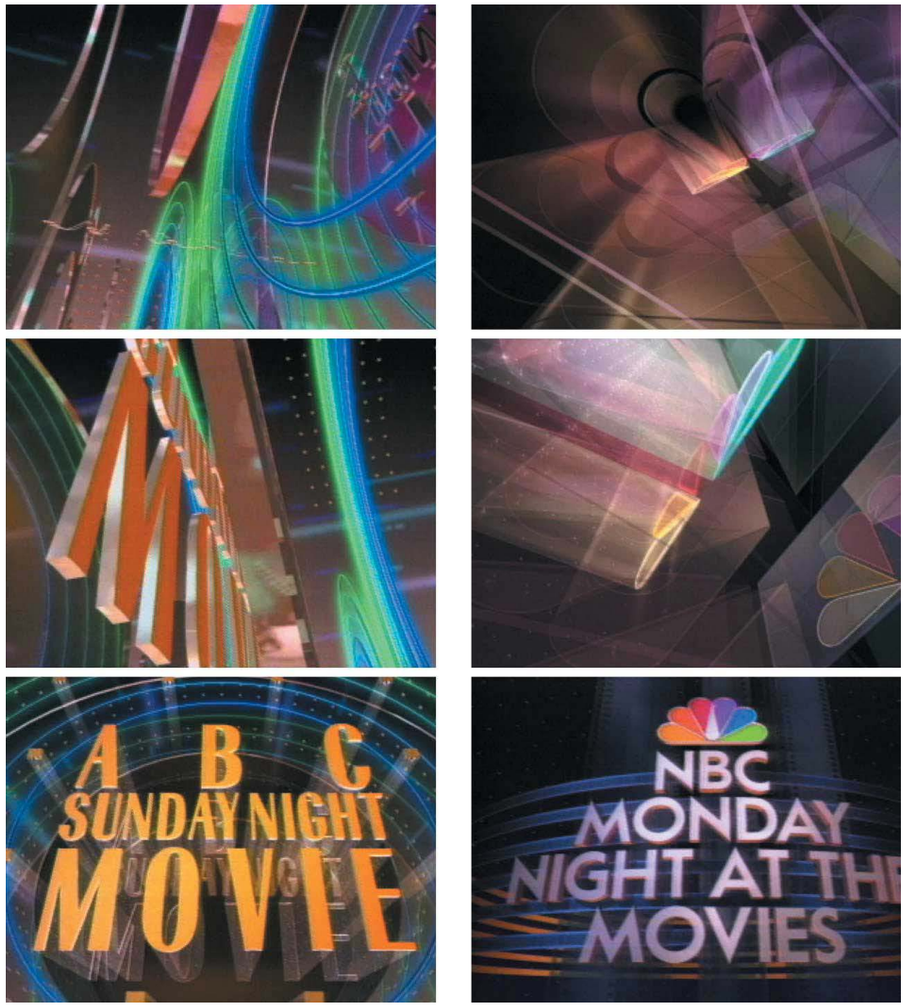


Figure 7: Frames from NBC's *Monday Night at the Movies* and ABC's *Sunday Night Movie* by Dale Herigstad (1989). Courtesy of Harry Marks/Pacific Data Images and NBC.

"There were maybe two or three of us paying attention to what the screen looked like. . . I think we opened the screen so it wasn't this three-by-four box any longer, but it had inferences of much bigger worlds outside the box. We were looking for a viewport."

—Harry Marks

ZONA Design's branding package for NBC-TV's reality series *Lost* devised the look that captures the sense of being confused and disoriented. A multilayered explosion of bold graphic elements and a fast editing pace exudes a heart-pounding energy. While international signage, transportation symbols, and bold, stylized graphic icons act as textural devices that punctuate the screen to express the feeling of billboards being peeled away, the words "lost," "north," "south," "east," and "west" appear in various languages, as if in a race against time, create a modular system of images that keep the viewer on edge.

Figure 8: Frames from the branding package for NBC-TV's reality series *Lost*. Courtesy of ZONA Design.

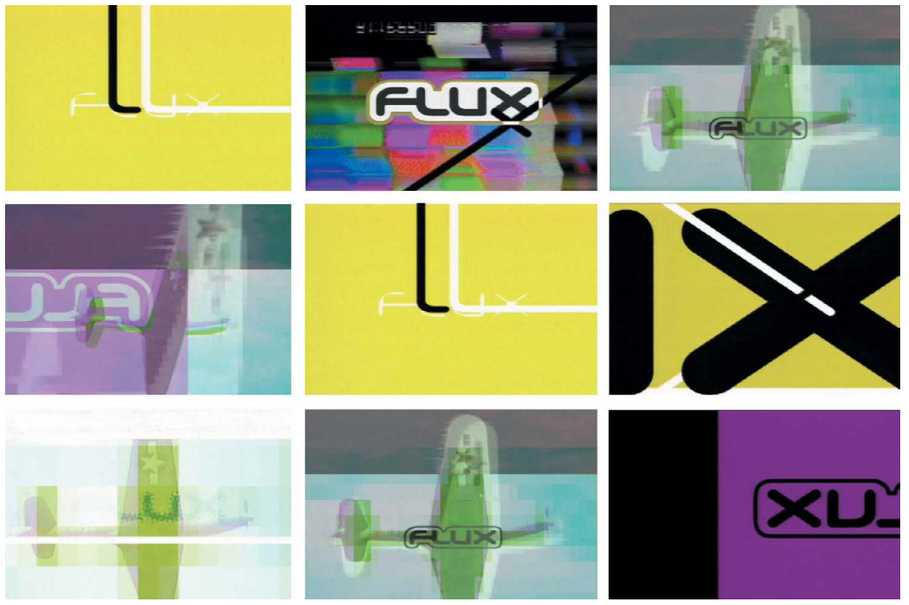


Figure 9: Frames from Flux Television, a music television program in the mid-1990s that addressed the digital culture of the pre-dotcom era through looped live-action elements and stylized graphics that were assigned bright, highly saturated colors. Courtesy of twenty2product. © 1994 Flux Television.

In the Independent Film Channel's *Cinema Red Mondays,* the organic, textural depth of early collage film was imitated by building on the concept of "pods" comprising of video-photographic collages. Each pod, designed to represent an aspect of Target and IFC's weekly indie film, comprises of 16-millimeter footage of subjects ranging from handwritten pages from a screenplay to a cinema marquee, layered with unfurling plant tendrils and photographs of nature. Target's logo appeared as an old-fashioned film countdown, a rising sun, and a stream of floating bubbles.

The fragmentary nature of Leger's *Ballet Mécanique* can be compared to the opener for *Arte Metropolis,* a political evening program on Franco-German culture. The use of secondary, camera motion generates a chaotic mood that supports the story's narrative structure. Unstable camera movements, in coordination with unusual angles, abrupt jump cuts, and tempo changes reinforce the concept of political entanglement. This strategic use of frame mobility accompanies a wide range of gestures made by actors to symbolize their dual role as puppets on strings and the masters pulling the strings.

Figure 10: Frames from a spot promoting the Independent Film Channel's *Cinema Red Mondays.* Courtesy of Freestyle Collective.

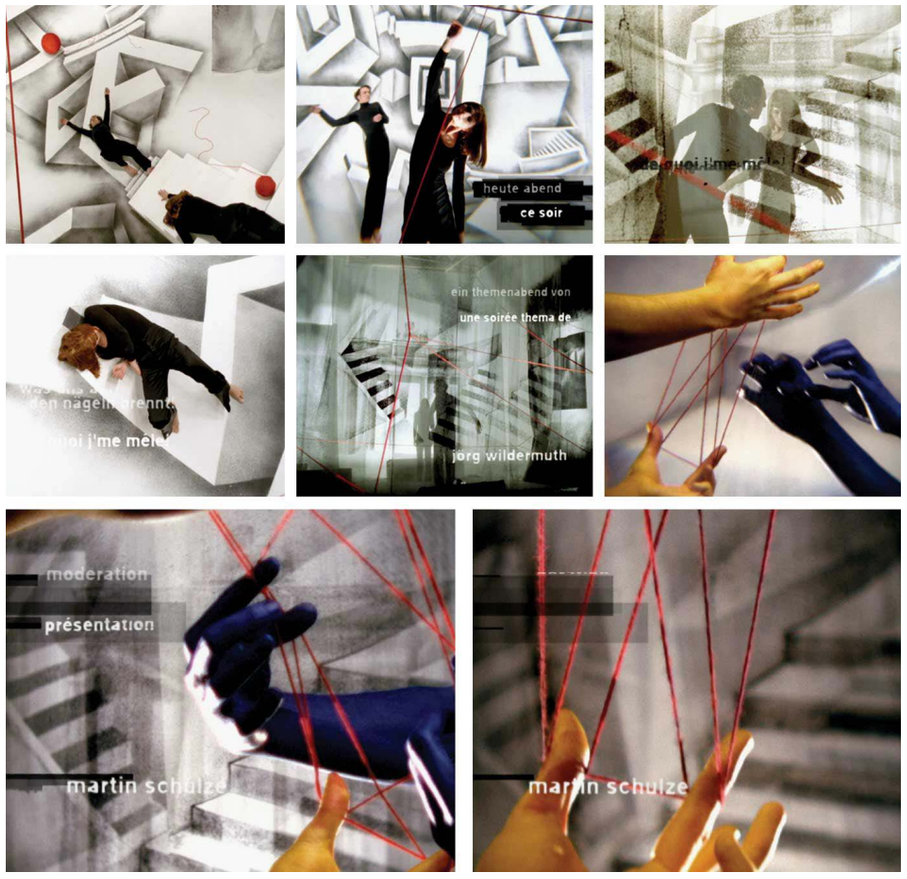


Figure 11: Frames from *Arte Metropolis,* a European culture magazine program. Courtesy of Velvet.

DW Euromax's bilingual on-air opener choreographed the movement of violins, shoes, chandeliers, chairs, and fountain pens into a highly strategic arrangement of shifting patterns and complex abstract shapes. Elements move at constant speeds and are spaced at equal intervals. The repetition of elements ties the film together, creating a structural continuity and cohesiveness. Experimental films from the 1920s also relied heavily on the devices of repetition and cutting or transitioning between similar images or actions to achieve rhythm. For example, Léger's *Ballet Mécanique* builds a rhythmic structure of juxtaposed motifs that are repeated in different combinations in rapid succession. The repetitive, sequential movements of spinning bottles, faces, hats, and kitchen utensils, along with accompaniment of body gestures and facial expressions, recur in highly choreographed arrangements. In Viking Eggeling's

Symphonie Diagonale (1924), rhythm is articulated by the speed by which geometric shapes appear and disappear in the frame and the time that they "live" on the screen. The arrangement of different themes can be compared, as the title suggests, to the orchestration of a symphony.

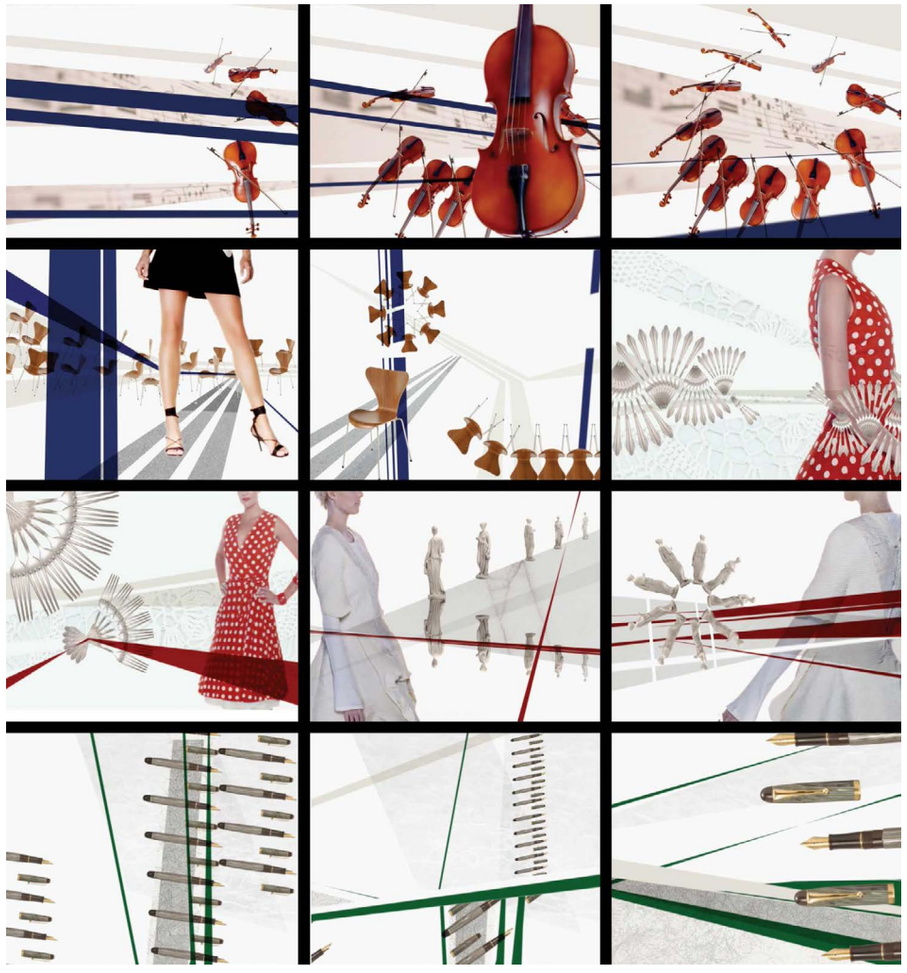


Figure 12: Frames from a program design for DW Euromax, a bilingual on-air program. Courtesy of Velvet.

Unlike Euromax's opener which shows a consistent rhythmic progression of images and actions, *Arte Metropolis* breaks the predictable flow of events by introducing changes in the way images and actions are presented, as well as changes in the tempo and the duration that the content remains in the frame. Additionally, rapid sequences of close-up shots illustrate a complete abandonment of continuity to achieve a dance-like orchestration of rhythm. In *Ballet Mécanique,* Léger achieved this by changing the relative scale of objects in the frame by varying the camera distance from the subject. He also used close framings to isolate and emphasize form and texture, while other framings, such as upside-down shots and masks, introduced rhythmic variation.

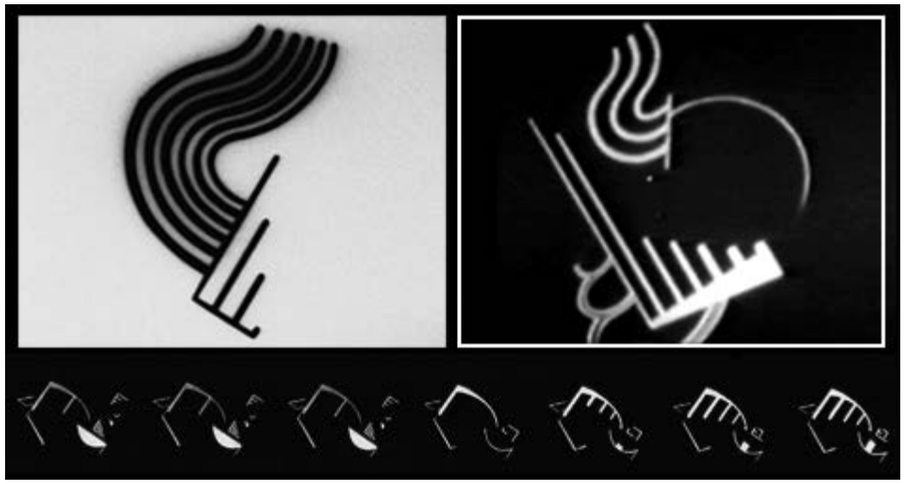


Figure 13: Frames and Filmstrip from Viking Eggeling's Symphonie Diagonale (1924).

Pure Cinema In Interactive Media

As the language of pure cinema evolved into a universal system of communication, it combined visual, sonic, and kinetic elements into a synchronized, multi-sensory experience. Combining motion with the added dimension of interactivity has led to a complete reinvention of cinema over the Web, in DVD menus, online games, kiosks, and portable communications devices.

"Once you made it, it stayed put. Great care was taken to get everything in just the right spot, just the right relationship. Now, increasingly, the output is a variable, not a constant."

—Chris Pullman

The subtleties of motion in animated transitions, for example, can help move users between complex levels of data. Brookfield Properties' website for Bankers Court relies on two-dimensional lines and simple geometric structures to rotate, change position, or slide open to reveal new content when a link is activated. The framing of these transitions produce compositional possibilities that are comparable to the those in the paintings of Dutch De Stijl artist Piet Mondrian. This simple and elegant design solution allowed for smooth, visual changes in layout and content, making the site stand apart from its competitors.

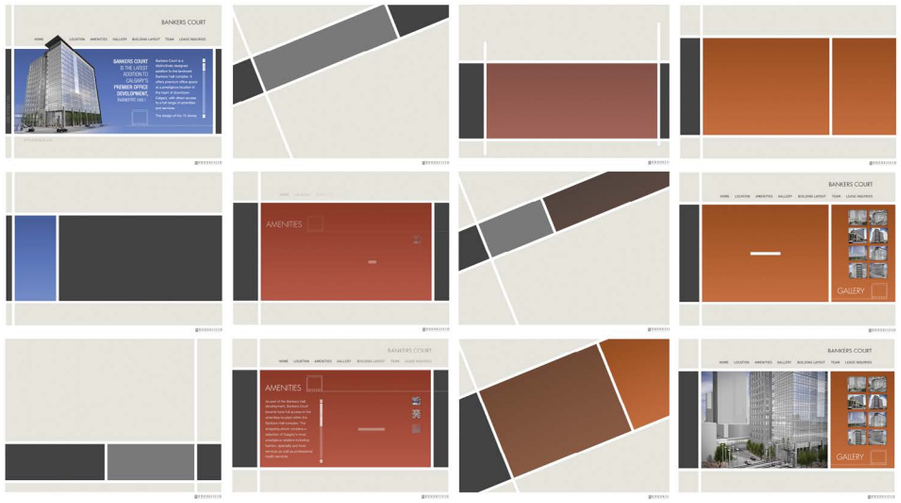


Figure 14: Brookfield Properties' Web site for Bankers Court, an office tower development for downtown Calgary, Alberta. Courtesy of Studio Dialog.

Over the past few years, animated transitions in mobile device applications have been developed to enrich visual content and enhance the user's narrative experience. New York- based design studio Trollbäck + Company's app *+loop* can split an iPhone or iPad screen into a custom, definable grid of video players. Each player can record and play back small, juxtaposed loops of moving or static footage. The footage can be recorded or played full-screen or composed in separate squares, similar to a video wall. Additionally, the grid is customizable, allowing users to embrace the intuitive possibilities of motion in a unique way. Factors such as grid size, frame offset, and playback speed can be modified to create a wide variety of compositional possibilities.

Figure 15: *+loop* screens. Courtesy of Trollbäck + Company.

Immersive Environments Beyond the Screen

The aesthetic devices of pure cinema can have a significant impact on today's immersive environments, enabling learning to become more experiential, collaborative, and memorable. The converging and expanding role of motion beyond the screen can bring about transformations in the way we learn and interact with each other.

Incorporating the aesthetic devices of pure cinema into the virtual world makes our interactive experiences more engaging and meaningful. To a greater extent, the visual landscape of interior and exterior design can be elevated by incorporating pure cinema into public informational systems, hotel lobbies, retail spaces, museums, art installations, exhibits, theme parks, and airports. With the added ability to control and interact with our surroundings, our *constructed* world allows us to adopt new perspectives and engage in learning that recognizes subjectivity, imagination, and creativity. The spatial and temporal properties of motion in these immersive environments enhances the overall narrative experience, interconnecting space, time, and interactivity to liberate participants as both consumers and producers of information.

In contrast to portable devices that mobilize and compress information into small spaces, mediated, immersive environments blend physical and digital media into large-scale experiences. These experiences can embrace the cinematic qualities of storytelling within a nonlinear structure. The cohesion that occurs between diverse media can allow motion designers to transform passive viewers into active participants. The cognitive benefits of motion in these environments can influence behavioral patterns and cognition, allowing users to consider new

possibilities and surpass assumptions about prevailing ideas, practices, and ideologies. Learning becomes experiential and collaborative, and in the long run, memorable.

> *The concept of* immersion *is described as the sensation of being surrounded by an alternate reality that takes over our attention. Immersive design describes activity of contemporary designers who work across media that is narrative or story-driven. Immersive designers hybridize virtual and 3D environments with time-based narrative and physical space.*
>
> *Many of today's immersive spaces offer solitary experiences, neither encouraging nor facilitating group interaction. Perhaps society's increase in technology has made people more engaged with gadgets and less engaged with each other and the environments the exist in. Likewise, in academia, many students are too busy to engage with each other and refuse to read books. They want information quickly and conveniently and would rather watch than participate. Contemporary motion designers can harness the potential of mediated environments to help individuals escape this complacency and stimulate deeper thought by enhancing interaction between users.*

The spatial and temporal properties of motion are playing a greater role in shaping our visual landscape of public informational systems, hotel lobbies, retail spaces, theme parks, airports, and museums. Large-scale interactive experiences are becoming increasingly cinematic, interconnecting space, time, and interactivity to liberate participants as both consumers and producers of information. The result can be transformative by enabling more informed and responsible learning that recognizes and encourages subjectivity, imagination, and creativity.

Case Studies: Motion Design for Immersion and Interaction

In 2007, a collaboration between visual artist and animator Bonnie Mitchell and electroacoustic composer Elainie Lillios resulted in a compelling immersive, interactive installation at Bowling Green State University called Encounters. As participants sit in the center of 13 ft. by 13 ft. abstract sonic and visual room in a sensor-activated chair, a ethereal, abstracted human figure appears and asks introspective questions, transporting them to another place, enticing them to reflect on his or her memories in introspection, self-actualization, and possible enlightenment. People interpret the virtual figure in different ways—perhaps representing himself or herself, a loved one, a God, or a spiritual presence. The figure then retreats into the distance and transforms into a tree-like form that metaphorically represents self-actualization and growth. Additional trees evolve into a forest, perhaps symbolizing a collective consciousness among all human beings. A pressure sensor placed in the chair communicates with an electronic circuit board that triggers the figure's visual and sonic presence. Questions and audio-visual events are randomly chosen from a repository to allow for unique encounters between the virtual figure and participant.

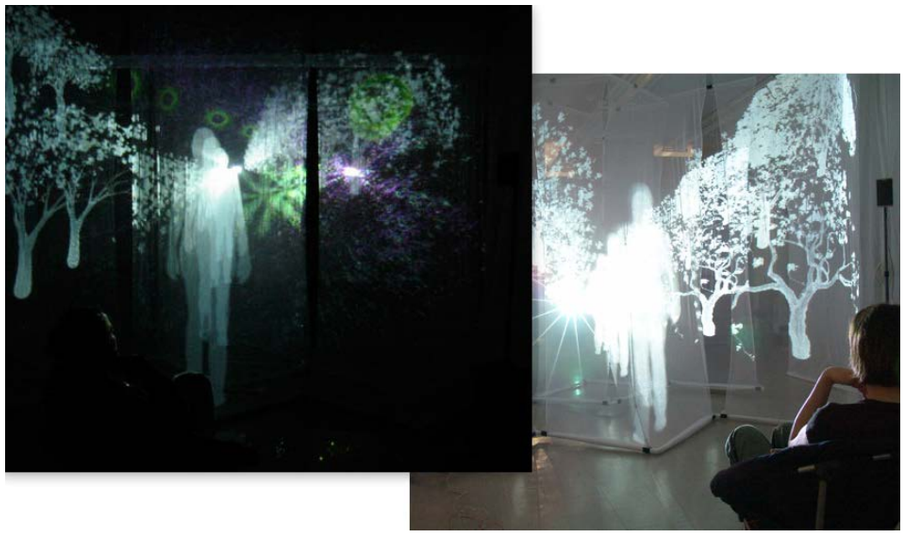


Figure 16: Frames from *Encounters,* by Bonnie Mitchell and electroacoustic composer Elainie Lillios

In the University of Dayton's admission center, a thirty-six-foot motion sensitive video installation uses traditional and generative animation to promote the institution's achievements to prospective students and their families. Directed by Flightphase, a design studio in Brooklyn, the idea of a simple cube was used as device to animate the screen. The

studio's designers explored two types motion: 1. user-driven (interactive and non-linear) and 2.) system-driven (passive and linear). In response to viewer activity in front of the wall, cubes move around the display, changing size and congealing together to generate diverse graphic patterns. The movement of a person passing in front of the system might be interpreted as sending energy into the field of cubes, pushing them in the direction he or she moving. The person's presence might also trigger the cubes to spin around to reveal segments of high-definition video portraying campus life. Changes that occur in this installation are not entirely motivated by viewers. When the application enters into "idle mode," generative, undulating patterns of cubes move and transform with changing color palettes, in coordination with typographic elements that reflect the university's mission. The system seems alive, much like a living, breathing organism. Creating a balance between inherent behavior and user-controlled behavior was challenging, and considerable time was spent investigating patterns that look visually appealing in both scenarios. This curatorial process ensured a sense of constraint and established balance between achieving unexpected and emergent visuals.

Figure 17: Admissions center video wall from University of Dayton. Courtesy of Flightphase.

The concept of sustainability emerges when we consider data-driven systems that are changeable and dynamic. Large-scale video architecture, for example, enables content to be created in real time based on the input of live data. In 2011, New York design studio Trollbäck + Company created a conference opener for The Association of Independent Commercial Producers. The design team explored creating something engaging on the spot from an input source—footage of attendees arriving at Times Center. The video was shot against a light box create a high contrast look, and a frame delay was added to offset the image's color channels, making the figures appear as silhouettes trailing a color array. The footage was programmed to be organized into loops, and the movements of the subjects triggered the audio. An incoming video's tonal values activated particular midi channels, enabling a soundtrack to be composed on the fly. The more frenetic the movement, the more active the audio. Since the same result never occurred twice, it was important that underlying design principles were strong enough to create beauty from random input.

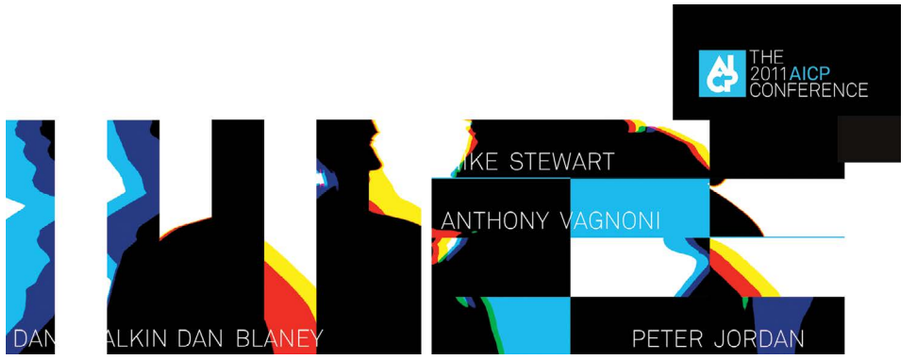


Figure 18: Frame from AICP conference opener. Courtesy of Trollbäck + Company.

The use of non-conventional design formats also offers unique possibilities when choreographing motion to work with architecture settings. Motion designers are no longer confined to specific layout sizes, and the dependency on architecture can blend the physicality and tactility of three dimensions with simulated, two-dimensional content. Further, the use of large-scale elements can enhance the feeling of realism, having a profound influence on behavioral patterns and cognition. Video display

technologies, unlike standard projection systems, are capable of displaying large images without sacrificing resolution, and allow many non-orthodox configurations.

In Philadelphia's Museum of American Jewish History, a public exhibition entitled *Only In America* encompasses two wide, curved displays that stand upright in the center gallery. Both their size and upright format offers a unique viewing experience that, unlike flat film and television monitors, creates an immersive and inviting setting. As opposed to one-directional viewing inside an enclosed theatre, the exhibition's content is configured to address the full rotation of the surrounding space, allowing viewers freedom to move around while focusing attention on particular moments of impact. The viewing area deliberately extends beyond the user's periphery to foster body movement. Further, dividing content into "pieces" within the exhibition's architectural space highlights moments that demand particular attention, allowing viewers to single in on specific details. Viewers can select different points of view, allowing deeper analysis of the parts to the whole, as well as different scalings of data. Realistic visualizations of historic events can be replayed and evaluated from multiple perspectives, including documented accounts of the persons involved. This provides a more reliable method of investigating details and discrepancies.

> *The optical effect of speed was amplified when standing close to a screen of this magnitude. Objects viewed further away appeared as if they were moving slower. Many animations needed to be slowed down to counteract this effect.*

Rectangular display systems have been the norm for the past seventy years, offering flat representations of data while sometimes attempting to depict three-dimensions. Designers have attempted to remove this constriction, recognizing that boundaries between people and media are slowly eroding. Media becomes the environment, making barriers between humans and simulated worlds they engage with disappear. Techniques such as projection mapping allow designers to augment physical objects with digital content, placing the experience in the physical world, rather than behind a screen or in an artificial space.

Figure 19: *Only In America.* Courtesy of National Museum American Jewish History, Philadelphia, Pennsylvania.

