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Local/Global: Mapping Nineteenth-Century London's Art Market

Abstract:
This article analyzes the local and global networks of the commercial art trade that dialectically informed the conditions of the art market in London over the course of the second half of the nineteenth century. This analysis is achieved through a ground-breaking application of digital humanities tools: spatial mapping and network visualization. The article intends to advance both revisionary studies of the rise of the art dealer in nineteenth-century Europe and the application of modes of inquiry associated with the digital humanities to art history.

Digital Humanities and Art History

Local/Global: Mapping Nineteenth-Century London's Art Market
by Pamela Fletcher and Anne Helmreich

with David Israel and Seth Erickson

We dedicate this essay to the memory of Tally Kampen, whose fierce intellect, wise counsel, and pioneering spirit of adventure will be sorely missed.

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Ever more extensive and effective networks of transportation, communication, and finance in the second half of the nineteenth century increased the mobility of goods as never before, fueling an enhanced international art market. Simultaneously, the explosive growth of metropolitan centers created local markets of unprecedented scale. These dialectical conditions were particularly salient in Great Britain whose material progress and ambition to become the workshop of the world were on display in the Great Exhibition of the Works of Industry of All Nations in 1851, and numerous international fairs thereafter. The population of the city of London grew rapidly from over 100,000 in 1801 to over two million by the 1850s.[1] While the city was home to poverty, slums, and filth, it was also the stage for displays of spectacular wealth, manifested in ambitious buildings, such as Gilbert Scott's St. Pancras Hotel; the luxury retail trade; and the rich entertainment complex composed of music, theater, and art that attracted not only Londoners but also visitors from around the globe.

In this article, we explore the dialogue between the local and the global art markets that established a distinctive dynamic for the British art world as experienced in London. Our analysis derives from two complementary data sets and visualizations. The first is a map plotting the locations of major London commercial art galleries between 1850 and 1914, authored by Pamela Fletcher and David Israel. The second is an analysis by Anne Helmreich, with the assistance of Seth Erickson, of sales data drawn from the stock books of Goupil & Cie, and its successor Boussod, Valadon & Cie, which cover transactions at the firm's various branches located in Paris, London, The Hague, Berlin, Brussels, and New York during the years 1846–1919.[2]

Combining these two analytical fields—the geography of the London art market and the social and financial network of a retail firm situated within that landscape—is a first step toward our larger goal of representing, or perhaps more accurately, modeling, the full warp and weft of

the London art market. The figure in the carpet, we argue, cannot be comprehended without a sense of the overall design; the significance of any one firm within the field—or the action of an artist—cannot be ascertained without a full understanding of the whole. But what defines that whole? Our discipline's increasing recognition of the transnational conditions that shaped the production, reception, and consumption of art underscores the importance of this question.[3] It is particularly relevant for London's art market, which was one of the most robust in the world in the nineteenth century. Its identity as a central hub in global networks of finance, trade, communication, and Empire made it a critical nexus in the international art market. In this article, we use the international reach of the firm of Goupil & Cie/Boussod, Valadon & Cie to define the geographic boundaries of our "whole." Conceiving this article as both a summation of our projects to date and a building block for a larger study of the art market, we anticipate that subsequent data sets will allow us to expand these geographic parameters.

The methods employed here allow us to establish the density of the London art market, as well as many of the pathways through which artworks (as well as artists and buyers) circulated in and out of that market. As we will demonstrate, the powerful pull of the city, as both a robust local art market and the critical meeting point for a web of international connections, became a decisive influence on the choices available to artists and patrons. By offering a larger view than hitherto possible, our approach allows us to understand the London art market in new ways—as a set of pluralistic and elastic possibilities—rather than rigidly codified by institutional bodies such as the Royal Academy. These possibilities both opened up the market —meaning there were multiple pathways for artistic success as measured in commercial terms —and also exerted pressure on artists seeking to steer a course through this dense and rapidly changing landscape.

The article grows out of our collaborative work on the nineteenth-century art market over the past ten years. This work is part of the ongoing revision of the paradigms of the nineteenth-century art market established by Harrison C. White and Cynthia A. White's ground-breaking study *Canvases and Careers: Institutional Change in the French Painting World*, first published in 1965.[4] White and White argued that the shift from a system of state-sponsored Academic patronage to a system of private dealers was characterized by a corresponding shift from emphasizing the trajectory of Academic professional success over the course of a career to a focus on individual, saleable canvases. Their pioneering work has been built upon, modified, and challenged in recent decades.[5] Across this scholarship there is a broad consensus on the basic transformations in the period: the relative loss of significance of state-sanctioned academies and the increasing importance of commercial art dealers and galleries, beginning roughly around the 1850s and becoming dominant by the turn of the century. The details and significance of this trajectory, however, are subject to considerable debate and, it would seem, regional variation.

Recognizing that frameworks derived from the French art market were ill-suited to that of Great Britain, historians of British art have been working to establish an accurate historical record of the British market and to develop analytical interpretations that reveal its rich complexity and significance. These studies range from Dianne Sachko Macleod's pioneering study of patronage, *Art and the Victorian Middle Class: Money and the Making of Cultural Identity* (1996), to the more recent investigations of Thomas M. Bayer and John R. Page, *The*

Development of the Art Market in England: Money as Muse, 1730–1900 (2011) and the authors in our anthology, *The Rise of the Modern Art Market in London, 1850–1939* (2011).[6] These studies definitively establish that the British art market, particularly as located in London, was shaped by distinctive conditions, including the new wealth created by Britain's rapid industrialization, the strong Protestant predilections of many leading art collectors, the rise of theories justifying the commodification of art, and the tightly-knit, often overlapping, and mutually supportive social circles of artists, critics, dealers, and collectors.

With the exception of Bayer and Page, scholars have generally adopted the case-study approach, using carefully selected examples from which to draw broader conclusions. Given the sheer quantities of data involved, drawn from the thousands of exhibition catalogues, auction records, dealers' stock books, collectors' inventories, and press accounts that detail the daily workings of the market, case study analyses of individual dealers, artists, galleries, or patrons are a strategic response. Yet some questions cannot be answered—or even posed— without using larger data sets and finding ways to mine and visualize effectively the material they contain. Bayer and Page, for example, bring the tools of economics to the study of London's art market, basing many of their conclusions on statistical and econometric analyses of databases they composed from records of auction sales.[7]

The recent growth of digital humanities and online publishing greatly facilitates these kinds of projects, and a secondary aim of this article is to explore the opportunities and challenges the online environment creates for the study of the art market. (See also "About the Project.") The online environment has already transformed scholarship on nineteenth-century British art, enabling unprecedented access to primary source materials, carefully curated by leading experts. The field has benefitted tremendously from such formative projects as *The William Blake Archive*, *The Complete Writings and Pictures of Dante Gabriel Rossetti*, *Vincent Van Gogh - The Letters*, and *The Correspondence of James McNeill Whistler*.[8] Building on the success of the latter project, Patricia de Montfort is currently embarked on *Exhibition Culture in London 1878–1908*, which includes records for over 3,000 exhibitions and 900 galleries in London between 1878 and 1908, searchable by the name of an exhibition, gallery, or person, as well as by keyword.[9]

The dissemination of scholarship on nineteenth-century British art has likewise been transformed by the online environment, as amply illustrated by the web presence of *Nineteenth-Century Art Worldwide*, an early pioneer in online publishing. The journal *Romanticism and Victorianism on the Net* (RaVoN), begun in 1996, expanded its remit in 2007 to include Victorian literature and art. *RaVoN* has become a platform for experiments in new forms of publishing, including *BRANCH: Britain, Representation, and Nineteenth-Century History*. [10] Recently, Tate Britain published its online scholarly catalogue, *The Camden Town Group in Context*, which links together a collection of scholarly essays, primary source materials, and the museum's online catalogue into a rich thematic study.[11] The latter two publications, in particular, leverage the new opportunities presented by the online environment: *BRANCH*, for example, uses an interactive timeline to organize its scholarly content, and *Camden Town Group* integrates multi-media content.

In this article, we investigate new models of publishing by integrating our text with an interactive map and zoomable visualizations of networks. The technical questions and intellectual issues were equally complex, as we worked toward a form of argumentation that

allows the visual—in the form of the map and visualizations—to convey as much persuasive analysis as the text. Indeed, the utility of the map and visualizations may extend beyond our written argument in that they contain information that other scholars can use to answer questions other than those posed here. We believe this visual mode of argumentation is particularly well suited to our discipline, which is accustomed to engaging with the rhetoric of images and their capacities for complex multivalency.[12]

Yet art history is only in the initial stages of exploring how digital technologies and the online environment can transform how scholarship is created.[13] In other words, our field has established models for online access and distribution, but lacks robust examples of scholarly interpretation predicated on new modes of analysis made possible by the innovations of the digital age. Applying the innovations of the digital age has been the primary focus of the digital humanities, which can be divided into four broad categories: text analysis, spatial analysis, network analysis, and image analysis.[14] Our project combines spatial analysis, specifically historical mapping, and network analysis, which examines relationships between entities.[15] In using these tools, we aim not only to harness the capacities of the digital environment for innovative research, but also to expand the framework of our discipline.

The digital humanities allow us to increase the quantity of information that any one scholar can analyze since computational methodologies are well suited to "big data." Building on this unprecedented capacity, we should be able to work across the boundaries of periodization and national borders that often define our field of study. Visualizations of spatial and network analyses have the potential to demonstrate that local and global markets are not really bounded or distinct, but rather are constituted of different sets of overlapping and intersecting networks that artists accessed and activated in different ways. The digital humanities are, thus, well aligned with art history's rising concern with mobility and exchange in a transnational framework.

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The Local: The *London Gallery Project* **(Pamela Fletcher)**
One of the most significant shifts in the nineteenth-century art market, particularly as configured in Great Britain, was the rise to dominance of the commercial gallery, as old systems of aristocratic patronage and Academic prestige faded in the face of a growing middle-class demand for art, and an increasingly diverse and far-reaching retail market. As I have argued elsewhere, the commercial art gallery as a distinct type—distinguished both from non-profit or artist-run exhibition societies, and from shops selling art among other items of home décor or artists' supplies—first emerged in London in the 1850s and 1860s. Within a few decades, the recognizably modern gallery system—with its professional dealers and regularized exhibition spaces—became the dominant force in the late nineteenth- and early twentieth-century field of cultural production, creating new roles for artists, dealers, objects, and audiences. The new gallery system was the ground on which new forms of modern art were created, experienced, and judged. Moreover, London was one of the leading international art markets of the era.[16] Thus its history is central to the study of modern art and the formation of new modes of circulation, exchange, and reception.

Fig. 1, Interactive Map of London [external link]

Fig. 1, Pamela Fletcher and David Israel, *London Gallery Project*, 2007, revised 2012. The map is stored on a server at Bowdoin.edu, http://learn.bowdoin.edu/fletcher/london-gallery, and this version will reflect further additions or revisions made to the data. An archived version of the map as of 22 October 2012 is available at http://19thc-artworldwide.org/fletcher/london-gallery/.

The *London Gallery Project* (fig. 1) aims to document the rise and spread of the commercial gallery across London from 1850 to 1914, visualizing the formation of this network across time and space. The map plots the location of commercial galleries across London's West End, and charts the patterns of their geographical distribution and movement over time and in relation to other types of spaces; namely, exhibition societies, artists' residences, museums, and other retail venues.[17] The categories at the bottom of the interface refer to the different layers of data plotted on the map, and each can be turned on or off. The timeline runs from 1850 to 1914, and can be set at a single year, or automatically run through a temporal overview of when and where commercial galleries were established. Clicking on any individual point accesses the larger database of information about that venue, with richer entries associated primarily with the gallery layer.

The map originated as a tool to organize and understand the large amounts of data uncovered through my research on the London art market, but the visualization quickly suggested new interpretations and avenues of inquiry. In recent years, much work on "spatial humanities" or "geohumanities" has suggested that bringing the category of "space"—and new spatial technologies—into the study of humanities can help scholars explore "the influence of physical or geographical space on human behavior and cultural development."[18] Historical mapping is one of the most obvious points of connection between geography and the humanities, and the new technologies of Geographic Information Systems (GIS) have been eagerly adopted by many historians as a way to organize and visualize large and complex data sets.[19] Benjamin Ray, a historian at the University of Virginia and the author of a documentary archive on the Salem Witch Trials, which includes several interactive maps, suggests one very simple and significant benefit of historical mapping: "the eye is a very good sorter of patterns."[20] Many historians have recognized the opportunities (and challenges) such visualizations present to established models of historical writing. Describing the animated maps on University of Richmond's website *Voting America: United States Politics, 1840–2008*, historian Edward L. Ayers writes, "The patterns, intricate and shifting, are too complex to explain easily in words or even numbers. We can see more in the maps than we can easily say."[21] Art historians would seem uniquely positioned to engage with this kind of visual argument.[22]

So what kinds of patterns might emerge from an animated map that measures both space and change over time? In a recent *New York Times* article, Ray relates how, when looking at his interactive map of witchcraft accusations in 1692, he realized that they had spread like an epidemic, an insight which allowed him to return to his historical data with a new set of questions about what was distinct to the behavior of Salem judges in 1692.[23] A similar pattern is visible in the London map, with galleries slowly beginning to dot the West End landscape in the 1850s and 1860s before greatly increasing in numbers in the 1880s. By the early twentieth century, many galleries had congregated along Bond Street, leading a critic for the magazine *Truth* to joke in 1905 that Bond Street was "getting more and more like one elongated picture

gallery tempered by tea shops!"[24] So why did galleries cluster in this area during this period of time? And what kinds of meanings and associations did being a "Bond Street gallery" convey?

