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Developing a Qualitative Coding Analysis of Visual Artwork for Humanities Research

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Abstract

The field of humanities has now grown into a digital environment challenging educators and scholars to create, manipulate, and curate data for research and instruction. The humanities is faced with a digital medium that is changing the way scholars conduct their exploration of research. This study encourages the examination of imagery through qualitative coding, or annotation, to reveal themes and visual stories to further unravel the layers of a visual object. Images from the work of 1960s pop artists James Rosenquist and Roy Lichtenstein were evaluated using ATLAS.ti to determine common themes, visual stories, and aesthetic differences. Qualitative coding is usually associated with textual data, but using a software analysis tool such as ATLAS.ti can centralize the collection of data to efficiently code imagery, text, audio, and video. This case study will be used to introduce researchers, faculty, and students to qualitative analysis tools and the usefulness of coding to reveal themes in imagery. Furthermore, librarians have an opportunity to facilitate the learning of these tools in combination with the various proprietary and open access image databases housed in the library.

Introduction

For librarians looking to strengthen connections with the humanities faculty they serve, introducing educators and researchers to the benefits of investigating data can uncover themes and connections within their research interests. Data or “Big Data” is solely not just for the STEM fields. The humanities is rich with textual, audio, video, and image data that can be harnessed for in-depth evaluation through qualitative methods. Digital archives of images are now at our fingertips and can be more easily explored for scholarly research. Medina states, “It is expected that the explosion of Big Data will contribute to a radical transformation of Arts and Art history research, analysis and practice” [Medina 2015, 19]. As librarians who promote image resources, we can facilitate and encourage the usage of image data that many students do not know is available through existing digital libraries and collections. 1

Images are constantly projected in every aspect of life. Understanding the contextual properties of imagery can provide essential analytical skills in deciphering the meaning and messages hidden within the underlying details. Barich and Kotler state, “We use the term ‘image’ to represent the sum of beliefs, attitudes, and impressions that a person or group has of an object. The impressions may be true or false, real or imagined. Right or wrong, images guide and shape behavior” [Barich et al 1991, 95]. Images communicate and resonate with the viewer on a basic, affective level. Determining how images affect us at primary level can be difficult [Winters 2014]. Qualitative analysis can be used to address this difficulty by dissecting the flattened layers of an image. Various techniques and computational analysis allow the viewer to rethink the identity, purpose, use, and substance of objects. The observer can ask questions about production history, style, and technique at a micro and macro level beyond traditional analysis [Drucker 2013]. 2

Paintings and artwork that have traditionally been viewed in person have engaged a new frontier through digitization and electronic surrogates. Manovich explains, “In contrast to old media where the order of presentation is fixed, the user can now interact with a media object” [Manovich 2001, 49]. The creation of a digital duplicate facilitates more opportunity to work with the “new media” object in potentially unrestricted settings. Manovich acknowledges, 3

“Software…is used to…create, store, distribute, and access cultural artifacts…becoming an interface to the world, to our memory and our imagination” [Manovich 2013, 2]. With this deeper study, the library can provide access to various databases containing images, in addition to print imagery in the public collections and archives.

Grounded Theory, Visual Grounded Theory, and Image Coding

4 Coding enables the researcher to apply notations to qualitative data to reveal themes and stories. Pre-determined codes can be utilized to assist a researcher with coding data sets, or researchers can code through grounded theory, discovering theory from data [Glaser et al 1999]. Example data sets can consist of text, numbers, images, audio, and video. A grounded theory approach to data allows content to direct emerging findings and theories [Liebenberg et al 2012]. Code lists can establish pre-determined themes and assumptions to be applied to data. This can be problematic if the data does not yield results towards these pre-established codes. Selecting data for an established category or property can hinder the generation of new categories due to effort being concentrated on data selection. Emergent categories, or open coding, are generally checked for ongoing relevance and meaning against the data, and tend to be the best fit [Glaser et al 1999] [Boeije 2010]. The researcher can discover and interpret the images while simultaneously defining the codes as the data presents itself.

5 Visual grounded theory relies on visual data for constructing categories, describing properties and generating/constructing theoretical hypotheses [Konecki 2011]. Analyzing iconography can “reveal ideological alignments that demonstrate how images may serve as culture icons – windows into a social world or historical moment that offer insightful evidentiary value for social and historical explanation” [Howells et al 2009, 9]. Using images as visual data to decipher meaning or to look at the layers of an image for insight into an artist’s work, can greatly assist with viewing imagery through a more critical approach.

6 There have been very few studies analyzing imagery with ATLAS.ti. Two studies in the last 5 years reviewed travel blogs and tourism photos using the qualitative analysis software, ATLAS.ti. In 2011, Li and Wang reviewed travel blogs pertaining to tourism in China analyzing the “destination image,” the visual component when marketing travel vacations to international tourists. This study reviewed written entries to determine the tourists’ perception of the images they saw and how their behavior was influenced by depictions of a location. This study assigned 125 individual codes grouped into 10 categories (or code families) to travel blog entries. They notated positive and negative comments, revealing positive themes towards museums and historic sites versus negative responses to local infrastructure and transportation.