In Philadelphia's National Museum American Jewish History, a remarkable wall installation entitled *Dreams of Freedom* combines the storytelling power of film with the physical qualities of sculpture to chronicle the massive wave of European Jews who, motivated by persecution and the Holocaust, immigrated to America during the late nineteenth century. The concept of mailed letter was used to portray the principle method by which relocation was discussed among families before leaving their country. This poetic journey back in time touches upon the choices and challenges that one-quarter of Europe's Jewish population confronted during World War II. Developing the narrative required considerable scriptwriting and research on Jewish archetypes from different walks of life. A soldier in Russian army, a social activist from Poland, a small child from Russia, and an orthodox Jew from Czechoslovakia all provided unique descriptions of life as it was experienced in Europe. These represented important moments in time during which the Jewish people stood at junction in history.

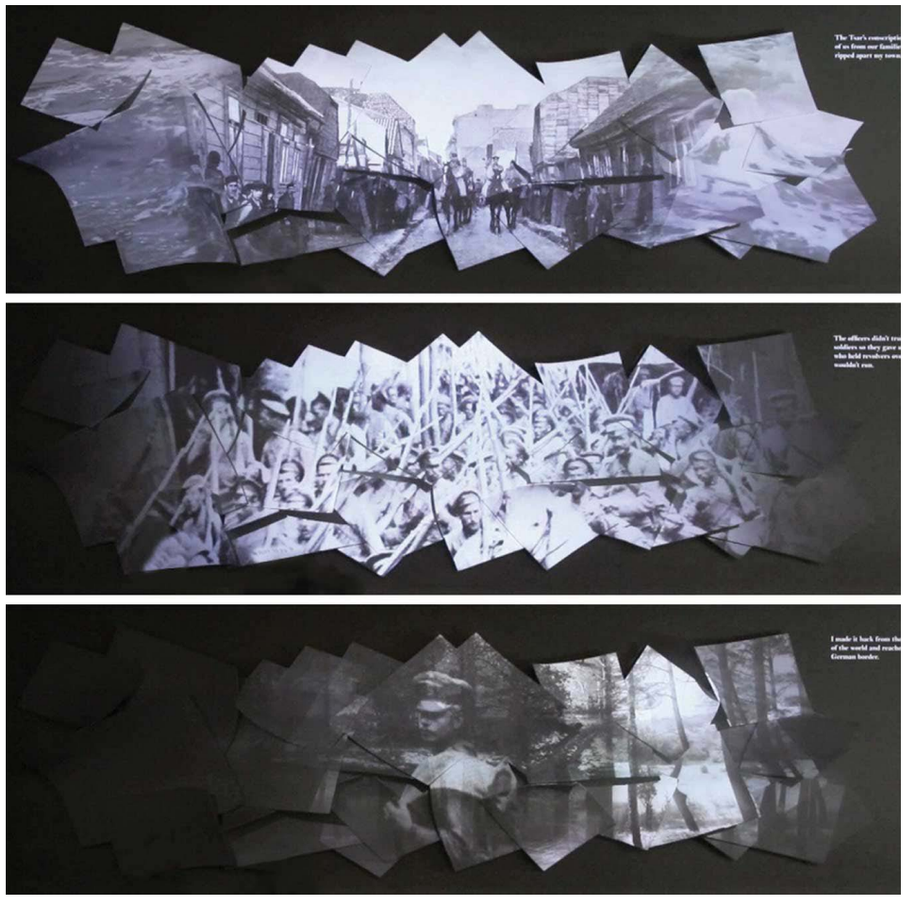
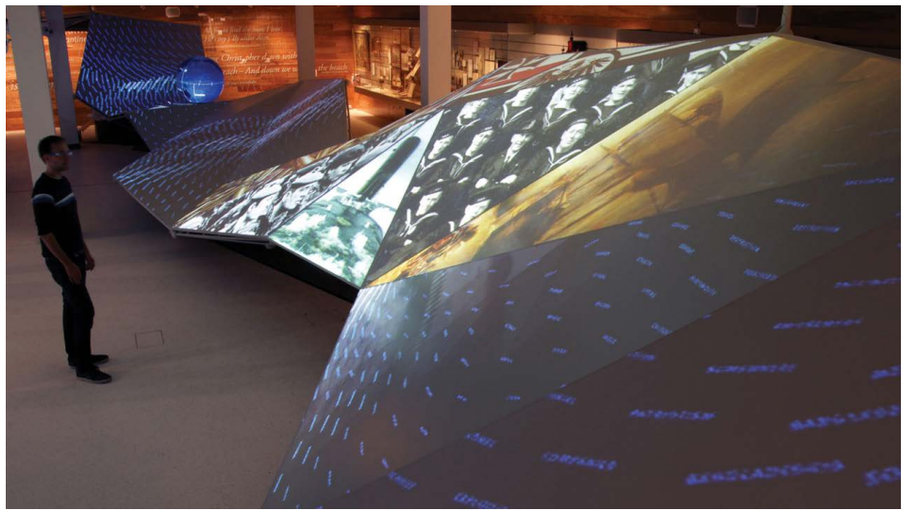


Figure 20: Dreams of Freedom. Courtesy of the National Museum American Jewish History, Philadelphia, Pennsylvania.

New York media design firm Local Projects collaborated with the museum's curatorial staff to determine how hundreds archival letters and pages from personal diaries could be incorporated into films based on actual historical accounts. The concept of the mailed letter was used to portray the principle method by which relocation was discussed among families before making the long journey. Instead of relying on flat projection, a customized display system was created to blend animated imagery onto a three-dimensional wall sculpture derived from actual aged and curved letters. Cut paper stock was soaked in water and then dried to fabricate the polymer sculpture. A rig of three projectors was used to map individual animations to the relief. Careful attention was given to differences between the original content viewed on the flat computer screen and the projected footage, as determined by the physical surface and optics of the projector's lenses. The presentation's large scale delivers unique cinematic impact, and division of canvas into handwritten letters enables large story to be composed from many small, personal stories. The presentation's large scale delivers a unique cinematic impact, and the division of the canvas into handwritten letters enables a large story to be composed of many small, personal stories. Letters float and fall from the sky as people gather in villages, accompanied by sound of letters being read in English, Yiddish, and Hebrew. The motion of elements was designed to portray fluid on the sculpture's surface to reflect the thoughts millions of people who traveled across two oceans. A foreground voice discusses what the new world



will bring—the good and bad that await the immigrants.

Figure 21: Voyagers. Courtesy of the National Maritime Museum, Greenwhich, England.

Greenwhich, England's National Maritime Museum hosts a permanent exhibition entitled *Voyagers* that goes beyond the dogmatic approach that most museums take in presenting information. An archived collection of thematic images, typography, and video transforms the environment into an emotive experience evoking the sensation of the sea. Accompanied by an audio soundscape, a large wave-shaped "canvas" composed of triangular facets and a spherical projector spans the full width of the room. Visual content extends into the physical space, encompassing viewers. Archival images and digital keywords wash across the surface, linking various components of the installation. Text based on archival meta data and interviews conducted with the public about their relationship to the sea permeates the walls. Inspired by gyrocompasses contained within the museum's archive, a globe-like object referred to as the "puffsphere" is perceived to be floating atop of the waves cascading underneath, transforming the earth into a visual canvas containing thematic words and live-action video. All elements are choreographed to allow viewers to become immersed in a series of visual, narrative journeys that recall England's long-standing maritime history.

> *Since beginning of time, human beings have craved interaction with other humans. Today, this is evidenced in popularity of online multi-user games, Facebook, Twitter, and other social networks. Although this type of computer-facilitated communication satisfies a desire to connect with others, the experience is not immersive because it fails replicate realistic forms of communication, including body language and facial expressions. Collaborative virtual environments allow users to break the normal rules of physical interaction, since they do not have to share same "reality." For example, a person can program their digital avatar to maintain eye contact with many other people at same time.)*

Over the past three decades, interactive and motion designers have developed strategies to engage viewers beyond typical, individualized GUI systems. Unlike touchscreen kiosks that foster one-way communication between user and content, social immersive exhibits accommodate the informal learning that museums champion.

Interactive designer Scott Snibbe explored human interactions in immersive spaces by observing people's entire bodies as "input devices." His installation entitled *Episodic Narrative: Three Drops* allows visitors to become active participants in a water simulation game allowing them to gain familiarity with how water behaves at the micro level. As people stand in front of a projection, virtual water splashes, puddles, and flows around them. At times, magnified drops of water drip onto the visitors. At this scale, water behaves differently; a single droplet acts like giant beach ball to catch and throw. Zooming in on the image further allows users to encounter individual molecules that clump together in chains, streaming by from left to right, attracted to the users' shadows as if magnetically charged. Studies indicate that, compared to conventional, passive video documentations of subjects, the visceral nature of collaborative, full body movements (i.e., playful showering, bouncing simulated water droplets, and standing still to make water molecules interact with their bodies) leads to longer periods of engagement and improved learning. Further, the responsiveness of simulation to users' movements, the continuously variable interactions with molecular structures (versus pre-recorded animations), and the socially scalable design that responds to every user, results in a transformative game of catch with multiple users. Familiar actions echo everyday activities. Since users can arrive continuously, the "narrative" is designed to remain understandable when the installation is entered at any time.

> *Research defines social immersive media as a distinct form of augmented reality that emphasizes social interaction. It abandons Graphical User Interface (GUI) metaphors and builds on the language of cinema, casting users as actors within simulated narrative models. Relational aesthetics focuses on how people interact in a given physical space that is designed specifically to force communication and focus on human relationships.*

Conclusion

Early film pioneers of pure cinema have enabled subsequent generations of fine art animators and motion designers to focus on the linguistics of motion across the mediums of film,

television, Web, multimedia, and immersive environments. While today's designers may not be fully aware of the contributions that these individuals made, they have adopted the unique cinematic language that evolved. From film titles to network identities, show openers, portable communications devices, to today's immersive environments that merge physical content and architecture with kinetic images and typography, the artistic possibilities remain endless.

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Over the past fifteen years, I have developed the Graphic Design program at Fitchburg State University and have exercised a pedagogy that emphasizes experimentation, aesthetic sensitivity, and critical reasoning.

My multi-disciplinary background in painting (M.F.A., Pratt Institute) and graphic design (M.F.A., Boston University) enables me to synthesize painting, animation, and music composition.

My textbook, "Motion Graphic Design: Applied History and Aesthetics," combines history and theoretical investigation, exploring a unique visual language that merges traditional graphic design and cinema. A companion DVD showcases professional and undergraduate projects from around the globe. The recent fourth edition discusses motion design over the Web, in interactive media, and in mediated, immersive environments. Editions of the book have been adopted by New York University, Pratt Institute, American University, California Institute of the Arts, Chinese University of Hong Kong, Nan Yang Technical University (Singapore), University of Hawaii at Minoa, University of Oxford, University of Alaska, and Yeditepe University (Istanbul, Turkey).

In 2012, I served as a juror for Ringling College of Art + Design's annual student exhibition and lectured on the history of motion design. In 2013, I spoke at the Motion Design Education {MoDe} summit at the University of Notre Dame and contributed to discussions that addressed the need for academically driven discourse to support design educators.

My investigation of the role motion plays in public spaces was presented at the Eastern Communication Association (ECA) convention in 2014. "Convergence and Expansion: The Role of Immersive Environments Beyond the Screen" addressed how immersive environments blend physical and virtual worlds into large-scale, interactive experiences that are transformative.

During my 2015 sabbatical, I will teach workshops in motion design to students in the Communication and Multimedia Design program at the Hogeschool van Amsterdam in The Netherlands.

PROFESSIONAL CASE STUDY

Motion Vibes: An Educational Project

Demetra Englezou

European University of Cyprus, Cyprus

Abstract: Motion Vibes is an educational project that teaches motion design exclusively to deaf people with an artistic inclination. A sign-language translator helps communicate the theoretical parts of the class to the students, but each week we also work on the practical incorporation of design to sound and music. To achieve this, I have studied the pedagogical methods used to teach sound, music, and rhythm to deaf people in other fields, especially dance, and have incorporated them into the teaching of motion design.

Keywords: motion design, pedagogy, deaf, visual audio, mapping, vibrations, motion graphics, body movement, deaf, learners.

Introduction

Our world is one of constant motion. And the arts produced from it have always aspired to imitate that motion: songs that set sound and voices traveling through time, narratives that send stories and heroes traveling through the ages, and static images that attempt to capture the live motion of the world. The technological developments of the last few centuries have given visual artists the growing ability to incorporate real movement into their art. "Motion graphics emerged after centuries of earlier developments and a general culture aspiration to create a visual art comparable to music: literally a 'visual music.'" (Betancourt 11)

"Time is the primary component that differentiates static from sequential, or dynamic, graphic design."(Woolman 46). Motion graphics, moreover, do not simply move in time, but also move through space to the rhythm of music in order to tell a particular story. Motion graphics, therefore, is a field that encompasses all aspects of the creative spectrum: vision, motion, sound, time, and space. In order to be able to set their work successfully into motion, motion graphic artists must receive a solid understanding of the interconnectedness of these creative fields through an all-encompassing pedagogical method. But not every student of motion graphics has access to these learning methods. People who are deaf or hard of hearing naturally find it difficult to grasp the sense of sound and its connection to time through rhythm when working in motion design.

Methodology

This is not to say, however, that auditory and rhythmical activities are out of reach for deaf people. Through various new pedagogical methods and technical aids, deaf people can now enjoy music, dancing, and even play musical instruments. One of the most important breakthroughs in teaching sound to the deaf has been the visual mapping of the flow and movement of auditory components in order to provide real-time visualization of music. Visual Audio (O'Kelly), for example, is a computer language which maps music into moving charts and graphs with the aim of augmenting the deaf community's experience of music. The objective of the Motion Vibes project has been to draw upon the pedagogical advancements of teaching music to the deaf, and to preserve the method, from creating music through visual components to creating motions graphics inspired by music. We're attempting, in other words, to translate music into a moving painting.

We're currently combining two pedagogical methods in our project. To begin with, students feel the music vibrations through a mobile bass application and, using an automatic free on-line painting tool, they draw the motion they sense in colors into a recording. Then, we transfer the product of the first method to an editing program, where the students are able to see the audio waves of the music. This allows them to

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Is there a visual cadence, rhythm or beat to silent motion graphics that affects the viewer the way music does?

—A. Murnieks

validate their drawings and reposition their visuals on the audio to achieve perfect synchronicity. At the end, the students get to enjoy their creation themselves by viewing the film they have created while simultaneously touching the vibrating bass of the mobile app to feel the music.

The Project

The project began with volunteer students from the European University of Cyprus. Some of the students are currently studying for Graphic Design degree (BA), while others study Computer Science or Educational courses. All the participating students are deaf or hard-of hearing. Each class session lasted around two and a half hours, the first forty minutes of which were dedicated to theory and to explaining the various procedures we would apply. A sign-language interpreter translated all the necessary information that the students needed to understand the main objective of the project. The rest of the class time was taken up by practical demonstrations and applications of the project.

In the first session of the workshop students were introduced to the techniques of Motion Design, and the theory of Cinematography and Digital Media. The main objective of this session was to teach students the basics of animated choreography and to encourage them to put into practice for themselves.

"Deaf learners are different from their hearing learners as a result of having had different experiences than their hearing peers. Such differences do not in any way make them less able than hearing learners, but they do add to the responsibility of those involved in educating deaf students." (Marschark 229). Standing before the class on this first day, I found myself in an entirely new position that I had never experienced before. My usual, verbal teaching methods were no longer sufficient. Although I have had a few deaf and hard-of-hearing students in my regular courses in the past, I had never considered a different teaching methodology I could use with these students. Through these classes, however, and with the help of the sign-language interpreter, I was able to develop a different teaching method that was based on body movement and expression and which my students could understand directly and respond to.

One of the most dynamic aspects of creating moving images rests on sound, and more specifically music. This whole project has set into motion the question of how to teach motion design to people who cannot hear the music. What became crystal clear to me through our workshop sessions is that music is really a multi-dimensional experience informed by much more than hearing alone, and thus, it is accessible to people of all hearing abilities.

Figure 1: Session 01.01 Student learning the software

Figure 2: Session 01.02 What music looks like

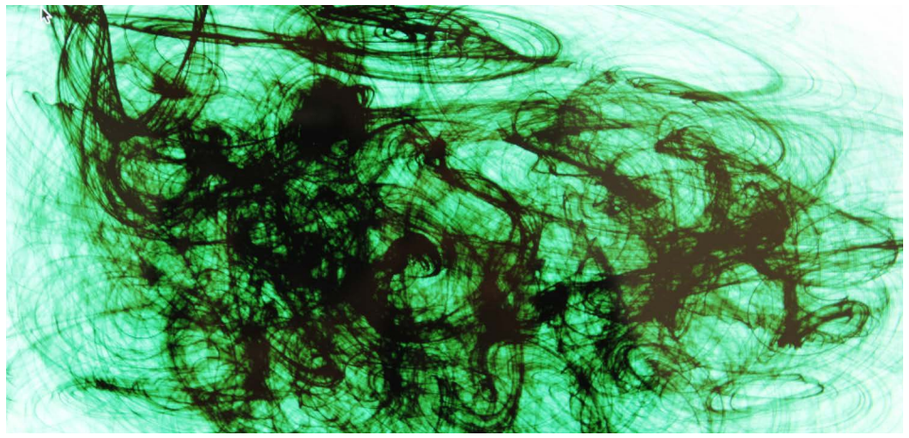

Figure 3: Session 01.02 Another aspect of sound as image

Figure 6: Session 01 Group Photo With the students of the workshop

Figure 4: Session 01.03 Students feeling the vibrations

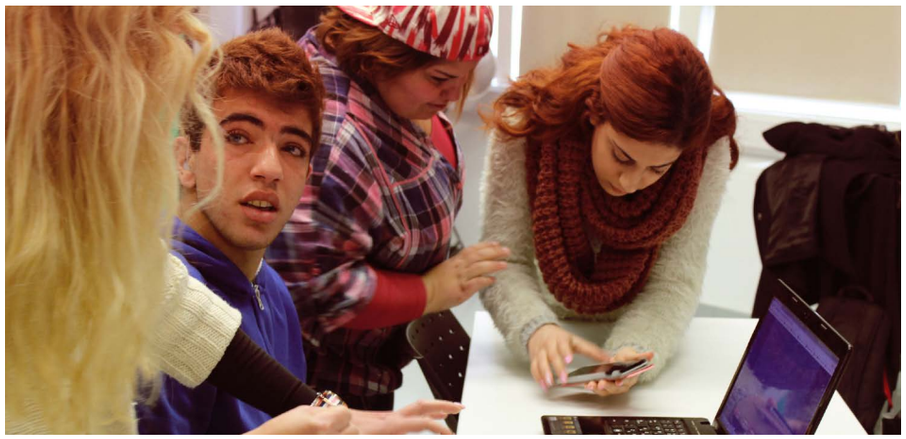

Figure 7: Session 01.04 Students exploring sound

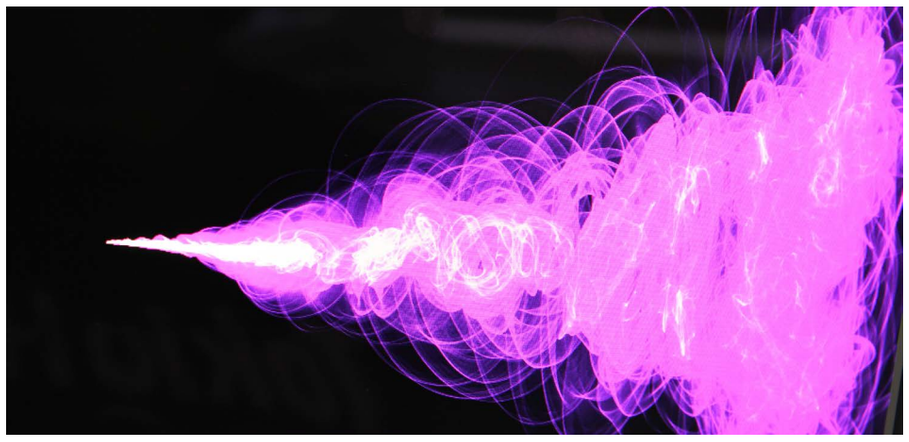

Figure 5: Session 02.01 Progress of a sound wave

Figure 8: Session 02.02 Setting designs into motion

Figure 9: Session 01.05 Feeling the bass and watching the motion

One of my main concerns in teaching this workshop has been how I would explain to these students who had never heard sound and music like I had, what music is and how it flows. Once we got into the practical applications of our lessons, however, a very interesting pattern appeared among the students. Deaf students who had taken dancing lessons or participated in kinesiology-related activities in the past grasped the concepts of the course much more easily than students with no such experience. Considering that the Motion Vibes course is purely based on the correlation of kinesiology with sound (through vibrations) this made good sense. What has been really impressive, however, has been to watch the more musically experienced students take on leading roles in the course, guiding their fellow students through their own interpretations and rationalizations of the relationship between music and motion, and helping them understand the class objective from a perspective that is entirely their own.

Another challenge of teaching the course is how to communicate the changes in pitch of the sound. Although the bass app has helped tremendously in transmitting the basic rhythm of the music to the students, pitch has been more difficult to explaining, as I'm still working on finding a more sensitive vibrating system that can communicating more nuances of the music through touch.

The emotional value of music has been easier to explain. With the help of the appropriate images that showed the mood and feelings communicated by the sound, the students were able to create the appropriate graphics.

By the end of the workshop we were able to put together a motion design film with various transformations and shapes following the musical pattern. The general concept was based on the creation of action and reaction according to the vibrations of the music. Interestingly enough, the animations created by the students expressed not only the emotions we communicated to them via the various images, but also reflected their own emotional state as well. In the end, the animated paintings were a combination of the feelings of their own inner world and of the influence of sound, and the different colors used in the film also bear evidence to this automatic mechanism.

Conclusion

Despite all obstacles to the process of teaching motion design to deaf students, I believe that the results were very satisfactory. The whole process was a great experience for both the students and the teachers. The students expressed their enthusiasm for the course and felt that they discovered a new path of expression, that of moving creation. They had also said that by the end of the course they had a better understanding of the relation between sound (through vibrations) and moving images. The world of the deaf is a world of incredible depth and surprises. This study is just the beginning of an investigation that I am positive will provide many solutions to current creative problems, and help us develop new pedagogical methods of teaching moving graphics to deaf students.

The main finding of this workshop has been that motion design is a course that does indeed need special modifications in order to accommodate the learning needs of deaf and hard-of-hearing students, but not one that lies beyond their reach. The possibilities are tremendous, and with the rapid evolution of technological tools, new opportunities and tools for the exploration of motion graphics through

Visuals from presentation *Motion Vibes: An Educational Project*

visual and tactile aids emerge every day. Our next task in this project will be to create a narrative story that utilizes motion images and sound, by applying these same techniques.

Additional Supporting Media

http://vimeo.com/channels/mode/denglezou

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Demetra Englezou holds a Master's degree (2001) in Computer Animation from the National Center of Computer Animation at Bournemouth University and a B.A (2000) in Graphic Design from the University of the West of England Bristol. She has worked in Broadcasting and Satellite Companies since 2004. She has created a large number of animated short films and Motion Graphics, and participated in International film festivals, exhibitions and art projects.

She is an instructor at the Department of Arts at the European University Cyprus. Her research interests are based on the Motion Graphics & Broadcast Design as well as 3D Computer Animation.

She is the founder and chairperson of the International Motion Festival (IMF), launched in 2012 and the first of its kind in the broader Mediterranean and Middle East.

PROFESSIONAL CASE STUDY PAPER

Breaking Down the Walls: Projection Design for Live Performance and Three-dimensional Mapping

Ryan Belock

University of Texas at Austin, U.S.A.

Abstract: Projection design and building mapping integrates the fields of environmental, graphic, and motion design in the context of live performance.

Keywords: Building Mapping, Projection Design, Motion Graphics, Live Performance

Media for Live Performance

What if motion graphics could influence live performance?

The growing field of projection design depends on engineered media servers to synthesize motion graphics, pre-produced video, live camera feeds, interactive movement, animation, and music to serve the ever-changing and instantaneous needs of live performance. In this way, projection design permeates every field of theatre, dance, film, television, opera, and music. Likewise, the commercial realms of the NBA and NHL pre-game introductions, large scale conventions, museums, car shows, and theme parks also rely on the same principles throughout the design process and production.

Integrated Media at Texas

"What starts here changes the world."

This motto of the University of Texas at Austin drives every field of study. In the Department of Theatre and Dance, that translates to developing new work, incubating new talent, and harnessing innovative storytelling technology. UT boasts the largest student-produced new works festival in the nation, showcasing 40 new pieces of theatre, dance, music, and installations. The role of storyteller is quickly becoming the responsibility of designers and media playback systems have become the tool of the trade.

In 2011, Integrated Media for Live Performance was established as a new program to bridge modern digital interfacing with classical training in theatre, dance, and design. As stated on its main web page:

> *The Integrated Media for Live Performance (IM) Program at The University of Texas at Austin utilizes the technologies, tools and techniques that have fundamentally changed live entertainment over the last 20 years. While projections and imagery have been part of the theatrical language since the beginning of the 20th century, the technological innovations of the last two decades have created a vast array of new challenges and opportunities for visual storytellers. Integrated Media covers areas as diverse as scenic projection, multimedia performance, interactive dance, immersive installations and architectural three-dimensional mapping.*
>
> *Students that acquire the skills to harness what these technologies offer are able to apply their knowledge to a variety of creative endeavors outside of traditional theatre, including museums, theme parks, retail spaces and interactive displays. Integrated Media provides the skills, tools and inspiration for tomorrow's storytellers as artists, directors and designers. (Ortel, Sven 2014)*

Integrated Media is an area of work and study that is in conversation with all STEAM disciplines. All fields of engineering, optical physics, materials science, and math find a home in this creative and innovative field. University of Texas, Yale, Arizona State, and California Institute of the Arts

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Motion design goes beyond screens. Belock presents a professional case study of "integrated media," which is motion mapped to surfaces in the built environment including exteriors of buildings.

—A. Murnieks

are among the first schools to offers programs in Integrated Media for Live Performance and the list is expanding with schools such as Maryland and Oregon State adding faculty to teach interdisciplinary digital media programs.

Celebrating Our 75th with Projection Mapping

As designers and educators, one of the greatest challenges is to seek out real-life experience from the field. As part of a collaborative effort in Advanced Projection Design, the Integrated Media graduate students proposed a projection mapping installation coinciding with the 75th Anniversary of Theatre and Dance at the University of Texas at Austin. This installation increased the visibility of the Loren F. Winship Drama Building and fostered a stronger relationship with the UT community.

Our department thrives on new work and challenging the world to think differently about how theatre is experienced. The mission statement of the department reads, "The Department of Theatre and Dance is a world-class educational environment that serves as the ultimate creative incubator for the next generation of artists, thinkers and leaders in theatre and performance."

Projection mapping is at the forefront of the theatrical design industry and is also used in many experience-based and communication industries. It has the ability to re-invigorate the architecture of storied buildings with new content and life, allowing audiences to experience storytelling in a new, dynamic, transformative way.

Storyboarding

The show honored the history of the building and the people who made up the fabric of its community. Giving extra attention to the F. Loren Winship Drama Building during this special week was an exceptional experience for the integrated media students and all who walked by Winship. Opening with simple geometry, lines, and text, the show highlighted the Winship building itself, ultimately revealing the department logo, as well as an indicator of our 75th Anniversary celebration. As the program continued, archived images of departmental shows, previous buildings, department chairs, and students of years past, once again surfaced within the Theatre and Dance community. Utilizing the geometry of the building, time markers mimicking the light bulbs that hung over the main entrance animated, traveled, and highlighted key dates and events. Current images of the dancers, actors, writers, directors, designers, and theatre makers alike were followed by images foreseeing the future and text of the following season's programming.

Figure 1-3: Past, Present, and Future were associated with specific type of color scheme, style, and animation. Source: Smith 2014

This journey through the past, present, and future of Theatre and Dance left the 75th Anniversary celebrants with a memorable experience. Ultimately, this exhibition will left an impression on those who previously never set foot in, or glanced behind Winship walls.

We were thrilled to ignite the passion of past, present, and future artists and scholars in the Department of Theatre and Dance. Operating as our own production team, we self selected roles based on our unique abilities as creative director, programmer, media manager, videographer, and content creators. Under the supervision of instructor Sven Ortel, we developed the story of the department's past, present, and future. Through familiar models of critique and revision, we found content suitable for the audience of alumni and students to relate their experience with the [space].