[Fig. 2, [external link to MP4 file].](#)
Fig. 2, Timeline with Gallery and Exhibition Societies layers turned on. Pamela Fletcher and David Israel, *London Gallery Project*, 2007, revised 2012, http://learn.bowdoin.edu/fletcher/london-gallery/

[Fig. 3, [external link to MP4 file].](#)
Fig. 3, Timeline with Gallery and Retail layers turned on. Pamela Fletcher and David Israel, *London Gallery Project*, 2007, revised 2012, http://learn.bowdoin.edu/fletcher/london-gallery/

Patterns of affiliation and clustering within this larger consolidation begin to answer these questions. The most obvious is the relationship between the sites of commercial art galleries and the location of the Royal Academy and, to a lesser extent, other exhibition societies, such as the Royal Society of Painters in Watercolours (as is visible running the timeline with "gallery" and "exhibition society" layers turned on [Fig. 2]. In the 1850s, early commercial galleries, such as Colnaghi and the French Gallery, clustered around the Haymarket and the Eastern end of Pall Mall, close to Trafalgar Square (then the home of the Royal Academy), to the Society for British Artists on Suffolk Street, and to the British Institution on Pall Mall. When the Academy relocated in 1867 to Burlington House, adjacent to Piccadilly Square, a gradual flow of galleries up toward this neighborhood, extending further to Old and New Bond Streets is visible, with clusters of galleries eventually surrounding the Academy. Other significant commercial art enterprises, such as the Fine Art Society and the Grosvenor Gallery on New Bond Street, also seemed to have served as "magnets," as other galleries quickly opened in their immediate vicinity in hopes of taking advantage of the publicity and foot traffic generated by these two major venues.[25] The relationship between exhibition societies and galleries, then, looks like a story of mutual benefit, rather than a competitive battle ultimately won by the commercial realm. Indeed, the prevalence of exhibition societies in London may be one reason for the development of such a robust commercial gallery system. [26]

Running the same timeline with both the "gallery" and the "retail shop" layers turned on (Fig. 3) provides another perspective on why the West End proved so attractive for galleries. (It should be noted that the data in the retail layer is a representative sample rather than a complete listing of all shops in the area.) The West End, particularly Regent Street and Bond Street, was already a fashionable shopping area by the mid-nineteenth century and art galleries moved in among other purveyors of high-end goods.[27] Many of the galleries were new businesses; but, perhaps more significantly, as print sellers or frame makers shifted their attention to selling paintings they, too, moved to this area.[28] For example, when the print-selling firm Goupil came to London in 1857, it first opened a branch in the Strand, an area dominated by the sale of books and prints. As the firm moved into the business of handling original works of art, the branch moved into new premises in the same area but with larger gallery space, and finally ended up on Bond Street around 1883. As an advertisement in *The Year's Art* noted, the firm had

long felt that the situation of their late Galleries has been found too inconvenient to allow of their seeing their patrons as often as they would desire, and they trust that . . . their removal to the most famous of West-end thoroughfares, will insure to them not only more frequent visitors from their present numerous amateurs, but also that their New Galleries may offer sufficient attraction to draw all interested in the Fine Arts to their establishment.[29]

This geographical shift is a physical manifestation of the changes in the art trade from an earlier association with print selling and the sale of antiquities to the definition of art as part of luxury retail trade.

As the Goupil Gallery advertisement suggests, a Bond Street location both attracted a certain class of visitors and carried a set of desirable associations. To be a "Bond Street gallery" was to claim a certain kind of prestige and to identify one's main business as the hosting of "exhibitions," distancing the gallery brand—in theory, if not always in practice—from other, more obviously commodity-oriented forms of art dealing, such as print selling. The distinction is visible in the way these galleries represented themselves in *The Year's Art*, an annual record of the art world viewed from the perspective of London. It first appeared in 1880, when the London art market had reached a level of robustness and density that demanded a way-finding device. Each volume compiled information on the major museums, exhibition societies, art dealers, and art schools in London, with chapters devoted to art in other English-speaking countries. One fascinating aspect of these listings is that dealers and galleries were included in two separate listings. The most comprehensive list of art dealers is a long alphabetical "List of Fine Art Dealers in London and the Provinces," which is situated in the back of the volume just before the "Directory of Artists and Art Workers." Some businesses that operated under the name of a "gallery" were included here, but the vast majority of the list consisted of names of individual dealers with addresses throughout the city. There was also, however, a much shorter, but more detailed, listing of "Other London Exhibitions in [Year]" positioned earlier in each volume within the section devoted to "Art Institutions in the Metropolis." This section was organized in order of importance, beginning with the Royal Academy of Arts, moving through the major and minor exhibition societies such as the Watercolour Societies, and then ending with the listing "Other London Exhibitions," which exclusively concerned commercial galleries that hosted rotating exhibitions throughout the year. Most of these businesses were located in the West End, and many of them included the term "Gallery" in their names. This listing of commercial dealers points to the signifying practices of a brand name, a published exhibition schedule, and a West End location, which were shared attributes of a certain subset of art dealers who aimed at the emerging identity of the "Bond Street gallery."

Seen from this perspective, it is evident that the large numbers of commercial galleries in the West End were in some sense an interlocking infrastructure with a common set of norms and practices. As I have discussed elsewhere, these commercial galleries blended the norms of exhibition societies, most notably, the Royal Academy, with the emergent retail practices of the later nineteenth century. Galleries hosted series of rotating exhibitions with dedicated catalogues, private views, and admission fees, just as exhibition societies did. Unlike these artists' groups, however, most galleries also held a stock of works of art available for sale year round, held regular shop hours, and were staffed by salesmen.[30]

This shared set of norms, however, does not mean that all West End galleries worked in the same way, or carried the same degree of prestige, whatever their aspirations. Seeing these patterns of distinction is another outcome of working with larger data in contrast to individual case studies, which tend to focus on the best-known galleries or the ones that were associated with the most famous artists. Indeed, perhaps paradoxically, mapping out the larger network of galleries ultimately leads to a more evenly distributed attention to each gallery within it, since the larger data set acknowledges the diversity of spaces in London in which art was shown and forces attention to galleries and other sites not yet well known in the scholarship on British art. Through researching and assembling background information for each gallery identified on the map, I began simultaneously to recognize both the shared identity of the "Bond Street gallery" created by the entire field of cultural production, and the many different forms of actual gallery spaces and organizations that make up this field.

In addition to the more familiar and prestigious galleries, such as the Grosvenor Gallery, which successfully combined the aura of aesthetic disinterestedness and commercial acumen that has come to characterize high-end art galleries ever since, there were many others that operated on a slightly less lofty level. These venues operated primarily as spaces for rent, with the gallery name, logo, and address available to add the luster of Bond Street success to any artist with enough money to pay for it. The Gainsborough Gallery was one such venue. Located at 25 Old Bond Street, the gallery was home to numerous special exhibitions. But an advertisement in the *Times* in 1891 suggested a less than stringent application process: "The Gainsborough Gallery, 25, Old Bond-street, for occasional purposes or for a term. Apply to Brice and Sons, Billiard Table Builders, 16 Soho-square."[31] The *Punch* cartoonist Harry Furniss held a show there in 1887, and in his memoirs he made light of the aspirations suggested by the gallery's name. Noting that the space "was called for some inexplicable reason the Gainsborough Gallery," he recounts a tale that rather quickly explains it: "One afternoon there arrived a venerable dowager in a gorgeous canary-coloured chariot, attended by her two colossal footmen. She sailed into the gallery, which, fortunately for the old and scant of breath, was on the ground floor, and slightly raising the pince-nez on her aristocratic nose, looked about her with an air of bewilderment. Then, going up to my secretary she said, "Surely! these are not by Gainsborough?"'[32]

As histories of individual gallery spaces and other venues are fleshed out at this level of detail, the map also begins to provide a foundation on which to trace patterns of circulation within the London art world. William Powell Frith was one of the most popular and successful Victorian artists, and his savvy use of the exhibition system both suggests its potential for artists and sheds light on its workings. Frith broke into the exhibition system in 1838 with entries at the Society of British Artists and the British Institution, both private exhibition societies, while supporting himself by painting portraits in Lincolnshire.[33] In 1840 his first picture (*Malvolio Before the Countess Olivia*) was accepted to the Royal Academy summer exhibition, a major coup as the Academy was at this moment the primary path to professional artistic success, the way to attract audience, sales and publicity. Frith quickly climbed the Academic ladder; he was elected Associate Royal Academician in 1845 and Royal Academician in 1852, and the immense popularity of his major modern-life painting, *Derby Day*, at the Academy in 1858 made him a household name.[34] Having achieved this level of success and brand-name recognition, he chose to exhibit his next major modern-life painting, *Railway Station*, with a private dealer rather than at the Academy. Dealer Louis Flatou paid Frith £4,500

for the painting, sketches, and engravings rights, and later paid the artist an additional £750 to give up the right to exhibit the painting at the Academy.[35] The enormous price (and the decision to exhibit the painting with a dealer rather than at the Academy) attracted significant press coverage, but Flatou used the Academy's prestige in other ways to promote the work.[36] While he generally used an exhibition space in Cornhill,[37] he exhibited the *Railway Station* in "a gallery prepared for it in the Haymarket, near to Mr. Hogarth's shop," and, tellingly, close to the Royal Academy, then located at the National Gallery in Trafalgar Square.[38] The exhibition at No. 7 Haymarket opened on Saturday April 19, 1862, two weeks before the private view of the Academy exhibition, and Flatou even copied the famous installation of a protective railing in front of the painting that had been one of the most visible signs of *Derby Day*'s success at the Academy in 1858.[39]

One of Flatou's main competitors, Ernest Gambart, who managed the French Gallery, lost no time in capitalizing on Flatou's success. The same day the *Railway Station* show opened, *Derby Day* was advertised as on view in the upper rooms of the French Gallery at 121 Pall Mall, within easy walking distance of both No. 7 Haymarket and the Academy.[40] The press helpfully highlighted the juxtaposition. After a short piece on art critic Tom Taylor's book on the *Railway Station*, a notice in the *Art Journal* in June 1862 advised readers: "'The Derby Day,' another famous picture by Mr. Frith, with the engraving by M. Francois, nearly finished, is also exhibited at the French Gallery in Pall Mall. Visitors may therefore compare the two great works."[41] The *Athenaeum* also advertised the opportunity; including as a note of "Fine Art Gossip" the fact that "The public will be able to institute a comparison between Mr. Frith's most important works, 'The Railway Station,' described by us last week, and 'The Derby Day,' by exhibition of both in the same neighborhood."[42]

The process did not end here. Over the next year, Flatou continued to mine the possibilities set up by the geography of London's art market. After a reported 80,000 viewers saw the *Railway Station* in the West End, he closed that exhibition in September 1862, with the intention, as the *Art Journal* noted, of "re-open[ing], we believe, about Christmas, in the city."[43] Accordingly, in December, the *Art Journal* reported "Mr. Frith's picture of the 'Railway Station' is now 'on view' at Messrs. Hayward and Leggatt's, [79] Cornhill, where it will, no doubt, attract as much attention as when exhibited at the West End of the metropolis."[44] Cornhill is in the City of London, an area associated with finance and home to the Bank of England, and by exhibiting in this area, Flatou presumably hoped to reach a different pool of viewers. By March 1863, the painting had returned to Haymarket, undoubtedly to take advantage of the opening of the spring art season, with its many gallery-sponsored "annual exhibitions" that preceded the annual Academy in May.[45] The complex patterns of circulation here were not unique. Frith would continue to leverage Academic and commercial success; for example, exhibiting his series the *Road to Ruin* at the Academy in 1878, but then bypassing the Academy in 1880 to exhibit a similar moralizing series, the *Race for Wealth*, at the King-street Gallery in the West End.[46] The latter series toured the provinces and then returned to London, where it, like the *Railway Station*, was exhibited in a different neighborhood for a different clientele: "Mr. Frith's "Race for Wealth" is now exciting the admiration of city men for whose benefit it is exhibited in Cheapside."[47]

These histories suggest two points worth emphasizing. First, the interplay between the Academy and commercial gallery spaces was critical for Frith's success; he never stopped

exhibiting at the Academy, contributing a major work there each year until the year before he died. Not only did exhibition societies and galleries rely on one another to attract an audience, but artists could productively play the different types of venues off one another. Second, even within the gallery system, there was a range of geographical opportunities, as exhibition spaces in different areas of London could reach very different audiences and surround the work of art with very different kinds of associations.

In sum, the map suggests a view of London exhibition culture as its own network, distributed across multiple sites and operating with a shared set of norms, but with a strong awareness of how strategies of distinction could provide publicity and attract audiences. The map draws attention to one particular gallery identity that emerged in this period: the "Bond Street gallery," associated with luxury goods, fashion, and an elite clientele. Understanding both the shared cultural identity of the "Bond street gallery" and the wide range of ways that individual galleries related to this category creates a clearer picture of the overall network and allows for a more accurate understanding and evaluation of what any individual gallery space signified. What did it mean to exhibit at Dowdeswells as opposed to the Gainsborough Gallery? On Bond Street as opposed to in the City? During the Academy's summer exhibition or at another time during the year? All of these distinctions carried meaning within the larger network of exhibition culture, and geographical and temporal maps are one tool that can help orient us within that lost landscape.

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The Global: Goupil & Cie/Boussod, Valadon & Cie and International Networks (Anne Helmreich)
Just as retail spaces changed irrevocably the dynamic of the London art market, the robust infrastructure of international trade concomitantly altered the economic possibilities that London offered for the sale of art. London had long been part of an international trade in art; indeed, in the early modern period continental artists, such as Hans Holbein and Peter Paul Rubens, achieved more renown than native painters. But in the nineteenth century, the lure of the London market, buoyed by the nation's relatively long period of prosperity, was considerable. In September 1871, in the wake of the Franco-Prussian war, Edgar Degas wrote to James Tissot, who had recently moved to London, "Why the devil do you not send me a line? They tell me you are earning a lot of money. Do give me some figures."[48] The map of London's commercial art galleries provides ample evidence of the opportunities the city afforded in the nineteenth century.

