Domain Analysis Applied to Online Graffiti Art Image Galleries to Reveal Knowledge Organization Structures Used Within an Outsider Art Community

Ann M. Graf

Simmons University, 300 The Fenway, Boston, MA 02115, <ann.graf@simmons.edu>

Ann M. Graf is an assistant professor in the School of Library and Information Science at Simmons University in Boston, MA. She teaches courses on information organization and art and cultural heritage documentation. She researches documentation and knowledge organization practices, both within and outside professional settings.

Abstract: Domain analysis is useful for examination of individual spheres of intellectual activity, both academic and otherwise, and has been used in the knowledge organization (KO) literature to explore specific communities and uses, including web pornography (Beaudoin and Ménard 2015), virtual online worlds (Sköld, Olle 2015), gourmet cooking (Hartel 2010), healthy eating (McTavish 2015), art studies (Ørom 2003), the *Knowledge Organization* journal (Guimarães et al. 2013), and domain analysis itself (Smiraglia 2015). The results of domain analyses are useful for the development of controlled vocabularies, taxonomies, ontologies, metadata schemas, and other systems for the documentation, description, and discovery of resources, as well as for knowledge discovery in general (Smiraglia 2015; Hjørland 2017). This research describes a methodology for the elucidation of knowledge organization systems (KOS) currently in use on image websites that document graffiti, graffiti art, and street art around the world.

1.0 Introduction

Traditional art museums have historically documented physical collections of artworks held within individual institutions. Museums now often digitize parts of their collections for various reasons: for internal documentation to track condition and maintenance, inclusion records for curated exhibits, and insurance purposes, but also more recently to provide electronic access to images of works online for those who wish to view them without traveling to the physical museum or gallery. Graffiti art, in opposition to traditional museum or gallery works, is created on or placed on the streets themselves, in a gallery of sorts largely by and for the public (Austin 2010; Riggle 2010). The works are, therefore, situated outside the monetized structure of the formal museum or gallery and defy, in their situation and means of creation, the power, ownership, and curation ideals imposed by these institutions. As such, they also largely avoid the careful and controlled documentary practices by such institutions (Graf 2018).

This does not mean graffiti works are not documented, organized, and described. Far from it! Hundreds of websites exist that are dedicated to sharing image galleries of graffiti, graffiti art, and street art from around the world. Hundreds, if not thousands, of image galleries also exist on social media platforms such as Instagram, Flickr, and Facebook, where a range of people, from the artists themselves, to professional photographers, casual observers, and even disgruntled property owners, share images of the works online. What is lacking in these extra-institutional collections is consistency in the descriptive depth and the terminology used to describe the processes involved to produce the works and images of the resultant works themselves (Graf 2018). There is even disagreement on what to call the works, as seen by the overlapping and often contested terms graffiti, graffiti art, and street art (Austin 2010).

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The navigational structure and page labels from 241 graffiti art websites were examined to determine the aspects used to organize graffiti art images. Use of various categories of description was tracked across all of these examined aspects of all websites, revealing which were most commonly used around the world. A motivational dichotomy was also apparent, revealing a significant difference in terminology used in "about text" between websites that were determined to be internally or externally motivated. Externally motivated sites are those focused on documentation of graffiti artworks by various artists, while internally motivated sites are those curated by artists themselves with a stated purpose of sharing works to gain commissions, sales, gallery representation, and other forms of direct economic benefit.

The research provides for terminological enrichment of controlled vocabulary tools for use with graffiti art, such as the Getty Research Institute's Art and Architecture Thesaurus (AAT). It also provides a base for the creation of a metadata schema or application profile of a schema already in existence to better document graffiti art images from four broad groups of aspects for description: general, supports, styles, and locations. These groups for description are the starting point for building a taxonomy of terms relating to graffiti art, with special attention paid to the idiosyncrasies of producing artworks illegally and on various (often) publicly seen but privately owned property. This work adds to vocabularies already in use for the documentation of more traditional art forms and gives voice to the graffiti art community and how this community speaks of graffiti art processes and products. The research is also valuable as a methodological example of domain analysis using evidence from the organizational structures of online image galleries.

1.1 Background

Research in knowledge organization (KO) has shown the value of domain analysis to reveal epistemological evidence of community practice, especially concerning language use within and for individual domains. It is useful for examination of individual spheres of intellectual activity, both academic and otherwise, and has been used in the KO literature to explore specific communities and uses, including web pornography (Beaudoin and Ménard 2015), virtual online worlds (Sköld 2015), gourmet cooking (Hartel 2010), children's information seeking (Beak 2014), healthy eating (McTavish 2015), art studies (Ørom 2003), the *Knowledge Organization* journal (Guimarães et al. 2013), and domain analysis itself (Smiraglia 2015). The results of domain analyses are useful for the development of controlled vocabularies, taxonomies, ontologies, metadata schemas, and other systems for the documentation, description, and discovery of resources, as well as for knowledge discovery in general (Smiraglia 2015; Hjørland 2017). This research describes a

methodology for the development and enhancement of knowledge organization systems (KOS) used to document graffiti, graffiti art, and street art by way of photographic images of the works.

The academic literature on graffiti is vast and comes from a variety of viewpoints, including that of art, art history, sociology, criminology, urban studies, and history, to name a few. While none, save Gottlieb (2008), discussed below, go into detail about aspects for documentation, there are several authors that have written about graffiti art that have been extremely useful to support this research and are often cited across various disciplines of study. Ross (2016) provides a glossary of graffiti-related terminology that includes several definitions for types and styles of graffiti (475-79). Austin (2001) focuses on New York City and the graffiti wars among graffiti writers, and eventually between writers and law enforcement, resulting in the city-wide campaign to buff the subway trains of all graffiti under the auspices of mayor Ed Koch in the late 1970s and 1980s. Austin provides a rich history of the art form, as well as the sociological and political underpinnings and responses to what many viewed simply as vandalism.