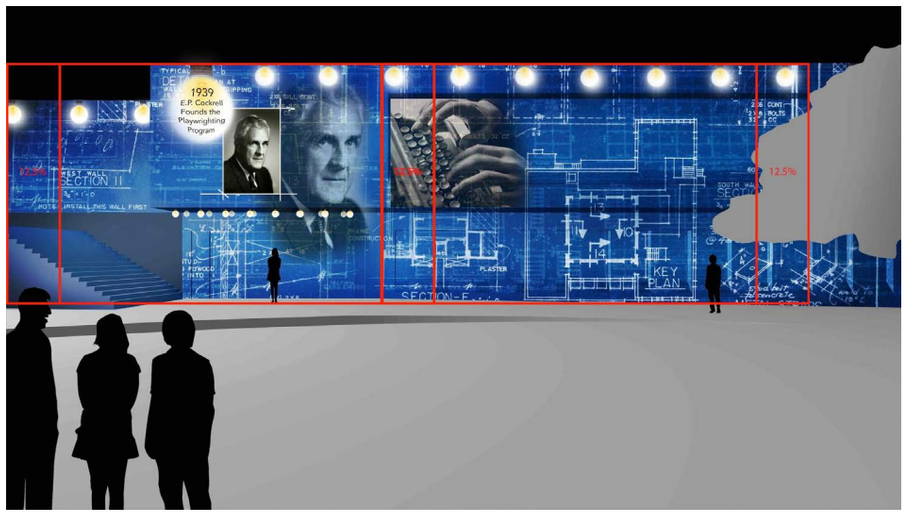

Figure 4: Rendering indicates projector coverage Source: Busing, Ortel 2014

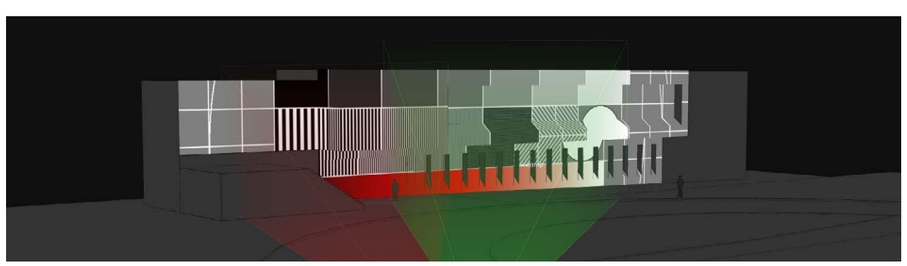

Figure 5 Projector blending in d3. Source: Ortel 2014

Figure 6: High contrast test pattern blending Source: Belock 2014

Engineering

Utilizing a d3 media server, programmer Jared LeClaire (UTiM Class of 2016) was capable of programming the pre-visualization which could be rendered to playback a demo for advisors and department heads to approve the final content. This same server was used on-site to play the final show. This programmable media server allows flexibility and opportunity for designers to preview what their work may look like when not displayed on a monitor, but rather in its final form - pixels mapped to the architectural surface. Another way to imagine this process would be if Adobe After Effects allowed you to skip the entire rendering process and simply press play and see your content appear where it needed to be, without any stutters or glitches.

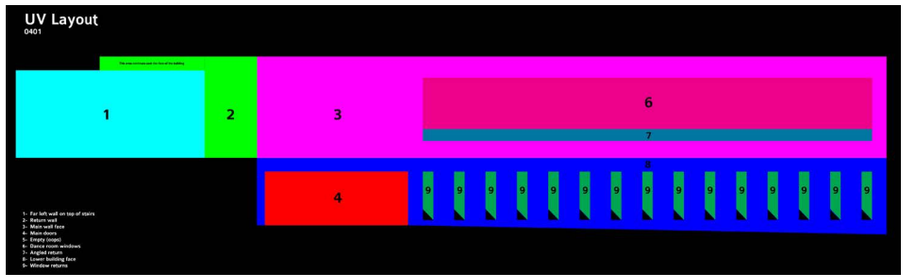

Figure 7 UV Map of Winship Drama Building Facade. Source: LeClaire 2014

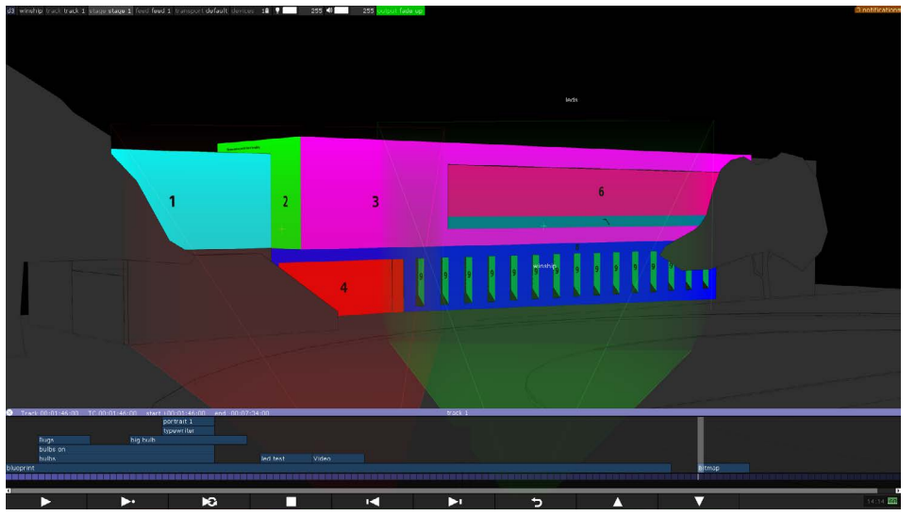

Figure 8: UV Map on 3D mesh in d3 Source: Ortel, 2014

Content creation for projection design began in the same realm as motion design. The Adobe Creative Suite offers every tool needed to capture, manipulate, and animate. The only difference was in the final delivery, projected and scaled onto scenery, scrim, or in our case, a brick textured building facade.

Archival photos were taken into Photoshop, treated and scaled to match the UV map, and then animated in After Effects. Not every final asset was a video file. Some png stills needed to be directly uploaded into the d3 media server in order to program a fluid transition from one section of the presentation to the next. Characteristics such a opacity, scale, rotation, color adjustment, pixellation, and distortion could all be controlled and programmed in the d3 programming timeline.

Standing atop a scaffold near the main circle adjacent to the building facade, our team assembled two rented 22,000 lumen projectors according to the placement coordinates in the d3 programming system.

Overall, an understanding of motion design helped propel the direction of the projection transitions and animations ultimately igniting the passion of past, present, and future artists and scholars in a previously “invisible” university department.

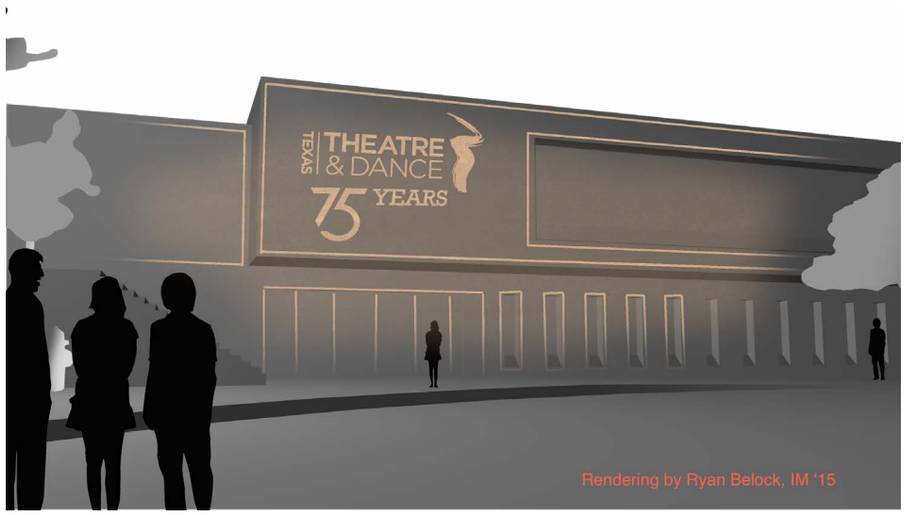

Figure 1: Rendering. Source: Belock 2014

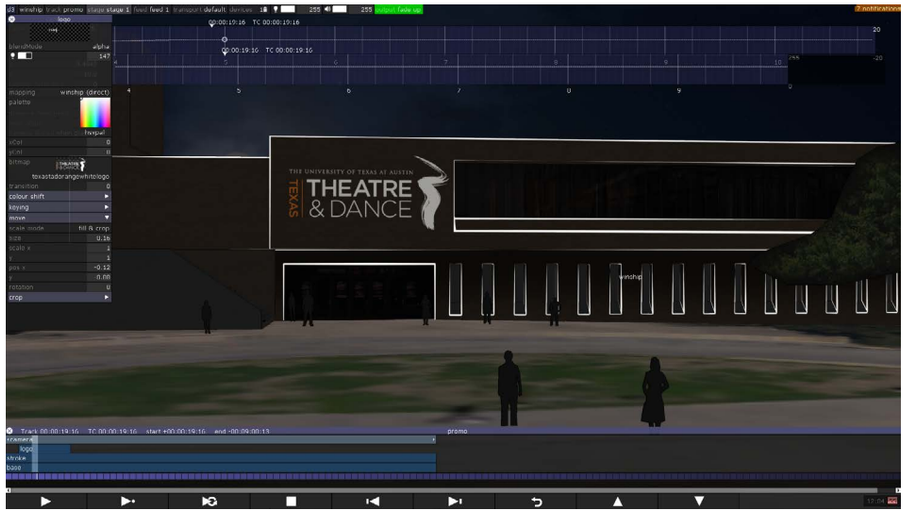

Figure 2: Pre-visualization in d3. Source: Ortel 2014

Figure 3: Final installation/production Source: Smith 2014

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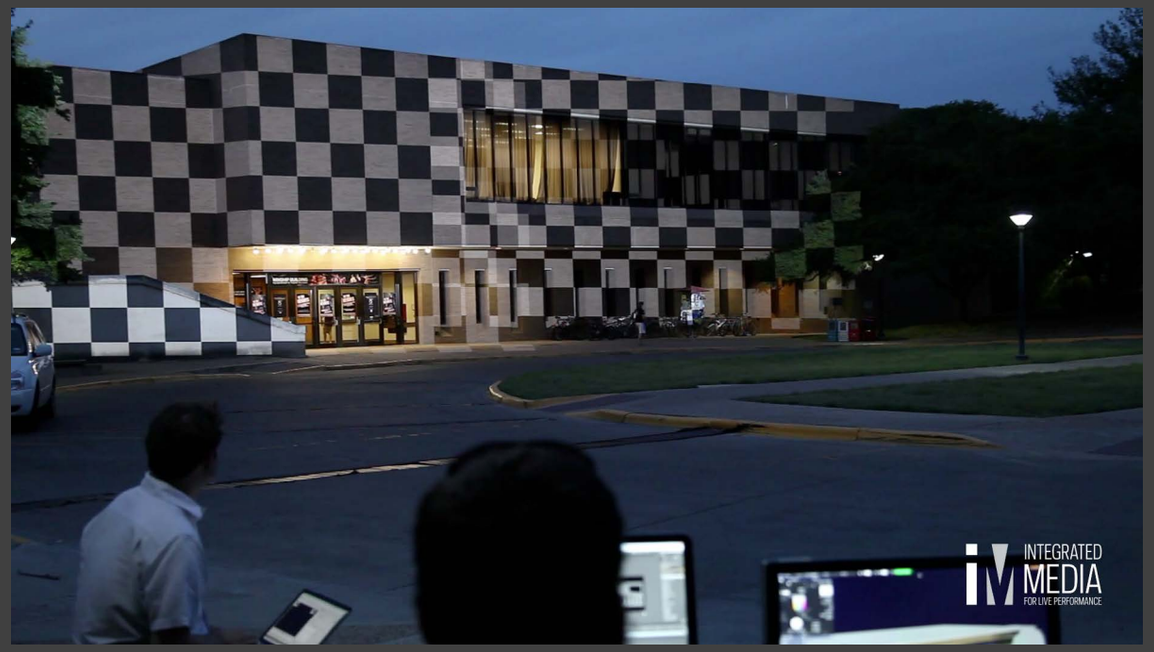
Ryan Belock is an interdisciplinary artist from Strongsville, Ohio. As an actor-musician and designer, his work concentrates on movement for the performer-designer and establishing projected media as a scene partner.

Belock distinguished himself as a “triple threat” at the University of Notre Dame, majoring in percussion performance, theatre, and graphic design. He received the accolade of “the arts guy” upon Commencement by the College of Arts and Letters Dean John T. Mc Greevy. As an undergraduate, Belock founded ARTS at NOTRE DAME, the first student advisory group for the integration, collaboration, and communication of professional, student, and departmental performance and exhibition entities on campus.

Belock is currently a third-year MFA candidate in Integrated Media for Live Performance at the University of Texas at Austin. His thesis, RE/CONNECT (Spring 2015) is an interdisciplinary (arduino LED costumes, immersive video projections, movement, and live music) performance about the fascination with current trends in communication technology and intimacy.

Recent credits: The Masked Ball (Austin Opera); “Max” in Dial “M” For Murder, In the Heights, Orchid (UT Theatre & Dance); And Then They Came For Me (Indiana Repertory Theatre); Dream of Perfect Sleep (UT New Theatre); COLOSSAL, Dead Mall (Cohen New Works Festival); A Woman in Morocco (Butler School of Music); Killer Women (ABC); and Historia de Amor (TEATROCINEMA - Santiago, Chile). Upcoming: Into the Woods (Butler School of Music).



Visuals from presentation *Breaking Down the Walls: Projection Design for Live Performance and Three-dimensional Mapping*

Designing Time

Keynote by Jeff Arnold of Microsoft
Summary by Andre Murnieks

Jeff Arnold is Principal UX Designer/Lead at Microsoft. Jeff and his team conceived an implemented the Motion Design Story of Windows Phone 7 which became the Design Language of Microsoft. Jeff comes from a 12-year background in broadcast design before coming to Microsoft to find that the language of Motion can translate regardless of the media. UX Design should be about solving real problems for real people in a way that is delightful and engaging. While the use of motion in User Interface may not be new, the thoughtful injection of teaching moments and other concepts introduced in WP7 make the difference between UI and UX.

During Jeff Arnold's years producing broadcast graphics at an NBC affiliate in Seattle, the longest lead-time for a finished graphics package might be two hours. Crushing deadlines were not always the best situation for a considered application of motion design. It was a refreshing change of pace at Microsoft where the deadline was two weeks. However, Jeff quickly realized that the design work, while great, was not translating through to the development stage. In fact, the Windows Phone UI seemed to be undergoing constant reinvention or "wash, rinse and repeat," as Jeff put it.

The Windows Phone experience needed an aesthetic to bind it all together. The design team looked to inspiration from established graphic systems that championed the content rather than the UI "chrome." They found examples in the New York subway system, way-finding and old-school Swiss design. For a phone UI, the look became distinct because it was very flat and gridded. Jeff's team realized this was an opportunity for animation to create "moments of delight with dimensional motion" in a very flat interface.

Motion in UI has lagged behind graphics simply because of the processing power necessary to execute it. Jeff points out that it required about ten years to develop the first useful GUI for desktop, and another ten years before it was even decent:

- 1972 XEROX Alto's "Alto Neptune Filemanager"
- 1985 Apple's System 1.0 and Microsoft Windows 1.0
- 1995 Windows '95

While graphics have evolved to use the ever-increasing performance of the silicon, the application of motion is playing catch up. Jeff notes that Windows Vista was a showcase for sophisticated graphics in UI, and it required top-of-line microprocessors and graphics cards just to see all of the advanced features. About this same time, the small screen is in its infancy with devices like the Pocket PC. It introduces a new way to interact with a personal device, yet it suffers from a desktop UI paradigm jammed into a small screen.

Windows Mobile begins to buck this trend, but it still relies on glossy buttons and a mix of resistive touch, stylus and physical button input. Then some technologies begin to converge and become commonplace: capacitive touch screens and small (even 4K) touch screens with the processing power to back them up. In particular, capacitive touch screens eliminate the layers of separation between user and content—no one degree of separation as there is with a mouse or stylus. This direct manipulation of screen UI elements benefits by good motion design allowing for smooth scrolling, simulated physics like inertia, meaningful screen transitions, and localized animations.

"With the injection of motion design, it starts to take it from UI to UX—it's the user experience. It's more than just getting stuff done. It's doing it in a way that's delightful; it's doing it in a way that leads the user along."

—Jeff Arnold


KEYNOTE SPEAKER
Jeff Arnold, Microsoft
RIA
ROYAL IRISH ACADEMY

Using motion in UI is interacting "in a real way," as Jeff states. He then boldly defines *that UI plus motion equals UX*. Jeff's team at Microsoft uses motion in UI for generally six different purposes:

1. **Injecting delight**, fun—such as Xbox's use of animated avatar's for game UI.
2. **Hinting towards the interaction**, "What am I supposed to do next?" as shown in the Windows Phone lock screen.
3. **Masking perceived slow performance** or making UX seem faster (or not locked up). Anything under half a second is instant for users when tapping an UI object.

Consistency in UX is also important. Jeff demonstrated the "turnstile animation" with two animated launches of an app that differ by one second but are perceived as the same. This buys precious time for background tasks and Internet access.

4. **Easing is essential,** and internal motion studies show that linear motion feels slower. Personas developed for testing report that one UX feels faster than the other simply because of easing.
5. **Something is happening** animated effects (not locked-up), like wait cursors, but better, often offering a bit of delight.
6. **Help find your way** as with Microsoft's "continuum effect." A piece (tab) of one screen tears away and becomes part of the next screen creating continuity rather than disparate states. This stitches the flow, and resets the eye on the next layout.

Through demonstration and testing, Jeff's team presented clear rationale for the benefits of motion in mobile UI, but are these same techniques appropriate for other systems like large screens? To prevent the overuse and abuse of motion, the team developed a set of principles for motion to act as guardrails. Rather than say "no," the team could cite sound reasoning with five tenants for the use of motion:

1. **Minimal.** Don't show more than what is needed to sell the moment.
2. **Serves a purpose.** No motion for the sake of motion.
3. **Doesn't get in the way.** Motion is meant to help. The product must be usable at the same time it achieves the desired user experience. Never wait for animation.
4. **Fast and fluid.** Motion flows naturally. It moves quickly but follows a natural path—like a swinging child. Faster frame rates (60 FPS) allow for even faster animations, and "it's all about easing." It ties the entire system together.
5. **Appropriate.** One size does not fit all. The scale of the screen matters for motion.

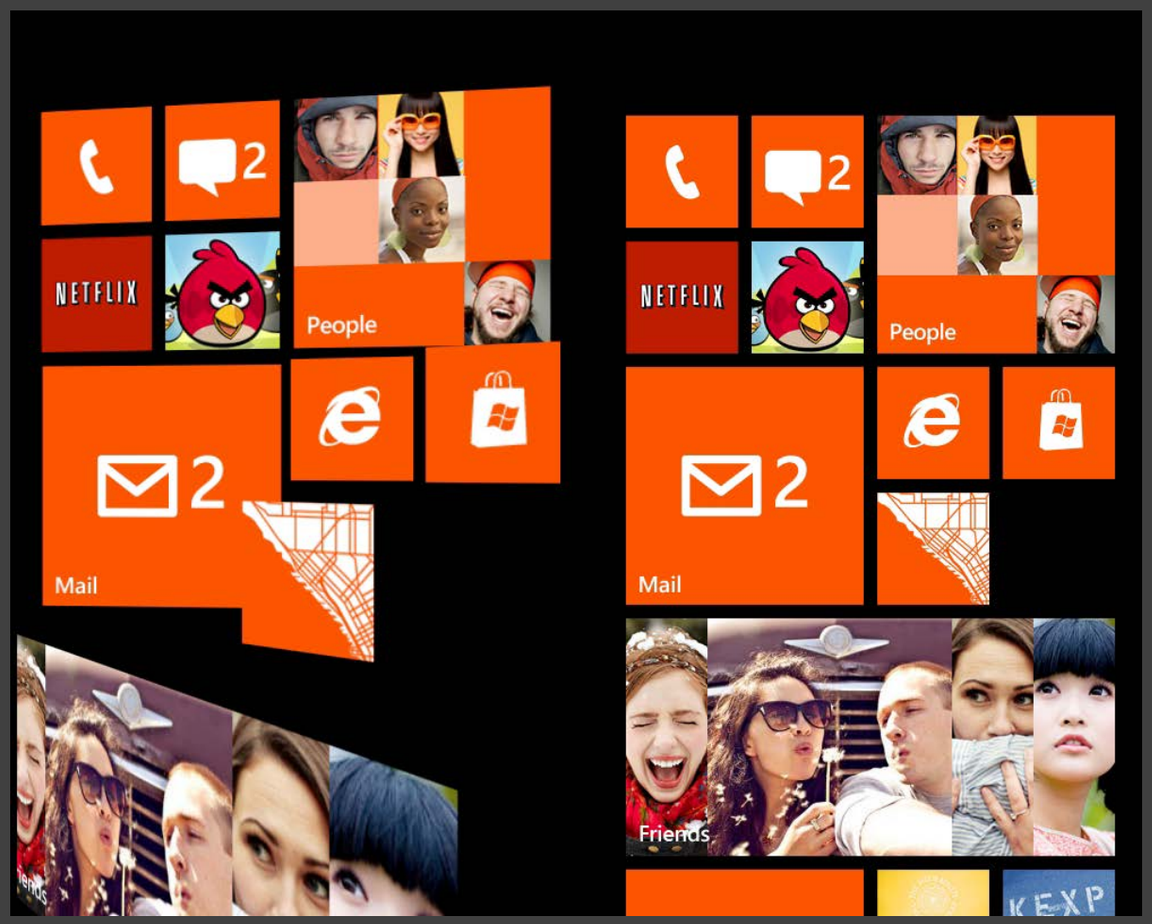
Within the UI, it is possible to "tell a story" using motion as it is injected into the process. Motion can act as glue to help the experience bind together as a unified system. The actions must feel real and perceived to follow the rules of physics. Jeff related a story where the velocity, friction and drag of a motion did not feel right. Using the word "feel" made the developer uncomfortable. He then offered a motion study: he slid his phone across the table and noted the behavior. There was a moment of instant clarity, and after tweaking an algorithm, everyone agreed the motion "felt" right.

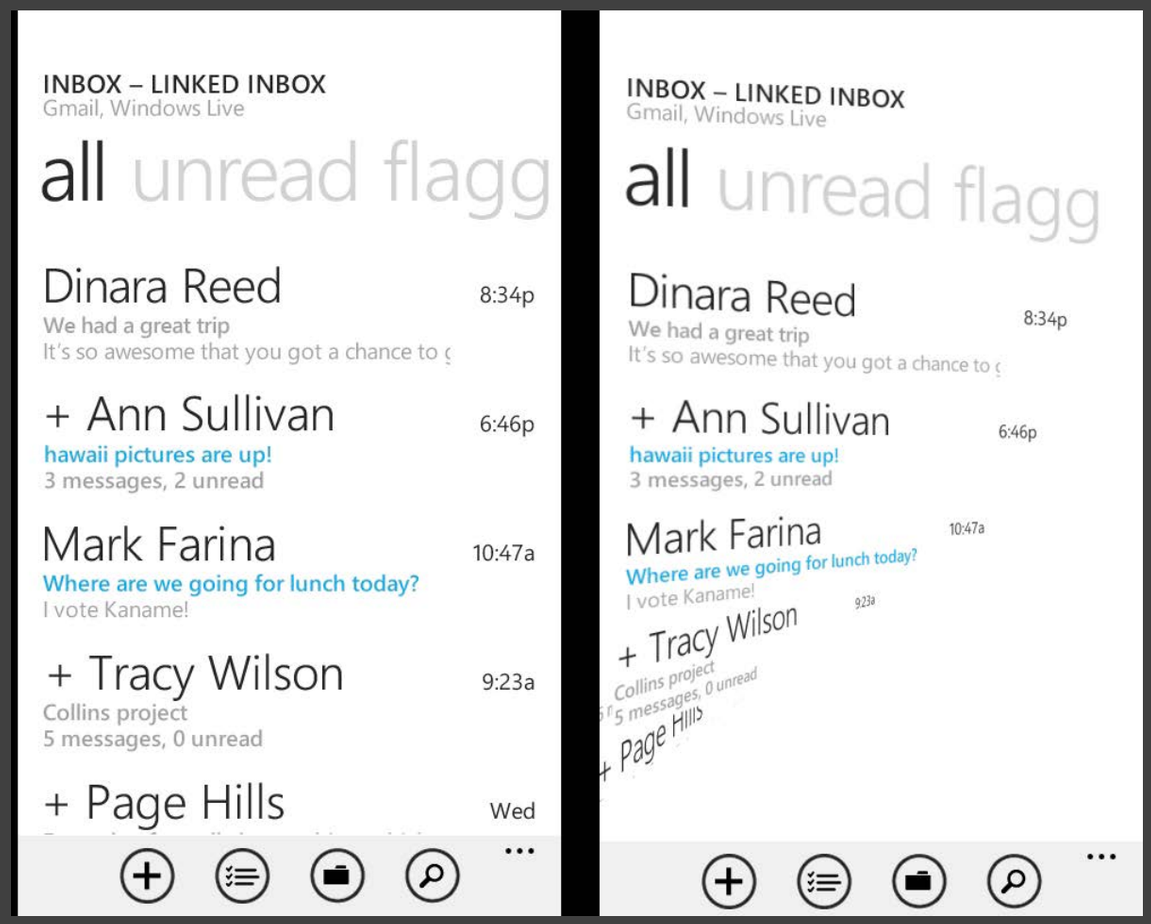
Since the widespread adoption of a motion standard for all of Microsoft, Jeff has noticed a change in the way UX is discussed, and what it means to have an elastic or snappy feel, be overly bouncy, or too exhibit much tension. Should the element build momentum before it lurches forward? Is even the smallest UI element becoming an actor on the small screen?

With a system of motions working together, the Windows Phone experience is not unlike a blockbuster movie. First scene opens from the lock screen with a grandiose "turnstile" transition, and then moves from scene to scene (app to app) with the "continuum" effect. Characters develop through "tiles" exhibiting localized animations, and finally story climaxes with another user task completed.

Additional Supporting Media

https://vimeo.com/channels/mode2015





Visuals from presentation *Designing Time*

ACADEMIC FULL PAPER

Character Development in Typeface Design and Motion Design: A Multifaceted, Cumulative Endeavor

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This essay discusses and compares the development of the notion of 'character' or personality in the two worlds of typeface design and animation. In typeface design, each 'character' in the typeface plays a role in establishing the overall personality and character of the typeface itself. This is a meticulous process of designing and managing idiosyncrasy and homogeneity across the shape landscape of often up to thousands of glyphs. This effect is felt when the reader reads a paragraph of text, or a headline, and all the minute decisions the designer has made to imbue the type with a character are brought to bear on the meaning of the words themselves, as well as the atmosphere and framing of the content presented. The individual glyphs work in harmony to create a personality that is bigger than any one of the individual pieces of type. In animation and motion design, the term 'character design' is usually used to describe an animated persona or role within a script or screenplay, whose personality is similarly constructed and conveyed through the cumulative effect of decisions on part of the designer, script-writer and director in the appearance and behavior of the persona in order to elucidate and 'characterize' the role. Each frame gives us a little bit more information about the shape of the body, in a way that reflects the building picture of typeface design. In both fields, the role of abstract shapes, the emotional quality of line or weight, posture, and rhythm can be seen to be central in building a meaningful character. In this exploratory essay, we discuss overlaps and speculate about what they might reveal for kinetic typography, typeface design, animation and motion design. Our aims are to articulate some tendencies, to highlight overlapping approaches, and isolate concepts common to both fields with a view to enriching both practices by cross-pollination. As a jumping-off point, we discuss a collaborative project where the notion of character took center stage.

Introduction

"Drawn characters are usually conceived in volume and move with consistency"

(Hernandez, 01)

The concepts explored in the essay that follows were borne out of a small collaborative project which saw the worlds of animation and typography collide in an animated short entitled Meanwhile. Teasing out the underlying commonalities, this essay notes some overlaps below. By bringing the writings of theoreticians and practitioners from both fields together with specific regard to the shared psychological, meaning-making and tool-oriented nature of both professions we discuss how both motion design, animation and typeface design:

- Construct participatory narratives in ways that invite interaction through a shared cumulative nature
- Contain gestural content that abstractly conveys meaning
- Have a similar relationship with technology/toolmaking
- Use movement to enhance the meaning-making capacities of form

We will frame and underscore the potential impact and value of animation for type design and typography, and the logic of cumulative, rather than plot-driven narrative for animation.

Meanwhile: Characterizing Character

Fuelled by the idea of identity, Meanwhile tells the concurrent stories of four individuals and shows their worlds converge for a split second. It is a meditation on the subtle moments that comprise a human life. The film orients each of these discrete narratives through the creation of four rich mini-landscapes, intended to communicate personality and disposition through color, form, narrated voice-over, and movement. The plot hinges on the snap-shot-like juxtaposing of these narratives. For this reason, the overall feeling is that of a staccato movement, of time interrupted, slowed down, and sped up, as we oscillate from the quiet calm of one character, to the impatience of another.

Figure 1: Scene breaks from Meanwhile showing lettering treatments. Source: Authors, 2014

With the intent of underscoring the personality of each character, four lettering treatments of the film's title 'Meanwhile' were created, that would serve to introduce and distil the personality of each character into an alphabetic interpretation. Working without a written brief, the designer responded to the animator's supplied keyframes, drawing style, visual cues such as facial profile, color palette, and vocal voice-over characteristics, and just three descriptor words for each character. This was an intuitive and organic process, where similarities in the practices of each field helped to speed up understanding, communication and interpretation between designer and animator. This resulted in a comfortable synthesis of the key ideas of the animation, through the morphological qualities of the letterforms (see Figure 1 below).

