

# AUGMENTED VISION: DIGITAL DEVICES AND POST-PROCESSING FOR EXPERIENTIAL LEARNING.

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## Abstract

*Today, digital devices and post-processing provide for rich mediated observations of places. When we observe the natural world through a digital lens, it alters perception and augments our understanding. Digital devices affect the observing reality through a bias of digital laws, thus participating by revealing layers of information concealed within the captured scene. This paper outlines strategies for digitally augmenting our innate powers of observation and facilitating critical experiential learning through digital visual notation. Digitally augmented observation techniques were tested during student and professor related travel/study with Ball State University. Examples of time-based motion capture such as serial digital photography, post processed image manipulation, and digital video/still collage with multimedia narrative will be used to illustrate how digitally enhanced augmented vision techniques render observation of the everyday world in new terms. Additionally, the paper points to a trajectory for future digital notes scholarship by examining the potential for innovative new pedagogies, and situating the discourse in relation to an existing body of scholarship on traditional visual notes.*

## 1. Introduction

Visualizing techniques and devices have always influenced how we observe our world. Consider dramatically differing results obtained from sketching, perspectives, serial vision, photography, and video. Today, digital devices and post-processing provide for innovative rich mediated observations of places and offer new ways to see the world around us. When we observe the natural world through a digital lens, it alters perception and augments our understanding. It has been proposed that in the cyber realm, ordinary digital laws are different from natural laws (Bermudez 2002). Following this logic, digital devices *affect* observing reality through a bias of digital laws, which becomes present when information is encoded. Thus, once a scene has been digitized, it belongs to a set of laws governed by code within software, which we can interrogate to reveal layers of information. If we can train ourselves to critically use software, and deploy digital devices in innovative ways, our understanding of places will be enriched as information not directly available to eye is revealed.

### 1.1. Experiential learning: digitally augmented visual notes

During travel/study, students rely extensively on familiarizing themselves with foreign environments through sketch analysis exercises designed to tune them in to the properties/characteristics of specific environments. In the case of experiential learning, nothing can replace many hours of direct observation and “being” in a place. However, typical students today comfortable with the internet, text messaging, and cell phones, are quite used to an interface culture and use digital devices to record their input. In addition to teaching students how “see” environments, we must also examine innovative methodologies to deliver content using devices with which students are already adept. This paper suggests that we build upon existing visual notes scholarship using a digital lens. To see a place, one must open the eyes, interrogate, and distill what the eye sees. To know a place, we must draw upon a key visual notation philosophy—revealing that which “cannot be seen directly by the eye...” (Crowe, Laseau, 1984). A solid body of scholarship exists around visual notation

(Crowe, Laseau, 1984). Traditional analogue techniques serve to document and heighten an observer's awareness of particular environments. The digital notes approach should not be seen as a substitute for the benefit of traditional analogue approaches to observation; certain analogue techniques might be replicated with rapidity, yet the observer would lose the time investment and the knowledge gained spent scrutinizing every detail of the image she was creating with her hand on the sheet of paper. Thus, digital notes should be seen as a continuation to traditional analogue notation techniques. Ball State Professor Emeritus, Paul Laseau outlines a major visual notetaking goal in his book on *Freehand Sketching*: "as a researcher, the designer needs to be both an investigator and a discoverer. Typically, this means examining environment from a particular point of view, but also being open to noticing the unexpected." (Laseau, 2004) Digital notes aims for the same goal; the critical use of digital techniques and post processing to augment experience by helping reveal the unexpected and to bring to the front issues that may not be perceived by the naked eye in real time.

It is useful recognize that initial digital notes scholarly enthusiasm was about organizing analogue notations. Consider hyperlinked sketchbooks (Clayton, Weisenthal, 1991). Today, digital devices and post processing provides opportunities to return multiple times to recorded observations, alter them, and look for content not noticed by direct experience. In this method, observation becomes like detective work. The information is captured, and is ready to fully interrogate repeatedly.