Riggle (2010) addresses graffiti and street art from an arts perspective and eloquently forefronts the importance of the street itself in the production and reception of the works. Wacławek (2011) explores the evolution of graffiti from its modern beginnings to the appearance of street art as a secondary art form. Her writing explores the differences in these two terms and the overlaps they engender. Both graffiti and street art share a history and many commonalities, and the labels are very often used interchangeably by those only casually familiar with the art forms. Austin (2010) further articulates a difference between graffiti and graffiti art while MacDowall (2019) highlights the often antagonistic relationship between graffiti artists and street artists. Schacter (2017) describes street art as a distinct art period, marked by stylistic conventions and classificatory permutations in what has been referred to as the post-graffiti era of the late 1990s and early 2000s. Those within the respective communities will be quick to point out the differences between graffiti and street art, but when examining hundreds of widely distributed and contributed image galleries online, the distinction goes beyond the scope of this research. The image websites explored herein have shared a mixture of graffiti and street art.

Very little research has explored the use of specific controlled vocabularies for use with graffiti art collections, though some authors mention terminology or typologies for the works in their writing. Biaggini (2018) investigated visual interventions, or wall painting, in Buenos Aires and formed a very broad set of categories for the works, including muralism, stencils, tribute works to those who had died, graffiti, educational murals, and works relating to the war

of the Malvinas Islands. These reflect categories found in the current research, as well as categories specific to the location studied. MacDowall (2019) excavated the top hashtags relating to graffiti on the social media site Instagram, though these were only terms applied to graffiti in general, a typology of terms that could be taken to mean graffiti. He notes coherence with the term street art that is not afforded to graffiti, the latter which has numerous variations in use around the world on Instagram (graffiti, graff, instagraff, etc.) (30). Gottlieb (2008) approached graffiti from a library and information science perspective for the purposes of developing a classification that could be used with collections of graffiti art images. Her work is based upon the theories of Erwin Panofsky and interviews with several graffiti artists, used to gain insight into various named aspects of graffiti form. Her graffiti styles classification expresses names for fourteen styles and aspects such as legibility, number of colors used, symmetry, letter overlap, outlines, and fills. While interesting as an example of classification, it is not known whether this system has ever been applied to a collection of graffiti images. It remains an example of research into graffiti art styles and dimensions of the artworks for a generalist art audience but does not focus on the particular aspects of documentation used within the graffiti art community itself.

Within library and information science, and KO in particular, there have been several studies of user communities and how they each address organization of collections and choices of terminology for description. Among these, Lee and Trace (2009) researched those who collect rubber ducks, revealing categories of information for aspects such as materials, value specifications, series, years, companies, and countries. Hartel (2010) examined the information organization behaviors of hobbyist gourmet cooks and revealed facets of entities used to organize information, features, spaces, and processes. Cho et al. (2018) discussed the need for distinct anime genre facets, identifying nine facets and 153 individual terms for use in describing anime genres. Summarizing research on the online image platform Flickr, Stuart (2019) discusses how images are organized by the site using metadata embedded within images as well as external organization by the user application of hashtags, the addition of titles, and descriptive text. Graf (2016) applied domain analysis to graffiti zines from the 1990s and 2000s to reveal process and product terminology used within the graffiti art community, then compared the resultant term list with available controlled vocabulary within the Getty Research Institute's AAT. At the time, there was only a 15% match between the top twenty community terms and AAT vocabulary, though by 2018 that percentage had jumped to 70% for the same list of terms after the Getty added thirteen more of the original twenty terms to the thesaurus. This in and of itself indicates the popularity of graffiti art and the value of terminological studies to highlight specific art community descriptive practice.

Graf (2018, 2020) expanded upon this research and augmented the findings with the results of interviews with graffiti website curators. The works of Graf, Cho et al., and Stuart, like that reported herein, explore what named aspects are already in use for organization and make distinctions among them. Benedetti (2000), in writing about vocabulary used to describe folk art, emphasized the importance of allowing those on the edges of the institutional art world to describe their works using their own vernacular, which helps engender trust between what may be considered art insiders and outsiders. This is a concept easily transferrable from folk art to graffiti and street art, also on the fringes of the traditional art world.

Alongside the benefit of nurturing trust from marginalized or otherwise non-institutional communities of practice is the acknowledgement that descriptive practices and vocabularies are often not known, not researched, overlooked, or otherwise foregone in favor of defaulting to controlled vocabularies already in common use. This discounts what Terras (2010) refers to as intuitive metadata, which she explored in online collections that were curated by non-professionals. The website collections in her study share challenges also inherent in graffiti image collections. Amateurs in her study were those curating website collections not associated with formal institutions and organizing images of objects not always owned by the curators, forcing them to rely at times on data supplied by contributors. Such data are often incomplete, unreliable, unverifiable, or entirely absent, which renders description challenging. This mirrors the experience of numerous graffiti art image galleries in this study, many of which rely on contributed images to fill out their collections. The excavation of ontological formation on this and similar websites can be used to guide the development of useful website architecture, metadata schemas, vocabularies, and other KOSs to guide users of such websites in their search for and use of information (Srinivasan 2005). Further, such research adds to the discussion of value placed upon professional curation over and above what Dallas (2016) refers to as curation in the wild, and the ongoing need to address the relationships among professionals and non-professionals (the latter who often have the most intimate experience with their collections), controlled vocabularies and fluid, organic ontologies, and with curators of information and users of information.