Richard: 'bold, modern, fast' (top left)

Lean, urbane and hot-tempered, we decided that something light-weight, but sturdy, expansive and controlled, would best represent his personality. The width of the letterforms conveying an expansiveness, perhaps an ego, and within the frame, the feeling of both speed and control. The mismatched M and W with its short middle junction are deliberately combined here to create a feeling of tension within the wordshape.

Chris: 'bright, young, hesitant' (top right)

A pre-pubescent boy, with all the awkwardness of a teen gaining his first awareness of sexuality, and his own identity. For this, we directly referenced the growth spurt, with letters sitting together awkwardly close and breaking typographic conventions where possible so that the wordshape feels strange and ungainly, while also feeling youthful, naïve, and vital in its monolinearity.

Florence: 'broad, delicate, organic' (bottom left)

A quiet, gentle woman who takes care of her ageing mother. When we meet her, her mother has recently died, and so the notion of time in slow motion, vulnerability, timelessness and love, were core concepts to imbue her letterforms with. Evoking the slow roundness of a cursive letterform construction, monoline, and almost roller-ball-like, the shapes suggest the unassuming nature of her personality. This is the only one of the four that is embellished, which was done to underscore the slowness of the shape, and with careful and deliberate swashes, suggesting a self-conscious reverence that communicates the character's gentle nature.

Malcolm: 'traditional, sharp, brittle' (bottom right)

A cantankerous older gent, talking to himself as he walks down the street, remembering past moments, and filled with regret. He is reflecting on the loss of love. There is the suggestion of another era, a time now passed. Because of this, we evoke a scratchy halting cursive scrawl that peters out at the end, and has the high-contrast of tool perfunctorily used to scribble a name, or write a quick note. The letters are angular with moments where the control of the tool appears to disappear or falter.

In all these treatments, there is a counterbalancing. Florence's soft roundness acts as a foil to Malcolm's sharp brittleness and both of these show a more manual approach than the typographic treatments of Chris and Richard. This carries through the axes of expression already present in the animation, which align each character on a spectrum through color, pace and form. Discussing the development of the lettering and contiguity of the animated and lettered forms, our language centered on connotative meaning, and the valency of abstract formal cues and movements to convey and evoke emotion and meaning. This was the genesis of this essay, which seeks to explore this culturally charged, rhetoric-based, shared language of type design and typography, and motion design and animation.

With its strong emphasis on identity, the process of creating the scene breaks for Meanwhile highlighted the convergence of the concept of 'character' in each discipline. The term 'character' in typeface design has two meanings. It refers to the overall feeling or atmosphere of the typeface, as well as to each individual letterform. In animation, the character plays a role, cast to help create a universe of relationships. In both disciplines, form is employed as a meaning-making tool where gesture, stature, demeanor and overall personality are translated and encoded in visual form.

The shape of the word is akin to the shape of the body or face in animated characters. Each discipline subtly massages the implied rhetorical value for the audience through decisions surrounding formal qualities and movement in communicating basic figurative relationships to evoke emotional or cognitive responses. In both fields, what takes place in the development of a character is essentially an attempt to distil or capture an essence, and amplify this. We discussed the use of width, stroke weight, calligraphic model, and its relative or implied speed of execution, rhythm, proportion, spacing, embellishment and word shape and to translate, distill and cultivate the characters of Meanwhile in typographic form. In the process, we reflected on the fact that each factor was intricately linked to the entirety of the others, and that in both animation and type design, these details form cumulative meanings, that shape-shift and morph depending on their context and combination.

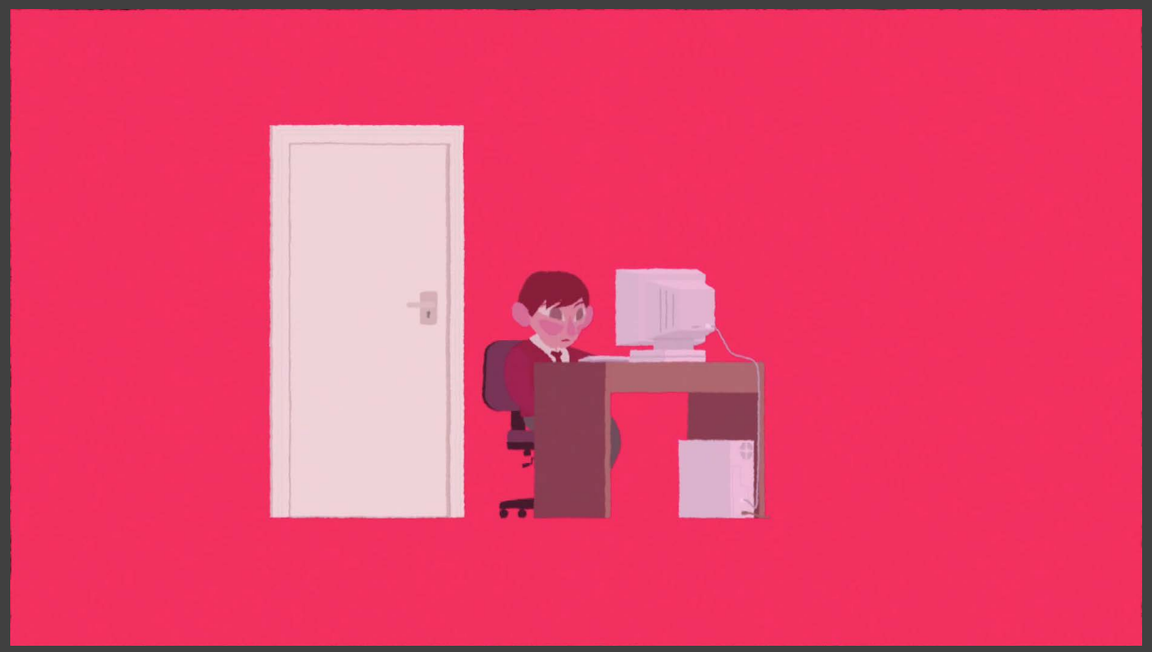
Greater Than The Sum Of Its Parts

"I'm still in awe of animation's mysterious paradox of vision, that what you see (a sequence of static images) is not what you get (movement)."

(Griffin, 260)

Perception and cumulative stimuli

A governing factor in the practice and substance of both fields is perceptual processing. Each discipline trades in sleights of hand that trick the perceptual system into reading subtle combinations and attributing meaning to them. Both fields employ a codification and manipulation of forms derived from human behavior. In the case of animation, this can include human body language, and in the case of typeface design, human verbal and written language. In both realms these codes are transmuted and defined by the cultivation of a visual language, or set of repeating visual consistencies, to create an over-arching effect. Hernandez describes it thus: "the visual rhymes assemble the story development, when the roundness of a cup of coffee, a spiral staircase, or a merry-go-round spinning, provide visual connections among the different memories and regrets from the main character's existence." (41)



Visuals from presentation *Activating Space: Character Development in Typeface Design and Motion Design: A Multifaceted, Cumulative Endeavor*

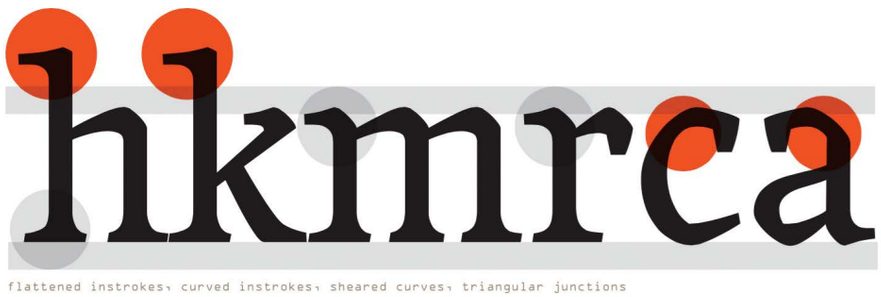


Figure 2: Image from Magnimo (unpublished) typeface specimen showing how the typeface is built out of a repeating set of forms. Source: Author 2010

In this sense, both animation and typeface design are areas of creation in which the idea is to establish a set of ingredients that do not exist alone but in combination, to create a product that is cumulative in nature and multifaceted in the visual cues it involves as its building blocks. An acknowledgement of this cumulative process can be seen in the distinctions each discipline makes between the parts and the whole. A common adage in type design is that typefaces are beautiful groups of letters rather than groups of beautiful letters. The parallel in animation is the dictum that "animation is not the art of drawings that move, but rather the art of movements that are drawn" (qtd. in Hernandez, 38). Through this visual language, frames and letterforms perform together and respond to each other in harmonious combinations to convey a consistent atmosphere, scene or personality. No one frame or letterform can contain all of the visual cues and forms in the visual lexicon of the piece, but must perforce constitute only a facet of the whole.

This convergence of cumulative methodology can be seen in the parallels drawn by Griffin between Concrete animation and typographic practice in de Stijl movement, and Concrete poetry. The cumulative effect he describes is that of meaning 'formed by the coalescence of discrete particles into a solid mass... more than the sum of its parts, be they frames on a strip of film, pages in a book, or a sequence of objects' (Griffin, 260).

Narrative and rhetorical underpinnings

This cumulative nature helps each field to engage the viewer in a participatory meaning-making endeavor. Strongly practice-led, both disciplines are highly specialized and technologically-tethered pursuits. As such, a sizeable quantity of the literature surrounding each discipline has more to do with the practice and method of the field, than it has to do with the theoretical frameworks or critical theory.

In her discussion of the role and relationship of visual rhetoric to typography, Brumberger notes that the empirical data and studies surrounding the field of typeface design have focused largely on legibility and readability but not on the personality or rhetorical impact of certain typefaces. (Brumberger, 207) Similarly, in animation studies, Torre notes that the literature discussing meaning-making and theory of practice is borrowed largely from another field—film theory—which does a disservice to the field of animation (48). Torre makes the case for a more philosophical look at animation processes as a more useful way to describe animation, framing the discussion less around "the end product, and more about the process of its becoming" (50). Our discussion addresses similarities between the fields with a focus more on these theoretical and conceptual frameworks than on methodological or practice-oriented comparisons.

Animation overtly and frequently relies on the operation of plot-driven narratives, but typeface design lays claim to the concept of 'narrative' in a less transparent way. The notion of narrative we are invoking here is that of Atzmon's visually rhetorical, cumulative—as against linear—narrative, which builds chronologically over time. Asserting that "the term 'narrative' also ought to include constellations of meanings embodied in a material artifact that are assembled and reassembled by its users over time..." (Atzmon, xvii), she challenges us to consider the compound effect of visual cues that configure and reconfigure and through use and observation on the part of the viewer/reader, helping them form associations and participate in a meaning-making endeavor through their engagement with a work of design. Of note here in particular, for the purposes of our discussion,

she argues for a reconsidering typography and type design not from the point of view of composition or page layout, which has been the traditional subject matter for the visual rhetoritician's analysis, but through the individual character forms themselves. Approaching narrative from this angle, we can compare the cumulative meaning-making of each field and consider the user or audience as an active participant or 'reader' rather than 'spectator' taking part in the assimilation of the atmosphere of a typeface, or forming meaning in the reading of an animated piece.

Goggin (91) discusses the formal qualities of letterforms in their capacity to convey cultural nuance and evoke emotion, through a discussion of the historical origins of woven lettering. She notes the origins of our word for text (from textura meaning 'woven') and in doing so highlights the cumulative nature of meaning-making in the construction of a set of letterforms. Describing the building of personality in the woven texts, she notes that "As stitches are rendered with differing sizes and kinds of needles, using different numbers, colors and types of threads on different kinds and colors of background fabrics, and are combined into distinct patterns, their potential as a semiotic tool multiplies exponentially"(91). This same combinatorial capacity is seen in both animation and typeface design where the constituent qualities of a line or form with regard to its weight, morphological features, implied direction, speed, among other formal qualities, play to specific ways of reading information that help us to form cultural or contextual understandings of the world, and narratives. See Figures 4 and 9 below.

Psychological underpinnings

Describing and constructing narratives in this way is a core feature of our psychology. Williamson argues that the kind of cumulative design narratives that Atzmon is describing, embedded and unnoticed, are, as such, more effective in their engagement of the reader/user, as they create a deeper participation in meaning-making. He contends that they do this by 'tapping into existing scripts', which have parallels in some psychological theories of how we interact with the world (Williamson, 352). He asserts that design narratives like this in some way allow us to play out social interactions with objects (Williamson, 353). Interestingly for our comparison, he also discusses the importance of time in this psychologically supported engagement. He notes its ability to create continuity and allow shapes to interpolate or morph.

Figure 3: Examples of 'smears' from Looney Tunes, and Meanwhile. The smear in Meanwhile is on the eye, but is subtle, so we have included another example from Looney Tunes here to explain the concept more fully. Sources: <http://tralfaz.blogspot.com/2012/12/hare-do-smears.html> / McNally 2014

In practice, what this means is that movement and form can be thought of as distinct units in the cumulative effort toward the whole. Torre argues for considering these facets as operations where "the animator must at least have an awareness of the pure motion, distinct from the form that they are engaged with, in order to create a convincing movement of that form." (52) So although they may be conceived of contemporaneously, the movement is an independent force that needs to be carried through the shapes themselves. This is most apparent in animation 'smears', where the individual frames distort the features of the characters in order to carry through the exaggerated movement, subordinating the individual to the whole effect. This can be seen as analogous to the balance in any typeface design between the overarching personality of the combined forms and their 'fit', and the individual letterforms, which must subsume themselves to the concept in order to support the overall effect. Torre concludes that "resulting complexity stems, not from the individual process, but from their cumulative effect" where "snippets of vision are then amalgamated into a 'visual trace' image" (Torre, 57).

This 'trace image' in animation could be seen to relate to the paragraph level texture, color and tone of voice of typography. This means that this cumulative structure, common to both fields, allows a separation of the macro and micro elements and thus separated conceptually, the forms and their movements can, "through re-combining elements, invent new and completely unexpected hybrid forms". In this sense, the cumulative nature of both fields leaves them ripe for experiment and cross-pollination.

Movement and implied movement

"...the progression of motion makes evident the material constituent of images; a similar phenomenon occurs when amplified photographs of Impressionist painters highlight the brushstrokes and the mass of pigment: no matter if they depict an eye of a necklace, anything contained in a picture by Monet or Velázquez is strictly painting."

(Hernandez, 42)

One distinction that must be challenged here is the idea that animation involves movement and temporality where type design and typography have, up until the last century, traditionally been and largely (notwithstanding kinetic typography) continue to be, a primarily static art. Even 'static' typography does, in fact, have a relationship and even dependency on movement, if covert. In any typographic text, the reader herself is anything but passive or stationary in interacting with the content. Abandoning the relationship of the tool to the operation, we can see that the eye movements act like animations, traveling along the line of type and micro-details as though frame-by-frame, distinguishing word-shapes and determining content from context in much the same way as that movement presented to the audience in an animation. This same movement is also evident in the reading of macro-typographic composition (Griffin, 260) wherein the physical movement of the eye traces the implied movement through the positioning of elements relative to each other. Movement and time being inextricably linked, we can also see that time is no stranger to the typographer! In creating visual rhythms, and the repeating pattern of black and white, type designers have frequently noted the relationship between typography and the rhythm or 'tempo' of music (see LoCelso, Benguait). In both these ways, in interacting with both typography and animation, our perception does the work of joining the dots, and our senses respond to a set of stimuli through movement and the perception of time.

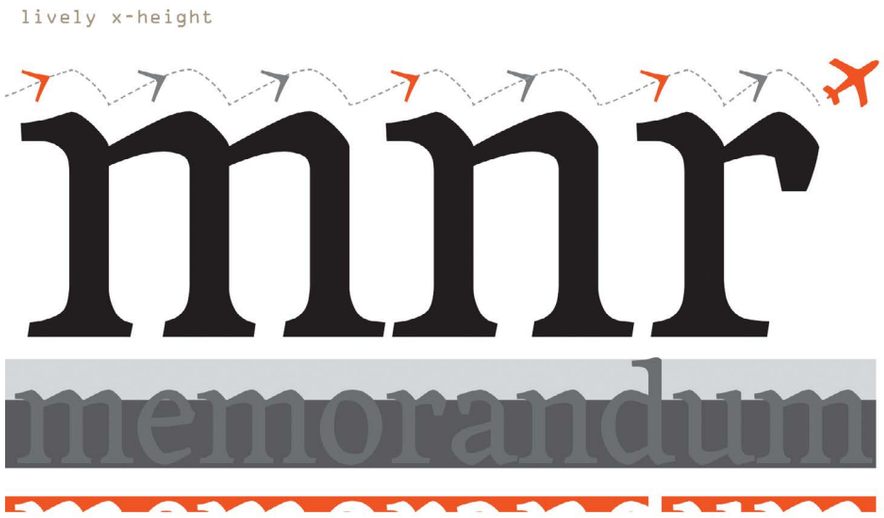


Figure 4: Image from Magnimo (unpublished) typeface specimen showing how the forms create a continuous rightward movement. Source: Author 2010

The Performing Line & The Influence Of The Conceptual Tool

"Animation of all kinds can be seen as a record of a performance, which the animator has created, and as a performative act."

(Hosea, 365)

We have discussed the cumulative nature of both animation and typeface design, looking at examples from abstraction in both fields, considered the psychological basis for this practice, and touched on the presence and role of motion in both fields. Now we will look at the relationship of these discrete elements in combining to evoke gesture

and the ghost of naturalistic movement derived from 'real life'. This gestural quality can be seen in both typography, which has been described as 'writing with prefabricated letters' (Noordzij qtd. in Biľak) and animation (Stanchfield, 7), converging in the role of motion in both spheres. In this convergence, we see both fields play with texture, contrast, stature of form, direction, and rhythm in a related fashion.

Figure 5: Image from Magnimo (unpublished) typeface specimen showing how the forms rely on and evoke the movement of a conceptual tool. Source: Author 2010

In Hosea's 'Drawing Animation' she notes the confluence, in drawn form, of human agency and figuration. She describes the encoding process of drawing in animation as something that does not merely describe reality in the way that the photographer captures life, but as a translation, a codification, an amplification, and something that has meaning and communicative power in and of itself. This same sentiment is embodied in typeface design in the well-known quote from Eric Gill "Letters are things, not pictures of things". This process exaggerates the world in abstract form, and allows a participation on the part of the audience in making new meanings out of these forms.

Hosea asks how a single pose, a static image, can convey the 'totality of a movement' (Hosea, 362). This same question can be considered in light of typeface design. What is the relationship between the individual letterform, and the paragraph-set text? Just as in typeface design, where the level of detail and tension in the forms can create a feeling of increased speed or slowness, so too in animation does the detail and form of the individual frame convey and contribute to the overall movement.

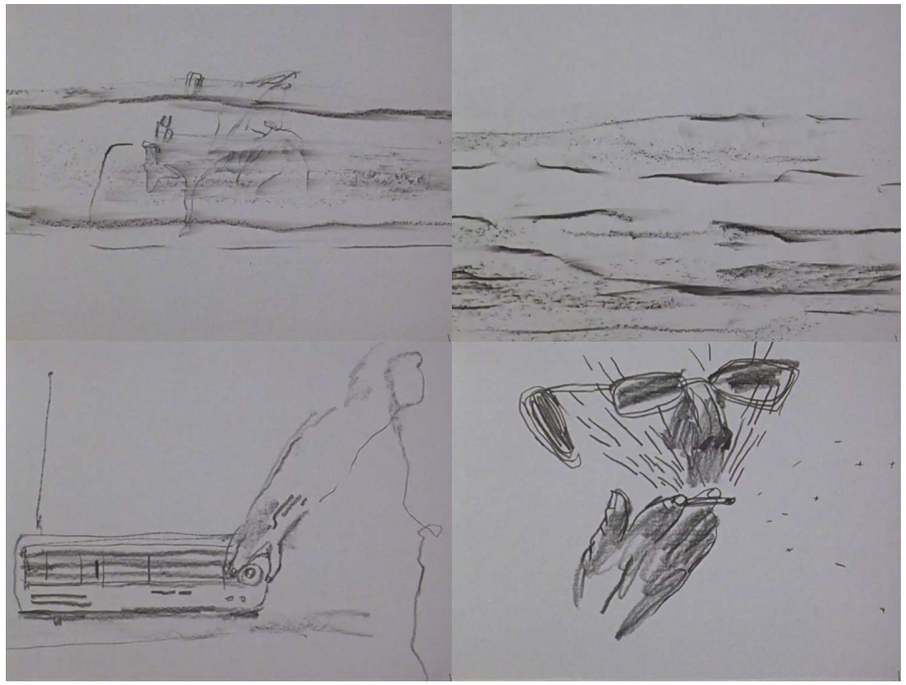


Figure 6: Stills from Karolina Głusiec's 'Velocity', which uses abstract oscillating lines and forms to engage the viewer in a meaning-making experience.

Figure 7: Image from Magnimo (unpublished) typeface specimen showing how the forms exaggerate personality and atmosphere in differing weights. Source: Author 2010

The skeleton models for the Latin alphabet are derived from the mark-making tools of calligraphy, inscription and sign-painting, which set precedents for the expectations of our eyes when reading letterforms, creating a delicate balance that must be struck in all typefaces between convention (i.e. recognizability) and idiosyncrasy (i.e. expression). Throughout the history of typography, attempts have been made to simplify, to abstract, extrapolate from and more recently, hybridize the forms inherited from manual traditions, but this relationship, even in the most modular and geometric of typefaces, is still present. Similarly, in animation, the means by which we assimilate, relate to, and create meaning from the movements, shapes and relationships presented between the characters on screen, is inextricably linked to a basis in natural movements and features.

Potential Fruits?

Although we have argued that the traditional view of typography as 'static' overlooks a key aspect of our interaction with type, the practice of kinetic typography indicates a recognition of the value and potential of overt and concerted animation for typographic practice (Brownie, 2012). Type designers too already employ animated gifs in their digital specimen showings to highlight font behavior as a more powerful way to communicate the personality of their typefaces. In her article on Arabic 'Calligraphic Animation', Marks argues that the Arabic script lends itself to animation, describing how you witness "a little animated movie in which the letters change shape according to what comes next" (Marks, 319). In Arabic typography the forms shape-shift according to context in the word and sentence. With Open Type technology, and advancements like DecoType's Tasmeem system (Milo), this capacity of motion for underscoring meaning and context would be welcome in the typography of any script. In its ability to engage interpretation (Marks, 313), this is the kind of meaning that would further enrich readings of visual rhetoric in typography according to Atzmon.

Figure 8: Liza Pro typeface being showcased in a video produced by the type foundry Underware. Source: Underware 2011

Figure 9: Responsive lettering logo/identity Octavio Pardo/Elena Ramirez, taken from a video showcasing how the logo uses responsive animation in letterform design for meaning-making. (tdc Award Winner). Source: Octavio Pardo Virto / Elena Ramirez 2014

So far, the integration of animation in typeface design has mostly been concerned with the behavior of the typographic tool as it relates to language, where the type behaves as a chameleon-like amplification of linguistic or grammatical content. However, another valuable contribution that motion could make to typography is in its ability to evoke and translate non-linguistic data or prosodic content. Evidence for this can be seen in a recent proposal to the w3c calling for the integration of color and animation into the building-block characters of a typeface. (Lemon) This belies an interest and a heightened focus on the integration of motion into not only the practice of typography but also into the related and discrete cumulative practice of typeface design, as a means to enrich and expand the meaning-making capacity of our communications.

Similarly, experiments in story-creation utilising a kind of cumulative approach to narrative similar to that found in typeface design (as per Atzmon's reading), can be seen to be making valuable contributions to animation already, in the work of animations and film shorts such as Karolina Głusiec's Velocity (shown above in figure 6), Run Wrake's Rabbit and Caleb Wood's Yield (figures 10 & 11 below). These films demonstrate a splicing together and juxtaposing of imagery and symbols to engage the audience in participatory, combinatorial and interpreted meaning that showcases the potential in explorations of the overlap between the narrative qualities of typeface design and animation.

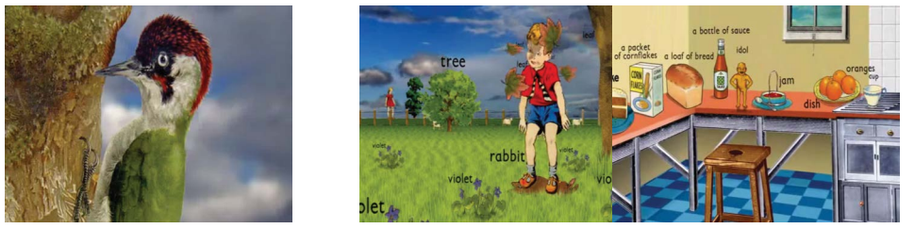


Figure 10: Stills from Run Wrake's 'Rabbit'

In Meanwhile, we see an attempt to harness this notion of a cumulative narrative format, and allow the reader/audience to dip in and out of the conflating events and form their own connections and conclusions. In establishing a set of discrete recombinable parts, the animator is engaging the audience in an interaction that as an endeavor opens more doors than it closes, and empowers rather than pacifies.

Alongside this cumulative principle, the potential of abstraction, seen in typeface design to play a role as a catalyst for expression and experiment in form in a way that challenges the reader and encourages interpretation, is also something that has been explored in animation before. The work of Len Lye and Max Hatler, for example, demonstrates how abstraction can create purely formal relationships between elements which allows the viewer to assimilate and attribute meaning and create highly personalized decodings that linger and creates ownership beyond passively absorbed storylines.

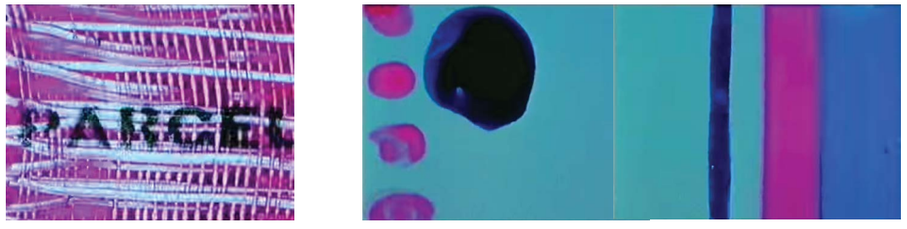


Figure 11: Stills from Len Lye's 'Kaleidscope + A Colour Box + Colour flight'

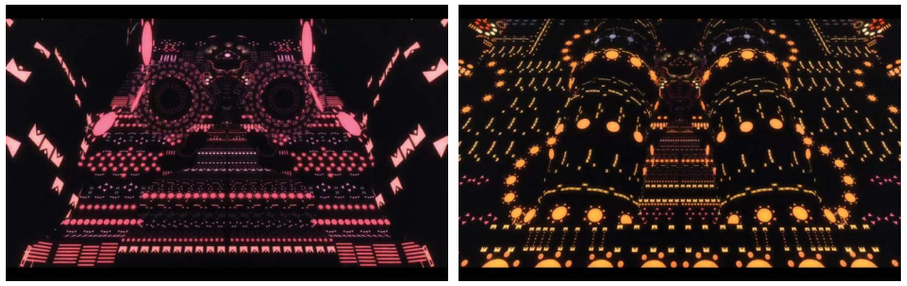


Figure 12: Stills from Max Hatler's '1923 a.k.a. Heaven'

Conclusions & Potential Implications

"Animated texts, words, and letters… can behave like figures one moment, then collapse into the most self-effacing of symbols the next. Calligraphic animation shows that documentary need not be confined to the perceptible surface of things; documentary can record the very event of coming into being." (Marks, 309)

In this essay we have attempted to align the creation of 'character' in the fields of animation and typeface design in order to elucidate similarities in the status and role of motion, time, cumulative meaning-making, abstraction and gesture in each discipline. In looking at the meaning-enhancing capacities of movement for type design, alongside the potential for more cumulative approaches to narrative in animation, it is the authors' hope that integrating motion in typeface design may be seen as more accessible, and the relevance and potential of non-linear or cumulative narratives for animation be seen as a viable and worthy goal in itself.

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ACADEMIC FULL PAPER

The Narrative Implications of Kinetic Typography in Scott Pilgrim vs. the World

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*Abstract: From the discovery and standardization of intertitles' expositive capacity in the early twentieth century, to the nearly constant stream of graphic and typographic animations in Edgar Wright's 2010 film, "**Scott Pilgrim vs. the World**," the history of film features diverse exemplifications of narrative kinetic type. Luiz Fernando Las-Casas's 2006 dissertation endeavored to analyze and classify typography and graphic design in film by focusing on the title sequences of award-winning films. A logical next step in examining the history and practice of text-image compositing in film exists in applying a similar analysis to typography which exists within a given film-that is, within its diegesis.*

*This paper examines the existence of kinetic typography within fictional film narratives in an effort to identify historical trends and stylistic conventions of this practice, primarily as a narrative device and, subordinately, as a visual technique. This examination then extends to analysis of "**Scott Pilgrim vs. the World**," in an effort to apply relatively new theoretical considerations to an increasingly utilized cinematic device.*

Attention is given to existing research, based on narratological theory, regarding kinetic typography's relationship to the diegesis of given narratives. Furthermore, the discussion extends to examine the impact of the growth of comics on kinetic typography composited within cinematic narratives. Specific attention is directed toward the narrative implications of kinetic typography's function within Scott Pilgrim, toward the end of evaluating how such typography effects the presentation the characters and events of a given narrative to further the critical dialogue surrounding the intersection of film, motion graphics, and typography.