### 1.2. Travel/study: Pedagogical strategies

Digitally augmented observation techniques were tested during a Ball State University travel/study in Italy. Students used motion capture/serial digital photography, filtered video, digital collage, and multimedia to record their particular observations. Just as an afternoon sketching and constructing analytical drawings of a piazza reveals things that we ordinarily wouldn't see, deploying digital devices and post-processing unveils even different kinds of information in both space and

time.

The power of the digital image lies in the ability to manipulate the digital information that creates the file. As William Mitchell pointed out during the nascency of digital image production, "[*Digital images*] can be used to yield new forms of understanding, but they can also disturb and disorient by blurring comfortable boundaries and by encouraging transgression of rules on which we have come to rely." (Mitchell, 1992). New rules underlay the image and are part of a collaborative conversation between observer and code. As such, digitally augmented observation has the potential to render experiences of the everyday world in new terms.

## 2. Digital notes cases

The following three strategies were explored as augmented observation cases: *time-based study* (serial vision, speed motion capture, and simultaneous view/same temporal condition), *image-based post-processing* (information alteration), and *digital collage multimedia analysis/narrative* (editing and recomposition in space/time).

### 2.1. Case 1: time based study: Italy

Speed was certainly a fascination of the Futurists at the turn of the industrial revolution in Italy. Today, we



Figure 1: Como, Italy, Affected digital print: "Futurismo: Terragni on Terragni" - an auto|bits|space spectacle. The image highlights the presence of the flow industrial and information age influences on the plaza and the Casa (ex) Fascisto by Guisepppe Terragni.

travel the same streets at the turn of the information revolution, to rapidly record quantities of information digitally. With digital devices, we are enabled to conduct time-based studies on a personal and iterative basis. In the past, massive equipment investment and time were restrictions for such types of study. Consider William Whyte’s studies in Seagram’s Plaza, which took enormous amounts of time in planning, preparation, and

post processing. Today, every student can conduct their own serial vision studies armed only with digital devices in real time. Further, post processing and editing also allows for the compilation and comparison of scenes on a same screen revealing to the observer relations not necessarily apparent in the linear sequence of experience, sketching, or photography. This simultaneity of image allows for further analysis of conditions of the place. Students continue to examine long past the experience.



Figure 2: Capri, Ostia Antigua, Italy: screen capture of video comparing ancient and contemporary road surfaces—a simultaneous series of old and new pathways framed by the same pedestrian experience.



Figure 3: Rome, Italy: screen capture of analytical video of Pedestrian flow down a narrow cobble street.

## 2.2.Case 2: filtered image study

The same image has multiple layers of information. Filtering the image in post-production can reveal information not seen in the photo “real” image. Commands such as tracing outlines, inverting the picture, adjusting contrast, replacing colors, etc. brings to the front of the picture plane certain kinds of information. However, these filtered operations are tricky, since altered images can also deceive, not by adjusting the reality, but by inserting an alternate reality. This is where the observer must deploy a critical eye and ethical practices, so as not to disrupt the image enough to deceive, but rather bring to the surface and reveal hidden information.

With digital devices and post-processing, the observer makes adjustments in conversation with software,



Figure 4: Helsinki, Finland, affected digital print: “Read Within Lines,” is an inverted image with boosted saturation revealing the typical compositional alignment of signage and lettering in the same rhythm with building façades.

yet still must make decisions about the nature of the representation. Therefore, by understanding representational intention, a critically trained observer will emphasize that intentional part of an augmented