1.2 Methodology

Despite a lack of institutional documentation and organization of graffiti art images, a plethora of online galleries exist that are managed by independent groups and individuals around the globe. To choose a selection of these galleries for

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examination, one of the earliest, largest, and most popular websites for graffiti art images was chosen as a source for all other websites in the study. Art Crimes (graffiti.org) was started in 1994 and "was the first graffiti site on the net" according to their about page information (https://www.graffiti.org/index/story.html). The site, a volunteer and collaborative effort, gathers and shares information about graffiti and graffiti art as well as curates a large image collection and links to hundreds of other graffiti websites. The list of website links from Art Crimes became the source of all the websites used as a sample in this research, as well as an individual site included in the overall list of websites. It should be noted that the words website and site are used interchangeably herein.

In 2017, Art Crimes included a list of 709 links to other graffiti-related websites. Each of these websites was visited to determine appropriateness for the study. Sites that were dead, i.e., no longer available, used navigation labels and main text solely in a language other than English, were completely commercial (such as sites dedicated to an artist's professional work for sale), were only links to a social media site such as Instagram or Flickr, or were otherwise not sharing image collections of graffiti and graffiti art were excluded. One link was to a subpage of Art Crimes itself and was, therefore, excluded as well. Social media sites such as Instagram and Flickr were excluded from the study because of the structures these platforms impose on the size of images (Instagram) and on the ability to organize images, galleries, and sub-galleries (Instagram, Flickr). Once this initial examination of all 709 links was complete, 241 websites remained for inclusion in the study. Table 1 provides a breakdown of all sites examined for inclusion.

Websites	Explanation
241	Live sites included for study
318	Dead, empty, or moved
64	Other languages
57	Artist's professional site (not graffiti or street art)
20	Not relevant (music group, advertising, etc.)
8	Other social media only (Flickr, Instagram, etc.)
1	Art Crimes sub-page, not website

Table 1. All websites examined for inclusion in the study.

Each of the 241 websites was then examined for explanatory text and navigation label text. Relevant text from the home page of each website, as well as any text from an about page or a page speaking about the history and/or the purpose of the website, was manually harvested and copied into an Excel file. Navigation labels were usually found on the home page of the website, but further exploration sometimes revealed deeper structure with subpage labels, most often for more specific division of image galleries. The labels given to

pages on the websites are indicative of aspects for organizing images of graffiti and graffiti art within this study and were also copied into the Excel file.

Once all of the data described above were collected, they were imported into QDA Miner software for qualitative coding. As the coding progressed, evidence of two top level categories appeared, one for description of the websites themselves, and the other for description of the work images featured on the websites. After all data were coded, the category relating to the websites themselves was divided into two sections, one for general website description and the other for links to other media, such as associated Instagram, Flickr, or Facebook feeds. This category and its sections will be described briefly. The other category consists of information about the organization of the work images themselves, and is the main focus of this report.

2.0 Results

2.1 The categories

The coding developed organically, soon evidencing two main categories of navigation labels: those that describe aspects of the websites themselves and those that are used to organize image galleries of graffiti art, representing the actual works. This is the first main division in the complete list of codes. It is important to note that within the latter category, images of works are examined and not the actual works themselves. This is an important distinction to make and impacts the creation and application of metadata. In formal systems for art documentation, such as the Visual Resources Association's *Cataloging Cultural Objects* data content standard, clear distinctions exist between a work and an image of a work and how to link records of each together while avoiding confusion (Baca et al 2006).

While the focus of the research is to discover which aspects of the works are being used as divisions for organization of the image galleries, the data come from the navigation labels, some of which do not speak directly to the works or their images. These, therefore, were not simply ignored but were gathered into their own separate category and further subdivided into the two sections that will be discussed briefly. The larger category of codes, those that relate to aspects of the works as reflected in their images, remain the focus of the work reported herein.

To make the structure of the following results easier to understand, the coding scheme is summarized in graphic form in Figure 1. Each of the two large categories of codes are further divided into sections, which in turn are subdivided into a series of codes representing aspects, and herein referred to as facets. It is noted that the term "facets" will be used in this research in a descriptive sense to denote aspects

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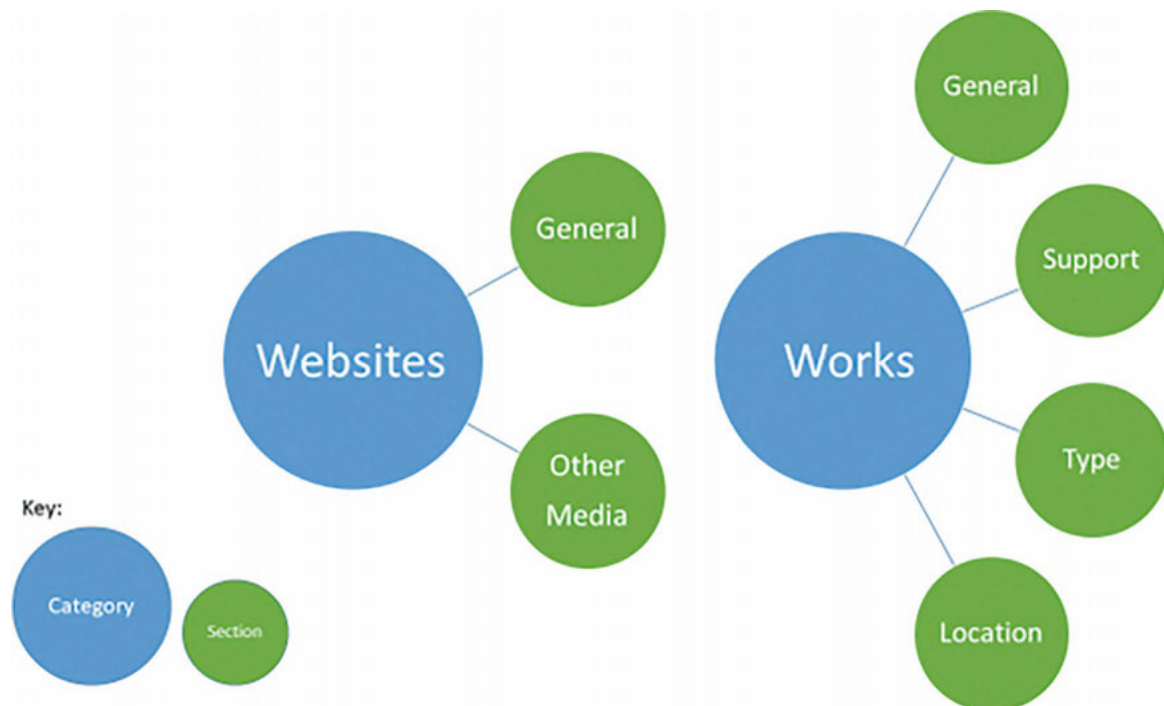