7 Pan, Lee, and Tsai conducted a study using 145 photos published in The New York Times Travel Section “Why We Travel” from 2008 to 2012. The authors evaluated the images “quantitatively through content analysis and qualitatively through semiotic analysis” [Pan et al 2013, 61] [Albers et al 1988]. Through coding the images and accompanying captions with ATLAS.ti, the researchers found that 54% of the photo suppliers were male and 46% were female. Coupled with *WordStat*, a text analysis module, they were able to determine emotional connections attributed to the photos based on context of the photo poster’s caption. They utilized positive and negative connotations to describe the photos. Pan et al. found that 28% of the photos were arousing, 28% pleasant, 21% relaxing, 17% exciting, 2% distressing, 2% unpleasant, 1% gloomy, and 1% sleepy. Their intent was to understand the connection between tourism, motivated by emotional interpretation, and the destination image. These studies are of interest because they utilized qualitative analysis software to encode and decipher the connection between the human eye and an emotional response towards an image.

Image Set

8 For this study, an image set of 40 paintings were curated from the work of Roy Lichtenstein and James Rosenquist. The image set was curated to experiment with the various tools and coding abilities of the software. The images selected are reproductions and originated from ARTstor and various monographs focusing on each artist and their work in the 1960s. Twenty images representing each artist’s work during the Pop Art era were curated and ingested into ATLAS.ti. The Pop Art era was compromised of artists creating work from the late 1950s to 1970. Lawrence Alloway coined the phrase

“Pop” in 1958 to describe the movement to and enjoyment of mass-culture. The artwork during this time distinctly resembled the “effects” and “artefacts” of mass-culture. The artists who produced work that tended to reflect popular, gimmicky, or glamourous subject matter that appealed to mass audiences [Shanes 2009].

Roy Lichtenstein (1923-1997) came on the Pop Art scene in the 1960s with his comic-strips and iconic Ben-Day dot screens reflective of commercial printing [Van Wyk 2013]. His work during this movement was influenced by commercial art, war-time imagery, and romance, but lacked the innocence of his contemporaries such as James Rosenquist, Andy Warhol, and Claus Oldenburg [Tomkins et al 1988]. Some of his imagery did lean towards the consumer culture with *Hotdog* (1963), *Sponge II* (1962), and *Trigger Finger* (1963). His later work explored his versions of Picasso, Cezanne, and Monet. 9

James Rosenquist (1933 -) is best known for his large sized artwork portraying illustrations of politics, celebrity, and consumerism in society in the 1960s. As a former billboard painter in the 1950s, Rosenquist depicted movie stills featuring Marlon Brando, Elizabeth Taylor, and products such as Coca Cola, larger than twenty-five feet high. The skill to scale his work up translated into his paintings when transitioning to an artist. As Rosenquist was finding his inspiration post billboards, he recognized that disrupting the picture plane by creating images so large that they would overwhelm the viewer, might push outward towards the onlooker [Rosenquist et al 2009]. His work developed through collecting images from magazines, advertisements, and photographic reproductions pinned on his studio walls. As he utilized his background in billboard advertising plus social and political imagery, his early work coincided with the Pop Art movement. Notable work includes *Marilyn Monroe* (1962), *President Elect* (1960-61), and *Two Spaghetti* (1963). As time progressed his work became more distinct and his methods broader as he continues his work today [Hopps et al 2003]. 10

A Study to Code Images in ATLAS.ti

ATLAS.ti is powerful computer-aided qualitative data analysis software (CAQDAS) with the benefit of tracing and documenting the analysis process that can be modified within the software [Friese 2014]. This software can be used to assist the researcher in developing themes, stories, and visual attributes through qualitative notation. The efficiency of the software allows the researcher to curate images, text, and audio in one virtual environment. The interface provides the researcher with a left hand document pane to retrieve the image and a right hand pane to display coding. Up to four document panes can be displayed side by side to analyze images. Large image files are unnecessary for use in ; Freise suggests that 1024 x 768 pixels is sufficient for getting started. Drop down menus are provided across the tool bar to access documents (images), quotes, codes, and memos. 11

The program also allows the data curator to store notes, citations, and additional documents to complement the coding analysis and categorization of codes. ATLAS.ti uses the hermeneutic unit (HU) to capture the researcher’s project files. The HU is the researcher’s project within the ATLAS.ti environment [Solutions4U n.d.]. This includes the actual data or documents ingested through ATLAS.ti, in addition to memos, notations, and codes. The data sets are stored locally on the researcher’s own hard drive, but ATLAS.ti can quickly generate the content into the navigation panes. This tool can assist a researcher in complex data interpretation and provide a comprehensive environment to create and curate image sets. 12

Themes Revealed

ATLAS.ti was utilized to reveal themes and compare image codes against the set of images. In this study, 98 individual codes were created based on the visual interpretation by the researcher and the paintings’ attributes observed from a two-dimensional standpoint. Applying visual grounded theory allows the paintings to reveal intricacies through in-depth observation. Static images appear to be flat, but upon further investigation they change when the eye sees more after continuous viewings [Elkins 1997]. Identifying the richness and vitality in imagery does not have to yield to interpreting the image, but can contribute to unfolding the surface area of experience [Marks 2002] [Rose 2012]. Examining the visual brushstrokes of a painting can be beneficial to interpreting and researching artwork. 13