It is thus not surprising that the Goupil firm, a print publishing firm founded in Paris in the early nineteenth-century, quickly alighted upon London when undertaking its plans for international expansion.[49] Reportedly, it first sent Belgian-born Ernest Gambart to London to establish a branch there but Gambart decided to pursue his own business interests.[50] The firm was more successful in 1857 when H. G. Gutekunst, originally based in Stuttgart, established a branch in the Strand specializing in selling books and prints. Around 1846, the firm opened a branch in New York, which it sold to the branch manager, Michael Knoedler, in 1857, yet remaining closely linked. A branch in Berlin opened in 1852 and, in 1861, Goupil bought out the business of Vincent van Gogh (uncle of the painter) in The Hague, which then

joined the international partnership. Hendrik van Gogh was charged with opening a branch in Brussels in 1863. In Paris, in 1870, the firm opened a second retail premises at the fashionable address of 2 place de l'Opéra, supplementing the salesroom at 19, Boulevard Montmartre that had opened in 1850, thus diversifying even within the geography of Paris.[51]

The second major shift that occurred in the Goupil business model over the course of the second half of the nineteenth century was the adoption of sales of original works of art, rather than just reproductive prints, following the common pattern for commercial galleries during this period. The firm focused largely on the primary market, building relationships with living artists, but also worked in the secondary market and would, for example, make purchases at auctions. Richard Thomson has described how the firm changed its profile over the course of the second half of the nineteenth century, moving from academic painters such as Jean-Léon Gérôme and William-Adolphe Bouguereau to costume genre painters such as Marià Fortuny in the late 1860s and 1870s. In 1887 the company restructured, ending a long-standing contract with Bouguereau in favor of signing a contract with naturalist painter Léon Augustin Lhermitte. In the mid-1880s, once Theo van Gogh had taken over the management of the Boulevard Montmartre branch, the firm entered the Impressionist market. Throughout, as Thomson notes, landscapes and rural scenes were a steady "staple," creating favorable market conditions for artists such as Camille Corot, whose work Theo knew well.[52]

The firm's ownership structure also changed over the course of the second half of the nineteenth century; this was eventually reflected in the decision to rename the firm Boussod, Valadon & Cie in 1884. In London, while this new name (now Anglicized as Boussod, Valadon and Company) was used for business transactions, the retail space retained the name Goupil Gallery. The Great War drew several decades of expanding growth to a dramatic close, and the Paris house did not survive. The London branch, however, continued because manager William Marchant purchased the business in 1901 from the Paris firm and his family continued to manage the Goupil Gallery in London until the Second World War when the business was destroyed by bombing.

The firm of Goupil & Cie/Boussod, Valadon & Cie is thus an excellent lens through which to address my larger research question about the role played by London in the internationalization of the art market over the course of the second half of the nineteenth century. While a fairly robust picture of the exchanges between artists, particularly between those located in France and those in Great Britain, has emerged, in great part through the work of scholars, such as Anna Gruetzner Robins and Richard Thomson, less well understood are the exchanges between institutions, in which I include dealers and galleries.[53] Moreover, while the significance of Goupil & Cie/Boussod, Valadon & Cie for French art is well recognized, its importance for the London art market is less well studied. But, in fact, it handled artists who were decisive for the course of British modernism, including George Clausen, Philip Wilson Steer, and James McNeill Whistler.[54]

In my study of the Goupil Gallery over the past nine years, I have adopted a variety of approaches, including biography, in exploring the significance of gallery manager David Croal Thomson; historiography, in examining Thomson's writings in the context of the emergence of art history in Great Britain; and social historical analysis, in analyzing the firm's strategies in negotiating between local and international markets.[55]

For these studies, the stock books of Goupil & Cie/Boussod, Valadon & Cie, now held by the Getty Research Institute, were an invaluable resource. While likely to be an incomplete record of the firm's activities on an international scale, since the individual branches also kept their own stock books and considered aspects of their business autonomous from the main house, these stock books nonetheless constitute an unparalleled record. The fifteen volumes cover the years from 1854 to 1919 and include over 40,000 transactions.[56]

Fig. 4, James McNeill Whistler, *Arrangement in Grey and Black: Portrait of the Painter's Mother*, 1871. Oil on canvas. Musée d'Orsay, Paris.

We are accustomed, as art historians, to avail ourselves of such resources when conducting provenance research, trying to track down the history of a particular object. But the quantity of data held by the stock books tantalizingly suggests other possibilities, which can be illustrated by exploring further one of the most famous transactions handled by the firm. Whistler's portrait of his mother, *Arrangement in Grey and Black: Portrait of the Artist's Mother* (1871; Fig. 4), is now in the collections of the Musée d'Orsay thanks to the brokering efforts of the firm. In 1891, Thomson, who would go on to orchestrate Whistler's 1892 retrospective at the firm's London branch, proposed to the Paris main house that the portrait be offered to the Musée du Luxembourg (whose collections have since been absorbed into the d'Orsay). To facilitate this, the painting was shipped from London to Paris and put on display in the firm's galleries, and local critics, particularly Gustave Geffroy and Stéphane Mallarmé, mounted a "campaign" to propose the acquisition, which, after much discussion, was finalized by the close of the year.[57]

But how does our understanding of this episode—often used to herald the eventual ascension of modernism into the sacred sphere of the museum—change if it becomes clear that this was not the only instance of a museum acquiring art from Goupil & Cie/Boussod, Valadon & Cie.? A survey of the database compiled by the Getty Research Institute from the firm's stock books reveals that the following institutions also patronized the firm: Leeds Art Gallery, Manchester Art Gallery, the Preston Art Gallery, the National Gallery of Victoria (Melbourne), the National

Gallery (Berlin), the Louvre Museum, the Dordrechts Museum, and the National Museum of Fine Arts (Buenos Aires). To understand and assess more fully the Luxembourg's action, it would be productive to compare the acquisition of Whistler's canvas with other museum acquisitions within the firm's network. Just as the significance of any one commercial art gallery changes when situated within the larger landscape of the London commercial and artistic fields, the consequence of any one transaction alters when positioned within a larger, contextual domain.

Producing this domain, created out of thousands upon thousands of transactions, is difficult with traditional art historical methodologies, which are arguably better suited for the investigation of individual or small groupings of artworks and/or artists because they privilege "close reading." To study the whole of the Goupil & Cie/Boussod, Valadon & Cie network requires a different intellectual framework, what literary scholar Frank Moretti has described as "distant reading," which allows the scholar to look at "units that are much larger or smaller than the text." Moretti adds that "if we want to understand the system in its entirety, we must accept losing something," but justifies this loss by pointing out how distant reading holds the promise, by allowing a larger corpus than before to be studied, of producing analyses "that go against the grain of national historiography."[58]

How to achieve this distant view, how to shift from the individual, telling transaction, to analyze the behavior and history of a network and the strategies embedded within it? To answer these questions, I turned to the methodology of network analysis, which allows me to study with greater precision the nature of the relationship between London and the Goupil & Cie/Boussod, Valadon & Cie network and the possibilities this relationship engendered. To adopt this methodology requires conceptualizing the market as a triadic relationship between artist, buyer, and art dealer. The transaction—the act of consigning, exchanging, selling, or buying a work of art—forms the links between these agents. The artist sells or consigns the work of art to the art dealer, thus establishing a relationship, and the buyer acquires the work of art (or exchanges one work for another or sells back to the dealer), establishing yet another relationship. In the language of network analysis, the artist, buyer, and dealer are nodes and the transactions are edges or ties.

In order to assess London's role within this network, the network analysis discussed here has been organized around the metropolitan locations within the Goupil & Cie/Boussod, Valadon & Cie corporate structure as well as other significant locations of sales, such as major exhibitions or auctions. These differing sites reflect cultural practices associated with selling art. In London, for example, by the time Goupil opened its picture gallery in the city, the system of rotating exhibitions to attract clientele was well established, whereas in The Hague such exhibitions were not customary so that the Goupil branch there focused much attention on sending works to large international fairs and exhibitions, as well as other venues, particularly in Amsterdam.[59] In order to identify broad patterns, the network analysis focuses on artists and buyers associated with these particular locations (as opposed to individual works of art that changed hands at these sites). For the sake of simplicity, the name Goupil has been used throughout the version of the stock book database used here and the visualizations produced from the database.

Most analyses of networks rely heavily on visualization as a means by which to both interpret and disseminate results. This methodology thus seems particularly well suited for art historical application, given our discipline's ready capacity for visual argumentation. In the visualizations of the networks shown here, the data have been processed according to the following protocols: the greater the number of transactions related to a particular location (or node), the larger that node. The relative thickness of the edges between any two nodes reflects the number of transactions as well—the greater the number of transactions, the thicker the line. In addition, nodes are brought into close proximity to reflect a close relationship—meaning a relatively higher number of transactions between them. (Here, in order to ensure the legibility of the labels, I have applied a label adjust layout after an initial force layout so that the initial proximity of nodes has sometimes been altered.) Network analysis also allows for various modes of algorithmic analysis, such as modularity (a way of detecting sub-communities within the network), closeness, and betweenness (which measure the distances between nodes in the network in order to assess the significance of any one node within the network), and page rank (which functions like a web search engine to assess the number of links to and from a particular node).[60] I have found "betweenness centrality" to be particularly helpful in assessing London's role within the Goupil & Cie/Boussod, Valadon & Cie network since betweenness "measures the extent to which an agent can play the part of 'broker' or 'gatekeeper' with a potential for control over others" and reveals how dependent the rest of the network is on that agent or node.[61] When this algorithm is run in the network tool used here, Gephi, those nodes that exhibit the highest degree of "betweenness centrality"—meaning they are the closest to other nodes in the network because of the strength of the ties between them —are rendered larger in scale than others. In these visualizations, yellow nodes mark transaction locations within the Goupil & Cie/Boussod, Valadon & Cie network; blue nodes represent clients; and red nodes indicate artists.

I should hasten to add that in many cases the visualizations raise a number of questions that often send me back to the stock books and other primary and secondary sources. In the section that follows, I am using the visualizations to support a broad narrative about the nature of the London branch within the overall Goupil & Cie/Boussod, Valadon & Cie network, including the artists it favored and promoted, and the individuals that patronized it. Even within that narrative, a number of perplexing questions raised by the visualizations remain unanswered: for example, why does the London branch show up as such a strong patron of itself in 1875; perhaps the branch had to acquire works that were initially placed there on consignment? Other viewers of these visualizations are likely to bring their own questions to bear upon them and derive even further queries.

Click on the icons below to view online.
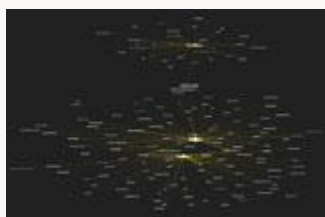

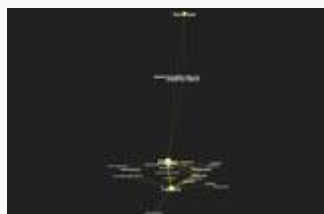Fig. 5, Goupil & Cie network, 1865. Fig. 6, Goupil & Cie network, 1865, betweenness centrality measured.

The opening of the London branch in 1857 does not appear in the stock books held by the Getty Research Institute, an absence explained by branch's focus on prints and books whereas these stock books generally register transactions concerning paintings and sculpture. By 1865, the London branch appears in the network, but is not nearly as robust as, for example, the Goupil branches at Boulevard Montmartre in Paris, The Hague, or Brussels, nor is it well integrated in that it is not linked closely with any of the other branches (fig. 5). This becomes readily apparent when betweenness centrality is measured and the nodes representing the Paris, The Hague, and Brussels branches emerge as the three largest, far outscaling London, which is even outstripped by Goupil's auctions in Rotterdam (fig. 6).

This perhaps is not a surprise; the Boulevard Montmartre branch was well established by 1865 and The Hague branch was built on an already successful business, whereas the London branch was finding its way. The painter Vincent van Gogh, for example, when he was working for the London branch, reported to his brother Theo in 1873, "we've had quite a few paintings and drawings and sold a lot of them, but we still have a long way to go, it has to become more solid and lasting and substantial. I believe that there's still a lot to do here in England, but it can't be done all at once, and of course the first thing we need is to have good paintings &c., and that will be quite a feat."[62]

When Vincent van Gogh was associated with the London branch of Goupil, he was working for Charles Obach, who succeeded Gutekunst in managing the business. Obach successfully grew the business, eventually acquiring a new retail space at 25 Bedford Street better suited for displaying original works of art. This gallery opened in 1875 and it appears to have had a dramatic impact on the scale of the London branch's operations. Van Gogh reported with great enthusiasm about the inaugural exhibition: "Our gallery is now finished and it's beautiful, we have many beautiful things at the moment: Jules Dupré, Michel, Daubigny, Maris, Israëls, Mauve, Bisschop, &c. We're going to hold an exhibition in April. Mr Boussod has promised to send us the best that can be had: Malaria by Hébert, The cliff by J. Breton, &c."[63]

Fig. 7, Goupil & Cie network, 1875, betweenness centrality measured.

Fig. 8, Goupil & Cie network, 1875, filtered to show only those buyers and artists who had more than one transaction with the firm.

As the measure of betweenness centrality reveals, in 1875 the London branch outstripped the Boulevard Montmartre branch and was only overshadowed by the branch at The Hague (fig. 7). Closer analysis of the networks reveals that the London and The Hague branches were closely

linked; when the visualization is filtered to show those buyers and artists who had more than one transaction with a particular branch, the bonds between London and The Hague are even more emphasized (fig. 8). What this also suggests is that while Mr. Boussod of the Paris main house had "promised" goods to London, it was, in fact, The Hague that delivered.

The Hague branch, at this time, was managed by Hermanus Gijsbertus Tersteeg, a close acquaintance of the Van Gogh family whom the painter Vincent van Gogh described as "a personal friend of [Anton] Mauve and many others, and he has that *je ne sais quoi* that wins art lovers over."[64] Tersteeg had assumed his position in 1867 and decided to focus on younger, lesser-known artists. When Vincent van Gogh had been stationed with Goupil in Paris, he had cultivated relationships with the young Dutch artists studying there, such as Jacob Maris, Matthijs Maris, and D. A. C. Artz, and Tersteeg subsequently capitalized on these connections. He later claimed that he had the entire oeuvres of Mauve and Jacob Maris "at his disposal for a number of years."[65] The stars of The Hague branch of Goupil & Cie/Boussod, Valadon & Cie, by the 1880s, were Jacob Maris, Mauve, Artz, and Jozef Israëls. Many of these artists were also favored in Britain, particularly Israëls and Willem Maris, and the Goupil Gallery became a major source.[66] But, it should be made clear; the London gallery was following on, rather than innovating taste.