Figure 1. Coding hierarchy structure, indicating two categories and their individual sections.

or groupings and is not intended, at this time, to reflect parts of a faceted classification.

2.1.1 The Websites category

The Websites category pertains to navigation labels not directly about the image galleries or works but rather about the sites themselves. This includes information about what is offered on each site apart from images and includes about pages, contact information, shopping, forums, associated media, and videos on various topics. There are two sections to this category, one for general website information and one for links to other media. The complete breakdown of this website category and these two sections can be seen in Table 2. The table indicates the codes applied to each section of the websites category, as well as how many times individual codes were applied across all 241 websites, what percent this count represents of all codes applied, the number of sites that employed this type of navigation label, and the percent of all websites that employed this type of navigation label. The tables in this report are each arranged similarly, listing individual codes (also referred to as facets) in descending order from most sites to least sites warranting each.

The two most commonly encountered sections of the Website category are for contacting the website curators ("contact") and for reading more about the site itself ("about"). Visitors to the websites can also often shop for merchandize that either advertises or supports the sites, view videos of interviews with artists or read transcripts of interviews, read disclaimers from the website curators (often pertaining to the illegality of some of the works featured on the site), contribute graffiti art images to the site (commonly referred to as flix), or participate in forums, ask questions, learn about how to create graffiti art of various types, and subscribe to updates posted to the site. A limited number of websites featured a user poll, soliciting opinions from visitors, and even fewer sites, only two out of the 241, offered a glossary of terms. The OtherMedia section indicates when a website offered a place to list links to other related websites, or links to associated social media accounts, a blog, or a published book for sale pertaining to the site and its activities. It was common for a site to have a place to provide links to other graffiti art websites or online outlets where graffiti art supplies can be purchased. Many sites provided links to associated social media sites, with Facebook and Instagram the most commonly referenced. While this category describing the websites does not speak directly to the works in image galleries, it provides valuable information that can be used to further illuminate the commonalities across graffiti art image collections, their goals, users, online presence, and organization.

2.1.2 The Works category

The other overarching category of codes applied to the data is that related to the organization of graffiti art image galleries, or to the works themselves as represented by their im-

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Sites	Count	% of Codes	Sites	% of Sites
Contact	147	0.7	133	55.2
About	145	0.7	110	45.6
Shop	77	0.4	60	24.9
Videos	61	0.3	43	17.3
Disclaimer	33	0.2	26	10.8
Interviews	51	0.3	22	9.1
ContributeFlix	18	0.1	16	6.6
Guestbook	21	0.1	15	6.2
History	18	0.1	9	3.7
Map	10	0.0	9	3.7
MyAccount	13	0.1	9	3.7
Forum	9	0.0	8	3.3
FAQ	7	0.0	7	2.9
HowTo	76	0.4	7	2.9
Subscribe	6	0.0	6	2.5
Poll	3	0.0	3	1.2
Glossary	6	0.0	2	0.8
OtherMedia	**Count**	**% of Codes**	**Sites**	**% of Sites**
Links	107	0.5	90	37.3
Blog	50	0.2	40	16.6
Facebook	12	0.1	10	4.1
Instagram	11	0.1	10	4.1
Twitter	9	0.0	7	2.9
Flickr	8	0.0	6	2.5
Book	8	0.0	6	2.5
YouTube	4	0.0	3	1.2
Pinterest	3	0.0	2	0.8
Tumblr	2	0.0	2	0.8

Table 2. Website category, sections, and codes/facets.

ages. This large category was divided into four sections: General, Support, Type, and Location. Each of these sections is further subdivided into specific codes for facets of the works that are used on the websites to organize images. Each of the four sections will be discussed in detail.

2.1.2.1 Work General section

The Work General section is subdivided into facets for organization that describe features of the works that did not organically develop into separate groups. One could argue for an additional section on time-based codes, such as Year, Month, Day, and Decade, but these were not very heavily warranted so they remain in the General section with other adjectival codes. The application of the Work General codes is shown below in Table 3.

The name of an artist is the most common way that works are organized among the General Work facets. This code was applied 14,439 times across all of the 241 sites and represents 71.2% of all codes used in this study. No other

type of code for graffiti artwork galleries was warranted anywhere near this many times so it is easily seen as a very important way to organize graffiti artworks. The second most commonly assigned code to organize works is the city code, a facet of the Location category, with 1,637 applications in this study. No other codes were applied over 1,000 times. This type of code was applied to navigation labels whenever the name of an artist or crew was used as a link to a gallery of works by that artist or crew. An example from the websites where this code was liberally applied can be seen in Figure 2.