The 98 codes identified during the image investigation manifested from visual observation and visual grounded theory

techniques. The researcher drew upon their personal familiarity with the artist and observed attributes from the data set of paintings. Additionally, the following observational techniques and questions adapted from Charmaz were used to review the image set [Charmaz 2014, 53]: 14

- What is the purported purpose of this image?
- How was the image produced? How is the image constructed?
- Who was the image intended for? Who is the audience?
- How does the image reflect the artist's/artists' assumptions?
- What is the structure of the image, and which categories can you discern from the image?
- Does the image reflect social, historical, or organizational contexts?
- Are there unintended/intended information and meanings in the image?
- What kind of comparisons can you make between images?

Using Charmaz's observational questions, a series of codes were developed and applied to the image set by assessing each image individually. With grounded theory, the researcher is invited to observe and code based on their own personal interpretation, allowing the data to dictate the code. As a former student in the fine arts, prior knowledge of the painting techniques, attributes, and context of these two artists were applied to the coding process. The medium for each artwork was captured from the paintings' description. For undergraduate students, who may not have expertise or past knowledge of an image, pursuing the coding through a combination of visual first impressions (coding for color, object, and weight of line) and scholarly research would be appropriate as an assignment. 15

An example of the software analyzing the image, *Necktie*, is demonstrated below [Rosenquist 1961]. This representation illustrates the ability to select portions of an image and continually code and even overlap codes if needed by the researcher. The right hand side of the image displays the codes. The researcher simply right clicks the image and the coding option appears in a quick links drop down list. The "Open Coding" option allows the researcher to create codes as they review the image. Once a code is developed, the researcher can easily continue to select the same code from one image to the next within the Coding tool, under "Select Codes(s) from List." A box is drawn on the selected area of the image, and then a new or existing code can be identified and attached. 16

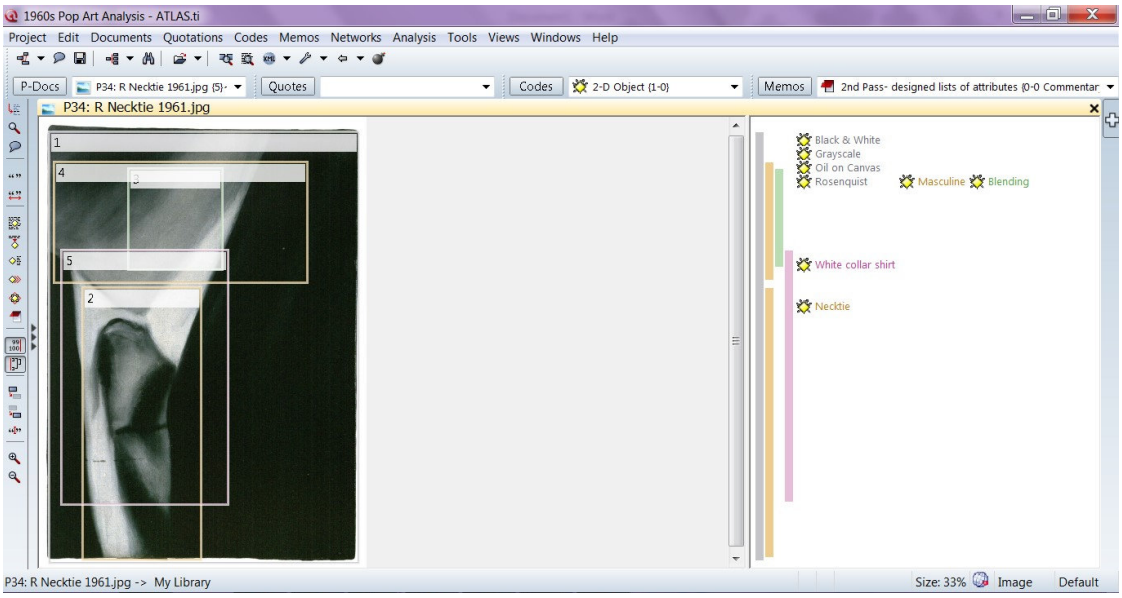

Figure 1. James Rosenquist, *Necktie*, Oil on Canvas, 1961, 14 x 10 inches Art © James Rosenquist/Licensed by VAGA, New York, NY

Below is a table of the initial codes accompanied by the total number of code occurrences for each attribute for both Rosenquist and Lichtenstein. This list is not exhaustive, as the image is in the eye of the beholder, and the potential for creating more codes is possible. For the sake of brevity, the list is more than useful to show the benefits of coding 17

imagery with qualitative software.