Israëls had achieved renown in 1862 when his submission to the International Exhibition of 1862 in London, *Fisherman Carrying a Drowned Man*, was popularly received and eventually acquired by the London accountant Alexander Young, whose widow donated it to the National Gallery, London.[67] By the 1870s, London emerged as the "leading centre" for the acquisition of Israëls's work.[68] Indeed, as Dieuwertje Dekkers has established, Israëls increasingly focused on the British market, particularly London, turning his back on his native market.[69] Collector James Staat Forbes, a railway entrepreneur who had lived in the Netherlands early in his career and patronized Goupil & Cie/Boussod, Valadon & Cie, helped to stimulate the overseas market for work by Israëls as he aggressively amassed a large collection and even speculated by selling off portions when economically advantageous to him (and perhaps Goupil & Cie/Boussod, Valadon & Cie as well).[70]

Willem Maris was the younger brother of Jacob Maris and Matthijs (Matthew) Maris, both of whom worked closely with Goupil & Cie/Boussod, Valadon & Cie. Jacob Maris quickly earned a reputation as a plein-air painter of rural scenes that owed a debt both to the work of his elder brothers and that of the Barbizon School in France. Many collectors who favored Israëls also patronized Willem Maris, as in the case of J. C. J. Drucker, a Dutch financier. Drucker moved to London in 1883[71] and, in 1912, donated Willem Maris's *Ducks Alighting a Pool* to the National Gallery, London.[72] He, like Forbes, was an important player in the Goupil & Cie/Boussod, Valadon & Cie network.

The behavior of these patrons suggests that pursuing an artwork trumped maintaining an exclusive relationship with any particular branch within the firm's network. Young, for example, clearly favored the London branch, as indicated by the thick line—so thick it has become a rectangle—linking him to the city in this visualization, but he also patronized The Hague, Paris l'Opéra, and New York branches (fig. 9). Forbes also worked heavily with the London branch, registered by the thick, long rectangle binding him to that location, but nearly

as much with The Hague and Paris l'Opéra branches, perhaps as a result of his speculative activities (fig. 10).
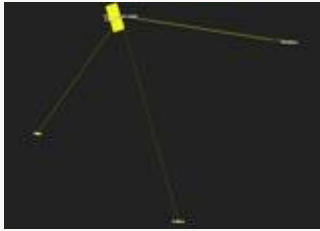

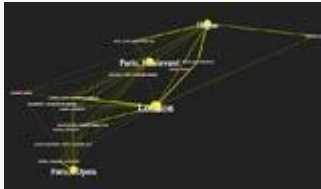Fig. 9, Goupil & Cie/Boussod, Valadon & Cie, 1846–1919, filtered to focus on Alexander Young.
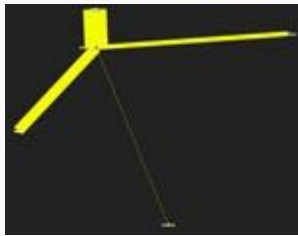
Fig. 10, Goupil & Cie/Boussod, Valadon & Cie, 1846–1919, filtered to focus on James Staat Forbes in the entire network.

By 1883, as the taste for The Hague School and Barbizon school artists with whom Goupil was closely affiliated became even stronger in Britain, the London branch became even more robust. This becomes immediately evident in a visualization of the Goupil network of 1883 which reveals that London is, in fact, slightly more significant within the network than the Parisian branches at Boulevard Montmartre or l'Opéra or the branch at The Hague (fig. 11). In this year, the London branch moved from Bedford Street to New Bond Street, putting it in closer proximity to many of its competitors and endowing the firm with greater visibility within the market. The greater prominence the Goupil Gallery obtained in London with its larger space and desirable New Bond Street address is reflected in its ascending position within the overall corporate structure of the firm. In fact, in 1883, London was responsible for more transactions than any of the other branches of the firm shown here.

Again, artists were shared across the network, as this visualization, which focuses on those artists with the greatest number of transactions, makes clear (fig. 12). Broadly speaking, most of these artists were associated with either The Hague School (e.g., Jacob Maris, Willem Maris, and Anton Mauve), or the Barbizon School (e.g., Jules Dupré, Constant Troyon, and Charles Daubigny). David Croal Thomson did much to popularize the Barbizon School in Great Britain; he authored a series of articles on the artists in the *Magazine of Art* and then organized a series of one-person exhibitions at the Goupil Gallery. He positioned Corot as part of this school of artists and capitalized on these artists' growing popularity within Great Britain.[73]
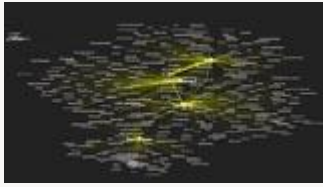
Fig. 11, Goupil & Cie network, 1883, betweenness centrality measured.

Fig. 12, Goupil & Cie network, 1883, filtered to show only those buyers and artists who had more than three transactions with the firm.

Yet, whereas the British market increasingly privileged the Dutch Hague school, the behavior of the French Barbizon artists—Corot, Daubigny, Dupré, and Troyon—tells a different story (figs. 13, 14, 15, 16). Looking at the overall network over the entire chronological frame, the branch at l'Opéra was the most significant point for transactions associated with these artists, with London, The Hague, and New York jockeying for second, third, and fourth position.

Fig. 13, Goupil & Cie/Boussod, Valadon & Cie, 1846–1919, filtered to focus on Camille Corot.
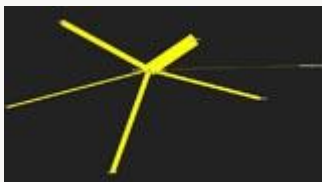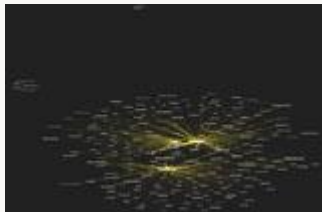

Fig. 14, Goupil & Cie/Boussod, Valadon & Cie, 1846–1919, filtered to focus on Charles Daubigny.

Fig. 15, Goupil & Cie/Boussod, Valadon & Cie, 1846–1919, filtered to focus on Jules Dupré.

Fig. 16, Goupil & Cie/Boussod, Valadon & Cie, 1846-1919, filtered to focus on Constant Troyon.

Fig. 17, Goupil & Cie/Boussod, Valadon & Cie, 1894, betweenness centrality measured.

In 1894, the London branch moved again, this time to a location on Regent Street that gave the firm an even larger sequence of galleries. The expectation, based on the previous links between geographic location in London and robustness within the Goupil & Cie/Boussod, Valadon & Cie network, is that this move would lead to yet another rise in scale and volume for the London branch (fig. 17). But the visualization of the network revealed an unexpected result —the appearance of a substantial node in New York, which is distinct from Knoedler's. This sent me back to the relevant secondary literature. Dekkers, who has closely studied The Hague branch, briefly mentions that a branch of Boussod, Valadon & Cie was founded in New York in 1887;[74] this is confirmed by reports in the *New York Times*. On November 15, 1887 the newspaper praised the appearance of a "new art branch house which Messrs. Boussod, Valadon, & Co., successors to Goupil and Co., have just opened at 303 Fifth-avenue." The author drew attention, in particular, to the display strategies adopted there: the proprietors eschewed a large display window and instead judiciously displayed a "limited number of paintings by the best masters" in an interior that resembled a tastefully appointed parlor. This aesthetic, the author explained, followed the model of "the best art houses in Europe," indicating that Boussod, Valadon & Cie was exporting not only art but also strategies for retailing art.[75]

In London, by 1894, David Croal Thomson had extended his stock beyond the Dutch and French artworks made available to him through the Boussod, Valadon & Cie network, and developed a roster of artists working in London, including Whistler, Clausen, Steer, and Arthur Peppercorn, all of whom had ties to progressive French art through their training and subsequent career trajectories.[76] In 1894, the rotating roster of exhibitions included displays of the work of Steer (who studied in Paris and was deeply engaged in the practices associated with Impressionism), Hamilton Aidé (a French-born writer and amateur artist living in London), Dutch artist Anton Mauve, and British watercolorist Hercules Brabazon (who was championed by John Singer Sargent).[77]

Like the French Barbizon circle, those artists based in London—such as Clausen, Peppercorn, Walter Sickert, and Steer—largely found their most robust market at home (figs. 18, 19, 20, 21). Whistler is the exception, serving a tripartite market of London, Paris, and New York (fig. 22). But the prominent role of London within Whistler's network reveals that, despite his claim, in a letter to Thomson in 1895, that "I don't want a single canvass [*sic*] of mine to remain in England" (where patrons were profiting handsomely on selling works acquired earlier in Whistler's career), the city was nonetheless a significant locus throughout his career.[78]

In 1901, around the time that Marchant bought out the London branch from the corporate management, the branch was highly robust, but overshadowed by New York and The Hague (fig. 23). The London branch continued to share artists with other branches in the network, privileging The Hague School artists, including Bernard Blommers, Théophile de Bock, Jacob Maris, Mauve, and Willem Roelofs, but retaining its long-standing interest in Corot.

Fig. 18, Goupil & Cie/Boussod, Valadon & Cie, 1846–1919, filtered to focus on George Clausen.
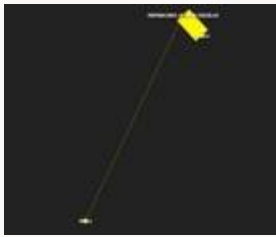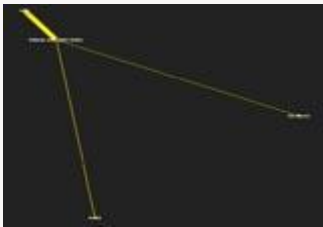

Fig. 19, Goupil & Cie/Boussod, Valadon & Cie, 1846–1919, filtered to focus on Arthur Peppercorn.

Fig. 20, Goupil & Cie/Boussod, Valadon & Cie, 1846-1919, filtered to focus on Walter Sickert.

Fig. 21, Goupil & Cie/Boussod, Valadon & Cie, 1846–1919, filtered to focus on Philip Wilson Steer.

Fig. 22, Goupil & Cie/Boussod, Valadon & Cie, 1846–1919, filtered to focus on James McNeill Whistler.

Fig. 23, Goupil & Cie/Boussod, Valadon & Cie, 1901, betweenness centrality measured.

In sum, the activities of the London branch of Goupil & Cie/Boussod, Valadon & Cie reveal that the London market was porous and pluralistic, able to sustain the careers of both native-born and foreign artists that flowed through the firm's network. Moreover, we should be mindful that the boundaries of the geography traced out by the Goupil & Cie/Boussod, Valadon & Cie network exceeds that of the locations of transactions. Firstly, the clients that patronized the various locales represented in the Goupil & Cie/Boussod, Valadon & Cie network were mobile and their home addresses indicate a widespread terrain beyond Europe and Great Britain: in North America, for example, Boston, Buffalo, Cincinnati, Cleveland, Minneapolis, Montreal, New Orleans, Philadelphia, Pittsburgh, Saint Louis, and San Francisco; in South America, Buenos Aires, Santiago, and Sao Paulo; and in the Empire, Calcutta.[79] Secondly, other art dealers were amongst the most active buyers in the Goupil & Cie/Boussod, Valadon & Cie network. This means that the artworks that flowed through this network could be mobilized to circulate even more widely through the actions of these dealers, who represented a broad diversity of metropolitan locations, primarily in Great Britain, Europe, and North America. But, intriguingly, many of these firms were located in the same urban centers as were the Goupil & Cie/Boussod, Valadon & Cie branches. For example, in London, the following commercial art galleries acquired work through the network: Arthur Tooth & Sons, Colnaghi, Daniel Cottier, Dowdeswells, the Fine Art Society, Ernest Gambart, Hollender and Cremetti (who managed the Hanover Gallery), Obach, Thomas Agnew and Sons, Thomas

MacLean, and Wallis and Sons. Moreover, these firms, like many other buyers in the network, patronized more than one branch of Goupil & Cie/Boussod, Valadon & Cie.

This suggests that one of the significant conclusions drawn from the mapping of London's art galleries—that the relationship between exhibition societies and galleries is a story of mutual benefit—can be extended to the commercial realm. Dealers benefitted from the presence of vigorous competition, which provided yet another market for their goods. This aligns with Bayer and Page's observation that in the Victorian period, dealers heavily availed themselves of auction houses not only to consign works but also to purchase.[80] Bayer and Page speculate that these actions may have been "intended to influence the public's perception of the state of the market for specific artists' works."[81] This interactive and interdependent field of competition may also explain why so much British art, at the first point of sale, did not leave the shores of Great Britain, since within the boundaries of London itself could be found a highly functioning market. This market could readily absorb and re-distribute what was made available within its perimeters, as well as import and export beyond the city's borders. As in the case of the map of London, these conclusions rest upon patterns only discernible when large data sets are examined.

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Conclusion: The Local and the Global
Henry James, in his novella *The Figure in the Carpet* (1896), describes an ongoing dispute between the first-person narrator and the critic George Corvick over the meaning, the "general intention," of the books written by their friend Hugh Vereker. The metaphor of the figure in the carpet is deployed to describe the process of searching for meaning hidden in the text, looking for "the string the pearls were strung on, the buried treasure." At one point in the narrative, Miss Erme reports that Corvick has discovered the treasure: "It's the thing itself, let severely alone for six months, that has simply sprung out at him like a tigress out of the jungle. . . . They all worked in him together, and some day somewhere, when he wasn't thinking, they fell, in all their superb intricacy, into the one right combination. The figure in the carpet came out."[82]

Like James, who uses this tale to raise skepticism about the practices of nineteenth-century criticism, we are not advocating for a single hidden meaning that can be excavated from our sources. Instead, we are arguing for the adoption of new modes of analysis that will allow us to view the historical record in new ways—from a point of view of distance that permits us to observe patterns that would otherwise elude us. As the narrative about our project accompanying this article attests, these modes of analysis are both experimental and labor intensive. And, as this article demonstrates, these new methods do not displace other modes of art historical analysis, but instead work in concert with them.

Perhaps a more useful metaphor, at this juncture, would be a constellation. Just as a single star gains new significance when set in the context of a constellation, here we propose that any single instance of a London commercial art gallery takes on a new significance when seen in a larger historical constellation. Here we have begun to chart at least two constellations, that of the city of London and that of the international art trade. The local and the global, we wish to

underscore, did not constitute constellations widely separated by time and space, but intermingled patterns that shared many points in common while holding others distinct. As the example of the Goupil Gallery demonstrates, many London galleries not only operated within the local context of London but also on an international stage. And, even for those London galleries that did not pursue international trade, the significance of their choice was framed by those who did. Just as being (or not being) a Bond Street gallery carried particular associations and significances, so too did adopting (or eschewing) transnational trade relationships.