Keywords: Motion Graphics, Kinetic Typography, Film, Narrative, Narratology, Diegesis, Intertitles, Subtitles, Edgar Wright, Scott Pilgrim, Luiz Fernando Las-Casas, Michael Betancourt, David Bordwell

Introduction

The emergence of filmmaking at the end of the nineteenth century demarcated a transition of the composite text and image from traditional two- and three-dimensional forms into time-based media possessing unparalleled kinetic and tranformative potential. From the earliest days of the form, text was present in the cinematic image and, over the course of the twentieth century, technological advancements directly impacted and expanded the narrative potential of kinetic typography in filmmaking. Initial film technologies and techniques were often exercises in experimentation and trial and error; as a result, the ways in which text could be incorporated into a film's imagery were initially somewhat constrained.

Intertitles, title cards used within a narrative, first appeared in the late 19th century as a visual means of presenting additional narrative information such as dialogue in silent films (Fig. 1), and the conventions of their use were well established by 1920. Moreover, Michael Betancourt, critical theorist at Savannah College of Art and Design, asserts in his 2013 book The History of Motion Graphics that "the design of intertitles provided the first integrations of typography into the narrative of the film itself" (Betancourt 2013, 30).

Filmmaking technology continued to mature and develop into the twentieth century, including the emergence in 1929 of a milestone transformative procedure: optical printing. Raymond Fielding, filmmaker and theorist at six universities including UCLA and USC, suggested in his book The Technique of Special Effects Cinematography that the optical printer is capable of a broad range "of space, time,

and image manipulations... No matter how subtle or fantastic an imagined film effect may be, it can usually be realized through some sort of optical printing" (Fielding 1985, 126). The appearance of optical printing, then, opened up a new range of possibilities for incorporating type into film frames, while also featuring the benefit of added precision over existing techniques. Moreover, optical printing served as the analog foundation for the digital image manipulation and compositing technologies that would emerge at the close of the twentieth century.

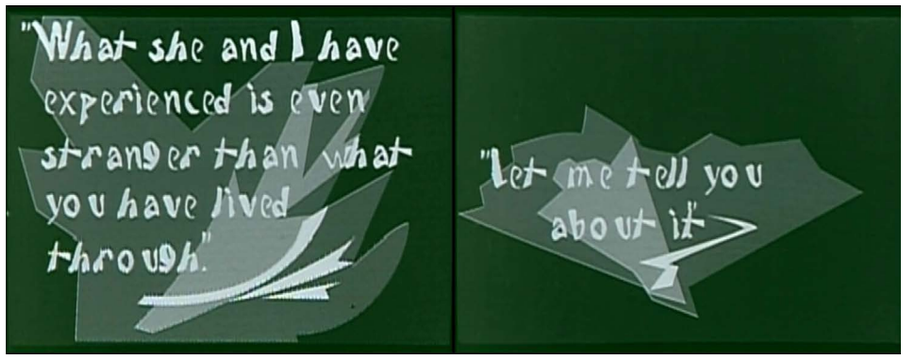

Figure 1: Intertitles presenting dialogue in Robert Wiene's The Cabinet of Dr. Caligari Source: Wiene, 1919

Less than a decade after Fielding's remarks, in 1990, NewTek released Video Toaster, a commercial software product enabling the creation of animation, compositing, and special effects on personal computers. Less than three years later, Company of Science and Art (CoSA) introduced their compositing software After Effects; two acquisitions and less than two years later, Adobe Systems, Inc. owned the application. Visual artist and theorist at UCSD Lev Manovich, in his 2006 article in Millennium Film Journal, identifies the mid-to-late 1990s as the tipping point "when relatively inexpensive graphics workstations and personal computers running image editing, animation, compositing, and illustration software became commonplace and affordable for freelance graphic designers, illustrators, and small post-production and animation studios" (Manovich 2006, 8). By removing the financial barrier attached to traditional optical printing and placing a cost-effective digital equivalent in the hands of filmmakers, Manovich contends that such software fundamentally transformed modern visual culture.

Although the concept of text-image compositing, specifically within film, is increasingly gaining attention from historians, theorists, and critics, it is still a relatively new and under-examined area of academic exploration. Las-Casas, in his dissertation at New York University, set out to analyze and codify typography and graphic design in movies, focusing primarily on the design of movie titles, in search of "a taxonomy of forms, movements, and languages" (Las-Casas 2006, 6). Las-Casas's decision to concentrate on title design reflects the historical primacy of the film title, and its antecedent, the title card, as the most recognized context for using typography in film. While film titles may represent the most extensive and recognized examples of typography in the history of film, filmmakers and designers continue to employ new techniques and variations of historical practices for placing type in their films- approaches that were not practically achievable, because of either financial, schedule, or technical constraints, until the most recent advancements in compositing technology. A logical next step in examining the history and practice of text-image compositing in film is to apply a similar analysis to typography which appears outside of a film's title sequence but exists in the given film- that is, within (or around) its diegesis, or narrative space. Specifically, animated typography composited within fictional film narratives can present imaginative and subjective responses to the characters or events to which they are applied.

Diegetic Level and Intensified Continuity

Once the conventions surrounding the use of intertitles in filmmaking had been established around 1920, experimentation into using text in the cinematic image for other narrative purposes began almost immediately. The composite nature of narrative kinetic typography suggests that such early cinematic experimentations emerged from or referenced other visual and literary forms. Beyond being influenced by literary conventions and narrative theory, the practice of utilizing text in the cinematic image has been

continuously shaped by other media and visual forms over the last century. Synchronous to the appearance and development of the cinema was the birth and growth of comics. Although comics lack the inherent kinetic qualities of motion pictures, including film's potential for sound, comics' construction of narrative through the juxtaposition of image and text, as well as their capacity to represent the passage of time through multi-panel layouts, suggests the two forms are more similar than they may initially appear. Comics and film have a long history of shared stories and characters, and of inspiring adaptation between each other, dating as far back as 1927's Charlie Chaplin, King of the Kinema (Fig. 2).

Just as the history of text and image can be traced back for several millennia, so too can the history of narrative. Michael Betancourt uses the language of narratology in his 2013 book *The History of Motion Graphics*, to suggest a means by which narrative kinetic typography can be parsed. Betancourt's examination is useful here, because his application is specific to narrative kinetic typography.

Understanding the relationship between typography and its role in a narrative depends upon the context of that use-how it figures in relation to the 'story space,' or diegesis, of the fictional world shown in the film. . . . The issue for all kinetic typography is one of application: how the type is inserted into the narrative 'space' of the film. . . . At the most basic level of construction, the role of text-on-screen is determined by the ability [of] characters to interact with, and be aware of, those typographic elements. (Betancourt 2013, 30)

Betancourt then proposes a three- fold division of narrative kinetic typography (Fig. 3), using the designations non-diegetic typography, diegetic typography, and extra-diegetic typography. In Betancourt's paradigm, diegetic describes narrative or typographic elements that exist in the primary story diegesis. Betancourts's non-diegetic is applied to narrative or typographic elements that frame the primary diegesis. Finally, extra-diegetic, is linked to the internal experience of characters within the primary diegesis.

Non-Diegetic Typography

- Type is not a part of the character's world
- Is instead presented as a comment, illustration, or function of the narrative
- Is not accessible to the characters who act within the fictional world

Diegetic Typography

- The moving type shown on screen is a part of the narrative world
- Characters are aware of it and its presence functions within their world
- It is part of the story space the characters experience and encounter

Extra-Diegetic Typography

- Functions within the (narrative) story space
- Gives information that is part of the story and expresses something a specific character experiences internally
- Other characters are not aware of this typography and do not interact with it

Figure 3: Table of Michael Betancourt's Terms for Diegetic Typography with Definitions Source: Betancourt, 2013

While the foundation of contemporary narrative kinetic typography does in fact date back nearly a century, the aforementioned surge in digital technology, with its associated impacts on cost and production time, has dramatically increased the degree, intensity, complexity, and frequency with which such narrative type is incorporated into contemporary films. David Bordwell, in his 2006 book The Way Hollywood Tells It: Story and Style in Modern Movies, terms such overt visual style intensified continuity (Bordwell 2006, 119). Bordwell is careful to note that although contemporary mainstream film has "intensified established

Figure 2: Cinema-inspired comic, Charlie Chaplin, King of Kinema Source: Chaplin, 1927

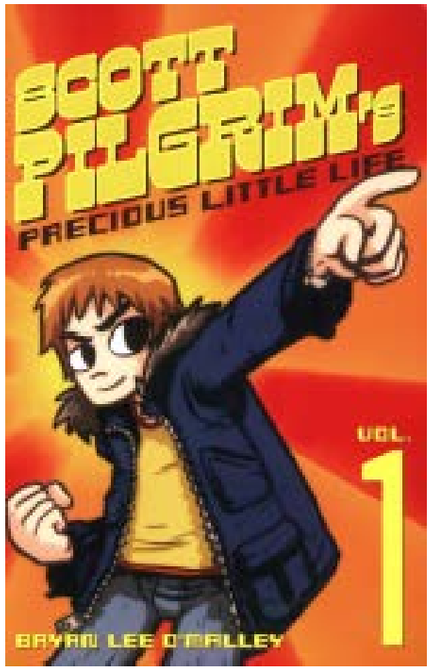

Figure 4: Issue 1of Bryan Lee O'Malley's Scott Pilgrim comic Source: O'Malley, 2004

techniques...[and] raised [them] to a higher pitch of emphasis," this intensification still exists within the larger, enduring system of classical continuity (Bordwell 2006, 120).

Bordwell's concept of intensified continuity, like Betancourt's focus on typography's relationship to the diegesis, places primary importance on narrativity-visual style and aesthetic considerations are secondary and assessed within the context of how they impact the larger narrative. Additionally, Amanda McQueen, in her application of Bordwell's theories to sound design notes "changes in visual and sonic stylistic norms over the past few decades have not produced an inherently new cinema, but instead have created new audience reading strategies and expectations" (McQueen 2013, 147). Both Betancourt's and Bordwell's theories are valid prisms through which to view contemporary instances of narrative kinetic typography. In the context of this new audience with new reading strategies and expectations, an additional aspect worth examining, through primary source analysis, is the way in which a given instance of narrative kinetic typography functions in presenting imaginative and subjective responses to the characters and events of the narrative.

Scott Pilgrim vs. the World (2010)

Perhaps no film has demonstrated the potential of narrative kinetic typography to a greater degree than Edgar Wright's *Scott Pilgrim vs. the World* (2010). The film is based on a series of comic books (Fig. 4) which themselves reference the grammar and culture of video games and independent rock music. This trinity of sub-cultures provided a rich tapestry of source material, each with distinct visual cues and styles, for comic creator Bryan Lee O'Malley to draw upon. The fact that the original form of the Scott Pilgrim story is found in the milieu of comics establishes the visual conventions in O'Malley's rendering as precursors to any typography depicted in its filmic incarnation. Director Edgar Wright drew heavily upon O'Malley's renderings in crafting both the narrative as well as the production design, visual effects, and most uniquely, the narrative kinetic typography of the filmic adaptation (Fig. 5).

Figure 5: Side-by-side comparison of selected panels Scott Pilgrim comic series and corresponding frames from filmic adaptation. Sources: O'Malley, 2004 and Wright, 2010

As McQueen notes, Wright's visual style 'exemplifies intensified continuity as Bordwell defines it' - *Scott Pilgrim vs. the World* features more than 2,400 shots in less than two hours, yielding an average shot length (ASL) of 2.8 seconds - on the fast end of Bordwell's threshold for intensified continuity. For these reasons, as well as the sheer volume and variety of narrative kinetic type present in the film, Edgar Wright's *Scott Pilgrim vs. the World* provides an appropriate source for evaluating the functional capacity of narrative kinetic typography.

Figure 6: Pixelated studio logo in *Scott Pilgrim vs. the World*, compared to usual rendering of the studio logo Source: Wright, 2010

Wright orients viewers' to this intensified continuity at the very onset of the film, starting with the opening studio graphic for Universal Pictures. The iconic Universal wordmark and globe logo are rendered in an intentionally pixellated visual style (Fig. 6a), which represents a departure from the typical aesthetic of the logo (Fig. 6b), and the Universal Studios audio mnemonic, which is usually presented through classical orchestral instrumentation, is instead played by a low-fidelity synthesizer. This juxtaposition of low-fi audio with the pixellated image immediately references the visual and aural grammars of 8-bit video games and establishes a tone of nostalgia-both themes which persist through the entirety of the film that follows.

Figure 7: Opening shot, with narrative typography, from Edgar Wright's *Scott Pilgrim vs. the World* Source: Wright, 2010

In synchronization with the concluding note of the audio theme, the Universal wordmark abruptly animates forward in space, and the crossbar of the "E" fills the film frame, establishing the background for the first shot in the film (Fig. 7a). Superimposed over this off-white background, three lines of typography fade in, accompanied by matching narration, in the upper-left corner of the frame (Fig. 7b). This text establishes both temporal ("NOT SO LONG AGO") and geographic ("TORONTO, CANADA") context for the action that follows. Additionally, the typeface in which the text is rendered is a slightly- irregular sans serif. This letter style and its placement in the upper-left corner of the frame evoke the typographic conventions of comic books. Specifically, captions at the beginnings of issues or storylines are conventionally placed in the upper-left corner of the panel and often contain contextual information which serves to orient the reader.

Additional text, with accompanying voiceover, states "SCOTT PILGRIM WAS DATING A HIGH SCHOOLER," and fades in to the lower-right corner of the film frame (Fig. 7c). The camera then immediately pans downward to a foregrounded leafless tree and a snow-covered residential roofline (Fig. 7d), revealing that the background of the shot is in fact a gray, winter sky. This camera move establishes spatial orientation which places the preceding text floating in the sky above the now depicted home-this further reinforces the compositional conventions of comic books. Wright's immediate nod to the conventions and style of comic books is particularly pertinent, given that Scott Pilgrim first appeared in comic form, as a series of six issues which formed the source material for Wright's film adaptation. Moreover, this first instance of narrative kinetic type is also the first instance of the expositive function, as it provides contextual detail as a caption in a comic would.

In the first forty seconds of his film, director Edgar Wright, quickly establishes a sense of Bordwell's intensified continuity-a sense which consistently grows more intense over the course of the film. By taking an iconic, well-established visual mark, and its accompanying audio mnemonic, and modifying it to evoke memories of late 1980s and early 1990s, director Edgar Wright prompts his audience to reflect backward in time, when they were younger, played 8-bit video games and were likely preoccupied with the some of the same issues Scott Pilgrim is wrestling with. Wright also deftly pays homage to the form of the source material for his film, and establishes a precedent of referencing the visual and typographic grammars of both video games and comic books for the duration of the film.

It is most logical to begin delineating the narrative function of these typographic instances (Fig. 7) with the most common and intuitive function of narration: exposition. Jeffrey Kirchoff, literary theorist at Milliken State University cites film

historian Brad Chisholm's position that 'expository intertitles were included in a film as a way to connect with the spectator to ensure the audience is following the action accurately" (Kirchoff 2012, 31). Narrative kinetic typography labeled with the expositive function are those instances of type which relate descriptions and tell the events of a narrative in an unbiased, explanatory fashion. The aim and purpose of these instances is to, as Chisholm suggests, orient the audience to the diegesis and clarify the events taking place in a given film. Additionally, as these instances of narrative kinetic type serve to facilitate audience comprehension of the narrative, they remain subordinate to the larger concerns of classical continuity, reinforcing Bordwell's concept of intensified continuity.

It is worth noting the difference between the more-or-less straightforward telling of exposition and the subjective, interpretive, often biased nature of commentary. Exposition typically presents neutral, fact-based statements and information, whereas commentary is usually overtly tied to a specific voice or point-of-view-such as the author, an omniscient narrator, the protagonist or other character within the diegesis. The next shot in the opening sequence of *Scott Pilgrim vs. the World*, following the establishing exterior shown in Fig. 7, is an interior of a kitchen, where Scott Pilgrim stands preparing coffee for himself while his three friends sit at a table. When Kim, his ex-girlfriend and the drummer in his band, presses him, he turns around to face her as he states his age. In a closeup shot (Fig. 2.7), a black rectangle with white text reading "SCOTT PILGRIM 22 YEARS OLD RATING: AWESOME" appears next to his head. The design of this typographic instance, which references the graphics one would encounter in the intro or menu of a video game, is taken with little alteration from O'Malley's illustrations.

Throughout the comic series, the initial appearance of almost every character features a similar black rectangle with condensed white lettering in the panel. While the text is working to introduce the character, the inclusion of the term "AWESOME" gives the text a subjective tone and suggests that this rating is Scott's opinion of himself. Furthermore, it suggests a point of view, opinion, and value system to the audience which would not be present in a straightforward, unbiased instance of expositive type. This instance captures the spirit of ongoing commentary, and represents the other category of narrative function. This commentary or illustrative function is defined as narrative type which describes, depicts, or simulates the thoughts, feelings, or physiological senses of a character or narrator. Anita Naciscione, in her article Visual Representation of the Phraseological Image, discusses the capacity of typographic/graphic/image composites to "open up the possibility of making human thought visible and creating visual effects . . . [and] form visual thinking" (Naciscione 2010, 21). Illustrative narrative text functions similarly to the "mental shots" or "dream sequences" of classic narrative cinema, which cutaway from the primary diegesis to reveal a character's internal thoughts (Verstraten 2009, 111). Like expositive narrative kinetic typography, illustrative instances still work to increase audience comprehension and engagement with the narrative; however these instances possess the added distinction of representing a particular point-of-view on the given diegesis and, as a result, make a more overt attempt to shade viewers' feelings about the narrative.

Figure 8: Narrative typography with subjective tone Source: Wright, 2010

As the narrative in *Scott Pilgrim vs. the World* unfolds, Scott Pilgrim falls for a new girl-Ramona Flowers- and, in order to win her over, he must literally win her by defeating her seven evil exes in a series of fights that mirror the levels and

corresponding “boss battles” of typical video game structure. As Scott’s confrontations with the exes escalate in stakes and intensity, the quantity and volume of narrative kinetic typography used in the film grows as well, easily surpassing over 100 instances spread throughout the course of the narrative. Despite this large number of type instances, each one can be seen as a reference to the audio-visual grammars of comic books, video games, or rock music, and all of these occurrences function as either expositive or illustrative.

One of the primary expositive uses of narrative kinetic type in *Scott Pilgrim vs. the World* is as captions within shots, just as presented in the first shot of the film (Fig. 7). These instances present narrative information to the audience to clarify and expedite understanding of the scene. Perhaps the best example of this usage is during Act I when Scott is attending a house party where he learns that Ramona is in attendance. Upon learning this news, he quickly exits the frame of the shot and then a series of successive shots with supertitles appears reading “ONE GIRL... AND THEN HE STALKED HER UNTIL SHE LEFT THE PARTY” (Fig. 10). Edgar Wright uses split-screen in this sequence to allude to the multi-panel layout of a comic book page. He also uses scale for comedic effect in presenting Scott’s anxious eyes in close-up. Both the style of the typography and the composition of these frames reference the visual grammar of comic books. Using narrative kinetic typography as captions is one of the primary examples of expositive type in the film.

Expositive Function

- Instances of type which relate descriptions and tell the events of a narrative in an unbiased, explanatory fashion

Illustrative Function

- Type which describes, depicts, or simulates the thoughts, feelings, or physiological senses of a character or narrator

Figure 9: Table of Suggested Terms for Narrative Function with Definitions

Figure 10: Expositive Typography in *Scott Pilgrim vs. the World* Source: Wright, 2010

In addition to captioning, the second main context that expositive narrative kinetic typography appears is during flashback, which occurs three times in the course of film. While on an early date with Ramona, Scott becomes self conscious about his lack of a recent hair cut, and split-screen compositions introduce illustrations and text referencing his last haircut (Fig. 11). Voiceover from the same omniscient narrator as the beginning of the film relays the events of Scott’s last haircut and the ensuing breakup and heartbreak that followed. Again this narrative content is presented through an omniscient narrator and gives the audience insight into the source of Scott’s anxiety, suggesting that this type instance functions as exposition.

Just as *Scott Pilgrim vs. the World* features more than one type of expositive narrative kinetic typography, similarly, instances of illustrative type occur repeatedly in a few different ways. The two most obvious and most frequently used contexts for illustrative type are tied to musical performances and the combat scenes with Ramona’s exes. One quarter of the way through the film, Scott and his band are playing at a local club. As his band concludes their first song, Ramona’s first evil ex crashes through the brick wall of the venue and flies toward the stage where Scott stands with his bass guitar. Scott’s roommate Wallace, still in slow-motion, yells “fight” from the balcony, triggering a large typographic instance of

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McFarlen really gets to the point with this statement, “Both the style of the typography and the composition of these frames reference the visual grammar of comic books. Using narrative kinetic typography as captions is one of the primary examples of expositive type in the film.”

—G. Rinnert

the word “FIGHT!” to appear behind Scott, along with secondary graphics that represent the visual grammar of video games and, specifically, the fighting genre of video games.

Figure 11: Expositive Typography in *Scott Pilgrim vs. the World* Source: Wright, 2010

Scott engages in hand-to-hand combat with the opponent, Matthew Patel, and in the process learns they are fighting over Ramona. As they fight each other, a flurry of typographic activity is seen in the frame, rapidly appearing, animating, and disappearing with every punch and kick (Fig. 12). Much of the text continues to reference the aesthetics of video game typography and gives further information about the fight, such as “64 hit combo.” However, the fight also triggers the appearance of several other typographic instances which appear after specific punches and kicks are landed and are more closely aligned with the visuals of comic books-words such as “KRAK,” “POM,” and “SOK.” In analyzing these instances, it is important to note that the comic medium features such text in the diegesis as the principal vehicle for presenting sound effects. Every instance of such sound-based type in comics, including the Scott Pilgrim comics, arises as a natural consequence of the world, concretely tied to a causative action. The animated style of these words serve to illustrate the way the characters feel when they punch or are punched and in fact, the words themselves seem to physically affect the characters as well. As such, each of these instances functions as illustrative and presents a different, more imaginative, subjective response than the more neutral information typically relayed in the expositive text. Given the frequency and importance of Scott’s fights with the exes, and the intensity of the action in each sequence, the quantity of these text instances in this film is staggering and ultimately plays a large role in how an audience interprets and feels about the entire diegesis.

Figure 12: Illustrative Typography in *Scott Pilgrim vs. the World* Source: Wright, 2010

Figure 13: Illustrative Typography in *Scott Pilgrim vs. the World* Source: Wright, 2010

Similar to the illustrative use of narrative kinetic typography in each of the fight sequences of *Scott Pilgrim vs. the World*, each scene featuring a musical performance, beginning with the prologue that precedes the opening credits (Figure 13), also make use of heavily stylized typography that looks and appears to function not unlike the "Kraks" and "Pows" that accompany combat. Within the same musical performance, different words are presented in varying typefaces and colors, depending on who is speaking or playing the part in question, how close the camera is to the source of the sound, and the intensity with which the musical performance is being conducted. Using type this way illustrates for the audience how it feels for the characters to be playing the songs, or to be in the scene experiencing the performance live. The similarities between the music text and the combat text also suggests a conscious desire to present music as if it is "punching" the viewer's senses.

Similar to these text instances which work to illustrate musical performances in the film, other text instances are tied to environmental diegetic sound like doorbells and telephone ringers and act to illustrate in an onomatopoetic way. At the beginning of the film, as Scott is talking about his girlfriend, one band mate asks, "So when do we get to meet her?" Scott is shown in closeup and the sound of a door bell is immediately heard. As the door bell rings, the words "DING DONG" appear in space beside Scott's head in a handwritten white font (Fig. 14). The words quickly dissipate as the sound does and Scott gets up to answer the door. The characters seem to react to the sound itself and not the typography, suggesting that the type exists as an external comment, using onomatopoetic text to reference the visual grammar of comic books and to illustrate the sound of objects in the diegesis. Most any instance of disruptive sound in the film is presented this way.

Figure 14: Illustrative Typography in *Scott Pilgrim vs. the World*. Source: Wright, 2010

The remaining action of the film centers largely around the series of final battles that Scott must successfully complete to secure Ramona from her final ex-boyfriend. As the importance of the fights increases with each successive showdown, so too does the intensity and volume of the kinetic typography. However, the narrative functions maintain consistency in each of the fight scenes, continuing to consist of illustrative type referencing video game graphics. The final battle requires the most of Scott, including at one point engaging in "2 player mode" in which he and Knives cooperatively fight the antagonist, Gideon, as two players would in a video game. As to be expected, the defeat of Gideon yields Scott a substantial quantity of points as well the affections of Ramona.

These two designated narrative functions-expositive and illustrative-coupled with Betancourt's three diegetic levels and considered within the context of Bordwell's intensified continuity begin to flesh out a framework against which to analyze contemporary narrative kinetic typography. *Scott Pilgrim vs. the World* represents one of the more recent films to employ a diverse range of narrative kinetic typography in new and interesting ways that greatly shape the story to which they are applied.

Visuals from presentation *The Narrative Implications of Kinetic Typography in Scott Pilgrim vs. the World*

Conclusions

The birth of the cinema in the late nineteenth century represented a crucial step in the evolution of the text-image from two- and three-dimensional forms into time-based media with unmatched kinetic capacity. Initially constrained by somewhat limited technology, early cinematic uses of typography were driven largely by practical considerations: the use of title cards to claim ownership of the production that followed, or the use of intertitles to present characters' dialogue before the advent of synchronous sound. However, very quickly filmmakers began employing these typographic components to their stories in more creative, expressive ways, adding meaning to each narrative and triggering the birth of narrative kinetic typography.

The materialization of optical printing represents perhaps the single greatest milestone in the advancement of the aesthetic and processes that would become foundational to narrative kinetic typography. Moreover, the creation of the digital equivalent of optical printing at the end of the twentieth century paralleled an increasing democratization of the digital hardware required to run these applications. This process of rapid proliferation increased artists' and designers' access to and fluency with these tools. Such an accelerated evolution in the use of images and type led to a similarly fluid and rapidly changing grammar for text-image communication that, to this day, warrants ongoing examination.

Those occurrences of kinetic typography that do exists in modern narratives exist on one of three levels, per Betancourt: non-diegetic, diegetic, or extra-diegetic. Moreover, a close reading of Edgar Wright's *Scott Pilgrim vs. the World* leads to the conclusion that examining narrative kinetic typography based on its function as exposition or illustration can help theorists and critics understand how such typography operates as well as guide filmmakers in implementing typography into their narratives in different ways.

From the studio logo and the opening shot of the film to its conclusion, Wright deftly adapted Bryan O'Malley's static vision and used narrative kinetic typography to amplify the diegesis without compromising narrative clarity or continuity-reinforcing Bordwell's intensified continuity. These instances largely influence the narratives into which they are embedded and, at a minimum, represent Betancourt's narrative levels and the two proposed narrative functions.

This paper's effort to extend and expand on prior narrative and graphic theory is presented in the notion of narrative function as a means for kinetic typography to present imaginative and subjective responses to the characters and events to which they are applied. As of this writing, no other discourse on the narrative function of narrative kinetic typography is known. This criteria is best viewed like the work of those theorists who preceded it-as an effort to further inquiries in a rapidly evolving, exceedingly fluid field of study. In that spirit, this paper seeks to build upon the work of Las-Casas, as well as that of Betancourt, Bordwell, and others to further the critical dialogue surrounding the intersection of film, motion graphics, and typography.

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This paper carefully analyzes a popular film and uses it as a system to explain the intricate vocabulary of kinetic typography. The author does a great job dissecting kinetic type, with all its influences, inspirations and references. I believe this is yet another example of the new possibilities for motion graphic design.

—G. Rinnert

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Additional Supporting Media

https://vimeo.com/channels/mode2015

Zachary McFarlen is an award-winning designer, animator, and editor who is most intrigued by the intersection of design and narrative that, in his opinion, exists most purely as motion design. He currently lives in Indianapolis with his wife and son, where leads the motion/video practice at KA+A, strategic design consultancy specializing in brand experience design.

Zach holds a BA in Classics from Texas Tech University and an MFA in Motion Media Design from Savannah College of Art and Design. Over the last decade, he has produced work for a broad range of clients including MTV, VH1, Cisco Systems, Adobe, Proctor & Gamble, Salesforce, Merrell, and Hotels.com.

The Aspects of Online Motion Design Education

Baris Atiker

Beykent University, Istanbul, Turkey

Abstract: Online education, as being one of the biggest outputs of digital era, has already changed radically the traditional understanding of teaching and learning methods for both teachers and students. Due to its relation to screen presence, motion design is becoming one of the most popular topics within online education. High capacity processors and network connections turn every personal computer into graphic workstations that can handle complex animations and design tasks faster and easier ever than before. So it is obvious that today's motion design education is contending a fast consumption of online learning resources where quality and quantity of tutorials are both in huge demand.