Initial Codes	Lictenstein	Rosenquist	Total Code Occurrences
2-D Object	0	1	1
3-D Objects	0	4	4
Acrylic on Canvas	0	1	1
Appliance	1	1	2
Appropriation	6	1	7
Ball	1	0	1
Ballet	0	1	1
Basket	0	1	1
Bathing Suit	1	0	1
Ben-day dots	10	0	10
Beverage	1	0	1
Black & White	5	1	6
Black Outline	15	0	15
Blending	0	11	11
Boat	0	1	1
Bobby Kennedy	1	0	1
Brushstrokes	1	0	1
Cake	0	2	2
Chicken	1	0	1
Circle	0	1	1
Coffee	1	0	1
Composition Notebook	1	0	1
Consumerism	8	12	20
Conveyer Belt	0	1	1
Cups	0	1	1
Detergent	1	0	1
Dishes	0	1	1
Domestic	2	1	3
Donald Duck	1	0	1
Ear	0	1	1
Feminine	5	8	13
Fighter plane	1	0	1
Fish	0	1	1
Fishing	1	0	1
Food	2	5	7
Frosting	0	2	2
Grayscale	1	12	13
Green	0	5	5
Gun	1	0	1
Hand	6	4	10

Hard Edged	17	5	22
Hockey Puck	0	1	1
Hot Dog	1	1	2
John F. Kennedy	0	1	1
License plate	0	1	1
Lichtenstein	20	0	20
Light bulb	0	2	2
Magna Acrylic on Oil on Canvas	1	0	1
Magna on Canvas	4	0	4
Marilyn Monroe	0	1	1
Marquee letters	0	2	2
Masculine	4	5	9
Meat	1	0	1
Mickey Mouse	1	0	1
Nail	0	1	1
Necktie	1	1	2
Offset lithograph on white coated paper	1	0	1
Oil and Graphite on canvas	1	0	1
Oil and Magna on Canvas	2	0	2
Oil and spray enamel on canvas	0	1	1
Oil and Synthetic polymer paint on canvas	2	0	2
Oil on Canvas	9	11	20
Oil on canvas and attached shaped panels	0	1	1
Oil on canvas and chrome steel, with electric lights and sockets	0	1	1
Oil on canvas with bamboo and string	0	1	1
Oil on canvas, with motorized conveyor, painted canvas conveyor belt, painted fabric, and wood	0	1	1
Oil on canvas, with painted plastic, wood, metal, and string	0	1	1
Oil on canvas, with plexiglass strips and acrylic letters	0	1	1
Oil on Masonite	0	1	1
Open Mouth	5	8	13
Pants	0	1	1
Picnic Table	0	1	1
Plates	0	1	1
Political	2	2	4
President	0	1	1
Primary Colors: Red, Blue, Yellow	6	9	15
Red	5	8	13
Red Lips/Lipstick	3	6	9
Relationships	1	0	1
Rib	1	0	1
Rising Sun	1	0	1
Rosenquist	0	20	20

Signage	0	2	2
Spaghetti	0	3	3
Speech Bubble	5	0	5
Sponge	1	0	1
Spool	1	0	1
Spoon	0	1	1
Tears	1	0	1
Toast	0	1	1
Twine	1	0	1
Typewriter keys	0	1	1
Vehicle	0	4	4
Wallet	0	1	1
Washing machine	1	0	1
Water	4	0	4
White Collar shirt	1	1	2
Yellow	6	3	9
TOTALS:	**184**	**194**	**378**

Table 1. Individual Image Codes

18 The individual image codes were developed through grounded theory techniques using the researcher's knowledge of the images in context of technique and societal impact, the painting processes, and the information provided by the artist. This exercise can be described as "aesthetic education," defined by Smith as the "aesthetic perception, experience, and judgement of the arts…within the context of arts in general and philosophical aspects" [Smith 1989, 4].

19 ATLAS.ti controls multiple codes and themes by allowing the researcher to categorize codes by shared similarities into Code Families. The researcher can evaluate their initial coding and then disperse the individual codes into overarching themed categories. Code occurrences are tabulated based on the number of applications of the codes applied to the images; a quantitative representation of the coding analysis. The Code Manger below demonstrates the categorization of creating code families. Individual codes are created first through initial evaluation and interpretation of the images. Then the researcher can determine similarities and differences by grouping the single codes into complementary Code Families. The Code Manager also provides the code occurrences, or number of times the single code was used in the evaluation of the image set.

20 Further interpretation and distribution of codes revealed eight code families, categorizing the 98 individual codes in Table 1. The individual codes were evaluated for common themes and trends to develop the following code families based on similarities. A definition follows each code family.

- **Artist:** The creator of the painting
- **Color/Hue:** The colors of paint used and applied to the painting in the image
- **Famous Figures:** Celebrities or politicians, famous figures of noted value in culture and society
- **Gender:** Interpreted Masculine or Feminine theme based on societal norms
- **Material:** The type of materials, medium, paint and process used to construct the artwork
- **Objects:** A broad group to include the visual objects present in the artwork
- **Social Context:** An observed social or cultural environment or setting
- **Style:** The appearance of an intentional design or approach to painting

21 These code families or overarching labels contain themes interpreted by the author. The technique of using grounded theory permits the researcher to conduct their code creation, categorization, and labeling based on their perception and

experience with an image.