Here the figure of the network, with its attendant implication of circulation, becomes more useful as it helps to characterize the flow of objects and people. In visual terms, the map of London and the visualizations of trade relationships reinforce the usefulness of this concept and render it easier to grasp and test. While these local and global networks held promise of fluid exchanges, and the ease and frequency by which such exchanges could occur accelerated over the course of the nineteenth century as the networks grew apace, the flow within these networks was not always even, as we have demonstrated. Therefore, the task of the researcher is both to reconstruct these networks, as they developed over time and space, and to investigate which possibilities within the network could be activated by particular agents or objects and why (or why not). Just as a dialectic is formed between the local and the global, so is a dialectic formed between the agent/object and the network. Such dialectics, as the editors of the new journal *Mobilities* point out, are characteristic of mobilities, "the large-scale movements of people, objects, capital and information across the world, as well as the more local processes of daily transportation, movement through public space and the travel of material things within everyday life."[83]

The mobility made possible by these networks has a marked impact on how we conceive of reception in nineteenth-century studies, reinforcing the need to recognize multiple historical moments and geographic points of reception that must be reckoned with, even within the span of a few short years after the work of art's initial production. This suggests, returning to the problem that plagued James, that we must continue in our pursuit of new modes of interpretation, setting aside the pursuit of a singular hidden meaning. Thus the modes of analysis made possible by the digital humanities align well with, and arguably help to reinvigorate, the revisionist program within our discipline that has been underway for at least the last thirty years. Moreover, the tools used here—geographic mapping and network analysis —are embedded in the practices of what has been recently dubbed the 'spatial turn in the humanities' and demonstrate the capacity of art history to engage meaningfully with this emergent mode of inquiry.

As Jo Guildi notes, the phrase "to turn" implies both a look backwards and a look forwards.[84] This holds true for our work here as well. These new modes of analysis both support paradigm shifts in the discipline—the spatial turn and the recognition of transnational mobilities—and allow us to reinvigorate traditional questions regarding an artist's career and provenance. So, we close on a note both cautionary and liberating. For those colleagues who argue that the test of the validity of the digital humanities is what new questions these new modes of analysis and dissemination make possible, we suggest that we do not have to wait for new questions to emerge from the methodology. The digital humanities allow us to address both questions

regarded as core to the discipline's formation of knowledge and inquiries that stimulate new interdisciplinary perspectives.

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Introduction | The Local | The Global | Conclusion | **About the Project**

Digital scholarship involves technological experimentation and significant collaboration. In this supplementary essay, we document and reflect upon those processes. In "Lessons Learned," we offer some thoughts on the implications of this kind of work for art-historical scholarship, including production, dissemination, and evaluation. In the "Project Narratives," we provide an overview of the data used in our analyses and our working process as well as brief introductions to the key individuals involved in this project and their roles and responsibilities.

Lessons Learned[85]

1. Understand that digital scholarship requires an extensive time commitment: This type of work is very labor, and therefore, time intensive. First, the primary source data must be obtained and verified, then it must be ingested into the digital platform(s). The latter step, because it is computerized, holds the promise of quickness, but, in our projects, we learned it takes considerable effort.

2. Digital scholarship rests on data standardization: One reason digital projects can take considerable time is that the data requires a certain level of standardization. This is particularly challenging for historic data that is often idiosyncratic and "dirty" (meaning, typically, ambiguous or incomplete). Moreover, in our field we tend to privilege transcription —retaining all the traces of the original source—but the computer requires standardized spellings and other repeatable formats in order to organize the data effectively and perform efficient searches.

3. Revise traditional scholarship and publishing workflows: In traditional scholarship, the content experts/scholars are responsible for authoring the text and then the manuscript is handed off to the publisher for editing and publishing. With digital projects, however, the publishing format is variable and therefore all options viable for the intended publisher must be considered at the outset of the project. The two strands of the project—generating new scholarship and publishing new scholarship—must be managed in tandem and in dialogue.

4. Collaboration is crucial for success: As scholars we possess considerable content expertise, but to undertake these projects we must seek out the expertise of specialists in data management, database construction, computing programs, and web design and development, just to name a few relevant domains. Critical to the success of digital projects is for these experts to come together as equals, sharing their relevant knowledge (as opposed to, for example, content experts regarding technologists as service providers). Working together they will identify and solve problems more efficiently and develop more robust and effective solutions.

5. Rethink traditional models of authorship: The new models of collaboration required for these projects challenge traditional notions of authorship. Throughout our process, we found ourselves engaged repeatedly in thoughtful conversations about what constituted authorship and who, from our project teams, should be identified as authors. As indicated in the article text, we chose to identify Fletcher and Helmreich as the co-authors of the article to reflect the fact that the text was co-written and that the arguments within the text itself are the product of their intellectual collaboration. But, in varying degrees, the processes of data standardization, interpretation, and visualization upon which these arguments are based were larger collaborative efforts involving many other contributors. The project narrative statement is thus an essential component of this publication, as it attributes and acknowledges the diverse contributions of our colleagues.

6. Digital scholarship is a form of scholarly interpretation: The London Gallery map and the Goupil & Cie/Boussod, Valadon & Cie visualizations rely heavily on Geographic Information Systems (GIS) and quantitative methods, respectively. The data-heavy aspect of the projects may obscure the fact that this work rests on acts of interpretation distributed throughout the entire process, from deciphering nineteenth-century script to selecting, modeling, and presenting the data. Generally speaking, scholarly interpretation took place at two critical stages in our projects—in assembling, processing, and analyzing the archive and in developing our analysis as a scholarly argument for publication. At times our interpretation was shaped by computational and database requirements ill-suited to the ambiguity that often characterizes the primary source material used by humanists. For example, the data structure underlying the mapping project required a precise starting and ending date for each gallery's tenure at a given address, but sometimes the archive does not provide definitive clarity on such information. The database underlying the network visualizations required a uniform name for each sales location for the purposes of clustering the data, but the archive used multiple nomenclatures. Decisions were made as to which names should be considered variants, but another researcher might, for example, interpret the variety of names differently. Both the methods and results of digital humanities projects should be understood as scholarly interpretations, and thus of a piece with long-standing practices in the humanities.

7. Reconsider traditional models of scholarly argument: Here we re-emphasize a key point in our article: our argument is not limited to the text, but is also embedded in the map and visualizations. We hope that any scholarly conversation our work might initiate will engage with the maps and visualizations, as well as with the text of the article itself.

Project Narratives
The *London Gallery Project*

Pamela Fletcher
The *London Gallery Project* is an integral part of the larger project on the history of the commercial art gallery that I have been working on since 2004. The primary scholarly outcomes of this project have been publications in the conventional formats of journal articles and a co-edited anthology.[86] From the early days of the research process, however, I have used this map to organize and interpret my data. *Nineteenth-Century Art Worldwide*'s move toward expanding digital publishing opportunities has provided a forum in which the project can be published, giving me the chance both to explore the research questions it generates in a

fashion not possible based on static images of the map, and to make the data available to other scholars.

My research project began with a question: how did the commercial art-gallery system operate in nineteenth-century London? My interest in this question was animated by a focus on reception: where did people encounter works of art, and how did the physical and social circumstances of those encounters shape their responses? My goal was to write a narrative history of the emergence and consolidation of the gallery system, but I quickly became overwhelmed by the sheer quantity of the data and its fragmented nature. Information about individual galleries is scattered across very different kinds of archives. My research focused on four major sources: the extensive collection of nineteenth-century exhibition catalogues at the National Art Library at the Victoria and Albert Museum in London; reviews and advertisements in the periodical press; the exhibition and event listings compiled annually by *The Year's Art*; and, to a lesser extent, collections of letters between artists and dealers in the collections of the National Art Library and the Getty Research Institute. As my files of data grew, I realized I needed a way to organize that data, and more importantly, to put the individual accounts of galleries into a larger pattern.

Mapping seemed an obvious choice to see the contours of the larger system, and so, at the suggestion of David Israel (Bowdoin College), I began to investigate available options. We chose to use ERSI's GIS for two interrelated reasons. In the 1990s and 2000s, GIS was increasingly visible in historical scholarship.[87] As a result, there was available funding and technical support for humanities scholars to use GIS. In the summer of 2005, David Israel, Bowdoin student Karen Fossum, and I received a grant from the National Institute for Technology in Liberal Education (NITLE) to attend a "GIS at NITLE Student Immersion/ Faculty Focus workshop" at Middlebury College, which was led by Diana Stinton. The workshop was designed to introduce us all to the possibilities of GIS, to train Karen and David in the software, and to get advice from experts on the specific challenges of our project. The Gibbons Summer Research Internship Fund at Bowdoin sponsored Karen's work on the project for the rest of that summer.

There were two primary outcomes from this workshop. The first was a seminar I taught at Bowdoin in fall 2006 on "The Commercial Art Gallery." Students divided into three groups, one focusing on London 1875–1900; one on New York 1950–1975; and one on New York 1976–2005. Each group gathered data on the names and addresses of galleries, and Karen Fossum entered it into GIS to create maps of the changing cultural geography of these two metropolitan centers. The student research on London has been incorporated into the map. The students also worked on individual research papers using the case-study model. The GIS maps were presented in a symposium to Bowdoin art-history faculty and other students.

The second major outcome was the interactive map and website, which was built in 2007 with the final data entered in the summer of 2012. The first part of the project involved mapping all the data points (i.e., commercial gallery locations) in GIS, a complex year-long project undertaken by student research assistant Karen Fossum. The second step was creating the animated map. As many scholars have noted, one major limit of GIS is how it handles time, a primary concern of historians and art historians.[88] Because modes of mapping time in GIS were inadequate when this project launched in 2007, we chose to animate the map using Flash.

Many members of Bowdoin's Information Technology department contributed to the project at this stage. David Israel conceived of the overall structure of the timeline, and designed and built the website within which the map is viewed. Tad Macy converted data into XML that could be consumed by the ActionScript to provide geographical coordinates, as well as gallery names, dates, and addresses, in the Flash multimedia platform for display on the website. He also revised and wrote new code in ActionScript to control the sliders on the map, and set the placement of map coordinates. Kevin Travers assembled the map's interface as a timeline in Flash, which allows for the incremental animation of the data and overlays. Christina Finneran helped manage the workflow in the final weeks of the project's construction in 2007. And, finally, in 2012, David Israel added information to each individual data point represented in the gallery layer of the map.

The first public presentation of the map took place at a symposium on the London Art Market at Tate Britain in February 2007. But the map's primary function continued to be as a resource and support for my research. The Mellon-funded initiative at *Nineteenth-Century Art Worldwide* (*NCAW*) offered me the perfect opportunity to make it more widely available to scholars, and to publish the results. When I returned to the map in 2012, the resources—most crucially the dedication of time, but also the financial means—were not available to re-create the map animation on a different platform despite the improvements in computing technology in the intervening years. I, therefore, decided to publish the map in its 2007 version, but with updated web pages and the inclusion of detailed essays and information pages for each of the seventy-six unique galleries (one hundred and fourteen data points) included on the map.

In conclusion, it is worth emphasizing the ways in which technical considerations shaped the project in fundamental ways. First, a gallery's "start" and "end" dates at a given address are constrained by the ability to identify them precisely; one may know that a gallery of that name was operating earlier or later, but if the specific address is unknown, it cannot be entered onto the map. Spatial location thus becomes a key attribute in a gallery's definition in ways that do not allow for the exploration of the frequent ambiguities and vagaries inherent in an emerging form. Second, using Flash to animate that map means that it is difficult to add layers or to change any individual data point on the map without re-doing the entire animation. This was not a serious problem when the map functioned primarily as a research tool, but it does limit the tool's ability to adopt new information that its publication will inevitably generate.

The Goupil & Cie/Boussod, Valadon & Cie Network Visualization Project
Here, the two main collaborators on this project, Anne Helmreich and Seth Erickson, describe their working processes.

Anne Helmreich
As part of a project investigating the state of landscape painting in Great Britain after the death of J. M. W. Turner, I began to study the firm Goupil & Cie/Boussod, Valadon, & Cie which helped to introduce French naturalism and impressionism into Great Britain. This led me to larger questions about the state of the art market in London in this period, the relationship of the London market to those on the continent, and London's significance within an international network. My inquiry into the possibilities that network analysis might hold for the study of the historic art market began in 2009 when I received a small grant from Case Western Reserve University to explore visualization tools. At that time, I was guided to using

Tableau Software, which I used to visualize the sales networks of artist James McNeill Whistler, who was associated with the firm. This experience convinced me that information visualization and network analysis were promising modes of analysis, but the difficulties I had in locating relevant expertise and assistance within the university also convinced me that I needed to acquire greater sophistication in these modes of investigation so that I could articulate better the needs of my project and also potentially pursue grant support.

I then applied for and was accepted to a National Endowment for the Humanities Summer Institute on Advanced Topics in the Digital Humanities, dedicated to Networks and Network Analysis, led by Timothy Tangherlini, University of California, Los Angeles.[89] This was, in short, a transformative experience. Over two weeks in August of 2010, with a dynamic group of humanities scholars, I learned about network analysis directly from leading experts, and engaged in hands-on workshops that provided basic and advanced proficiency in various software tools and programs. Most importantly, in learning these tools and programs, our group gained insight into the algorithms and principles that informed them so that we would become critical consumers. At the end of the two weeks, I was able to present my first visualization, drawn from 50 sample records extracted from the online database of the Goupil & Cie/Boussod, Valadon & Cie stock books created by the Getty Research Institute. This visualization was derived using *ORA, a network analysis tool developed by Computational Analysis of Social and Organizational Systems at Carnegie Mellon University.[90]

My ability to undertake this analysis rested upon the work on the Goupil & Cie/Boussod, Valadon & Cie database that had been completed by the Provenance Index team at the Getty Research Institute (GRI). Since acquiring the stock books of Goupil & Cie/Boussod, Valadon & Cie, the GRI had arranged for the stock books to be scanned and made available to the public as PDFs.[91] The GRI also developed a searchable database, based on the stock books. Christian Huemer, (Project for the Study of Collecting and Provenance, GRI), planned and supervised the production of the database. Ruth Cuadra, (Application Systems Analyst, GRI), was responsible for structuring the database and its web interface; Agnes Penot-Lejeune, independent scholar, transcribed the stock-book information.