These online motion design education resources can be classified into two groups. As the first group 'paid' resources are consisting of online training portals (such as Lynda.com) and certificate programs offered by colleges / universities where students pay for annually or tutorial based subscriptions. As the second group 'free' resources are generally prepared by professional / amateur motion designers who prefers to share their experience or knowledge with the help of social media.

Online education is undoubtedly a revolutionary move introduced to our lives by the Internet. And motion graphics is one of the most popular of these topics: It is cool, it is easy, it is interesting and of course, it promotes creativity. As those definitions stand by the fact that all becomes so rapidly, is consumed by the glimpse of our society, people from many different ages, occupations and interests are getting involved in the motion graphics industry who are both learning and teaching through online education.

Free vs Paid

Everyone loves the free stuff but you have to pay for quality, well, because quality has its price, right? This judgment actually does "not" apply to online education. Good things in life "do" come for free. One can find excellent resources from professionals without having to pay. And it is a great opportunity for motion designers that they can earn money not only for their design skills but also with sharing their knowledge by increasing their reputation and recognition in the meantime.

Spread vs Depth

The spread and the depth of online motion design education materials are two major distinguishable aspects. Most of the free tutorials cover a wider subject matter, but lack the depth of a given topic. Also most of paid tutorials are very thorough on individual subjects covering it in scrutinizing detail, but they lack the motion designers who don't have enough technical background.

Amateur vs Professional

Whether it's a teenager or a retiree, an amateur or a professional, motion designers use online education platforms as an expression of their skills and talent, with intentions that are "not" so different as their methods: The amateurs do not refrain from replicating a tutorial that has been done millions of times before, while the professionals act as if they are magicians revealing the secrets of their illusion craft. At the end of the day, they both produce content to be viewed and studied by others which is a great motivation to accomplish more and more.

Individual vs Social

Although online education offers a great path to self-learning, it's so obvious that learning and teaching is a social act. Regarding the motion design, which

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Atiker points out that while an enormous number of on-line resources exist to teach motion production technique, comparatively few showcase creativity.

—A. Murnieks

is a multidisciplinary production of technical and artistic patchwork, online education is all about individual and social challenges through experiences.

Language vs Culture

Have you ever watched a motion design tutorial in an unfamiliar language for example in Russian, Chinese or maybe in Turkish? Most of my students have to adapt themselves to understanding the software interfaces and designers' language to achieve the final outcome of the tutorial without knowing a single word. But is it possible to learn by imitating not only the language but also the culture behind the motion design?

Local vs Global

Visual communication is the field where globalization concept becomes concrete. Motion graphics has the same aesthetic look and feel anywhere in the world, because of the common visual language being developed by different cultures. In fact the enriching potential of local cultures for motion graphics must be treated as the key in motion design education and the best way to spread it is by utilizing this potential online.

Creative vs Productive

The real challenge behind online motion design education is finding the perfect balance between creativity and production. Creativity attracts people at the beginning while production keeps them going at the end. So it's better to ask why we have so many similar (productive) motion design tutorials but only a few creative solutions to follow them.

Software vs Workflow

One ring to rule them all...or one software to rule all the workflow. Motion design software are getting more complicated than ever before, in offering every possible design solution, Photoshop for video editing, After Effects for 3d animation and etc... What we have learned and studied for years is not valid anymore and as lifelong learners, we need to adapt to a flexible workflow with new tools and softwares.

Teaching vs Learning

Both have already changed with online tools. The difference is no longer obvious between the student and the teacher. Because the information and the methodology are ever changing rapidly, they expand and reproduce as never before. Now I ask you to rethink your position as an educator in an era where nothing is constant. It's always hard to devote one's life to constant learning. And teaching is absolutely the best way to learn something.

So why not try it now?

Baris Atiker is an Associate Professor in the Department of Graphic Design at the Beykent University of Istanbul, Turkey where he has been a faculty member since 2010.

Baris completed his proficiency in arts and his postgraduate studies at Hacettepe University of Ankara. His research interests lie in the area of motion design ranging from theory to design to implementation, with a focus on stop motion animation technique and motion typography. In recent years he has focused on better techniques for expressing, analyzing and executing digital and analog experiments for type in motion.

He has served on roughly twenty conference and workshop program committees and he has organized several international Stop Motion Typography workshops in Turkey and Poland. Baris has taught a popular Motion Typography, Interaction Design, 2D/3D Animation and Design Project Management courses on undergraduate and postgraduate topics.

Baris has received several international awards for his professional design career. In his never-ending spare time, Baris enjoys playing guitar, dancing Argentina Tango and making short films. Baris also runs a blog called 9078 with tutorials and interviews with successful talents in Turkey.

Time Compressed: The History and Future of Motion Design

Kara Oconnell

Digital Producer at Sales Graphics and Adjunct Assistant Professor of Animation and Design CUNY, The City University of New York, New York, NY, U.S.A.

Introduction

New digital landscapes are emerging at lightning speed. This paper examines the origins of motion design to illuminate its influence today as a hybrid media and role in digital storytelling. The origins of motion design are analogue, digital, tactile, graphic and hand-drawn. It is this unique identity that I use as a point of departure to suggest ideas to reveal the past while envisioning the future.

Origins Of Motion Design

Many point to the history of motion design as rooted in the birth of cinema. Examples date back as early as the 1800's with flipbooks and Zoetropes. Can we go back even further to a time when society evolved from sound to symbol in the Paleolithic Age? In his 3d documentary Cave of Forgotten Dreams, Werner Herzog captures how cave paintings hinted at the idea of motion in pictographs etched on walls. Thousands of years later we continue to find new ways to represent people, places and things in motion on different surfaces and devices. Today the motion designers' cave glows with the light of a digital surface often from the POV of a home studio equipped with multiple software applications.

A Hybrid Media

Lev Manovich states that motion design is a hybrid media, part of an invisible revolution. In *Understanding Hybrid Media,* he describes the transformation in moving-image culture in the 90's when cinema evolved from live-action video to composites with photography, animation, kinetic text and hand-drawn elements. Today, blending and layering of media is so seamless it's almost unrecognizable.

Manovich's research illuminates intersections between the various moving parts, which provides a lens to explore the emergence of a new aesthetic prevalent in digital cinema today. In "Image Future" Manovich argues how computerization and software platforms combine what used to be distinct productions into one application and plays an important role in creating a new aesthetic.

Motion Design And Narrative Storytelling

In *Print Magazine,* Joe Kloc quotes Mathew Cullen, Director of Motion Theory, on the future of motion design. Cullen rejects the notion that design is purely aesthetic and instead sees it as an inventive form of narrative; "The best motion designers embrace technological leaps forward and fuse their skills as designers with traditional storytelling" (83). Cullen believes that motion artists today with the ability to understand and create a story from a design perspective are more equipped than ever before.

Mid century artists Normal McLaren and Saul Bass distinct in their crafts, contributed significantly to the transformation of motion design as a narrative tool. A milestone moment in motion design can be traced to graphic designer Saul Bass for introducing kinetic typography to feature filmmaking. Infusing title sequences with narrative depth and awe, Bass inspired millions. He crossed the line without asking permission and inadvertently edged an entire medium forward. In Otto Preminger's *Man With the Golden Arm*, the title sequence speaks in sparse geometric forms. Plain shapes outline street corners that morph into roads and coalesce like veins to resolve into a disjointed arm. Bass' title sequences

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Oconnell gives us a brief history of motion design beginning with cave paintings to modern day motion designers with creative autonomy to produce hybrid creative works—not necessarily tied to the all too common film title.

—A. Murnieks

set the tone for a film about the struggles of a heroin addict and sent shock waves through American cinema. Bass is best known for his title work in *Psycho, Vertigo* and *Anatomy of a Murder* but his credit as a pictorial consultant on *Psycho* resulted in a controversy that disrupted the notion of the auteur and opened the door to future designer/director collaborations and called into focus designer led production.

Online Convergence

Alternative modes of digital storytelling surface as online resources challenge traditional production standards. According to Scott Belsky Director and Founder of Behance, digital artists have more creative power then ever before to produce and promote through online venues. A recent example of this is the short film produced by Canadian spoken word artist Shane Koyczan. *To This Day,* a first person narrative unites a diverse group of motion artists in a powerful collaboration on the psychological impact of being bullied. The film is a digital collage pieced together with one narrative thread evoking the surrealist parlor game in the form of a "digital exquisite corpse." Like the surrealist game suggests it is an abstract visual language that comes together as a whole when the parts connect.

Future Of Motion Design

Can we predict the future of motion design? Technological developments are often easier to predict than to understand how future generations will adapt and alter them. We are living in a digital renaissance where artist led collaborations rival old standards; the definition of motion design will continue to expand and inform art and new media. The role of the designer as storyteller is not a new concept but I believe it's evolving into a new standard. Designers can learn from cinema, the mechanics of traditional storytelling and cinema can employ the principals of design contrast, balance and space to explore alternative narrative devices. As an educator, artist and digital producer I see this rich dialogue unfolding. Computerization, the merging of software tools and online resources are at our disposal like never before. It's up to us to define them as we find new innovative ways to put them to use.

Additional Supporting Media

https://vimeo.com/channels/mode2015

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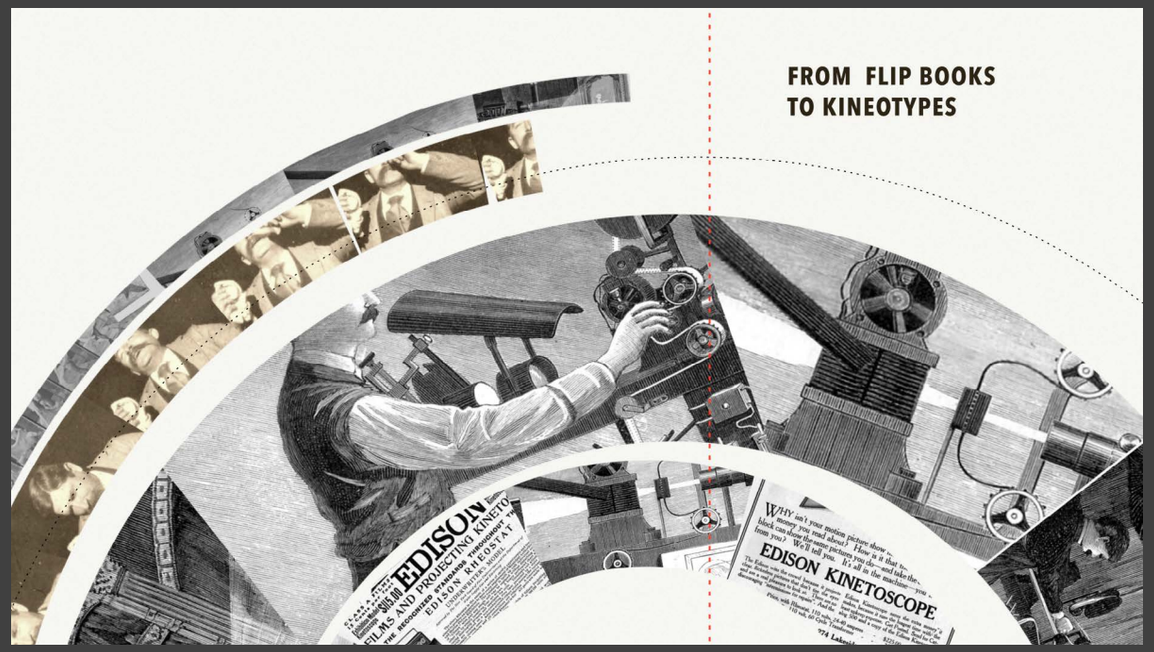
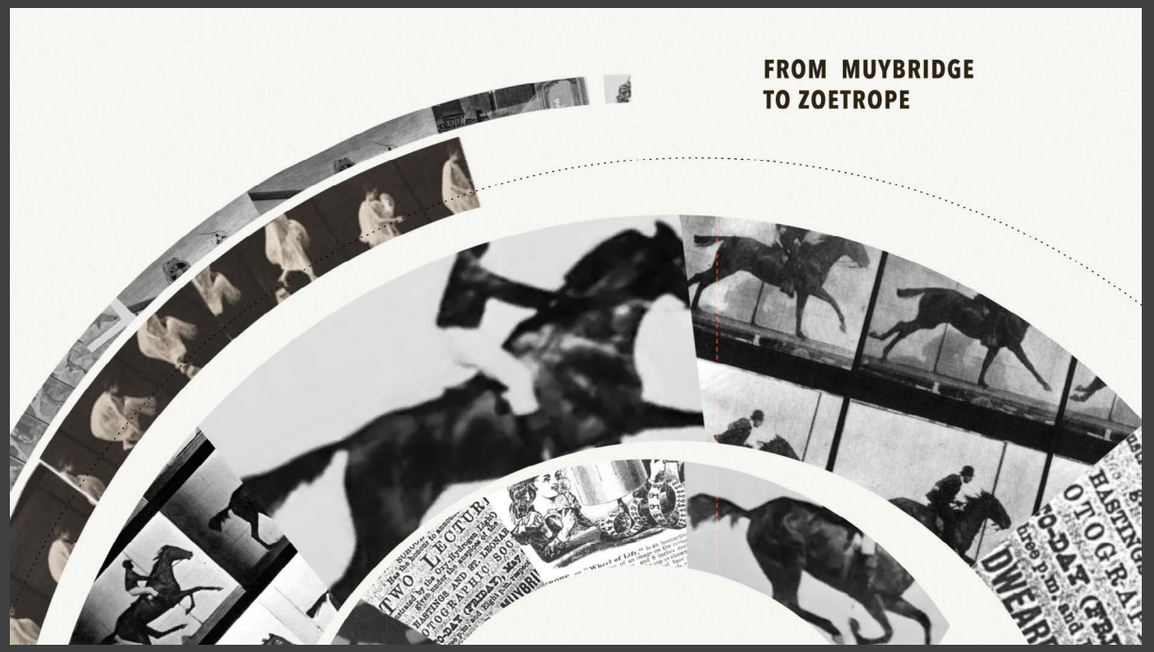
Kara Oconnell is a visual artist, designer, media producer and writer. She was born in Boston Massachusetts and grew up near the ocean. From an early age she wrote prose and took photo- graphs with her Kodak Instamatic 100.

After working as a photographer for many years she became interested in time based media. She moved to New York City in 2000, and dove head first into the independent film world. She received her MFA in digital art and animation from Pratt Institute in 2010. Currently she works as a media producer, designer and adjunct professor at CUNY in New York City.

The diversity of her work illustrates a desire to never compromise—not to be afraid to use new techniques or to convey what story or idea needs to be expressed.





Images from presentation *Time Compressed: The History and Future of Motion Design*

Zen Forms & Contemporary Spectacle: Projection Mapping and Video Installation in James Whitbourn's Luminosity

Sarah Martin and Allison Evans

University of Notre Dame, U.S.A.

Luminosity is a motion piece designed for James Whitbourn's modern cantata of the same name. Synthesizing contemporary methods of projection mapping, live music performance, and video installation art, the work challenges linear narratives in traditional music performance, as well as the experiential nature of light and sound.

The site-specific work, performed in the Reyes Organ Hall, follows a live conductor, organist, choir, orchestra, and soloists through Whitbourn's seven-movement work. The venue is a baroque, chapel-like hall used by traditional ensembles. Activating the architectural structure, the designers render and map enchanting video vignettes into the recesses of the three-story ceiling, recalling the French "son et lumière" or "sound and light shows" of the 1950s. These nighttime shows shot cascading lights onto historic facades, which, while synchronized to live music, created an immersive aggregate—a moving composite. Remembering these "son et lumières," the constructed planes of *Luminosity's* environment are deeply considered and designed into the immersive performance.

Approximately 40 ft. x 25 ft., the inter-crossed ceiling canvas has a specificity of form that requires illumination. Projecting original animation and video pieces through its vaulted wood beams, the façade morphs into an array of portals, whose view shifts between undulating dark forms upon an expanse of glittering stars, to insects buzzing between summer sun flares and furiously green grass stalks. The motion pieces cycle through seasons and oscillate between the celestial (the abstract) and the earthly (the tangible). Both light and shadow give shape to the unknown.

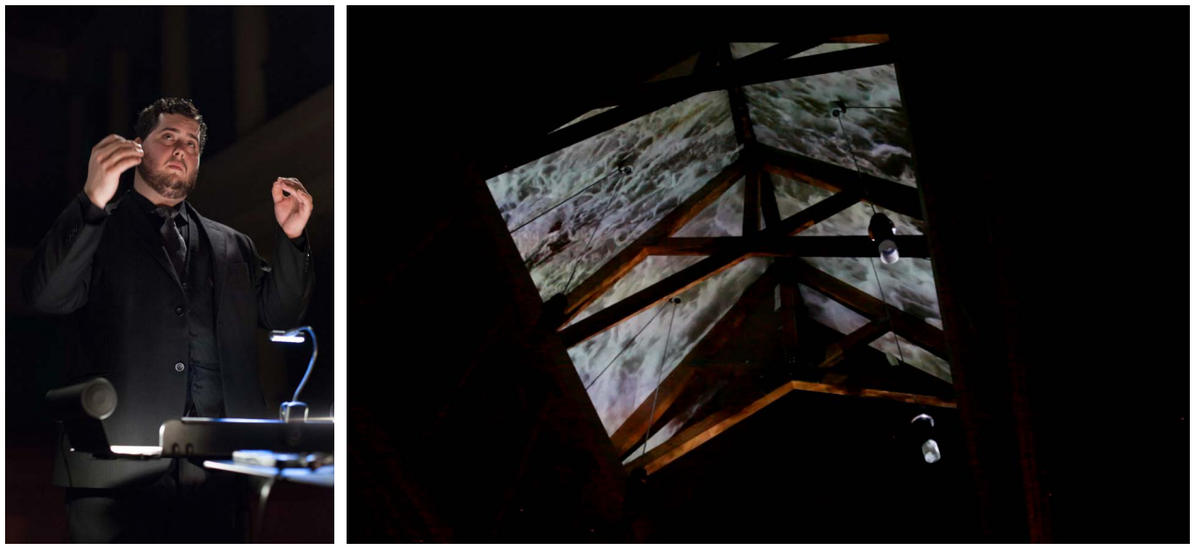


Figure 1: Conductor Brendan Barker prepares the voices; and the ceiling of the Reyes Organ Hall as different movements of Luminosity project up into the rafters. Sources: Evans and Martin, 2015.

Through this projected imagery, the audience is given a different set of interpretive cues. Not just graphic support, the motion vignettes are an opportunity for contemplation on both the visual and auditory experience of *Luminosity.* For example, the act of looking up at the cathedral ceiling recalls looking up towards the sky, a method of perceptual isolation advocated by Tibetan Buddhists to achieve meditative states. This references the Carnatic (Classical Hindu) themes found within *Luminosity's* score and promotes meditation over storytelling. Immersive video qualifies lyrical meaning. For example, an orchestral crescendo or pianissimo

notation is met with an immersive signification of light: blossoming starlight or a dousing of the house lights all together. A response to the "sensibilities" of Western tonality and frontal cinematic viewing of art, the work does not progress in a linear movement with traditional tensions and resolutions, but instead, employs cyclical techniques of Zen meditation, above and around its audience.

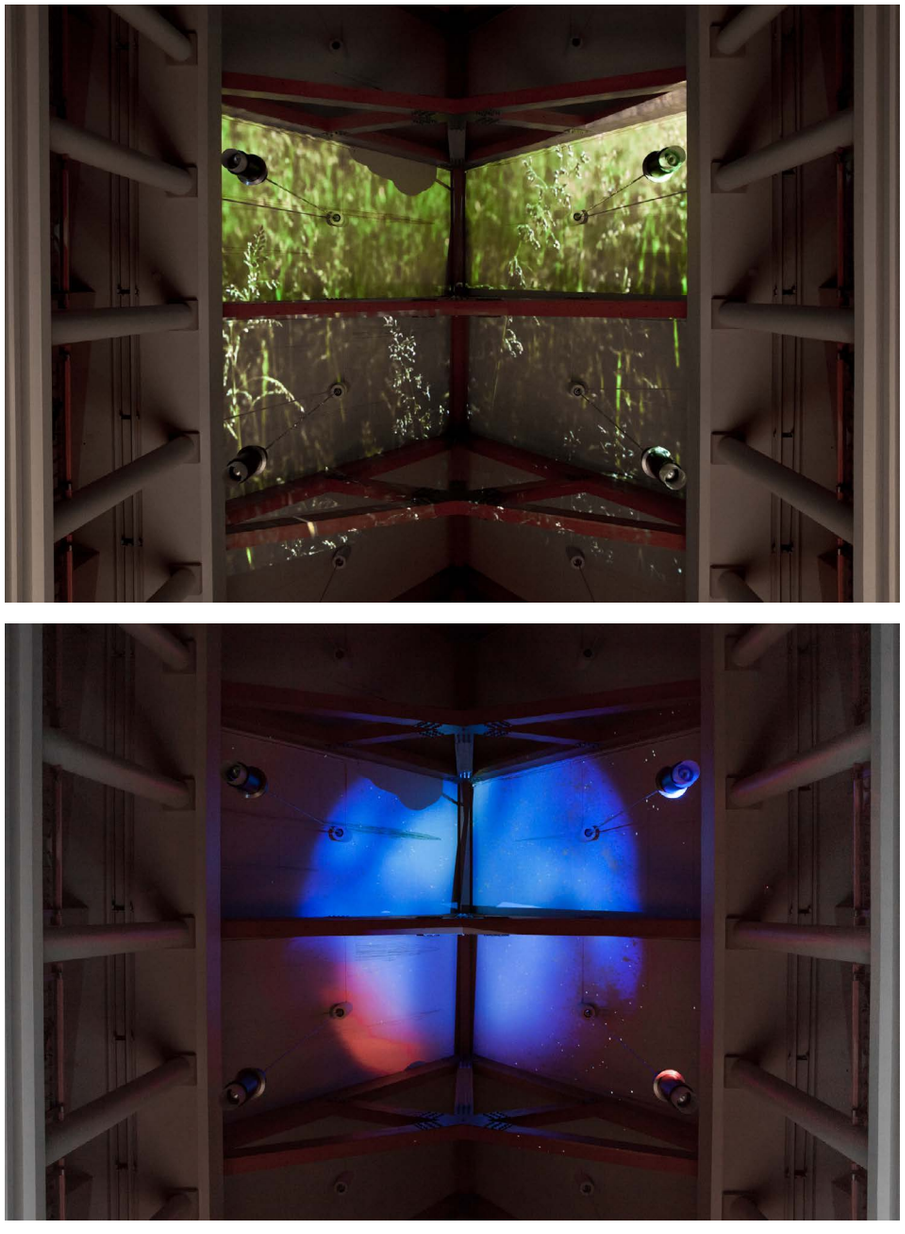


Figure 2: From expanses of glittering stars to insects buzzing between summer sun flares. Sources: Evans and Martin, 2015.

The interplay between architectural character, digital texture, and tromp l'oiel illusion in this interdisciplinary performance provides a hermeneutic aperture via which a viewer discovers new interpretive significations of *Luminosity*, the cantata.

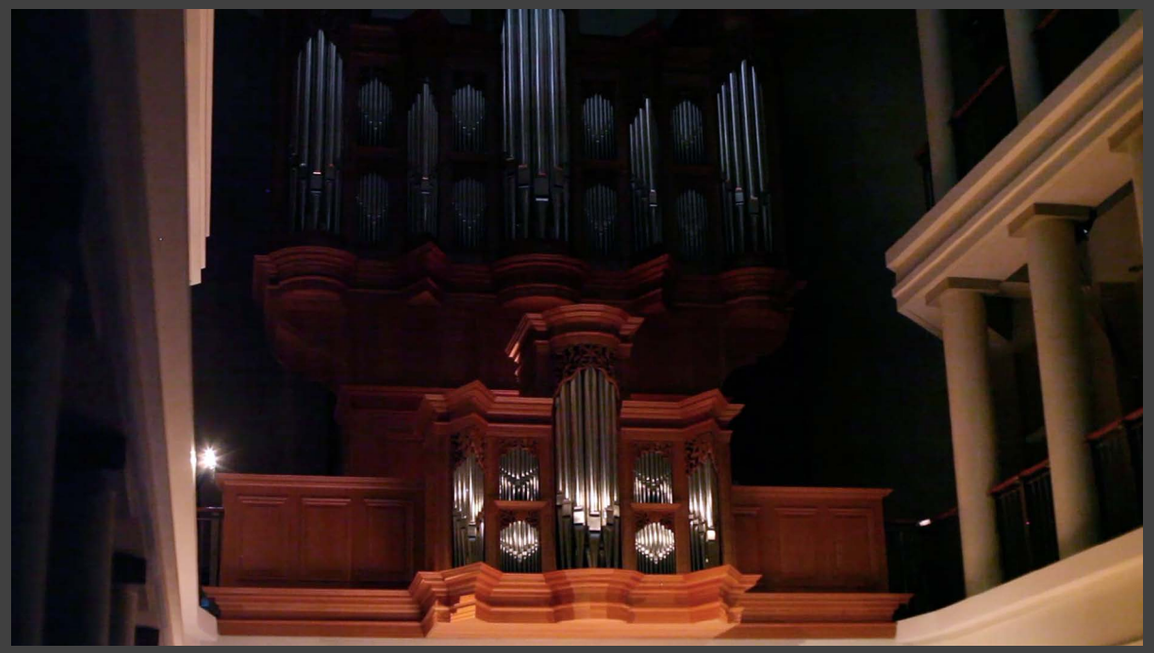
Using industry standard video software, like Adobe After Effects and Premiere, to render animations, textures, and complex effects, the designers also had to install and sync 6 projectors to a live performance. This required Projection Mapping programs like Isadora and installation engineering in order to control the 3-dimensional illusion over time. Like the "son et lumières" before it, this work leverages emerging technologies across multiple disciplines in order to delight and inspire its audience. By employing these technologies to promote multi-sensory immersion, *Luminosity* emphasizes bodily experience--providing a counter to the 'screen'.

Presenting Luminosity

Sarah: Luminosity is a motion piece designed for James Whitbourn's modern cantata of the same name. Synthesizing contemporary methods of projection mapping, live music performance, and video installation art, the work challenges linear narratives in traditional music performance, as well as the experiential nature of light and sound.

Allison: The site-specific work, performed in a baroque, chapel-like Organ Hall used by traditional ensembles, follows a live conductor, organist, choir, orchestra, and soloists through Whitbourn's seven-movement work. Activating the architectural structure, we render and map enchanting video vignettes into the recesses of the three-story ceiling, recalling the French "son et lumière" or "sound and light shows" of the 1950s.

Sarah: These nighttime shows shot cascading lights onto historic facades, which, while synchronized to live music, created an immersive aggregate—a moving composite. Remembering these "son et lumières," the constructed planes of *Luminosity's* environment are deeply considered and designed into the immersive performance.



Visuals from presentation *Zen Forms & Contemporary Spectacle: Projection Mapping and Video Installation in James Whitbourn's Luminosity*

Allison: Approximately 40 ft. by 25 ft., the inter-crossed ceiling canvas has a specificity of form that requires illumination. Projecting video and animation through its vaulted wood beams, the façade morphs into an array of portals, cycling through seasons and oscillating between the celestial (the abstract) and the earthly (the tangible). Both light and shadow give shape to the unknown.

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The interplay between architectural character, digital texture, and tromp l'oiel illusion in this interdisciplinary performance provides a hermeneutic aperture via which a viewer discovers new interpretive significations of *Luminosity,* the cantata.

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Allison Evans will earn her MFA from the University of Notre Dame (May 2015). She researches the phenomenology of light and experiential, site-specific video installation, generating immersive projections that simulate overlooked natural phenomena (See link 1, 2, & 3). Her work stresses the importance of sensorial acuity and challenges perceptual awareness. Evans has received awards including the School of the Arts scholarship for outstanding photography major at the College of Charleston, the Redux Contemporary Art Center's Award for Photography, the College of Charleston's President's Choice Award for Photography, and the Graduate Student Research Award at the University of Notre Dame. She has participated in a number of group and juried shows across the country, and had her first solo show at the Rick Rhodes Gallery in Charleston, SC.

Sarah Martin will earn her MFA in Visual Communication Design from the University of Notre Dame (May 2015). Her work employs digital animation, collage, and subversive set design in order to create alternate modes of storytelling. Challenging our perception of conventional storytelling, her work forces us to become conscious of the ways in which we learn from stories. Working for clients as diverse as Luminary Digital Media, the Snite Museum of Art, and the Association for Craft Producers in Nepal, she has also earned awards including the Anwar Sadat Art for Peace Scholarship Award, the Colonel Wharton Award for Artistic Excellence from the University of Maryland, the John Snider & Betty Gallagher Endowment Award from the University of Notre Dame, the Zahm Travel Research Award and the Graduate Student Research Award, and the American Dream Grant. She recently received 1st place in the Graduate Student Union & Office of Postdoctoral Scholars Research Symposium and presented a peer reviewed paper in Oxford, UK on digital graphic narratives.