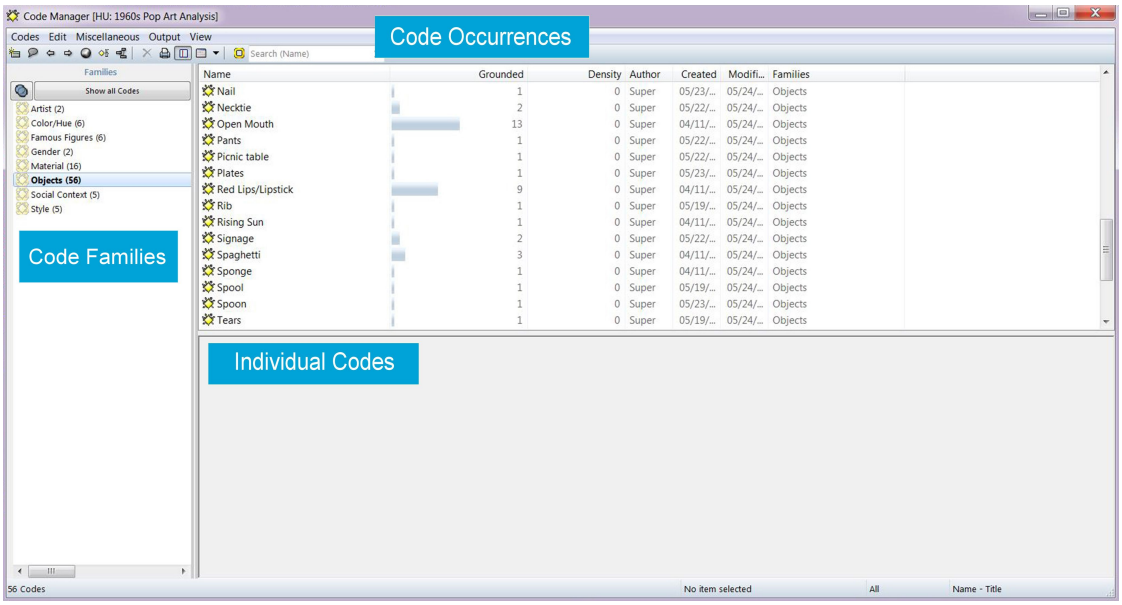

Figure 2. Code Manager

In total, 378 code occurrences, how many times the individual code was applied to an image, were recorded based on the coding interpretation and categorization of the image set. The following graph represents the 98 individual codes compared to the eight code families (Figure 3). 22

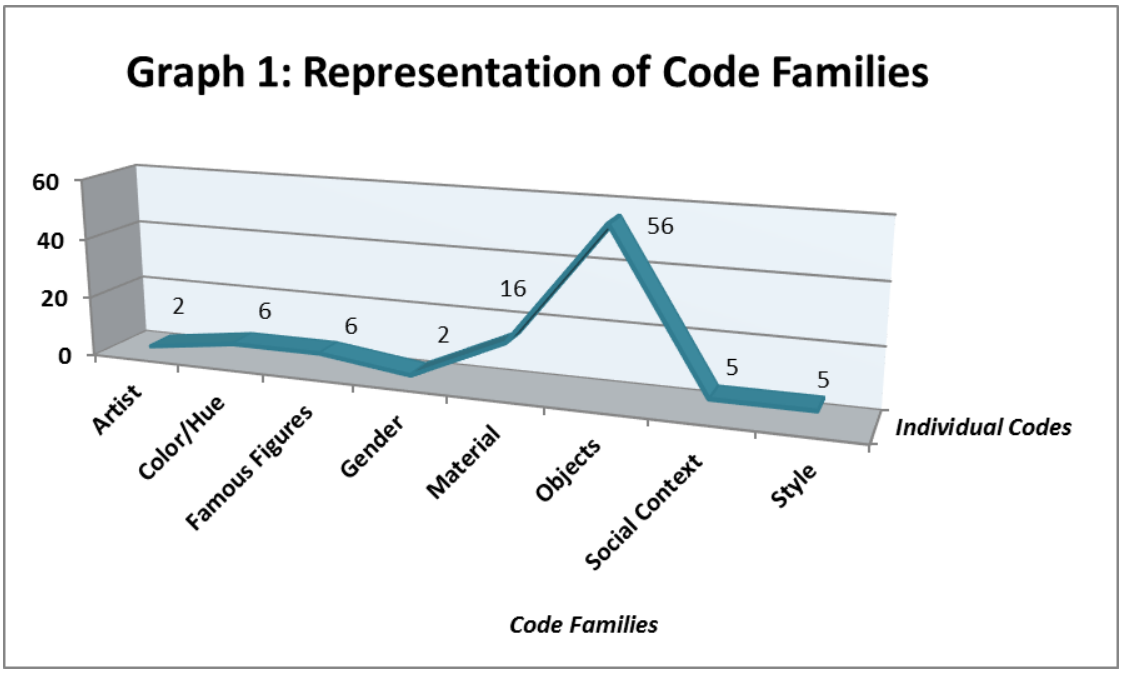

Figure 3. Representation of Code Families

Figure 4 below illustrates the frequency of how often the individual codes were applied to the image group in comparison to the eight code families. 23