As Goupil scholar Penot-Lejeune explains, while the database is largely a transcription of the stock books, it nonetheless required distinguishing information that was often collapsed into a single entry in the original books.[92] Through its web interface, this database is well suited for typical provenance research, which entails searching for an individual work of art. But, its present interface does not allow for searches that would elicit broad patterns about particular regional markets; for example, what art works were sold in New York between 1885 and 1890? [93] While the web interface does not allow for the exploration of connections between entities –which artists, for example, sold both in New York and London?—the flexibility of the back-end system, most critically the underlying database (in the STAR format), made it possible to re-purpose the data for this project.

Becoming a Getty employee in the spring of 2011, following a tenure as a research fellow at the Getty Research Institute, permitted me obtain the entire database in spreadsheet form, with the permission of Huemer and technical assistance from Cuadra. As we began to work with the data, we encountered a number of problems that stemmed from the fact that the database was created as a transcription of the handwritten stock books. It contained multiple spellings of the

same entity, making computer recognition of similarities difficult. For the "artist" field, this problem was rectified as the database was created by validating the names against the Getty Provenance Index's authority list of artist names, but the sales location field and patron field, for example, still contained multiple variants. With the consultation and support of UCLA PhD student Seth Erickson, I developed a name authority for the sales location field and also rectified the spelling of patrons' names. (Unfortunately, the process of moving data to the Gephi software led to the loss of accents and other diacritics, but correct spellings have been preserved in the source database.)

Erickson, building on his expertise in information science and online publishing, then developed a command-line script, written in Ruby, to extract the relevant fields from the spreadsheet that was created from the GRI's database, standardize the data, and prepare them for ingestion into network analysis software programs, as described below. It is worthwhile, at this juncture, to underscore a point that has been thus far implicit in my narrative: the collaborative nature of the work in the digital humanities and the ways in which projects, in order to succeed, must draw on the expertise of diverse experts. This project has been able to make significant advances because of the GRI's investment in creating a structured database for the Goupil stock books, and because I have been able to gain the insights and expertise of a wide range of digital humanists.

Based on this ongoing work, I shared the results of my research first at the Digital Art History workshop organized by Nuria Ortega and Murtha Baca at the University of Málaga, and then with my colleagues from the NEH Institute in a symposium, organized at UCLA by Tim Tangherlini, in October 2011.[94] In these presentations, I had made the decision to adopt two modes of analysis, as can be seen in this article: a) analyzing the networks by annual slices of time; b) studying the behavior of artists and patrons within the network over time. This entailed creating individual networks for each year, and then one giant network for the entire time period. The latter is extremely unwieldy and gnarly. Because I was working on a typical desktop and laptop configuration, I found it useful to apply filters so that large amounts of data are suppressed and key transactions are highlighted.

Since these presentations, I then made the decision to switch the software program for network analysis from *ORA to Gephi because Gephi is an open-source program supported by a large development community, and I hoped to benefit from the ongoing improvement of key features and the addition of new ones over time.[95] With the support of the Mellon grant to this journal, I then worked further with Erickson to prepare the data for this program (see below for a fuller explanation). In early August 2012, through the Mellon funding, I organized a workshop on Gephi, led by digital humanist Elijah Meeks and attended by Christian Huemer, Emily Pugh (Web Developer, *NCAW*), Seth Erickson, and myself. The goals of this workshop were to identify the best means of publishing the graphs derived from Gephi, to explore the analytical capacities of Gephi and how these might be best deployed for this project, and to contribute to building a community of humanities scholars engaged with Gephi and network analysis. The opportunity for the group to work collaboratively in identifying problems and solutions and in sharing ideas about the state of the digital humanities allowed us to move the project forward substantially and in exciting ways. Meeks provided invaluable input; most critically he envisioned a new way of structuring the art market network to be able to focus on individual transactions, an approach I hope to take up more fully in the future. He also

recommended using a relational database to structure the data, an approach that was immediately adopted as this issue had been a long-standing question for our team.

Meeks also offered us a publishing model via the project ORBIS, recently completed at Stanford University.[96] In particular, the sections of the project "Understanding ORBIS" and "Network Visualization" suggested how a dynamic interface for networks of select years of the Goupil database might be managed within a publishing interface. Again, I hope that a future opportunity will allow me to explore this model more fully.

The network visualizations shown in this article, developed via Gephi, were first generated using a Forced Atlas layout (10,000 repulsion). Nodes were then colored (red for artists, blue for buyers, and yellow for sales locations). This allowed me to identify clusters visually. Once the labels were added to the nodes, I changed the layout to Label Adjust to avoid overlapping labels that obscured reading the networks. Within this network I could undertake subsequent analyses, most typically deploying statistical analysis to derive betweenness centrality, or filtering (using the ego network functionality of Gephi) for the behavior of a particular agent within the network. These networks were exported as SVG files, which Erickson prepared for publication by developing an interactive interface.

Seth Erickson

As briefly described above, migrating Goupil & Cie/Boussod, Valadon & Cie's raw stock-book data into a form suitable for network analysis involved a process of first identifying the features in the data that the author was interested in analyzing, then cleaning the relevant fields and, finally, developing a mechanism for querying or selecting portions of the data for export to Gephi. The tabular data provided by the GRI consisted of an 18MB comma-separated value (CSV) file with several dozen columns and over forty thousand rows representing transactions between 1846 and 1919. Despite the size of the data set, isolating the table columns relevant to this research was a straightforward process—the nature of each transaction (e.g., sale, return-to-artist, etc.), the transaction location, the date, the artist, and the buyer directly all mapped to columns in the CSV file.

Cleaning the data and deciding how to represent it as a network graph, however, posed more serious questions. The data was fraught with inconsistent spellings for buyer names and Goupil & Cie/Boussod, Valadon & Cie sales locations, as noted above. Indeed, the variations in spelling were great enough to necessitate a manual cleaning process before we could begin network analysis. (As mentioned above, the artists' names were already represented by the GRI's authority term). We proceeded by generating tables listing every unique value for buyer names and sales locations as found in the raw data. The resulting lists included 7,757 unique spelling variations for the buyers and 356 unique spellings for the sales locations. Helmreich then manually associated each spelling variation with her own authority term. This process was partially expedited by sorting the lists alphabetically to increase the collocation of spelling variations that referred to the same entity. The resulting tables, which we refer to as authority tables, were used later to map the "dirty" buyer names and locations found in the original data to the "clean" values that would be exported for network analysis. While this approach was extremely labor intensive, we are confident in the results. Further, because the authority tables encapsulate all of the textual modifications we made to the original data, they may assist future efforts by the GRI to clean the data at its source.

With the data cleaned in this manner, the next challenges were to implement a means for selecting subsets of the data and to decide which kinds of network graphs we were interested in generating. Although Gephi and other network analysis software packages provide filtering features, they are not designed or intended to be used as general-purpose querying tools for datasets as large as the Goupil & Cie/Boussod, Valadon & Cie stock books. A typical solution is to store large data sets in a relational database (such as MySQL or Postgres) and configure the analysis software to query the database for the graph's node and edge lists. (Network analysis graphs are composed of nodes and edges.) Gephi, for example, can be configured to query a SQL database through its "Import Database" tool. In our case, the administrative trouble associated with setting up a relational database management system and populating it with data, combined with the fact that we do not share workspaces or computing systems, made this approach problematic. Further, our selection criteria were not complicated; Helmreich simply needed to isolate the transactions from a particular year. Consequently, I decided to implement a per-year filter as a configuration option for the same command-line tool that would be used to extract fields from the raw data, integrate the modifications from the authority tables, and export the network graph.

Before this command-line tool could be created, however, one question remained: what kinds of network graphs should we generate? Data as found in the Goupil & Cie/Boussod, Valadon & Cie stock books can be represented as a network in a myriad of ways because each column is a potential node type and each additional node type increases the options for associating nodes with one another. Here we were interested in only three node types: the Goupil & Cie/Boussod, Valadon & Cie branch, and other transaction locations, the artist, and the buyer. Even so, many graph configurations were possible: those involving just one node type (e.g., location to location via common artists, or common buyers); those involving two types (e.g., locations linked to artists); or those with all three. (Elijah Meeks later pointed out yet another option: that the transactions themselves could be a fourth node category, functioning as a "meta-node" linking artists, buyers, and locations).

Our initial strategy (which we continued to use through the project) was to generate graphs with all three node types; each transaction in the data set is represented by two edges—one between a location and an artist and another between a location and a buyer. This graph configuration worked well because it was a relatively transparent representation of the data. Further, because Helmreich was primarily concerned with the transaction locations, it was easy to generate the two-type graphs we required (location-artist and location-buyer) by simply filtering out the unwanted node type within Gephi. Later in the project (thanks to generous input from Elijah Meeks) we also implemented the one-type graphs for locations linked by transactions with common artists and locations linked by transaction with common buyers.

The command-line tool used for constructing the network graphs was written in Ruby because it is a robust scripting language with good support for handling the file types used here (CSV for the input and GraphML—an XML standard for network graphs—for the output). Furthermore, as described below, Ruby's object-relational mapping library (ActiveRecord) was very useful. Nonetheless, other languages, such as Python or Perl, have similar features and would have served just as well. As for its design, initially, the tool was implemented in a very procedural manner: it simply iterated through all the rows in the CSV, cleaning the column data using the authority tables, and writing the results to a GraphML file. Later in the project,

when it became clear that we should explore alternative graph configurations more rigorously, the tool was re-implemented using object-relational mapping and a SQLite database (a relational database in file-form). This made it much easier to implement the queries associated with each of the graph-types. In its present form, the tool consists of two components: one that imports the raw data, cleans it, builds the object-relationship mappings, and writes them to a SQLite file; and another component that queries the SQLite according to the graph type requested (selecting only transaction from a certain year, if specified), and exports it to GraphML.

Publishing in *Nineteenth-Century Art Worldwide*

Emily Pugh
The narratives above illustrate both the potentials and the challenges of using technologies, such as GIS and network analysis, for art historical research and scholarship. These potentials and challenges extend into the publication phase of the project, which, as indicated above, must be considered simultaneously with research and development. Publishing encompasses integrating the analysis in the form of an argument and essay as would be recognized by the scholarly community, and in a format easily accessible across differing computing platforms. Developing approaches and techniques for publishing this kind of scholarship is therefore as crucial to the implementation of digital humanities in art history as is the creation of digitally-advanced research tools and methodologies.

The publication of the current article was a challenge because some of the computing applications used by Fletcher and Helmreich did not generate results in a format that could be presented immediately in an online format. For example, the file format produced by Gephi (.gephi) is viewable only if readers have the software loaded on their computers. The dynamic map created by Fletcher and Israel uses Flash, which is more widely accessible, but which makes it difficult to direct users, via hyperlinks for example, to specific dates or layers within the map. To solve the .gephi file-format issue, Erickson developed a presentation format that employs both javascripting and SVG files (which is an export file format allowed by Gephi) allowing for a dynamic presentation of the evidence produced in Gephi that works across browsers and across platforms. For the *London Gallery Project* map, video files provide a way around the limitations of Flash, taking the *NCAW* reader through specific views of the map without having to rebuild the map itself in a new format.

Stanford University's ORBIS site once again provided a valuable model in addressing publishing concerns. As a "Digital Scholarly Work," ORBIS provides its readers with both the fruits of the research conducted using the geospatial network analysis tool and the analytical framework itself. ORBIS's readers can benefit from the scholarship by reading a scholarly essay, and by using the framework on their own, potentially to explore their own research questions. Similarly, here, we have provided both guided "views" of the visual evidence and interpretation assembled by Fletcher and Helmreich and access to the maps and network visualizations themselves so that *NCAW* readers can explore these scholarly resources further. While some of the solutions developed for publishing "Local/Global: Mapping Nineteenth-Century London's Art Market" were unique to this project, many of the lessons learned in publishing this article can and will be used by *NCAW* in the future to publish articles which use similar methodologies. Our experience with this article has shown that it is possible to develop

publishing approaches that are customizable as well as scalable and adaptable to different kinds of scholarly research and content.

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The *London Gallery Project*
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The Goupil & Cie/Boussod, Valadon & Cie Network Visualization Project
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Nineteenth-Century Art Worldwide
Emily Pugh: Web Developer

Pamela Fletcher is Associate Professor of Art History at Bowdoin College. Her research and teaching center on Victorian and Edwardian painting, with a focus on questions of narrative, sentiment, and play in the context of nineteenth-century exhibition culture. Recipient of fellowships from the Center for Advanced Study in the Visual Arts, the Getty Research Library, and the Paul Mellon Centre for British Art, she is the author of *Narrating Modernity: The British Problem Picture 1895–1914* (Ashgate, 2003). Her work on the London art market has appeared in *Nineteenth-Century Art Worldwide, Visual Culture in Britain*, and in the co-edited (with Anne Helmreich) anthology *The Rise of the Modern Art Market in London, 1850–1939* (Manchester University Press, 2011). She is currently writing a book on the mid-Victorian painting of modern life, portions of which have appeared in the *Oxford Art Journal*, *Victorian Studies*, and *Nineteenth-Century Contexts*.

Anne Helmreich is Senior Program Officer, Getty Foundation (Associate Professor, Art History, Case Western Reserve University, on leave). She earned her Ph.D. from Northwestern University and has held appointments at the Center for Advanced Study in the Visual Arts and Texas Christian University. Recipient of fellowships from the Clark Library, the Getty Research

Institute, the Harry Ransom Center, the Huntington Library, the National Endowment for the Humanities, Paul Mellon Centre for British Art, and the Yale Center for British Art, she is the author of *The English Garden and National Identity* (Cambridge, 2002) as well as numerous articles and book chapters on nineteenth-century British art and culture. She has a manuscript in progress on the relationships between art and science in nineteenth-century Britain. With Pamela Fletcher, she has authored several studies relating to the nineteenth-century British art market, including the co-edited volume *The Rise of the Modern Art Market in London, 1850–1939* (Manchester University Press, 2011).

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Notes

[1] Walter L. Arnstein, *Britain Yesterday and Today: 1830 to the Present*, 4th ed. (Lexington, MA and Toronto: D. C. Heath and Company, 1983), 73–74.