In this gallery page screenshot from website 50mm Los Angeles, there is a list of numerous links to individual gallery pages where images are organized according to criteria represented by the links themselves. The majority of these links listed in the alphabetized paragraph are the names of artists. Interspersed among the artist names are the names of cities (Amsterdam Graffiti), US states (Arizona), countries (Brazilian graffiti, Canadian graffiti), crews (C.U.L.T. Crew, AWR Crew), supports (billboards, boom boxes, bus,

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General Facets	Count	% of Codes	Sites	% of Sites
Artist	14439	71.2	50	20.7
Event	89	0.4	31	12.9
Gallery	49	0.2	29	12.0
Year	227	1.1	27	11.2
New	35	0.2	26	10.8
Old	35	0.2	26	10.8
Featured	27	0.1	20	8.3
Inside	11	0.1	10	4.1
RIP	75	0.4	10	4.1
RatedHigh	14	0.1	8	3.3
Legal	15	0.1	7	2.9
Outside	7	0.0	7	2.9
Month	35	0.2	5	2.1
Color	12	0.1	4	1.7
Day	5	0.0	4	1.7
Decade	8	0.0	4	1.7
Illegal	5	0.0	2	0.8

Table 3. Work General codes/facets.

Figure 2. 50mm Los Angeles gallery page (http://www.50mmlosangeles.com/gallery.php).

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canvas), RIP memorials (Amore (r.i.p.), Ayer (r.i.p.)), and events (50mm Production 01.16.05), among other types of facets. The screenshot only shows through the beginning of the letter "c," but on the live site continues all the way through the alphabet down the page. This image also illustrates the types of navigation labels that were collected and coded during the research. It can be seen that while fifty sites used this type of facet for organization of graffiti artworks, it was used by some sites several hundred or more times for various artists. The bigger the website, the greater the number of artists and works represented. Some sites are dedicated to works by only one artist or one group of artists, referred to as a crew. For sites focusing on one artist, it would not make sense to use the name of the artist as an organizational tool, though sites focusing on an individual crew do use the members' names to indicate when an individual created a work or was responsible for the design of a crew work.

Named events are also a way that graffiti image galleries are organized. Images from annual or one-off festivals are often gathered together on a page of their own. These events can be important markers in the evolution of the art form that bring together disparate artists to work near each other or together on pieces, share styles and techniques, and gain knowledge and insight into local cultures. Smaller events often highlight local styles and are then shared globally in event galleries. The Gallery code was applied when a site displayed works from or featured in a formal gallery show. These are sometimes gatherings of works by one artist, or many, sometimes on canvas or inside walls, and sometimes featuring works on the streets, yet curated through sponsorship by a gallery.

Going down the list, works are often organized by year, most often on sites that are dedicated to the works of one artist or crew. This provides a valuable view of an artist's development over time as easy comparisons can be made between early and more recent works. Codes related to the popular Year facet include Month, Day, and Decade, appearing near the bottom of this section list. The Day code refers to images taken or works created on a particular day, and could at times be related to the Event code, but inspection of individual images would be necessary to differentiate the two. This code was only warranted on four of the 241 sites. The New code was applied when a website had a specific image gallery for works new to the site. This might include things that were produced long ago, but recently submitted or added, brand new works, or anything in between. It does not refer with any consistency to the age of the works themselves. The Old code, on the other hand, more often referred to works that were indeed older, painted earlier in the history of modern graffiti art. These are often used as historical markers, highlighting pioneers in the art form and paying homage to their individual styles. The Featured code has some semantic overlap with the Old code, but is more of a curated look at a particular artist or crew. In image two,

the navigation label "L.A. Legends" can be seen on the website banner for 50mm Los Angeles. This indicates where the Featured code would be applied. This image gallery features works by known L.A. artists and is divided into sections for each, with images and transcribed interviews.

The Inside code was used to represent galleries showing works committed inside buildings or inside other structures. This is sometimes used to differentiate works that are done outside on walls, billboards, and other public-facing structures. The complementary code Outside is used to indicate the opposite, though it was not warranted as often as the Inside code. This is not surprising as graffiti is commonly encountered outside by default. This occurs with the Legal and Illegal codes as well. Most graffiti is explicitly defined as illegal, which becomes the default. The Legal code was warranted three times more often than the Illegal code for this reason. In the graffiti community, legally created works do not carry the same kind of respect as illegal ones. It is much easier to create a beautiful, intricate legal piece because of the ability to work without pressure, in daylight, and sometimes even with financial support. A beautiful and intricate illegal piece garners a lot of admiration from other graffiti artists because of the constraints placed upon the artist to work under pressure, often quickly, and often in the dark and in difficult locations. Using a code such as Legal (or Illegal) is adding important information regarding the creation of the works.

The RIP code was applied to galleries dedicated to particular artists who have died. This may include works by the deceased as well as works by others in their memory or honor. It is common to add the initials RIP after an artist's name when they die. In this way, some navigational labels were coded for an artist name as well as for RIP. Further research could differentiate between works that are by deceased artists and those created in honor or memory of deceased artists. The RatedHigh code was only warranted on eight websites in this study. To use this type of code, a website had to offer some kind of user ranking system, either all the time or during specific open periods on the site. Users can submit their favorites in this way and the website can choose to use some kind of cut-off in ranking to determine which works can be gathered for this purpose. The Color code was only used on four sites and does not represent a popular way to organize works.

2.1.2.2 Work Support section

The second section of the Work category is that for various kinds of supports upon which graffiti art is created or placed. Sometimes works are created in situ, while other times they may be created in a studio or elsewhere and moved to another site and mounted, glued, screwed, sewed, or otherwise affixed.