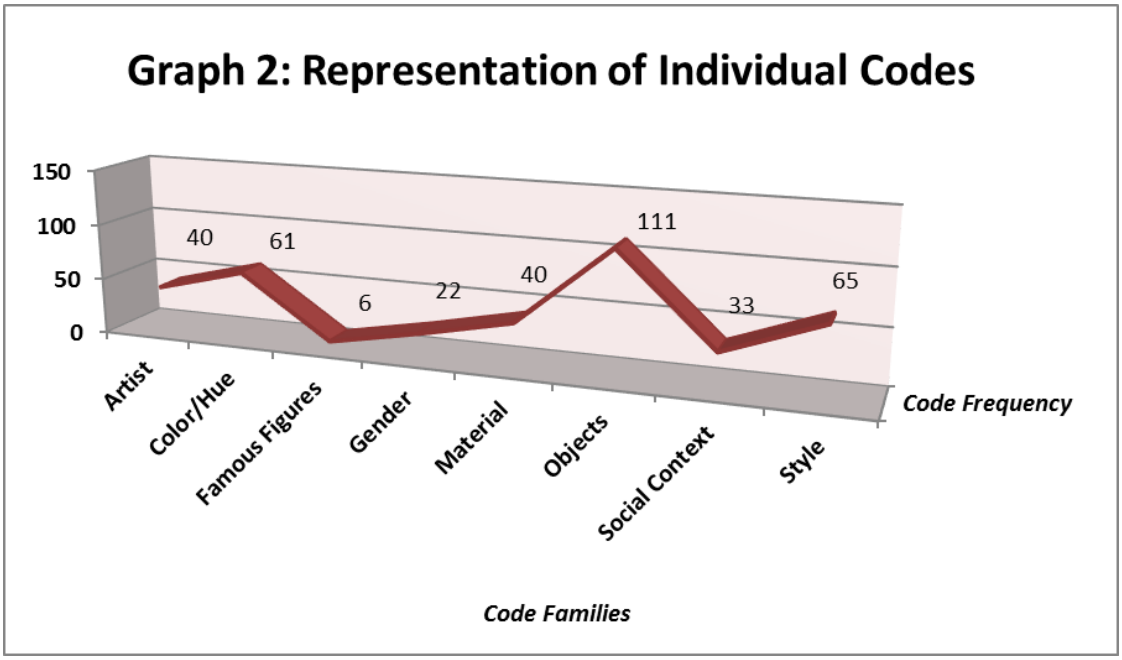

Figure 4. Representation of Individual Codes

In both graphs, “Objects” has the highest frequency for representing the most individual codes developed and applied to the image set. “Objects” was created as a code family to include the myriad of common household or environmental items depicted in Lichtenstein and Rosenquist’s work, such as a stool, spoon, or food. In Figure 4, “Color/Hue” was coded in 61 occurrences, which demonstrates how a researcher can record the precise variations of color in a painting through qualitative software, although with reproductions of artwork the integrity of the medium can be limiting as a digital copy. “Artist” is verification that a total of 40 images were used based on two artists artwork. The codes for “Material” were gathered from the descriptions of the images themselves. These descriptions generally accompany the images when printed in a monograph or digitally reproduced. The codes for “Material” included 16 individual codes applied to 40 images. “Famous Figures”, like “Objects”, are the actual presence of celebrities or politicians, people in society that are recognizable which accounted for six individual codes that only occurred once in the image set. “Gender” was interpreted as a masculine or feminine theme based on societal norms in the art work understood by the author. “Gender” was noted in 22 code occurrences and “Social Context” was present in 33 code occurrences. 24

The Query tool allows the researcher to compare and contrast the differences, similarities, and themes within their data to quantify observational categorizations. The researcher can visually display the semantic relationships between codes, memos, and documents utilizing the Network tool. Memos, another feature, are essential to maintaining notes, research, and citations alongside the qualitative data set. Memoing creates a paper trail for analytical process as well as documenting research decisions and rationales for making those decisions along the way. Digitizing, mapping, and keeping everything on file assists with organizing research content [Clarke et al 2015]. An example of the Query Tool is below with the codes that originated from this image set. 25