[2] *The London Gallery Project* was begun in 2005, as a joint project between Pamela Fletcher and David Israel. The data on commercial galleries was drawn from Fletcher's research, while Israel originated the concept of an animated map with a timeline. The map developed as a fully collaborative project, with substantial updates in 2012, in preparation for its publication in this journal. For the Goupil & Cie/Boussod, Valadon & Cie project, Seth Erickson designed an interface that allowed the appropriate data to be extracted from the stock-book database created by the Getty Research Institute and modeled for ingestion by Gephi. We have chosen to identify Fletcher and Helmreich as the primary co-authors of this article to reflect the fact that the text itself is a product of their intellectual collaboration. Israel and Erickson have been identified as secondary authors because of their substantive intellectual contributions to the technological projects. Further explanation of the collaborative nature of the digital projects on which this art historical argument rests can be found in "About the Project".

[3] The College Art Association's most recent conference (Los Angeles, 2012), for example, featured sessions on "Happenings: Transnational, Transdisciplinary," "The Interconnected Tenth Century," "Mapping Cultural Authority: Revisionism, Provincialism, Marginalization," "Internationalizing the Field: A Discussion of Global Networks for Art Historians," "Civilization and its Others in Nineteenth-Century Art," "Avant '68: France and the Transnational Flow of Culture in the Global 'Long Sixties,'" and "'Useful to the Public and Agreeable to the Public': Academies and their Products in Spain and New Spain."

[4] Harrison C. White and Cynthia A. White, *Canvases and Careers: Institutional Change in the French Painting World* (New York: Wiley, 1965).

[5] See, for example, Malcolm Gee, *Dealers, Critics, and Collectors of Modern Painting: Aspects of the Parisian Art Market between 1910 and 1930* (New York: Garland Publishing, 1981); Nicholas Green, "Dealing in Temperaments: Economic Transformation of the Artistic Field in France during the Second Half of the Nineteenth Century," *Art History* 10, no. 1 (March 1987): 59–78; Nicholas Green, "Circuits of Production, Circuits of Consumption: The Case of Mid-Nineteenth-Century French Art Dealing" *Art Journal* 48, no. 1 (Spring 1989): 29–34; Robert Jensen, *Marketing Modernism in Fin-de-Siècle Europe* (Princeton: Princeton University Press, 1993); and David W. Galenson and Robert Jensen, "Careers and Canvases: The Rise of the Market for Modern Art in Nineteenth-Century Paris," *Current Issues in 19th-Century Art*, Van Gogh Studies, vol. 1 (Zwolle: Waanders; Amsterdam: Van Gogh Museum, 2007), 155. Galenson and Jensen have most directly re-evaluated the arguments of White and White. They re-examine the structure of the "Salon system," to show how it supported careers rather than individual canvases as White and White had asserted. With regard to dealers, whereas White and White assign them a significant role in stimulating competition and sustaining patronage outside the state system, Galenson and White argue "art dealers proved inadequate substitutes for state patronage." Galenson and Jensen, "Careers and Canvases," 155.

[6] Dianne Sachko Macleod, *Art and the Victorian Middle Class: Money and the Making of Cultural Identity* (Cambridge: Cambridge University Press, 1996); Thomas M. Bayer and John R. Page, *The Development of the Art Market in England: Money as Muse, 1730–1900* (London: Pickering & Chatto, 2011); and Pamela Fletcher and Anne Helmreich, eds., *The Rise of the Modern Art Market in London, 1850–1939* (Manchester: Manchester University Press, 2011).

[7] For a fuller description of these databases and the analyses they made possible, see Bayer and Page, *Art Market*, 8–11. For models of the application of quantitative analysis in the early modern period, see J. Michael Montias, "Cost and Value in Seventeenth-Century Dutch Art," *Art History* 10, no. 4 (1987): 455–66; J. Michael Montias, "Socio-Economic Aspects of Netherlandish Art from the Fifteenth to the Seventeenth Century: A Survey," *Art Bulletin* 72, no. 3 (1990): 358–73; Neil de Marchi and Hans J. Van Miegroet, eds. *Mapping Markets for Paintings in Europe 1450–1750* (Turnhot: Brepols, 2006); and Neil de Marchi and Hans J. van Miegroet, "The History of Art Markets," in *Handbook of the Economics of Art and Culture*, ed. Victor A. Ginsburg and David Throsby (Amsterdam: Elsevier B.V., 2006), 1:69–122. For the period covered by this article, see Guido Guerzoni, "The British Painting Market 1789–1914," in *Economic History and the Arts*, ed. Michael North (Cologne, Weimar, and Vienna: Böhlau Verlag, 1996), 97–130, which provides a structuralist analysis of the market and focuses on auction sales. Guerzoni notes that "economists have erred in considering this pattern [that established by White and White] as predominant" (118).

[8] Morris Eaves, Robert Essick, and Joseph Viscomi, eds., *The William Blake Archive*, accessed September 7, 2012, http://www.blakearchive.org/blake/; Jerome J. McGann, ed., *The Complete Writings and Pictures of Dante Gabriel Rossetti*, accessed September 7, 2012, http://www.rossettiarchive.org/index.html; Leo Jansen, Hans Luijten, and Nienke Bakker, eds., *Vincent van Gogh - The Letters* (Amsterdam and The Hague: Van Gogh Museum & Huygens ING., 2009), modified June 2012, accessed September 21, 2012, http://www.vangoghletters.org/vg/; and Margaret F. MacDonald, Patricia de Montfort, and Nigel Thorp, eds., *The Correspondence of James McNeill Whistler*, including *The Correspondence of Anna McNeill Whistler, 1829–1880,* ed. Georgia Toutziari, University of Glasgow, accessed September 7, 2012, http://www.whistler.arts.gla.ac.uk/correspondence/.

[9]*Exhibition Culture in London 1878–1908*, University of Glasgow, 2006, http://www.exhibitionculture.arts.gla.ac.uk/ accessed September 7, 2012.

[10]Dino Franco Felluga, ed., *BRANCH: Britain, Representation, and Nineteenth-Century History*, http://www.branchcollective.org/, accessed July 29, 2012.

[11] Helena Bonett, Ysanne Holt, and Jennifer Mundy, eds., *The Camden Town Group in Context*, May 2012, accessed September 7, 2012, http://www.tate.org.uk/art/research-publications/camden-town-group/.

[12] This was a key theme of the CAA 2012 session, "Information Visualization as a Research Method in Art History," organized by Christian Huemer and Lev Manovich. For an example of new a digitally embedded mode of analysis embedded in a textual argument, see, Diane Favro and Christopher Johanson, "Death in Motion: Funeral Processions in the Roman Forum," *Journal of the Society of Architectural Historians* 69, no. 1 (March 2010), 12–37.

[13] See Diane Zorich, "Transitioning to a Digital World, Art History, Its Research Centers, and Digital Scholarship, A Report to The Samuel H. Kress Foundation and The Roy Rosenzweig Center for History and New Media," May 2012, accessed October 7, 2012, http://www.kressfoundation.org/uploadedFiles/Sponsored_Research/ahrc_report.pdf.

[14] Elijah Meeks, "More Networks in the Humanities or Did Books have DNA," *Digital Humanities Specialist*, Stanford University, December 6, 2011, accessed June 30, 2012, https://dhs.stanford.edu/visualizations/more-networks/. Meeks lists the first three as the "pillars" of digital humanities research but recognizes the fourth as a developing field worthy of recognition on a par with the first three.

[15] For a brief introduction to spatial analysis in the digital humanities, see, the toolkit available via Stanford University, in "Tooling Up for Digital Humanities," accessed July 29, 2012 http://toolingup.stanford.edu/?page_id=1135. For a brief introduction to network analysis in the digital humanities, see, Scott Weingart, "Demystifying Networks," *The Scottbot Irregular* (blog), December 14, 2011, accessed July 29, 2012, http://www.scottbot.net/HIAL/?p=6279. For sample introductions to the digital humanities, for which a copious secondary literature has already developed, see Patrik Svensson, "The Landscape of the Digital Humanities," *Digital Humanities Quarterly* 4, no. 1 (2010), modified September 4, 2010, accessed July 29, 2012, http://digitalhumanities.org/dhq/vol/4/1/000080/000080.html; Lisa Spiro, "Getting Started in Digital Humanities," *Journal of Digital Humanities* 1, no. 1 (Winter 2011), modified, March 2012, accessed July 29, 2012, http://journalofdigitalhumanities.org/1-1/getting-started-in-digital-humanities-

by-lisa-spiro/; and Matthew Gold, ed., *Debates in the Digital Humanities* (Minneapolis: University of Minnesota Press, 2012).

[16] I have attempted to chart this trajectory is a series of articles: Pamela Fletcher, "Creating the French Gallery: Ernest Gambart and the Rise of the Commercial Art Gallery in Mid-Victorian London," *Nineteenth-Century Art Worldwide* 6, no. 1 (Spring 2007), accessed October 10, 2012, http://www.19thc-artworldwide.org/spring07/creating-the-french-gallery-ernest-gambart-and-the-rise-of-the-commercial-art-gallery-in-mid-victorian-london; Pamela Fletcher, "Shopping for Art: The Rise of the Commercial Art Gallery, 1850s-1890s" in Fletcher and Helmreich, *Rise of the Modern Art Market*, 47–64; and Pamela Fletcher, "The Grand Tour on Bond Street: Cosmopolitanism and the Commercial Art Gallery in Victorian London," *Visual Culture in Britain* 12, no. 2 (July 2011): 139–52. I have greatly benefitted from the work of other scholars working on the London art market in recent years, most notably the work of Anne Helmreich; Patricia de Montfort and the *Exhibition Culture in London 1878–1908* project; Thomas Bayer and John Page; and the contributors to *The Rise of the Modern Art Market in London 1850–1939*. For a more extensive list of relevant scholarship, see the resources page.

[17] In order to isolate the development and rise of this new institutional form, the commercial art gallery is defined here as a private and for-profit institution devoted to the exhibition and sale of fine art in a dedicated retail space. The emergence of retail display spaces where paintings and sculpture as well as fine art and reproductive prints and the decorative arts were singled out as distinct types of commodities was a key development in the market in London, and one that also occurred in other art market centers such as Paris at the same time. Green, "Dealing in Temperaments"; and Green, "Circuits of Production." The data set thus usually omits dealers who worked from private homes or offices, and shops that sold paintings among other forms of home decoration, sundries, or antiques.

[18] "Introduction," to *The Spatial Humanities: GIS and the Future of Humanities Scholarship*, ed. David J. Bodenhamer, John Corrigan, and Trevor M. Harris (Bloomington and Indianapolis: Indiana University, 2010), vii. For an overview of these trends, see the essays in that collection and in Michael Dear, Jim Ketchum, Sarah Luria, and Douglas Richardson, eds., *GeoHumanities: Art, History, Text at the Edge of Place* (London and New York: Routledge, 2011).

[19] For a discussion of these trends, see David J. Bodenhamer, "The Potential of Spatial Humanities," in Bodenhamer, Corrigan, and Harris, *Spatial Humanities*, 14–30; and Douglas Richardson, "Geohistories," in Dear, Ketchum, Luria, and Richardson, *GeoHumanities*, 209–14. Many Historical GIS projects are indexed at the Association of American Geographers website, *The Historical GIS Clearinghouse and Forum*, accessed August 22, 2012, http://www.aag.org/cs/projects_and_programs/historical_gis_clearinghouse.

[20] Quoted in Patricia Cohen, "Digital Maps are Giving Scholars the Lay of the Land," *New York Times*, July 26, 2011, C1.

[21] Edward L. Ayers, "Turning Toward Place, Space and Time," in Bodenhamer, Corrigan, and Harris, *Spatial Humanities*, 11.

[22] Art historians are beginning to explore the potential of geospatial technologies. See, for example, Jim Tice and Erik Steiner, *Imago Urbis: Giuseppe Vasi's Grand Tour of Rome*, accessed August 22, 2012, http://vasi.uoregon.edu/; and *ARTL@S: Une Histoire Socio-Spatiale des arts et lettres*, accessed August 22, 2012, http://www.artlas.ens.fr/?lang=en.

[23] Cohen, "Digital Maps," C1.

[24] "Art Notes: An Artistic Hotch-Pot," *Truth*, February 22, 1905, 502.

[25] Fletcher, "Shopping for Art," 55–56.

[26] On the prevalence of exhibition societies, see Julie Codell, "Artists' Professional Societies: Production, Consumption and Aesthetics," in *Towards a Modern Art World*, ed. Brian Allen (London: Yale University Press, 1995), 169–87.

[27] Erika Rappaport, *Shopping for Pleasure: Women in the Making of London's West End* (Princeton: Princeton University Press, 2000).

[28] The development of the art gallery in Paris followed a similar trajectory. Green, "Dealing in Temperaments"; and Green, "Circuits of Production."

[29] Advertisement, *The Year's Art 1883*, 5.

[30] Fletcher, "Creating the French Gallery," and Fletcher, "Shopping for Art."

[31] Advertisement, *Times* (London), June 20, 1891, 1.

[32] Harry Furniss, *The Confessions of a Caricaturist* (New York and London: Harper and Brothers, 1902), 2:12.

[33] William Powell Frith, *My Autobiography and Reminiscences* (New York: Harper & Brothers, 1888), 1:58, 59, 46–50.

[34] For details of Frith's career, see Christopher Wood, *William Powell Frith: A Painter and His World* (Stroud: Sutton Publishing, 2006).

[35] Frith, *Autobiography and Reminiscences*, 1:229–30.

[36] For a typical example of the press coverage, see: "The Railway Station," *Times* (London), April 19, 1862, 5.

[37] Advertisement, *Times* (London), January 20, 1859, 1.

[38] "Art and Artists," *Critic*, April 12, 1862, 370.

[39] "Home from the Colonies," *Chambers's Journal of Popular Science, Literature and the Arts*, June 1862, 404.

[40] "Minor Topics of the Month," *Athenaeum*, April 19, 1862, 533. Jacob Bell owned the painting; Gambart owned the copyright, in order to publish and sell an engraving after the painting. For more on Gambart's dealings with Frith, see Jeremy Maas, *Gambart: Prince of the Victorian Art World* (London: Barries and Jenkins, 1975),100–105.

[41] "Minor Topics of the Month," *Art Journal*, n.s. 24, 1 (June 1862), 147.