With Sarah's strategic communications leadership, plus her background in both literature and music, and Allison's technical film accomplishments and ability to interpret the creative and technological essence of a project, the interdisciplinary collaboration required for a work like Luminosity was right up their alley. Having collaborated in the past on gallery installation works at the University of Notre Dame, Allison and Sarah are thrilled to work together again on such a technically challenging, visually inspiring project.

Improvisation in Motion Design Workshop

Adam Taylor

Michigan State University, U.S.A.

Undergraduate studio art students at Michigan State University participated in a two-hour prompt-based workshop, which sought to explore a new method of image making and ideation in motion design. Students were directed through a series of prompts inspired by an improvised creative process. In this setting, improvisation was needed as making with limited preparation and only the materials at hand. This way of working contrasts a more structured and regimented processes typically practiced in the development of motion design pieces. The objective of the workshop was to build an understanding and test the role improvisation practices play as a standalone method for ideation and image making.

Under the direction of myself, a 2nd year MFA candidate, and an assistant professor, students were split into groups and given a series of open ended prompts which they used as a starting point to create motion. Within each prompt student groups were given a limited amount of time and a specific number of shots to be captured with DLSR cameras (Figure 1). Visual elements utilized by the students were limited to blocks of color, type, and images downloaded and printed from the students' Facebook profiles. All the elements were altered based on their interpretation of the prompts. Each prompt revolved around one specific visual element and one interaction or objective. For example, the second prompt instructed students to cut out six strips of colored paper and in 20 shots have these strips enter the shot and interact with an element already present on the visual plane. How the students cut the shapes, the size, the way elements entered the frame, and how the shapes interacted with each other and other elements were completely up to the students.

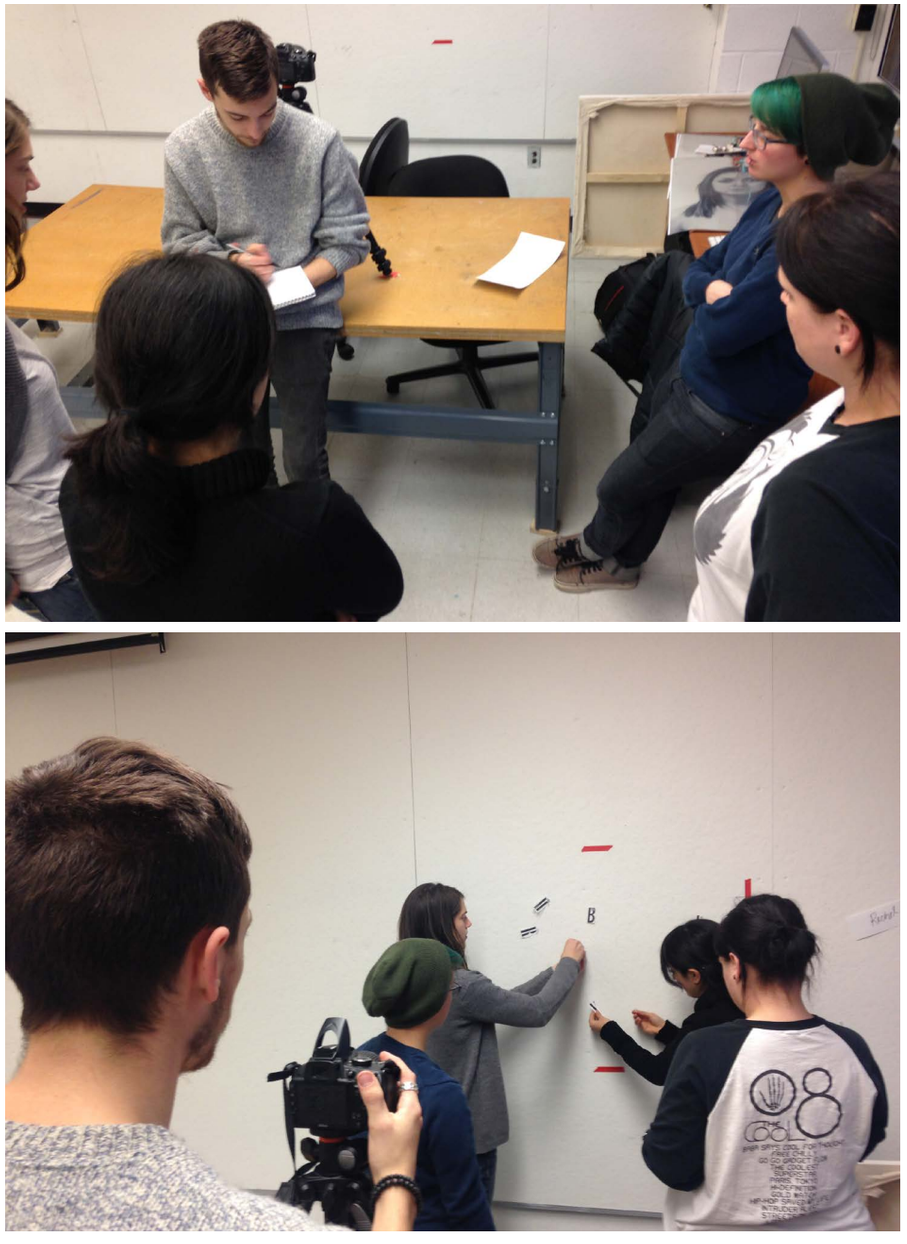

Figure 1: Students in group 1 interpreting a prompt (top), and visualizing their interpretation (bottom).

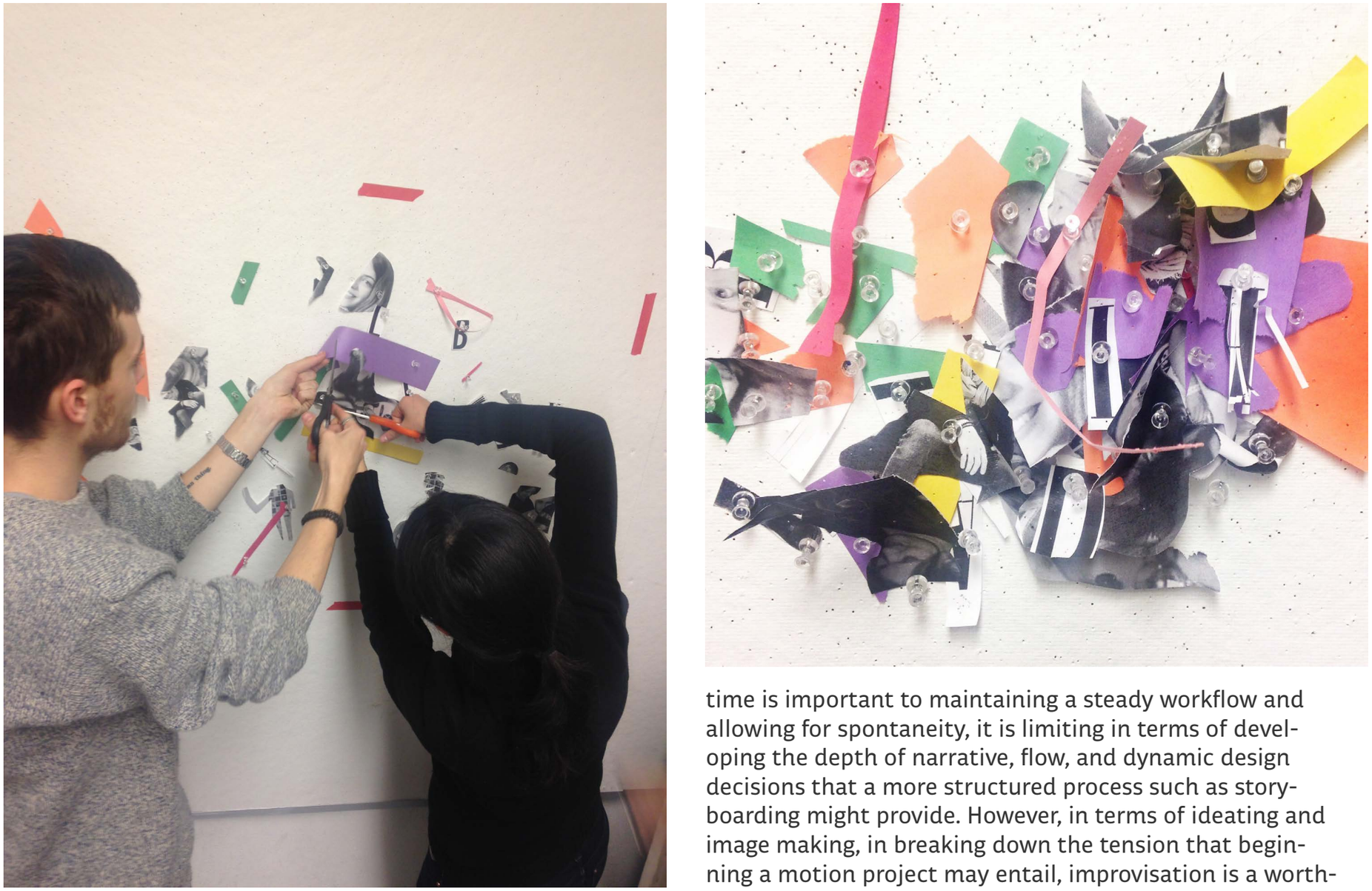

Figure 2: Students using limited materials such as colored strips and Facebook photos (left), detail (right).

The workshop resulted in several 30-40 second stop motion animation pieces, each with unique visual solutions to the identical series of prompts each group was given. The results were varied in quality and visual interest, which was revealing in regards to the potential pros and cons of utilizing this method as a sole means for developing motion design pieces. While the limitation of materials and time is important to maintaining a steady workflow and allowing for spontaneity, it is limiting in terms of developing the depth of narrative, flow, and dynamic design decisions that a more structured process such as storyboarding might provide. However, in terms of ideating and image making, in breaking down the tension that beginning a motion project may entail, improvisation is a worthwhile tool and can yield very interesting visual directions.

The introduction of material limitation provided students with a series of rules and constraints to explore and advance their creative thinking at a rapid pace (Figure 2). In a practical sense, these materials really could be anything an instructor or practitioner wishes to use, and can be as varied as the instructor wishes. The more unexpected the materials are, the better. However it may be important to note that uncertain and unexpected processes can be alarming to some, especially when they are timed. This stressor

can be a catalyst to producing interesting work, but it can also be a non-starter for some. Having at least one practice round of timed, prompt based improvised work sessions is hugely beneficial to taking some of that stress out of a process that is supposed to be fun and interesting.

After the workshop students were asked a series of questions about their experience. Their responses are informative in terms of identifying what aspects of the process students might benefit from the most, and what students took away from the experience.

"What I liked most about the workshop was that you were working so quickly, you didn't have time to over-analyze what you were doing. The total free flow of ideas was a nice mental warm up."

—Student participant, group 1

"I see myself applying these same ideas to future projects — working quickly, almost randomly, without editing as I go. Probably during the brainstorming and thumbnail stages."

—Student participant, group 2

Based on the responses received, the rapid pace of ideating and the collaborative nature of the workshop were the aspects students gravitated towards the most. From an instructor's perspective, mediated improvisation is an excellent approach to providing students with new ways to think about their work. The open framework allows students to expand on the process and make connections between this new method of making and how they have previously worked. If conducted in a group format, students are exposed to the strengths and struggles of collaboration within a flat hierarchy, no one is in charge and ideas have to be exchanged quickly which can pose a real challenge.

In summation this is a method I plan to continue utilizing in the future and encourage others to experiment with it as well. There is great potential in developing the prompts and building a variety of materials to help students and professional practitioners find new avenues through which to explore visual directions. This workshop represents a first step in investigating the role of mediated collaboration as an alternative method of ideating and image making within the creation of motion design pieces. I am eager in moving forward to continue developing this model and elaborating on the format to see if there is additional potential in the development of narratives evolving out of an improvised process.

I am Adam Taylor, a second year MFA candidate focusing in graphic design at Michigan State University. Previous to attending graduate school I worked as an in-house print designer and illustrator for a research institution at the University of Utah. While my previous work resided firmly in the realm of print design, I have focused primarily on motion and interactive design in my studies as a graduate student.

The Impact of Storytelling on a Generation Overwhelmed with Technology

José Manuel Vélez

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Abstract: The continuous and fast advances of the technological platforms and motion design software have produced an overly enthusiastic generation of student in the past years, students that are commonly mesmerized by the endless creative possibilities that these advances offer, in a fast, democratic and easy to learn way. These advances in the technique have created, many times, an imbalance in the approach to academic projects, focusing on achieving excellence in the crafting of the piece, or exploring new visual effects, to the detriment of content and the message underlying their work. It seems that along the way our students forgot the importance of the narrative.

As a consequence their projects lost part of their communicative nature, the acknowledgement of an audience, and an effort to affect it; and they have become design pieces that through pyrotechniques aim to reach their target, trusting on the surprise and "wow factor", that, most of the times, but not always, achieve a low memorability or a poor communication of the ideas that constitute the message.

Taking this observation as the starting point, in this motion design workshop for 4th year students, we tried to encourage the discussion and exploration of the narrative dimension in motion design, and the storytelling principles common to every time-based work, so that the projects developed during the semesters -whether they are animations, films, stop-motion, or any other technique- have solid narrative foundations, making the technique and visual form a result of a reflection about what is being communicated; in other words, message before form.

Through the study of concepts and theories from different fields such as neuroeconomics and film theory, the course has attempted to explore different strategies to transform data and information into audiovisual narratives, with different degrees of success. This exploration has also covered different types of motion design pieces and application fields, from the abstract and experimental -like concert visuals-, to the more practical -like educational infographics.

Keywords: Storytelling, Narrative, Film theory, Montage, Education

Time and Storytelling

In almost every generation at the Design School of the Pontifical Catholic University of Chile there has been a question arising: what is the importance that our students give to technical production over content? This school has a comprehensive curriculum that, in the first 2 years, doesn't offer specialized courses of graphic, industrial, motion or textile design; and rather focuses on the methodological approach to design problems. Consistent with this curriculum the school's strength is not in the technical or technological aspects of design production, an approach that has caused frequent debates within the students and faculty.

These students are eager to learn new software and production techniques and, in motion design specifically, are eager to experiment with new effects and plugins, mesmerized by the infinite creative possibilities. Among students it has been observed that they think of software use as a highly important ability for their training, but they have an opposite opinion on knowledge of narrative, storytelling and dramatic structure, regarding it as a less important ability to master. This phenomenon is clearly not exclusive to this design school in particular, but apparently transcends into other non-visual trades. Alex Blumberg, professor of radio

documentary at Columbia University, said that one of the problems with his students was that they usually got seduced by a particular sound aesthetic, and the quality of their stories suffered (Glass, 2004). Our students get seduced by millions of visual aesthetics, more now with the proliferation of online platforms to exhibit motion media, and the always evolving landscape of motion design tools.

But this low importance given to narrative shows not only in the designers' final work, but can also be observed in other situations. Different faculty members had noted the poor ability of students to apply narrative strategies to oral and visual presentations; they were unable to articulate effective and persuasive discourses, or to construct visual narratives in graphic design pieces. This observation has bigger implications in the field of motion design, given its time-based nature. If in a static graphic design work the narrative is constructed partially by the user during the reading or viewing process, in a motion design work this narrative must be thoroughly controlled by the designer before its first contact with the user or audience. The time-based and time-constrained nature of motion design limits the audience's ability to construct the narrative, and delegates it almost entirely to the designer. Then, how do we design time?

As motion designers, time is the raw material with which we work; time is moldable and malleable, we bend time, stretch or compress it, we deconstruct it and reconstruct it, we manipulate time, and we do it mostly using narrative and dramatic structure. Stories, in its broadest definition— not only spoken or written stories, but visual stories too—, are how we can control and design time and its perception. But this concept may be hard to grasp for design students, who have gotten used to hearing and speaking in a form-oriented language. Working with a block of wood, they can see it being shaped under their hands; they can see a typographic family and color palette on their screen, and then compare it against the print version. But they cannot see time. They cannot touch it or grasp it as it is being shaped, and they can only comprehend it by experiencing its sequential deployment. Very often their work process goes back to the form, to the technical aspect: using the current most popular transition, or particle generators, and every other stunning visual effect. Thinking about time as the subject of design, and narrative as the structural component that shapes time, gives the designer the possibility of developing the visual form as a natural consequence of what is being told.

From this comes an imperious need to try to define the way in which we narrate, the languages and codes that we already use as designers, and the new linguistic codes necessary to work as motion designers. Exploring this terrain was the main objective of the motion design workshop for 4th year students at the PUC Design School.

Course overview

Some basic film and narrative theories

In this narrative landscape we could recognize at least 3 forms with which as designers we must learn to tell stories, each one with its particular codes and grammatical structures: we narrate with words, we narrate with images, and finally we narrate with moving images. Predictably, our students' weakest ability was narrating with words, they had little training in this; but they also showed low proficiency in the use of moving images, they showed a developed aesthetic appreciation of the moving image, but little "motion literacy". The students had somehow forgotten that these images could transmit a message, that through movement and during time they could be containers of ideas and stories, and that this content is shaped with words, whether they are spoken or unspoken, words that shape the narrative structure of what is being told.

So firstly, we tackled this issue, what it means to work with images in a narrative project.

Our students are used to dealing with codes such as color, type, shapes and composition, but they often can't use them to drive a story. They can use images to create meaning, images as signifiers, but they usually miss the fact that images also tell stories. A single image can help tell the story of a crazy (and very small) King Arthur and the silly and hilariously epic quest he is about to embark on to

find the Holy Grail (Figure 1), or it can show the fear, solitude and helplessness of a king, making us foresee the almost unbearable task of speaking to his nation (Figure 2). Taking film references and film theory as a fundamental knowledge to understand the nature of the moving image allowed the students to shift paradigms, viewing the image as part of a whole, an image that works only when it is accompanied by the previous and following frame, an image whose perception is modified by the perception of the context; instead of thinking of images as independent components connected only by temporal continuity.

The soviet theory of montage, especially the contribution of Lev Kuleshov's experiments and the concept of "intellectual montage" coined by Sergei Eisenstein, were the theoretical basis during this part of the course. Reviewing scenes of "The Strike" or "Battleship Potemkin" was critical to effectively shift the paradigm of a static image to one of a moving and time-based image. The power of an image capable of creating complex political concepts and articulate a propagandistic discourse was a revelation of how motion images can communicate and affect an audience, beyond the use of special effects (Figure 3).

Figure 1: "It is I, Arthur, son of Uther Pendragon, from the castle of Camelot, King of the Britons..." screams the visually small king in front of a towering castle, in Monty Python and the Holy Grail. Source: Gilliam and Jones, 1975.

Figure 2: In the opening scene of The King's Speech a man announces "You're live in two minutes, your Royal Highness", and the future King of England freezes, revealing his dread. Source: Hooper, 2010.

Figure 3: Through montage in The Strike Eisenstein delivers a powerful political message about the tsarist regime and the russian population. Source: Eisenstein, 1925.

Following these ideas the students were encouraged to experiment with creating short pieces that could communicate simple concepts using only 2 shots cut together, much like David Mamet told his students, we didn't want them to tell a story in the shot, we wanted them to tell it in the cut (32).

This exercise, together with exercises of composition of moving images and rhythm, was the first step to make the students realize how they could create and control the content or message of their work through the use of images, which once are perceived by an audience, they themselves are capable of reconstructing.

But this experiment not only shows the enormous power of composition, montage and rhythm to create complex concepts, but also shows how we can elaborate stories in our minds with as little as 2 images. In his book "The Storytelling Animal", Jonathan Gotschall said that "Kuleshov's exercise shows how unwilling we are to be without a story, and how avidly we will work to impose story structure on a meaningless montage" (108). Even if this montage is not meaningless, as Gotschall said, it shows not only the human urge to perceive a story where there is none, but our responsibility as designers to control that story, to think and design carefully in a story-oriented way, so that every resource used serves a purpose on our project, and can communicate effectively with our audience. So it was necessary to understand how stories work, how they are constructed, and how stories can be translated into a visual language.

The analysis of stories is not a new field of study, and has a diversity of theories dating back as far as Aristotle. Taking different authors' perspectives, and contrasting them with movies or motion media examples, allowed the students to shape their own way of elaborating stories capable of being translated into images. Joseph Campbell's "The hero of a thousand faces", Robert McKee's "Story", and contemporary storytellers as Ira Glass, were briefly studied as different examples of story analysis. Taking authors and theories applied to very different ways of storytelling, from film and television, to musical composition, opera, mythology and radio documentary was a way of showing how stories permeate almost every artistic, cultural and social reality, and to try to find the smallest component that could constitute a story, that in every case is the idea of conflict, a purpose that drives forward a narration. Coming from the radio industry, Ira Glass was an excellent example to show the form stories take when they are stripped down of all possible paraphernalia (at least of visual nature), the exclusive use of the spoken word and, in some cases, music, allowed to clearly see the structure that shapes any given story, to experience and see the beats, the dramatic progression and climax. And Glass's own simple way of deconstructing story's structure, formed by two building blocks (anecdote and a moment of reflection) served as a basic formula to develop stories: what is happening? What is happening next? And, why is it happening? (PRI Public Radio International, 2009).

During this phase of the course we aimed to apply ideas about storytelling to projects of distinctive natures, which differed in the integrity in which story structure was applied, from the most traditional narrative kind, like short-films with characters, an objective and conflict; informative pieces, like animated infographics; to the more abstract and experimental, like title sequences and concert visuals. Regardless of the integrity in which story structure was applied, the idea was to inject every design work with a narrative component. Curiously, the projects that required a simpler and more traditional use of dramatic structure were the weakest ones. When they faced the challenge of making a short film they didn't know what the story was about, and when they designed animated infographics they were unable to articulate data and information in a narrative structure.

But the projects that required a more loose application of narrative concepts, the more experimental ones, had better results. They were capable of designing and shaping a non-traditional narrative from the analysis of the given material, whether it was a movie or a song. Good examples of this are 2 results of the final project, the design of concert visuals for the band "Plugin". Taking the songs as the starting point for the project the students

analyzed the content, theme and argument of the song, looking for a potential story hidden within the lyrics and melody, and translating them into a visual narrative.

So the song "Come on (What friends are for)", about the temptation to cross the line that separates friendship and sex, was shaped into a montage of wild animals hunting and fighting, starting with a shot of a mountain lion, and ending with an image of a black spider casting its web and devouring its prey; all as a reflection of an instinctive and animal human aspect (Baus and Cevallos, 2012) (Figure 4). And on the other hand, for the song "Play out", about a relationship in its final moments, the students designed a repetitive sequence of circular motifs from ordinary and domestic objects, like wilted flower pots and tuna cans, showing the most mundane and tedious side of a terminally ill relationship (González and Parás, 2012) (Figure 5). In both examples the story is not shown literally, but suggested through visual narrative resources, like the montage; and the visual aesthetic and technique are the answer to 2 crucial questions: what are we telling? And, where are we telling it? These questions allowed the students to comprehend the nature and context of the work they were creating, a visual piece that had its own narrative, but that worked as a visual complement of the band's concert, and it was not a protagonist in itself.

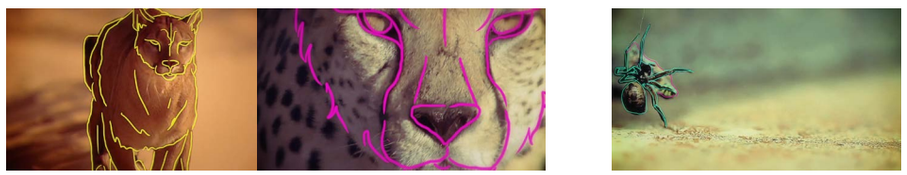


Figure 4: Screenshots from concert visuals for the song "Come on (What friends are for)" from the band Plugin, showing the graphic intervention over stock footage. Source: Baus and Cevallos, 2012.

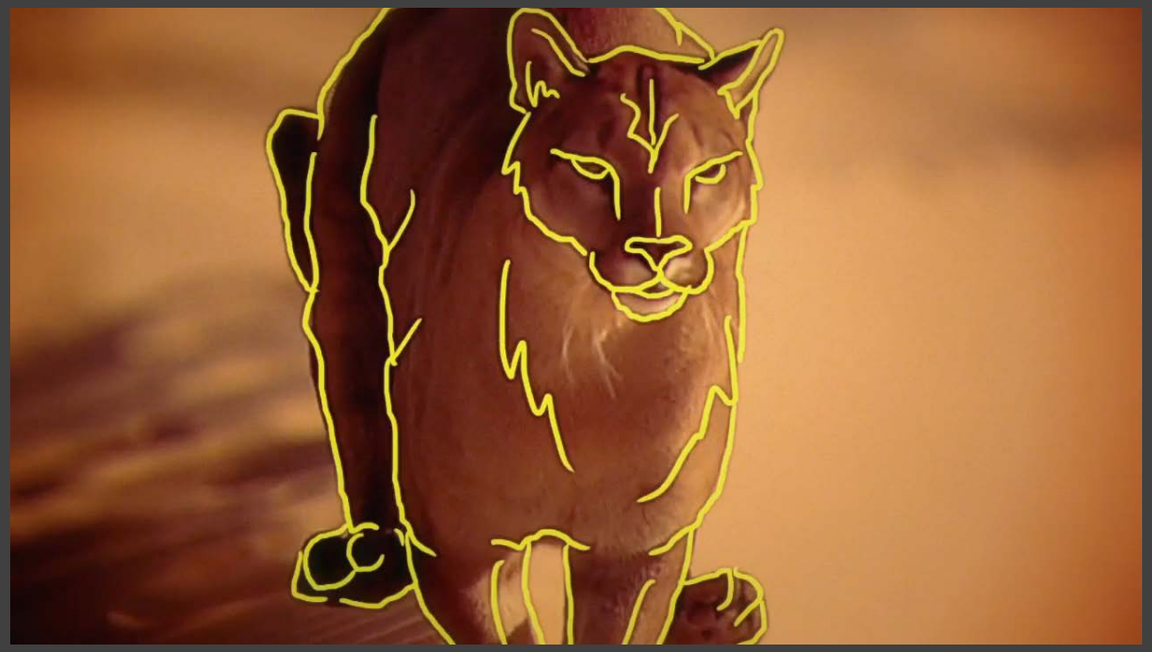
As an evaluation of these results we could observe that the students showed strength developing visual abstractions and narratives, but faced bigger challenges when they had to articulate more traditional narrative forms. This, perhaps, could reinforce the initial idea that the students had little or no problem designing expressive pieces, in which the form had a major relevance over the story being told, but were weak in the field of visual communication, of articulating a message and transmitting it through narration. This showed the need to address new questions with the new students during the course's next semester; questions about communication theory. How could we engage with a particular audience? How can we communicate effectively a message through images? Can a story help us do it? And if so, are stories a good way of doing it?

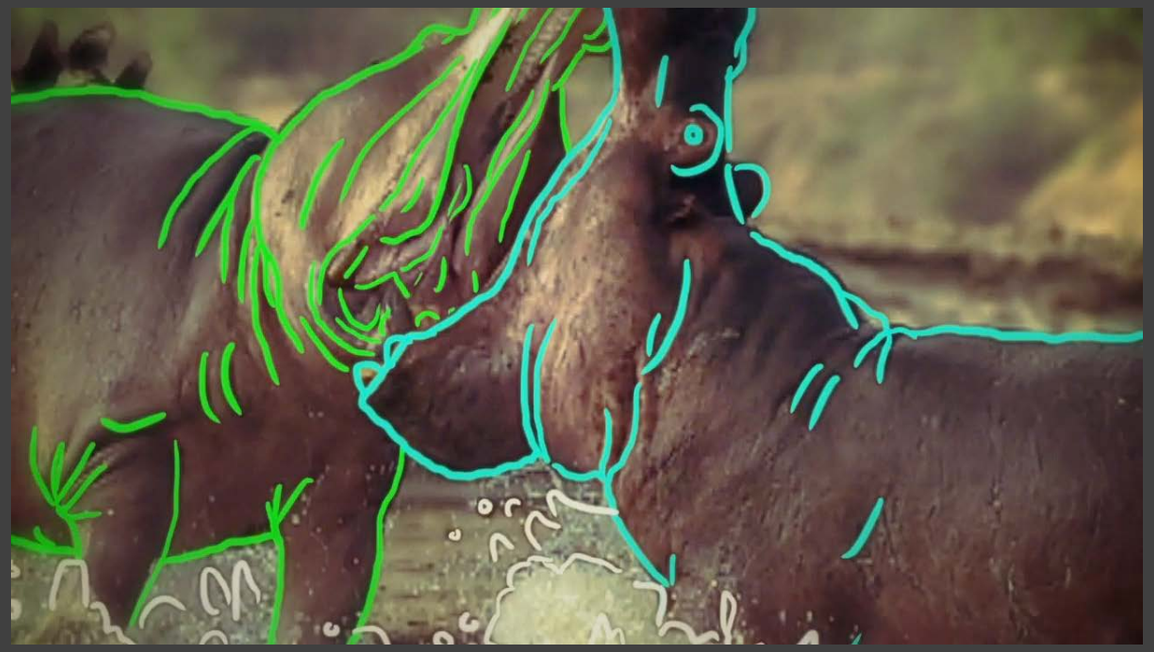
Figure 5: Circular motifs of domestic and ordinary objects from the concert visuals for the song "Play Out" from the band Plugin. Source: González and Parás, 2012.