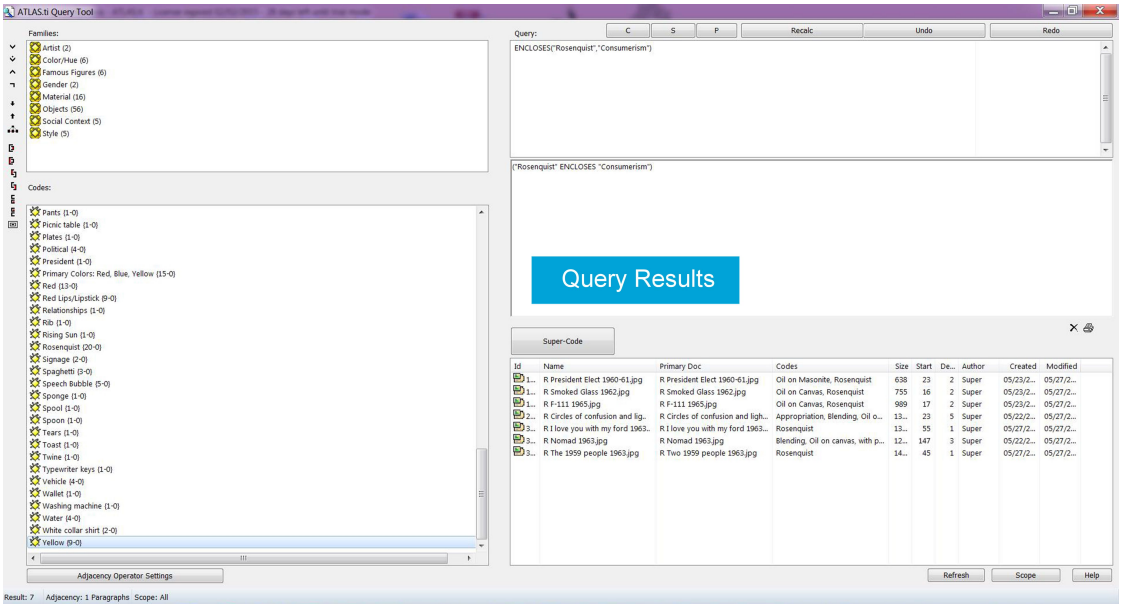

Figure 5. Query Results

Through this tool, the images in the set were evaluated and categorized on a more granular level and recorded based on visual first impressions. Comparing individual codes in the Query Tool, revealed that seven images created by Rosenquist contained consumerism. The depiction of an open mouth was present in 13 images in total amongst the two artists. A masculine or feminine theme was present in 22 images collectively by Lichtenstein and Rosenquist. The Kennedy family was prominent in two of the images under the code family “Famous Figures”. These visual observations can assist students when theorizing the purpose and intention of the painting. These artworks may have been viewed in a different context when first presented to patrons in the 1960s, but modern day observation will inevitably be seen through the eyes of a different generation. These are but a few examples of how combining a powerful tool can assist with visual research and discovering the extensive context of an image. 26

Impact for Humanities Scholars, Researchers, & Students

The next step for researchers is to utilize this data to draw conclusions on the two artists investigated through this study, or through their own study of selected imagery. For instance, Rosenquist’s work encompasses the 1960’s era and portrays images of political personas and common everyday household objects. Lichtenstein similarly utilized objects native to consumerism and depicted iconic cartoon characters. How is this different from a traditional visual inspection of artwork? Observing artwork in person is the ideal method of inspection, but in less urban university settings, reproductive surrogates can be a more than satisfactory substitute. As art history courses are taken online for distance education, this method of research can be useful for students studying outside of a physical classroom. Adapting the art history curriculum beyond physical engagement to include virtual observational and qualitative analysis not only introduces the students to digital images, but also to an analytic process to evaluate the objects. Through using a qualitative analysis tool, scholars, researchers, and students can develop a new technical skill set and utilize the expansive image archives available via web or through the library’s databases to analyze imagery. 27

Implications of Study

This study allows for alternative methods of analysis and engagement with image collections. As libraries subscribe to proprietary image collections or develop archives from digitized collections, combining a qualitative data analysis tool with digital images can allow for increased engagement in or out of the classroom. Padilla attributes unusable interfaces as a barrier to manipulating humanities data. Library interfaces are generally geared towards engaging with data through page turners and image zooming designed towards a single item [Padilla 2016]. Many digital image collections only offer the object or image as a surrogate to the original, but utilizing a qualitative analysis software can enhance the 28

experience the student has with the object. Similar to the artist critique in the studio classroom, students potentially can engage with their instructor on the constructs and attributes of an image set selected for an assignment. Students can develop and critically assess an image through a method of visual exploration and one word or short phrase coding to collect and consolidate their image notations. These image notations can then be used to write detailed analyses of the artwork or images. Instead of viewing the image as one flattened file, the exercise is progressed to strip the layers and construction of the digital image apart for greater critical thinking and analysis. Instructors can engage students in discussion on their interpretations of the artwork, rather than assume the students' opinions and interpretations are concurrent with established opinion. Critical discourse can be applied to expand students' perceptions through analysis and evaluation, rather than popular opinion [Leshnoff 1995].

29 Lazo and Smith conducted a small study to assess how 17 year old students could develop critical thinking skills through images. Teachers and students were selected purposively for this study, with one teacher stating, "We look at images to create a foundation, analysing stylistic approaches, intentions and meanings. Then students can springboard from that to really create their … own language through a broad range of visual arts making" [Lazo et al 2014, 103]. The curriculum encouraged a student-centered model, allowing the student participants to brainstorm self-selected subject matter and develop their own artistic creations through writing and hands-on assemblage. The learning environment was created to encourage exploration and discourse despite students' unfamiliarity with the images, processes, or artworks. The results revealed that students took a deeper look at the image as a creator and as the viewer, thinking more critically about the formal principles and the philosophy behind creating an image.

30 As evidenced by Lazo and Smith's study, imagery was contextualized to determine the implications for critical thinking in a visually enriched curriculum-based environment. In combination with a qualitative analysis tool to propel students into a virtual environment to categorize and assess imagery, analysis of visual elements, principles, and the perceptions through the eyes of the creator or artist can be investigated. Francis Alter describes students as autonomous thinkers when evaluating artwork. Alter argues, "…there is an expectation that students will seek reasons for, and provide evidence to support, their own response to art" [Alter 2011, 12]. Since some students may not have access to the original artwork hanging in a museum, digital surrogates of the artist's work are more easily obtainable through museum websites, databases, or localized digital collections.