[42] "Fine Art Gossip," *Athenaeum*, April 19, 1862, 535.

[43] "Minor Topics of the Month," *Art Journal*, n.s. 24, 1 (October 1862), 210.

[44] "Minor Topics of the Month," *Art Journal*, n.s. 24, 1 (December 1862), 247.

[45] Advertisement, *Athenaeum*, March 7, 1863, 335.

[46] Frith's history of exhibiting at the Academy is recorded in Algernon Graves, *The Royal Academy of Arts: A Complete Dictionary of Contributors and their Work from its Foundation in 1769 to 1904* (London: Henry Graves and Co. Ltd., 1905), 3:171–77. The exhibition of *The Race for Wealth* was widely advertised, as for example, in the *Times* (London), March 17, 1880, 1.

[47] "Our London Correspondent," *Liverpool Mercury*, October 28, 1880, 5.

[48] Richard Thomson, "Modernity, Figure, Metropolis: Importing the New Painting to Britain in the 1870s," in *Degas, Sickert and Toulouse-Lautrec: London and Paris, 1870–1910* (London: Tate Publishing, 2005),22. See also Petra ten-Deoesschate Chu, "The Lu(c)re of London: French Artists and Art Dealers in the British Capital, 1859–1914," in *Monet's London: Artists' Reflections on the Thames, 1859–1914*, exh. cat. (St. Petersburg, FL,: Museum of Fine Arts, 2005), 39–54.

[49] The history of the Goupil & Cie/Boussod, Valadon & Cie firm provided here has been largely assembled from the following sources. Archival sources: Stock books (900239) in the collections of the Getty Research Institute, Los Angeles, CA, http://www.getty.edu/research/tools/digital_collections/goupil_cie/index.html; papers of David Croal Thomson (910126) held by the Getty Research Institute; and Records of the Goupil Gallery, Papers of the Marchant Family and Miscellaneous Material, (TGA 8314), held by Tate Gallery Archives, Tate Britain, London. For the origins of the Goupil Gallery, see DeCourcy McIntosh, "The Origins of the Maison Goupil in the Age of Romanticism," *The British Art Journal 5*, no.1 (Spring/Summer 2004), 64–76. For a history of the firm, focusing largely on the Paris main house and its relationship to the artist Jean-Léon Gérôme, see *Gérôme & Goupil, Art and Enterprise* (Paris: Editions de la Réunion des Musées Nationaux, 2000). The period of the firm's internationalization is addressed in Agnès Penot, "L'internationalisation des galeries d'art françaises durant la seconde moitié du XIXe siècle: L'exemple de la maison Goupil (1846–1884)," (PhD diss., l'Université Paris I Panthéon-Sorbonne, 2012). For a history of the firm in later years, focusing on its activities in Paris and relationships with Impressionist artists, see Richard Thomson, "Theo Van Gogh: An Honest Broker," in *Theo Van Gogh 1857–1891: Art Dealer, Collector and Brother of Vincent*, ed. Chris Stolwijk and Richard Thomson (Amsterdam: Van Gogh Museum; Zwolle: Waanders Publishers, 1999), 61–149. For a history of the Dutch branch, see, Diewertje Dekkers, "Goupil en de international verspreiding van Nederlandse eigentijdse kunst," *Jong Holland* 11, no. 4 (1995): 22–36, 63–64. For a history of the London branch, see, Anne Helmreich, "The Art Dealer and Taste: The Case of David Croal Thomson and the Goupil Gallery," *Visual Culture in Britain* 6, no. 2 (2006): 31–48, and Anne Helmreich, "The Goupil Gallery at the Intersection between London, Continent and Empire," in Fletcher and Helmreich, *Rise of the Modern Art Market*, 65–84.

[50] Jeremy Maas, *Gambart: Prince of the Victorian Art World* (London: Barrie & Jenkins, 1975), 31.

[51] The Opéra branch closed around 1884 and another branch/office opened at 24, Boulevard des Capucine, in 1893. Further research is needed on the dates and locations of these branches and the relationships between them as well as between the branches and the Paris main house.

[52] Thomson, "Theo van Gogh," 75, 89–91.

[53] Patricia Mainardi, "Nineteenth-Century French Art Institutions," *Art Journal* 48, no. 1 (Spring 1989), 7–8. The theme of institutional connectivity in the nineteenth century emerged very strongly in the CAA session I chaired in 2009: "The Networked Nineteenth Century," Association of Historians of Nineteenth-Century Art, College Art Association Annual Meeting, Los Angeles, February 26, 2009.

[54] For more on the Goupil Gallery and modernism in Great Britain, see Anna Gruetzner Robins, "The London Impressionists at the Goupil Gallery," in *Impressionism in Britain*, ed. Kenneth McConkey (London: Yale University Press, in association with Barbican Art Gallery1995), 87–96.

[55] For Thomson, see Anne Helmreich, "David Croal Thomson: The Professionalization of Art Dealing in an Expanded Field," *Getty Research Journal 5* (forthcoming 2013); Helmreich, "Art Dealer and Taste"; and Pamela Fletcher and Anne Helmreich, "The Periodical and the Art Market: Investigating the 'Dealer-Critic System' in Victorian England," *Victorian Periodicals Review* 41, no. 4 (Winter 2008): 323–51. For examples of social-historical analysis, see Helmreich, "Goupil Gallery at the Intersection," and Anne Helmreich, "Traversing Objects: The London Art Market," in *Marketing Art in the British Isles, 1700 to the Present: A Cultural History*, ed. Charlotte Gould and Sophie Mesplède (Farnham: Ashgate Publishing, 2012), forthcoming.

[56] The data within the stock books is already structured: each transaction includes such fields as inventory number, title or subject of the work of art, dimensions, artist, date purchased, purchase price, sale price, seller, buyer (and sometimes the geographic locations of purchase and sale), and date sold. Certain prices are in code.

[57] Margaret F. MacDonald and Joy Newton, "The Selling of Whistler's *Mother*," in *Whistler's Mother: An American Icon*, ed. Margaret F. MacDonald (Aldershot: Lund Humphries, 2003),74–77.

[58] Franco Moretti, "Conjectures on World Literature,*" New Left Review* 1 (January- February 2000), 61.

[59] Dekkers," Goupil," 26. See also D. S. MacColl, who describes "the house of Goupil," as "a sort of tripod with legs in Amsterdam and London as well as Paris." "Modern Dutch Painters," *Saturday Review*, October 7, 1899, 451.

[60] These are very simplified descriptions of these algorithmic functions; readers searching for more information are directed to the relevant professional literature. See, for example, John Scott, *Social Network Analysis, A Handbook*, rev. ed.(London: SAGE Publications, 2000). The software program Gephi used for the visualizations deployed in this article describes "betweenness centrality" as measuring "how often a node appears on the shortest paths between nodes in the network."

[61] Scott, *Social Network Analysis*, 86–87.

[62]Vincent Van Gogh to Theo van Gogh, November 1873, in Leo Jansen, Hans Luijten, Nienke Bakker, *Vincent van Gogh - The Letters*, letter 15, accessed August 25, 2012, http://vangoghletters.org/vg/letters/let015/letter.html. See also, Martin Bailey, *Van Gogh in England: Portrait of the Artist as a Young Man* (London: Barbican Art Gallery, 1992), 31.

[63]Vincent van Gogh to Theo van Gogh, London, between Monday, January 4 and Friday, March 5, 1875, in Jansen, Luijten, and Bakker, *Vincent Van Gogh - The Letters*, letter 29, accessed August 25, 2012, http://vangoghletters.org/vg/letters/let029/letter.html. "Our gallery is ready now and is very beautiful, we have some splendid pictures: Jules Dupré, Michel, Daubigny, Maris, Israëls, Mauve, Bisschop, etc. In April we are going to have an exhibition. Mr. Boussod [in Paris] has promised to send us the best things available." Bailey, *Van Gogh in England*, 32.

[64]Vincent van Gogh to Theo van Gogh, March 25, 1888, in Jansen, Luijten, and Bakker, *Vincent Van Gogh - The Letters*, letter 589, accessed August 25, 2012, http://vangoghletters.org/vg/letters/let589/letter.html. In 1875, Tersteeg had visited London with Cornelius Van Gogh, an Amsterdam art dealer and bookseller. Vincent complained to Theo that the two men "went a little too often to the Crystal Palace and other places that didn't concern them." Vincent van Gogh to Theo van Gogh, May 8, 1875, in Jansen, Luijten, and Bakker, *Vincent Van Gogh - The Letters*, letter 33, accessed August 25, 2012, http://vangoghletters.org/vg/letters/let033/letter.html.

[65] Dekkers, "Goupil," 28.

[66] Charles Dumas, "Art Dealers and Collectors," in *The Hague School, Dutch Masters of the 19th Century*, ed. Ronald de Leeuw, John Sillevis, and Charles Dumas(The Hague: Haags Gemeentemuseum; London: The Royal Academy; published in association with Weidenfeld and Nicolson, London, 1983), 125–27.

[67] John Sillevis, "International Fame," *The Hague School Book* (Zwolle: Waanders Publishers, 2004), 17–18.

[68] Dieuwertje Dekkers, *Jozef Israëls, 1824–1911* (Groninger: Groninger Museum, 1999), 105.

[69] Ibid.

[70] Ibid.,107, 109.

[71] Ibid.,111.

[72]Acquisition credit, National Gallery of Art, London, accessed October 2, 2012, http://www.nationalgallery.org.uk/paintings/willem-maris-ducks-alighting-on-a-pool/*/key-facts.

[73] L. Whiteley, "L'École de Barbizon et les collectionneurs britanniques avant 1918," in *L'Ecole de Barbizon: Peindre en Plein Air avant l'Impressionism* (Lyon: Musée des Beaux-Arts, 2002), 100–107; see also Sarah Herring, "The National Gallery and the Collecting of Barbizon paintings in the Early Twentieth Century," *Journal of the History of Collections* 13, no. 1 (2001): 77–89, and Howard L. Rehs, "Julien Dupré: The Making, Unmaking, and Remaking of an Academic Reputation," *Twenty-first-century Perspectives on Nineteenth-Century Art: Essays in honor of Gabriel P. Weisberg*, ed. Petra ten-Doesschate Chu and Laurinda S. Dixon (Newark: University of Delaware Press, 2008), 93–99.

[74] Dekkers, "Goupil," 33.

[75] "Beautiful Art Rooms," *New York Times*, November 15, 1887, 8.

[76] Thomson's roster of artists is established via the exhibition catalogues published by the Goupil Gallery. I consulted those held in the collections of the National Art Library, Victoria and Albert Museum; see, for example, Pressmark 200.B. 174, 200.B.175, 200.B.176, 200.B.177, 200.B. 178. The Goupil Gallery Scrap Albums (1885–1891, TGA 739), held by Tate Gallery Archives, were also an invaluable source of information about the history of the firm, and contain numerous exhibition catalogues, notices of exhibitions and other miscellaneous ephemera.

[77] Catalogues documenting these exhibitions can be found in the collections of the National Art Library, Victoria & Albert Museum. See Pressmark 200.B.175 which includes the following items: 28. Paintings by P. Wilson Steer, 1894; 29. Drawings and sketches by Hamilton Aidé, 1894; 30. Pictures by Anton Mauve, 1894; 31. Drawings by H. B. Brabazon, 1894. John Singer Sargent authored an essay about Brabazon's work for an exhibition at the Goupil Gallery in 1892. See, Goupil Gallery Scrap Album, Tate Gallery Archives, TGA 739.1, vol, 2, p. 14.

[78] James McNeill Whistler to David Croal Thomson, July 11, 1895, System number 08305, MacDonald, de Montfort, and Thorp, *Correspondence of James McNeill Whistler*, http://www.whistler.arts.gla.ac.uk/correspondence/.

[79] For a history of collecting The Hague School in Canada, see Marta H. Hurdalek, *The Hague School: Collecting in Canada at the Turn of the Century* (Toronto: Art Gallery of Ontario, 1984). See also, Petra ten-Doesschate Chu, "Anton Mauve in Amerika," (Haarlem: Teyler Museum; Laren: Singer Museum, 2008), 148–65.

[80] Bayer and Page, *Art Market*, 110.

[81] Ibid., 111.

[82] Henry James, *The Figure in the Carpet* (1896; 1916 Martin Secker edition, transcribed by David Price, Project Guttenberg, ebook #645, modified September 2, 2002, accessed September 16, 2012, http://www.gutenberg.org/dirs/etext96/fgcpt10h.htm.

[83] Kevin Hannam, Mimi Sheller, and John Urry, "Editorial: Mobilities, Immobilities and Moorings," *Mobilities* 1, no. 1 (March 2006): 1.

[84] Jo Guldi "What is the Spatial Turn," *Scholar's Lab*, University of Virginia, accessed September 2, 2012, http://spatial.scholarslab.org/spatial-turn/what-is-the-spatial-turn/. See also, Richard White, "What is Spatial History," *The Spatial History Project*, Stanford University, February 1, 2010, accessed September 2, 2012, http://www.stanford.edu/group/spatialhistory/cgi-bin/site/pub.php?id=29.

[85] These lessons learned are inspired by the Interim Report of the Online Scholarly Catalogue Initiative, sponsored by the Getty Foundation, accessed September 1, 2012, http://www.getty.edu/foundation/funding/access/current/osci_report.html.

[86] Pamela Fletcher, "Creating the French Gallery: Ernest Gambart and the Rise of the Commercial Art Gallery in Mid-Victorian London," *Nineteenth-Century Art Worldwide* 6, no. 1 (Spring 2007), accessed October 1, 2012, http://www.19thc-artworldwide.org/spring07/creating-the-french-gallery-ernest-gambart-and-the-rise-of-the-commercial-art-gallery-in-mid-victorian-london; Pamela Fletcher, "Shopping for Art: The Rise of the Commercial Art Gallery, 1850s-1890s" in *The Rise of the Modern Art Market in London, 1850–1939*, ed. Pamela Fletcher and Anne Helmreich (Manchester: Manchester University Press, 2011), 47–64; and Pamela Fletcher, "The Grand Tour on Bond Street: Cosmopolitanism and the Commercial Art Gallery in Victorian London," *Visual Culture in Britain* 12, no. 2 (July 2011): 139–52.

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