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Support Facets	Count	% of Codes	Sites	% of Sites
Canvas	109	0.6	77	32
Walls	107	0.5	65	27
Trains	253	1.2	51	21.2
Blackbook	28	0.1	20	8.3
Freights	27	0.1	16	6.6
CarsTrucksVans	28	0.1	12	5.0
Subways	81	0.4	11	4.6
Billboards	10	0.0	5	2.1
Body	5	0.0	4	1.7
Clothing	11	0.1	4	1.7
Rooftops	4	0.0	4	1.7
Tunnels	5	0.0	4	1.7
Subway Cars	60	0.3	3	1.2
Buses	3	0.0	2	0.8
Highways	2	0.0	2	0.8
Signs	2	0.0	2	0.8
Skate Deck	2	0.0	2	0.8
Trash Bins	2	0.0	2	0.8
Shutters	2	0.0	2	0.8

Table 4. Work Support codes/facets.

Three facets of support stood out in this section: Canvas, Walls, and Trains. The Canvas support is interesting, because it indicates the importance of noting when works are created in a studio and not on the street. Graffiti is often defined by its use of the street, broadly conceived (Riggle 2010) so that graffiti works created in a studio, on canvas, could be perceived as graffiti-style instead of graffiti itself. This code encompasses works created in a studio or displayed in a gallery, as opposed to found in the more traditional graffiti context. Terminology used to represent navigation labels coded as Canvas include painting, art, prints, studio, color works on paper, commission, portraits, watercolor, and street sellout art.

The next Support facet for Walls is used by sixty-five sites, indeed a very common support upon which graffiti is found. The third most commonly warranted Support code is for Trains, used on fifty-one sites but used more often on those fifty-one sites than any other Support facet. This means that a site may have a gallery area for trains that is further subdivided so more than one use of the Train code is warranted. Various named kinds of train graffiti will be seen in the next section on Types.

Trains represent a complex Support facet in this study, which begs further explanation. In this list of Supports, one can see Trains, Freights, and Subway Cars. All of these could be called Trains, though there are subtle differences. The word Train is the most generic of the three. Freights are a specific type of train with flat sides and no windows, carrying not passengers but things. They represent a specialized type of graffiti surface that has long been exclusively favored

by certain artists. The freight car offers a moving support that can take an artist's work across entire countries or continents. Styles have moved from coast to coast in the United States and other countries in this way. Individual freight cars are recombined in train yards for new journeys, and works may be seen in different juxtapositions over time and space. Subway cars, on the other hand, are very different. They carry people and usually have windows to break up the sides. They are also notably found in larger urban areas and do not usually go far beyond individual city hubs. Subway cars are often much more difficult to access than freight cars and more difficult supports upon which to create large and complex pieces. They are also cleaned, or buffed of graffiti, frequently (see Austin 2001). For the purposes of this study, navigation labels that indicated galleries for works on trains were coded as such, but if a site explicitly used labels for subway cars or for freights, those codes were applied. The Subway code was applied when works were on the subway structures but not referring to the subway cars themselves. It is noted that all of these navigational terms used on the sites may have overlap. Further study would be needed involving investigation of individual images to make a more precise reporting of these Supports, which goes beyond the scope of this research. It is sufficient to say that graffiti on trains of various types represents one of the most commonly cited Supports in this study.

There is a similar issue with the Subways and Tunnels facets in this section. Tunnels may be subway tunnels, or they may simply be other tunnel structures. Graffiti is commonly found in subways, inside the tunnels and also outside

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on walls or other structures along the tracks. This possible overlap is acknowledged, but when a site indicated navigation labels specifically for subways, this code was applied. Tunnels, when similarly stated, were coded as Tunnels. Further inspection of individual images in these galleries would be required to make a more precise reporting of these Supports, which goes beyond the scope of this research.

The artist sketchbook, referred to in the graffiti art community as a "black book" or "blackbook," is another notable Support in this section. The Getty Research Institute includes the term in the Art and Architecture Thesaurus (AAT) as "black book (graffiti)" and notes (Getty Research Institute 2004) the term as "sketchbooks in which graffiti artists develop ideas, practice tags, and acquire other artists' signatures." Twenty of the study websites reserved individual image galleries for works from artists' blackbooks.

Besides trains, other moving vehicles used as supports were either grouped as Cars, Trucks, and Vans together, or separately as Buses. The Body support refers to either body painting or tattoos of graffiti-style artwork. Billboards and Signs are similar, but Signs refers to smaller surfaces such as municipal or traffic signs. Shutters refers to pull down metal or wood doors facing the street used to cover small shops when closed.

2.1.2.3 Work Type section

The Work Type section includes descriptive terminology used to separate individual image galleries dedicated to various types or styles of graffiti art. This section represents the largest of the code groupings and includes a broad range of style vocabulary. Detailed explanations of what each of these facet terms represent can be found in Graf (2018). Discussion here will focus on broader themes present within this section and relationships among included facets.

Nearly a quarter of all sites dedicated a part of their website to Sketches. This is interesting, because sketches represent ideas or layouts that are not actually completed graffiti artworks. The more complex a planned piece, the more time required to complete it and the more important it is to draw up what the final work might look like so that precious time on site can be better utilized. This code was applied when encountering navigation labels including words like sketches, drawings, outlines, illustrations, and phrases using these words, such as charcoal sketches, ink outlines, and sketch battles. Because a graffiti artist's blackbook is often used to create these sketches, there is overlap between these two facets of their respective categories.

The second most warranted type facet in this category is for Graffiti. This may seem so obvious as to not be useful, but it was used by roughly 20% of all sites in the study. Variations in the terminology that earned this code include graffiti, graff, vandalism, and assorted sub-galleries of

named geographic facets (Amsterdam Graffiti, LA Graffiti, etc.). Each of these galleries was visited to make sure that the focus was indeed on graffiti, especially when terms like vandalism had been used. The next most popular type facet was Other. This code represents graffiti types that do not fit into other facets used as types, and were only used once or by one site. The Other code was applied when the word "other" was used to set aside images (other graffiti pictures, other works) or when a label was used that did not have any obvious meaning. Examples of this include when a site simply numbered galleries, or had place-saving text such as "empty," as if the website administrator had simply not given a name to a gallery so the website template term was all that was used. Other examples of text that earned the Other code in this study include but are not limited to, scratchiti, motorcycles, mixed media, screenprints, scenes, wallpapers, cardboards, unusual spots, bunker, burners, quickies, planes, and trams.