Engagement with Library & Digital Collections

31 Digitization of imagery, text, audio, and video has allowed for a wider reach of participation and engagement between patrons and online collections. Databases such as *Artstor Digital Library* have provided endless digital image collection in humanities, performing arts, fine arts, plus a wide scope of content in sciences, technology, and industry. In addition to proprietary content, archives, museums, and libraries have digitized collections and made them freely accessible online. The Library of Congress provides the Prints & Photographs Online Catalog (PPOC) with a broad range of popular prints, drawings, and architectural drawings in an international scope. New York Public Library also has digitized over 600,000 items from their collection for public use. Museums have also provided online access to collections for more interactivity with patrons through the web. The Philadelphia Museum of Art has an extensive collection of art, tapestry, and objects online for viewing and educational use. With generous open access and online entry into the vaults of libraries, museums, and archives, educators can utilize the vast quantity of digitized collections as a curriculum source for teaching. Coupled with qualitative analysis software, the student can work solely in an online environment whether physically in the classroom or taking credit hours through distance education.

Coding to Encoding Images

32 The author's study to analyze and categorize attributes from a curated data set of Rosenquist and Lichtenstein paintings is similar to notation and markup when coding and encoding images in a digital environment. Many universities and research centers are developing their own digital repositories from physical collections transformed into digital surrogates. Green and Courtney conducted a qualitative study with humanities faculty members on their perceptions and use of digital collections to inform Project Bamboo. The researchers found faculty were most concerned with the following functionalities when utilizing a digital image collection: downloading capabilities, editing

tools, metadata, usability and user-friendly interfaces, and searchability. Specifically, Green and Courtney found that there was a greater need for annotation and editing tools. The authors found that, “three core areas of need emerged: tools and analysis, content, and search/discovery and interoperability” [Green et al 2015, 697]. These results attest that better metadata and coding are needed for increased accessibility and usability for faculty utilizing digital collections for research. The introductory process of image analysis through ATLAS.ti and other qualitative software could be used as a preliminary “springboard” and data set to inform markup and metadata of digital image collections.

33 Several researchers have developed or experimented with tools to analyze and assess imagery in a more meaningful and digitally accessible way. Martin Holmes developed *The Image Markup Tool*[1] to annotate and select areas for classification. His tool is designed for novices with little experience that require XML files for image markup. The *Hyper Image Virtual Research Environment* is a toolkit that focuses on hyperlinking (regions of) images and managing complex metadata [Kuper et al 2014]. In addition to textual annotations, similar to coding in ATLAS.ti, this toolkit allows links and external URLs to be created in the analysis process. The software supports linking one image to external data. Kuper and Loebel are exploring the implications for art and art history scholarship, and how this tool can enhance the images context. Planned enhancements include standardized XML format for archiving and processing.

34 Rath conducted a study to evaluate whether TAMS (Text Analysis Markup System) Analyzer and Viewshare were viable tools for data sharing and creation for digital humanities scholarship [Rath 2016]. She found that coding text, images, and video-based files with open source TAMS Analyzer was comparable to other proprietary qualitative analysis software. She concurred that using a qualitative analysis tool, like TAMS Analyzer, supported learning new tools, developing management and workflow strategies for coding projects, and sharing knowledge between the librarian, faculty, and students. Could this exercise then be translated into image encoding into digital collections? The next steps for these tools may be whether they are useful introductions for faculty and students to experience and “play” with coding data before leaping into a digital collection platform. Unfamiliarity with digital tools and computer coding languages could prompt a dissuasion towards participating in a digital collection project. Qualitative analysis tools could be a useful introductory tool to introduce and provide a low-risk setting for scholars to experiment with coding imagery.

Future Research

35 After studying non-textual data for this case study, my intent is to create workshops to introduce and highlight qualitative research tools to humanities faculty and students on the Texas A&M campus. Beyond workshops, engaging in a research study with a Humanities discipline instructor locally or at another institution, would be ideal to trial image data combined with qualitative coding software in a physical or online classroom setting. Engaging in qualitative data analysis will provide new skillsets that enhance faculty vitas and student resumes for the ever-changing job market. Students will be able to demonstrate the curation of images and utilization of image databases through qualitative research and coding. The evaluation of images for research can be used for criticism, interpretation, and revealing similarities and differences amongst artwork and artists or other humanity centric data. ATLAS.ti or other qualitative software can teach researchers to develop their data into a manageable environment to be stored and revisited, past an initial assignment or research project. Likewise, qualitative software allows the researcher to continually contribute and add to existing research. Qualitative data analysis is not manageable solely by ATLAS.ti. NVivo, Dedoose, and MaxQDA offer alternatives and can also be harnessed for qualitative analysis as licenses. AQUAD is sophisticated open source software that can analyze text, images, video, and audio.

Notes

[1] http://wiki.tei-c.org/index.php/ImageMarkupTool and http://tapor.uvic.ca/~mholmes/image_markup/goals.php

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