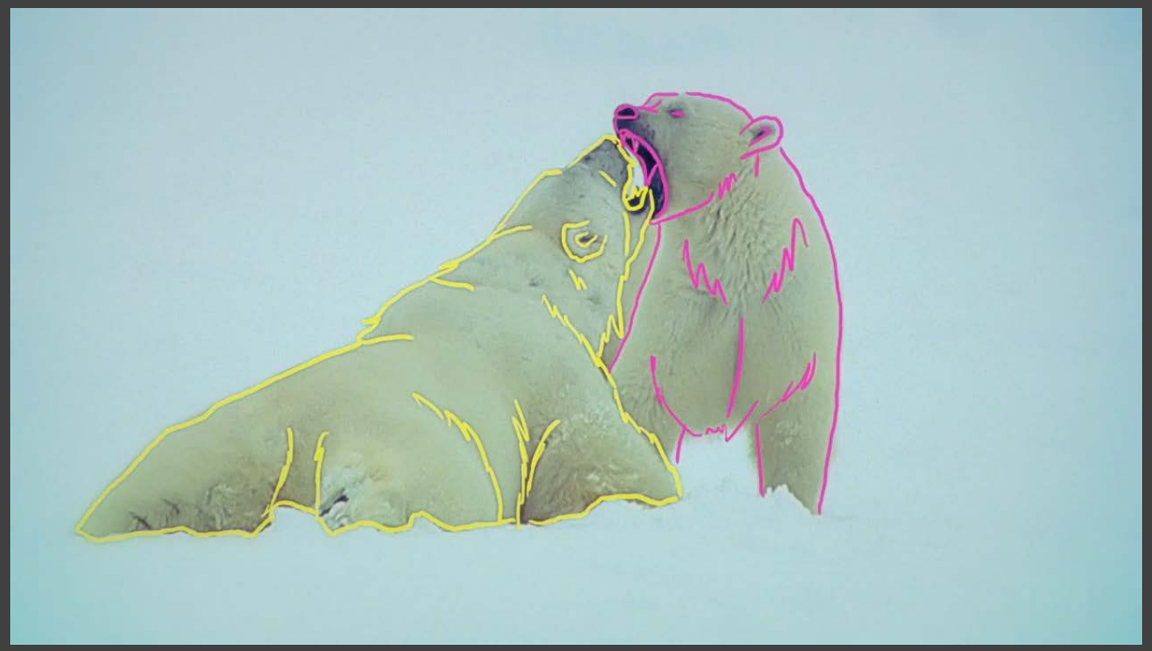
Audience and Story's Impact

In the introduction of "The hero of a thousand faces" Joseph Campbell declared "... the wonder is that the characteristic efficacy to touch and inspire deep creative centers dwells in the smallest nursery fairy tale" (ch. 1). The power of stories to elicit emotional responses in humans has been present not only in mythology, but in novels, films, music, and even advertising and dreams. And this power helped shape not only religions and cultures, but artistic, social and political movements. But even if we considered this as an undisputed truth, we still wondered about the mechanisms by which stories can accomplish this.

The neuroeconomist Paul Zak, author of "The moral molecule", has been studying human behavior and its relationship with oxytocin, a hormone related to human care, connection and empathy. Together with Dr. William Casebeer they conducted a series of experiments in which they exposed people to an animated short-film about a father and his terminally ill son, and measured levels of oxytocin, cortisol (the hormone responsible for distress responses and attention focus), took brain images and other vital signs of the viewers. As explained in the beautiful video from the Future of storytelling







Visuals from presentation *The Impact of Storytelling on a Generation Overwhelmed with Technology*

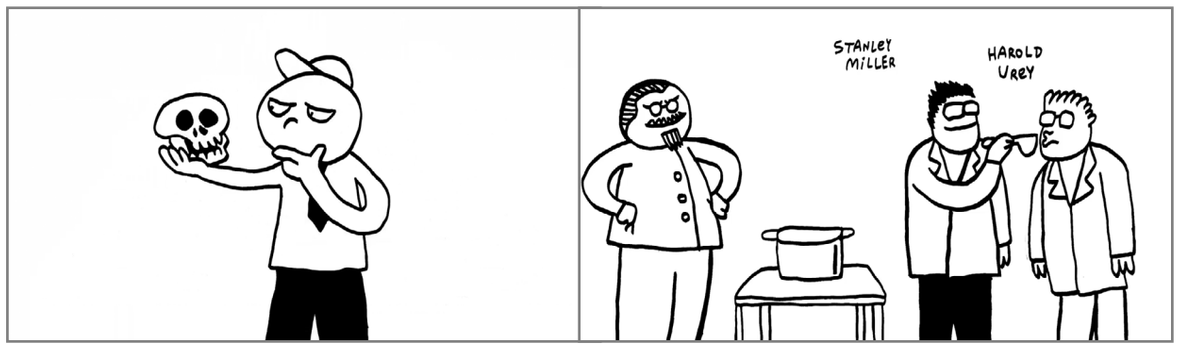
Summit the subjects exposed to a version of the short-film with a clear dramatic construction showed an increase in the release of both hormones, as opposed to a group exposed to a descriptive animated film of the same characters just walking, who didn't show any notable response (Casebeer and Zak, 2013). Not only were they able to identify the neurochemical changes in the study subjects, they were also capable of predicting their immediate behavior with an 80% rate of accuracy when they were offered the possibility of donating to a charity that worked with ill children. These experiments showed a clear and scientific explanation of how story structure is capable of affecting us at an emotional level, increasing empathy and focus, and they also showed how well constructed stories could affect human behavior.

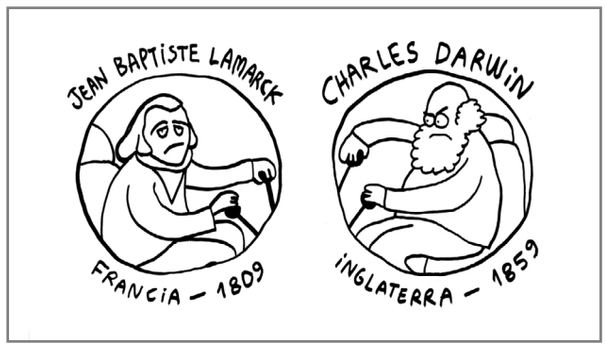
Exposing these findings to the students made them more aware of the implications of story construction, and it also made necessary for them to review and analyze deeply how stories are constructed. So the authors' perspectives taken during the first run of the course were analyzed in a more detained way. The idea of the hero's journey, the 3 act dramatic arc, and 5 points dramatic structure: inciting incident, progressive complications, crisis, climax and resolution.

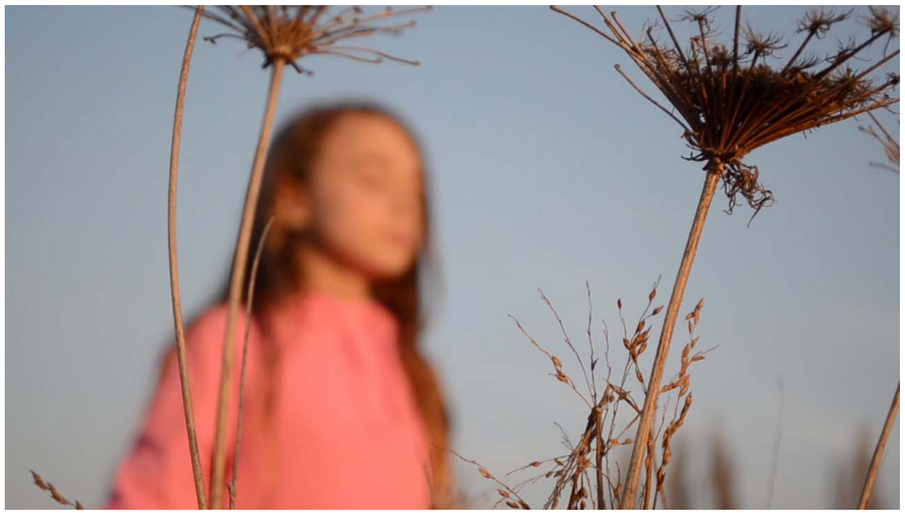
But again the results obtained after including these theories and expanding the previous content were uneven. The development of new animated infographics covering current news showed little improvement. Even though the biggest weaknesses were the technical and formal aspects, most of the works were unable to elaborate compelling narratives from the information compiled about any given news.

A later project of animated educational videos gave better results, both in form and in narrative structure. Even though none of them could be considered "traditional storytelling" they had an advantage that allowed them to better shape the story structure: recognizing a target audience. After the exploration of different narrative and film theories, during the projects we had forgotten the most basic element: this school's vision of design as a user-oriented discipline. By constraining the parameters of the project to a specific context (education) and to specific users/audiences (school-aged kids) they were able to understand the way these kids communicate, and taking the narrative theories and studies they could shape a narrative form that could speak directly to them. This particular narrative form helped the students develop a visual form and aesthetic consistent with the course's subjects and the stories used to teach them. So the humoristic approach taken to teach kids the more boring aspects about science and evolution, gave form to a rudimentary animated video, in which form and content were consistent, and didn't clash (Bozzolo and González, 2014) (Figure 6). And the same applied for a video about music education, that combined the use of beautifully filmed shots, with a sense of lyricism, and infographic shots explaining musical concepts; all with a main character that helped drive the story (Correa and Ruz, 2014) (Figure 7). This project not only showed that they didn't need dazzling animated pieces to connect with the audience, but also proved the diversity of visual forms, techniques and aesthetics that a single project could take.

Figure 6: A humoristic narrative gave form to this rudimentary animation about evolution, for Science class. Source: Bozzolo and González, 2014.







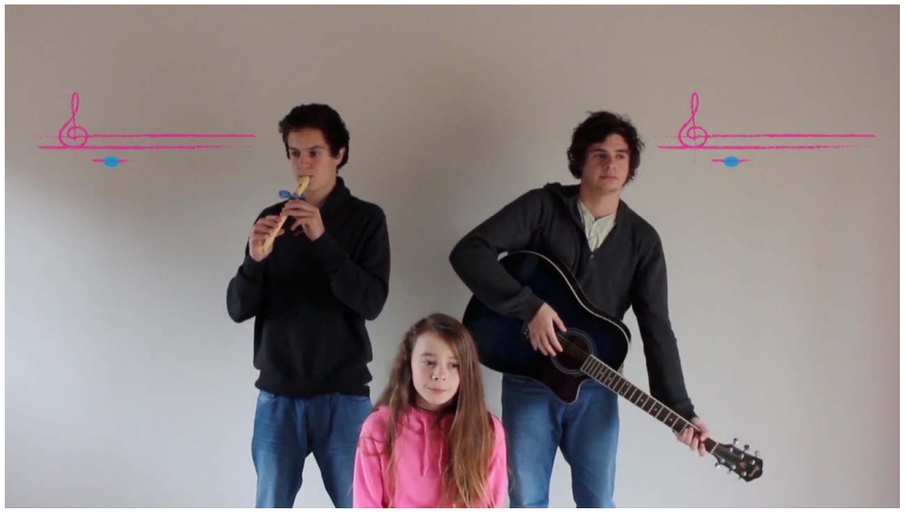


Figure 7: Beautiful shots were combined with graphic interventions in this educational video about music theory. Source: Correa and Ruz, 2014

The four semesters during which this workshop was dictated gave diverse results, both in the type of motion media created, and in the quality of the students' pieces, revealing the necessity of future revisions of the program, so that both the narrative and formal aspects, can be developed without neglecting one for the other. Since then, these contents have been introduced to 2nd year students, trying to develop their narrative skills earlier on their formation.

Guided by a powerful conviction that stories have an unparalleled capacity to affect and connect with people, both intellectually and emotionally, the course intended to transmit this conviction to the students, to make them aware of the universal presence of stories in life, and to try to discover the hidden stories behind every design piece produced, and in this way explore the power that stories and narrative theory have to change the students' perspective when facing a motion design project.

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Motion and graphic designer born on 1985, in Santiago, Chile. I studied design at the Pontifical Catholic University of Chile, where my degree project consisted of an attempt to unify the aesthetic and visual dimension of a low-budget film through a concept-driven and coordinated creation of design pieces that boosted the film's identity, from poster to title sequences.

Passionate about film, and what design can learn from it, I have taken screenplay writing seminars (Robert McKee's Story) and filmmaking workshops (New York Film Academy) in an effort to better understand the medium, and the creative process behind the telling of stories.

As a motion designer I have worked creating corporate animated videos and infographics, advertising, and art related work, like concert visuals and film title sequences.

On 2012 I joined the design school at the Pontifical Catholic University as a teacher of a motion design workshop to 4th year students, a course that focused on exploring the motion design language -in comparison with the language of graphic design and other related fields- rather than the technique. From the second semester of 2014 I joined the team of professors of the 2nd year workshop, a course of design projects of all specialties: graphic, industrial, motion, etc. Moving from 4th to 2nd year was an attempt to give our students better foundations on storytelling and motion design language early on in the career.

Currently I work as bachelor's academic coordinator (1st and 2nd year) and I'm participating in research about the evolution of motion design education in the last 10 years of our school, aimed to diagnose our students and faculty's strengths and weaknesses, and improve our curriculum.

The Increasing Shortage of Time in Motion Graphics

Laurie O'Brien

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Abstract: As a relatively new discipline, motion graphics has developed a short history that demonstrates distinct trends communicating messages with a speed and brevity that is ever-increasing. My exploratory paper examines the acceleration of speed and also other aspects of time manipulation through three popular trends in motion graphics: the fly-in/ fly-out typographic, the animated GIF and the cinemagraph.

Keywords: kinetic typography, animated GIF, cinemagraph, flying type, speed, brevity

Introduction

I have always been fascinated with our perception of recorded time and how it began to change in early cinema with the invention of editing. Before match-cuts and editing, audiences simply watched footage unfold in "real time" and had no notion of any disruptions in time through film. In one of the first close-up shots of a man pointing a gun into the camera in "The Great Train Robbery", Edwin S. Porter worried that his audience might become confused if this scene was inserted in the middle of the story (Burch). Experiencing time disruptions through editing is now normal and invisible to us. It is fascinating to think of how the first cinema audiences might have been confused by close-up intercut shots. They would have no frame of reference to understand a linear break in time.

In the same way, I imagine how challenging it would be for a person living in the early 20th century to experience the speed required to "take-in" a typical motion graphic from our era. Invisibly, audiences are cognitively trained to accept time-disrupting codes of moving media. Dissecting these motion trends gives us insight into larger cultural forces that reflect and mimic current cultural behavior.

After a one-year break from television, I had a motion graphics "speed" shock a few years ago when I was reunited with TV commercials on an airplane flight. I could not believe the speed that messages were being transmitted through fly-in/ fly-out typography. I not only felt disoriented but I also felt forced to read faster than my natural pace. Now that I have cognitively acclimated, what feels "natural" to me has changed.

The pace of communication has changed and we are no longer a "reading" society but we instead tend to "scan" information. These paradigm shifts in our culture profoundly affect the aesthetics of motion graphics and how we "take-in" information. Do audiences crave that the message will be transmitted as quickly and efficiently as possible? In this rushed desire to receive the message, are we willing to sacrifice

A

Is the speed of kinetic information promoting scanning over reading? Impressions over understanding? O'Brien discusses this, and then counters it with a wonderful project assignment: the cinemagraph.

—A. Murnieks

understanding? If we prefer impressions to understanding, will the speed continue to increase? Will our brains continue to adjust and will we accept and crave even faster messages?

The Aesthetics of Time

Shorter

Our attention spans have been shortened by navigating multiple distractions such as laptops, phones, and an overabundance of visual information—causing us to prefer faster and shorter messages. It is not only that our attention spans have been truncated, we are now accustomed to having control of our visual information by actively skipping anything that does not interest us. From an advertising perspective, companies have only a few seconds to hold our attention before we move on. If people are going to skip ads, advertisers have a better chance of us watching if the content is very short (Flint). As the attention span of media consumers decreases, faster advertising is on the rise. For example, "The number of 15- second television commercials has jumped more than 70% in five years, according to a Nielsen study" (Flint).

Faster

Not only are ads shorter, they are also faster. Recently, Sitcom TV shows have increased the frames-per- second to shave off more time for commercials. The speed change is designed to be imperceptible to audiences but when playing them side-by-side a noticeably higher pitched and faster rhythm is experienced with the faster versions (Flint).

Staccato

We hunger for information to be delivered to us not only more rapidly but also more efficiently and with less need for understanding. Understanding would require pauses and breaks. This is manifested in motion graphics through three ideas that mimic how we surf the Internet—speed, flying and staccato rhythm. The motion graphic aesthetics of "speed" and "stop and go" have developed because we have control of our devices and have the ability to skip. This rhythm that mimics the control that we now yearn for to scan and skip instead of read and wait, gives an aesthetic to time that is perfectly demonstrated in the staccato fly-in/fly-out motion graphic.

The Fly-In/Fly-Out Typographic

When we compare the speed of motion graphics from just ten years ago to the fast staccato graphics that we are seeing now, we have essentially gone from driving cars to flying planes in a few short years. I believe that we are able to cognitively digest the speed increase because of the start/stop rhythm. My theory is that the aesthetics of this rhythm is a sign of our times and corresponds to the infiltration of hip-hop and rap into popular culture and has led to the popularity of word-based kinetic typography. Hip-hop can pack more messages into a song by using fast but staccato sentences and by editing out pauses. Motion graphics has evolved in the same way with the same objective.

For example, in the 1960's, one of the fastest songs recorded, Bob Dylan's "Subterranean Blues", had a total of 326 words at a rate of 2.33 words per second. In the 80's REM "End of the World As We Know It" contained 615 words at a rate of 2.49 words per second. In 2013, Eminem song "Rap God" broke the world record containing 1,560 words at a rate of 4.3 words per second. (Ferro).

It is disconcerting that the objective of our era is to deliver the message efficiently with impressions instead of understanding, and yet we still seem to be yearning for even more speed.

The Animated GIF

I argue that GIFs are popular because they can convey a short video-like message without investing in the patience required of watching a video. Also, since it loops, the user is in control of when to skip or move on. How short is too short? When does watching repel us instead of attract us?

Visuals from presentation *The Increasing Shortage of Time in Motion Graphics* by Colleen Mann, Nicole Rosenberg, Margaret Seward and Edward Szlosek

The Cinemagraph

The possible antithesis of this speed culture is the popularity of the cinemagraph, which generally plays in real-time and requires a meditative pause in our attention span to be able to experience the uncanny feeling of both motion and stillness. It is interesting to note that it only take a few seconds to "get" the cinemagraph. The cinemagraph may not be fast, but it is still short.

Conclusion

The first few viewings of the all discussed motion tropes are mesmerizing, but like all tricks, they do not age well. They are a time capsule of our era. These gimmicks give us insight into how our culture is changing. Watching a slow or real time commercial or motion graphic requires an unbearable amount of patience and feels "dated". Will the aesthetic of the "fast" be dated in our future? Will our messages continue to speed up? Will we continue to value impressions instead of understanding?

Additional Supporting Media

https://vimeo.com/channels/mode2015

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Laurie O'Brien is an artist and educator working in time-based work such as motion graphics, video, installation, animation, and performance. Her interdisciplinary media work is collaborative, interactive, socio-political, exploratory, hand- made and digital. She is interested in hybrid forms of expression that combine and defy definitions and categories. Her animations, performances and video installations have been exhibited in numerous galleries nationally and internationally. She is the creator of Peephole Cinema, a public art installation in Brooklyn, Los Angeles and San Francisco, that screens short films that can be viewed any time day or night. She is an Assistant Professor of Visual Media at RIT, Rochester Institute of Technology. She lives in both Brooklyn and Rochester.

User-Centered Video Tutorial Design

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Modern motion media designers utilize video tutorials to stay current on the rapidly advancing software tools of the trade, but the majority of designers will not receive an optimal learning experience through current video tutorial training techniques. While motion designers can learn software from the conventional approaches to video tutorial training, there is greater potential to accommodate different individual styles of learning. Conventional video tutorials are only optimized for two out of 32 different styles of learners. This leaves the vast majority of designers with an exhausting, frustrating and anxiety inducing experience. This paper examines the current popular video tutorial models through the lens of Felder and Silverman's learning styles in order to inform the creation of a better performing model.

By determining the positive and negative qualities of the present video tutorial models, a new proposal is created keeping the benefits of the current approaches while addressing current shortcomings through the addition of new sets of video tools. The result is a user-centered modular approach to tutorial design which creates tailored courses for each individuals learning style. Each modular video piece in the system is built to aide a particular set of learning styles. When particular modules are combined with their appropriate companion modules, a maximum amount of learning styles can be accommodated. This tailored approach is achieved through a short survey each designer takes at the onset of each course which determines the designers learning style and triggers the optimal modules to be presented in the optimal configuration. The intention of this model is to create a training system that eliminates the friction most designers endure while using current video tutorial trainings. By eliminating this friction designers can experience increased learning speeds and greater retention, and all designers can receive an equal quality of learning no matter how they learn best.

Learning Styles

Learning styles are classifications of how individuals best receive and process information. How much information an individual retains can be attributed in large part to how their particular learning style aligns with the training method they are being exposed to (Felder and Silverman, 674). In Felder and Silverman's 1988 framework there are 32 learning styles that stretch across five dimensions (675). Each dimension spans between two opposing classifications. An individual's learning style is defined by stringing together the dominant tendency in each of the five dimensions. For example, a person's learning style may be represented as intuitive/visual/inductive/reflective/global.

Learning Styles		
Sensory	}	Perception
Intuitive		
Visual	}	Input
Verbal		
Inductive	}	Organization
Deductive		
Active	}	Processing
Reflective		
Sequential	}	Understanding
Global		

Figure 1: Felder and Silverman's 32 Learning Styles Across Their Five Dimensions Source: Felder and Silverman, 1988

Current Approaches to Video Tutorial Training

Two major types of video tutorials were examined: large scale providers such as Lynda.com and small scale providers such as GreyScaleGorilla.

With large providers, the course content is laid out in a linear model of teaching. Each lesson builds on and expands the knowledge developed in the previous lesson. Instructors describe their actions as they manipulate the software and repetition is used throughout courses to increase retention.

Small providers tend not use the linear model. The way these sites teach is akin to watching over-the-shoulder of a working professional as they complete a project. Instructors share their knowledge as it pertains to the course project while they complete it. Mistakes are often left in and viewers witness the instructors recognizing and resolving their mistakes as the project unfolds.

Current Approaches in Regards to Learning Styles

Examining the two different approaches, two distinct learning styles appear. One that is well suited for the large provider's model, and one well suited for the small provider's model. A sensory/verbal/deductive/active/sequential learning style would thrive with the large provider's model, while intuitive/visual/inductive/reflective/global would thrive with the small provider's model. Conversely, each style would have difficulty learning when paired oppositely.

A New User-Centered Proposal

By keeping the benefits of both approaches while addressing shortcomings, a new proposal is created. The result is a user-centered modular approach which creates tailored courses for each individual's learning style. Each module in the system is built to aid a particular set of learning styles. When particular modules are combined with their appropriate companion modules, a maximum amount of learning styles can be accommodated. This tailored approach is achieved through a short survey taken at the onset of each course which determines a designer's learning style and triggers the optimal modules presented in the optimal configuration. The modules proposed to create this system include the following: Overview, purpose, concept, procedural, observer, tools, take-aways, and follow-up challenge.

Overview

The overview video covers what is to be accomplished within the course. This benefits global, reflective, and verbal learners.

Purpose

The purpose video explains the reasoning behind why a designer might want to accomplish the course project. It provides a foundation for designers to start the course, but also provokes them to think about their own work and how they might apply the same concepts. This video benefits intuitive, verbal, inductive, reflective, and global learning styles.

Concept

The conceptual module explains how the work is approached. The high-level sharing of the concept promotes listening, thinking, and orients the learner for the course. This video benefits reflective and global learners, while also assisting verbal learners.

Procedural

This module demonstrates the sequential process of the project being created. It benefits sequential learners most though step-by-step teaching, but also benefits sensors and deductive learners through the building of factual steps.

Observer

Little verbal direction is given in this module but users watch the project being completed by the instructor in the instructor's own manner. This module benefits intuitive, visual, and reflective learners.

Tools

This module is made up of numerous short videos covering individual tools that are utilized in the course. Most users will not watch each tool video, but may watch videos of tools they are unfamiliar with. The tool module benefits sensors and active learners through the decimation of factual knowledge and provoking practice. The tool module videos may be placed in-line with the procedural or observer videos to benefit sequential learners, or they can be placed in a grouping alone for at-will viewing, benefiting global learners.

Take-Aways

The take-aways video explains the major lessons to be learned throughout the course. This module benefits deductive learners by conveying the course's main teachings outright. Arranging this module early in the course benefits global learners as it provides understanding of the larger goals before providing details.

Follow-up Challenge

This module proposes additional projects to be attempted after the course using the same principles, tools, and techniques. This acts as a test of retention and benefits active and intuitive learners through hands-on adaption of learned skills onto new projects.

Conclusion

By combining the optimal modules in the optimum order this model eliminates the friction most designers endure while using current video tutorial trainings. By eliminating this friction designers can experience increased learning speeds, greater retention, and all designers can receive an equal quality of learning no matter how they learn best.

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Felder, Richard M. & Silverman, Linda K. "Learning and Teaching Styles in Engineering Education." *Engineering Education* 78.7 (1988); 674-81.

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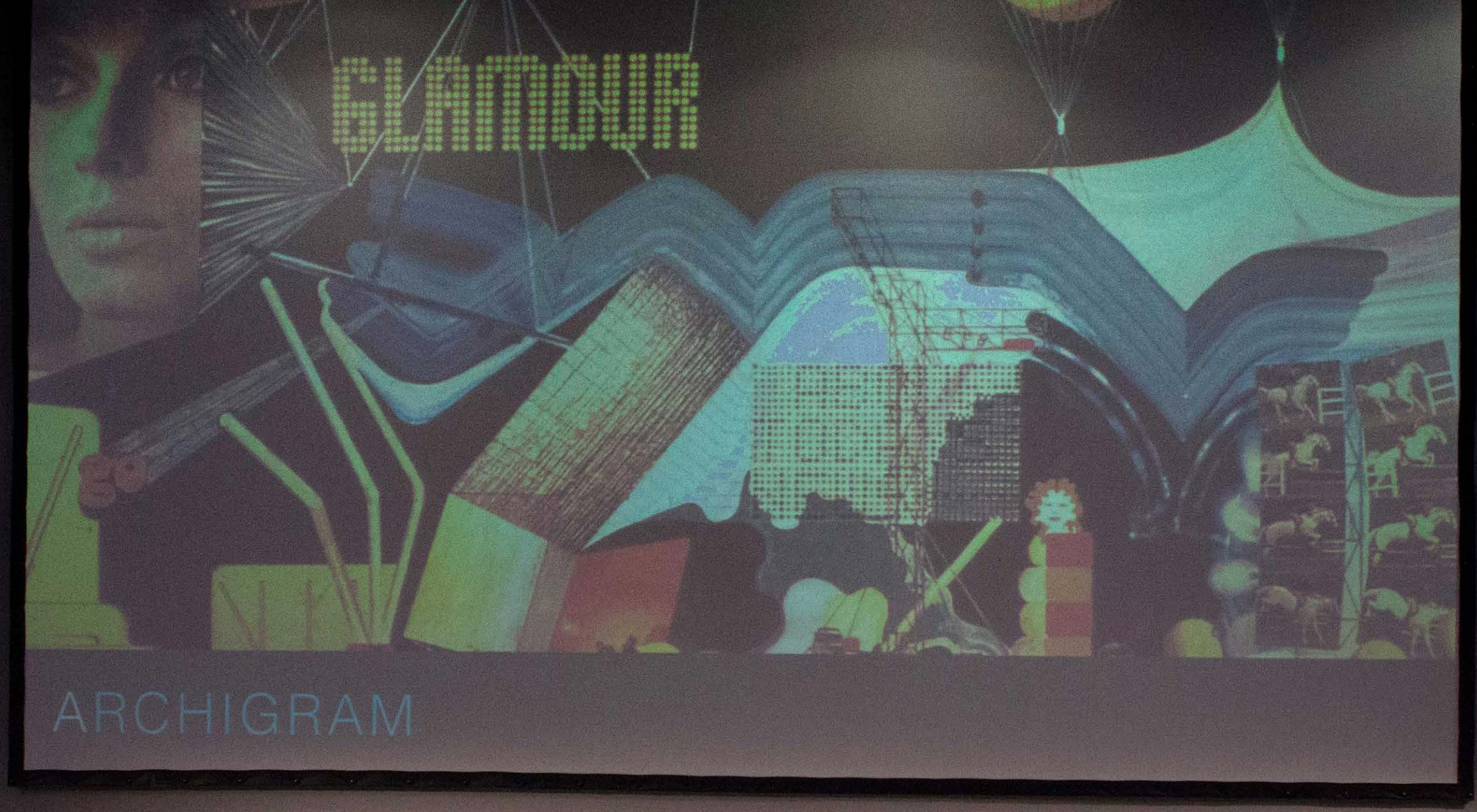

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