The next three codes in this category, CommercialDesign, StreetArt, and Murals, share an aspect that is important to this study. All of these imply work that is legal and possibly done for profit. The terms street art and murals have been used interchangeably at times in the literature, but common practice is to use these terms as distinct from graffiti. Commercial design implies a work created for profit at the request of a customer. While commercial designs, street art, and murals can and are often done in graffiti art styles, the association with these descriptive terms separates them from traditionally created graffiti art. They are often very large and beautifully executed pieces due to their creation under legal and often sponsored circumstances, and they are afforded protections that most graffiti art is not. They are documented and shared widely, as this research indicates, placing them near the top of terms for organization used in this category. The most important aspect of note is the use of terminology for them that separates them from traditional graffiti, speaking more to the environment surrounding their creation than to a specific style. The research does show that the CommercialDesign code was used almost exclusively by websites curated by individual artists, graffiti crews, or other artist collectives. As opposed to sites that are curated to feature a broad range of works from many artists, these sites display an intrinsic motivation for profit from exposure to their work and gaining further commissioned work.

Codes used for types of train graffiti in this category include Wholecars, EtoEs, TtoBs, and TrainPanels. Note that other Types included here may be found on trains, but these four codes refer to the sizes of works that are done specifically on trains. This type of granularity was understandably found most often on sites that featured numerous works on trains and provides a way to divide up the organization of such galleries. A work can cover an entire train car, or a train

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Type Facets	Count	% of Codes	Sites	% of Sites
Sketches	74	0.4	56	23.2
Graffiti	75	0.4	50	20.7
Other	184	1.1	43	18.3
CommercialDesign	63	0.3	43	17.8
StreetArt	38	0.2	35	14.5
Murals	39	0.2	32	13.3
Tags	22	0.1	17	7.1
3D	18	0.1	16	6.6
Characters	59	0.3	15	6.2
Pieces	37	0.2	15	6.2
Stencils	20	0.1	13	5.4
Bombs	13	0.1	12	5.0
Throwups	16	0.1	12	5.0
Letters	19	0.1	10	4.1
Productions	12	0.1	10	4.1
Stickers	14	0.1	10	4.1
Digital	8	0.0	8	3.3
TrainWholecars	13	0.1	8	3.3
Action	6	0.0	6	2.5
Posters	9	0.0	5	2.1
SprayPaint	4	0.0	4	1.7
Wheatpaste	4	0.0	4	1.7
Political	3	0.0	3	1.2
Projections	3	0.0	3	1.2
TrainEtoEs	5	0.0	3	1.2
Collaborations	3	0.0	3	1.2
TrainPanels	3	0.0	3	1.2
Silvers	2	0.0	2	0.8
TrainTtoBs	2	0.0	2	0.8
Wildstyle	3	0.0	2	0.8
Handstyle	2	0.0	2	0.8

Table 5. Work Type codes/facets.

car from end to end (EtoE), but not going all the way from top to bottom. Conversely, a work can cover a train car from top to bottom (TtoB), but not from end to end. These distinctions are important to the graffiti artist, because they indicate various levels of difficulty and time required to complete an illegal work. Train cars are tall and require the use of ladders and equipment to reach the top for a TtoB piece. An EtoE may, therefore, be considered difficult in that it takes time but not as difficult as painting a TtoB and not as difficult, and, therefore, respected if well done, as completing a Wholecar work. TrainPanel is used for a smaller part of a train than the other train-related terms here. Again, there

may be some overlap in the actual types of works featured in these image galleries.

2.1.2.4 Work Location section

The last of the Work category sections is that for geographic location of works. The codes applied within this section are shown in Table 6. This type of information was included on the sites using standard textual labels, some of which can be seen earlier in Figure 2 but sometimes in use on graphic maps where users can click on different parts of the world or a specific country and see works from those locations.

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Location Facets	Count	% of Codes	Sites	% of Sites
Cities	1637	8.6	43	17.8
Countries	543	2.8	37	15.8
SpecificLandmarks	73	0.4	13	5.8
CityParts	94	0.5	13	5.4
World	22	0.1	12	5.0
Continents	42	0.2	11	4.6
States	117	0.6	6	2.5
CountryParts	10	0.0	5	2.1
Address	2	0.0	1	0.4
Intersection	27	0.1	1	0.4
Undisclosed	2	0.0	1	0.4

Table 6. Work Location codes/facets.

Figure 3. World map from site Bombing Science (https://www.bombingscience.com/graffiti-map/).

Nine sites within the study used some form of map for image gallery navigation. An example of a navigational map is shown in Figure 3.

Whether the geographic locations were listed as standard text or as labels on an interactive map, each link to an individual gallery of images for a specific location was coded appropriately using facets of this section. Cities and countries were by far the most commonly used geographic division across all websites. Forty-three percent of all sites used some kind of organizational feature by individual cities and 37% by countries. There are several factors at play regarding the use of geographic labels for organizing graffiti art images, not the least of which is the focus of the site itself and the way that images are gathered for inclusion. Many websites specifically focus on graffiti art from a named country (Australian Graffiti, Irish Street Art, etc.), or city (Bristol Street Art, The Helsinki Connection, Miami Graffiti, etc.) and, therefore, exhibit a narrower geographic focus than sites that seek to highlight works from around the world, often soliciting images from global visitors to the sites (12 Oz.