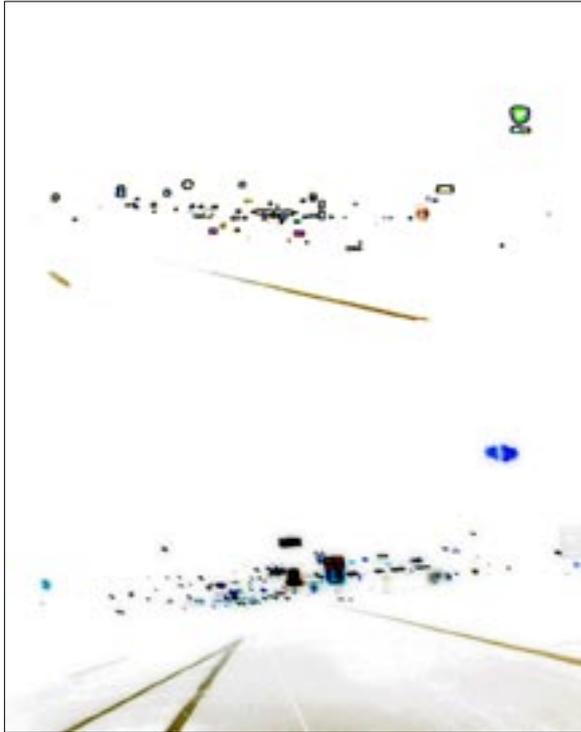


Figure 5: Portland, OR and New York City, NY, United States, affected digital print: "Coast to Coast" frames the presence of signage as an event field from a distant approaching vehicle. Tracing edges, inverting, and adjusting contrast reveals this field.



Figure 6: Kokomo, Indiana, United States, affected digital print: "Speed-way" uses edge tracing to flatten the depth of field of the unorganized collage of signage and infrastructure on a typical automobile strip.



Figure 07: Rosario, Argentina, affected digital print: "Connections." Edge tracing flattens the depth of field and reveals the power of image in this relation of signage, infrastructure, and architecture.

experience of a place. The following prints are a series of studies in various locations conducted by the author about the use of image and information in public places. The digital images were affected by post processing in order to reveal more clearly particular design conditions present in the recorded environment.



Figure 08: Grimmelwald, Swiss Alps, digital collage: "Switzerland" was post processed to stitch together single images taken from the same scene to create an unfolding experience of a single instance in time traversing the area of the collaged image.

### 2.3. Case 3: digital collage/multimedia narrative

Organizing sketch studies with video, sound, and digital collage techniques is perhaps the most difficult form of sketch, as there are so many variables to consider. In this sense, this process comes very close to that of editing for film. Students might gain from exposure to other disciplines prior to engaging the field study to better understand film editing process and principles. Nonetheless, it is important to acknowledge that edited digital collages/narratives are intended to be sketches, which reveal quite particular qualitative aspects of place: character, scales, flows, etc. It is critical to the



Figure 09: Venice, Italy, Multimedia Narrative: “Apostoli” framed relational simultaneous video by different observers synchronized over time within the same threshold and space of the piazza.

success of these sketches to avoid adding more and more content. These digital collages retain their potency as short succinct clips. If trained carefully, working with multiple levels of media can help students more clearly frame their representational intentions.

### 3. Conclusion

While the scholarship in digital notes is in its nascency, it builds on the existing scholarship of visual notes. New techniques and devices need to be further delineated.

Additionally, device catalogues such as cell phones, text messaging, should be further explored as innovative avenues for further pedagogical experiments with experiential learning. Finally, a taxonomy of digital strategies is necessary, but well beyond the scope of this paper.

An effective discipline with digital devices relies upon immediate post-processing of captured visual information, thus avoiding backlogs of data, and facilitating further analysis to better develop rich strategies for future observation. Thus, visualizations from the observed world are constantly under review. Preferably, a rigorous course of study with experiential learning focuses on digital device skill building and post processing techniques, coupled with extensive editing while students are immersed in observing a series of experiences. This (experiential/editing) multitasking will help inform the next series of observations, as knowledge gleaned from the edit process informs the captures on the following day. Importantly, it is necessary that students bring a strong set of prerequisite digital skills, file management practices, and prior editing experience, so that they are not bogged down with the learning curve on the post-processing while in transit. Travel/study using augmented observation results in greater confidence in students’ own powers of observation and a broader collection of critical analysis of new places. Ultimately, this digitally augmented knowledge might lead to new understandings of our places and tune us in to the potential for design strategies that are of our time.

### Digital Augmentations

1/6/8/9/10: ©Kevin R. Klinger.

2/4/11/12: Robert Horner, BSU-CAPItalia 2004.

3: ChristopherPeli, BSU-CAPItalia 2004.

13: Robert Horner, Christopher Peli, and Jeremy Richmond.

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