Prophet, Can Control, Art Crimes, FatCap, etc.). The focus of the site and the number of images to organize unsurprisingly contributes to the need for different types of geographic facets. Dividing by continents only makes sense if you have a global image collection. Division by specific landmarks or parts of cities is useful with a collection that includes numerous works from one metropolitan area, such as New York or London.

The CountryParts code was applied when large countries were divided by logical divisions, such as the United States into East Coast, West Coast, or Midwest. The States code was applied to not only US states, but Canadian provinces and Australian states. CityParts refer to named areas or neighborhoods used as individual galleries, for example when listing Tenderloin, Castro, or Mission in San Francisco, or Plaistow, Tottenham, or Crouch End in London. The SpecificLandmarks code was applied to named buildings, parks, train yards, or other such individual locations. These named locations are often popular spots for graffiti art and have earned a reputation as such.

It is notable that no information more specific than a part of a city or named landmark was used for organization of graffiti art images in this study. Only one site had navigation labels referring to a specific address. A street intersection was used only once, and the code Undisclosed was applied only once, the latter representing that works were specifically not located, their location either not provided, explicitly withheld, or otherwise unknown. Further research would be required to determine if GPS coordinates for works were ever provided for individual graffiti art images, but this is beyond the scope of this research. Anecdotally, GPS information was never encountered for images during the website examinations.

3.0 Summary

This study has explored the knowledge organization practices of graffiti art website curators from 241 sites hosted around the world using a domain-analytic approach. All navigational text used on the sites was coded into two broad categories, one for description of aspects of the websites themselves, and one for organization of works. The Websites category was further divided into sections specifically relating to the site or to social media links. The Works category was further divided into sections labeled as General, Support, Type, and Location. Each of these sections were further subdivided into individual codes or facets and were described herein as the focus of this report.

Even the most commonly used facets for organization of graffiti images in this study rarely were used by more than 20% of all 241 sites. Those that were include the General Artist code (20.7 % of all sites), the Support Canvas code (32%), the Support Walls code (27%), the Type Sketches code (23.2%), and the Type Graffiti code (20.7%). Variety among the types of codes across all sites was influenced by a number of factors. Larger sites with more images displayed warranted more granularity in organization and earned a broader range of codes for things like General work facets, work Support facets, and work Type facets. The geographic focus of each site impacts the range of work Location facets. Sites with a specific focus, such as those covering works on trains, used facets for description with more granularity in those areas.

Internal and external motivation were coded during the study and were shown to correlate with terminological choices for description and organization. Stated motivation was found on 112 of the 241 sites. Of these, seventy-two sites were coded as internally motivated and forty as externally motivated. Internally motivated sites, those run by individual artists or crews seeking exposure with an explicit intent to garner commissions and sales of artwork, tended to avoid using terms that were more common in the graffiti art community, excluding words like graffiti and vandalism, and favoring instead terms including street art, mural, urban art, and vocabulary that is not associated with illegal activity. Externally motivated sites, those not explicitly seeking paid work or commissions, but rather sharing artworks for enjoyment and study, did not shy away from graffiti terminology. In fact, the externally motivated sites displayed the broadest range of facets for the organization of image galleries while internally motivated sites used the widest range of art style vocabulary (see Graf, 2018).

4.0 Conclusion and further research

This domain is ripe for further research on many fronts. There is a group of websites from the original 241 examined herein that host very large image collections from various artists around the world. Research on this subset of large, externally motivated sites may prove valuable to refine this study's results with information on only the largest, broadest, and most descriptive collections, and those not displaying possible biases in terminology fueled by an underlying motivation to sell works. This research is in process by the author.

There are also many other opportunities to refine and expand upon this type of domain analytic work to increase understanding of the knowledge organization structures in use within the graffiti art community. Work could be carried out to examine instantiation of individual works across time and space and how they are documented by various agents. Because images for the aforementioned larger sites are often solicited from and received by a wide range of individuals, differences in documentation practices involving angles, contextual inclusion or exclusion, instantiation over time displaying changes in condition of works, and a myriad other variations may be revealed. Related to instantiation research on individual works is research on individual artists over time and space. These types of research require more refined focus on individual images and their textual accompaniments.

There is also a wide range of research that can be conducted on social media sites such as Instagram, arguably the largest image sharing platform in use around the world. The organizational practices of Instagram users are largely shaped by the structure and limitations of the platform itself. Analysis of image tagging practices applied to graffiti works on Instagram could lead to further precision of style, location, and type facets already found in this examination. Research of this type is also in development by the author.

Graf (2016) excavated graffiti art terminology from a series of graffiti zines from the 1980s to 2000s and compared it with what was available in the AAT. Only three of the top twenty occurring graffiti terms from the zines were found in the AAT in 2016, but within two years the AAT had added an additional eleven of these twenty terms, bringing the in-

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clusion of studied terms from 15% to 70%. This was an important addition to one of the most popular controlled vocabularies for art-related terms in use around the world. There are further terms that could be added to the AAT, but it is also acknowledged that those doing the bulk of the documentation, description, and organization of graffiti artworks online, the aforementioned graffiti art community, are not using such tools with their image collections.

This research may inform not only a taxonomy of graffiti art terms and thesaural vocabulary but also awareness of facets for description that may be useful for the graffiti art community if made available as a metadata schema or application profile. It may also be useful for libraries, archives, museums, and other public and community art associations as more traditional institutions consider curating online collections of graffiti art and street art images themselves and seek to respect the terminological distinctions applied by those within the graffiti art community. The work remains an example of the use of domain analytic techniques engaged in the discovery of organizational practices of an extra-institutional user community, a domain, and the methodology has demonstrated the particular epistemological stance of those involved in the creation, documentation, and organization of images of graffiti artworks.

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