The Art of Spatial Resistance

The Global Urban Network of Street Art

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Abstract

This study examines street art as a form of popular culture, popular communication, and popular spatial resistance that connects cities and the people in them. Taking a cultural studies approach, it asserts that street art serves not only as a medium for self-expression, but as a means for reclaiming public spaces, communicating to the masses, and forming local and global social networks. In the context of sociological globalization studies, the discourse of global cities, and global city network theory, it argues that street art can form inter-city networks of 'multi-local' popular resistance. Newly compiled quantitative data from six global street artists produce complete network matrices and visualizations representative of a weighted, directional network of eight cities. Empirical social network analysis is used in demonstrating this global urban network of street art, and discussing its properties and wider implications. This network analysis illustrates the existence of global urban networks based on subcultural practices, suggesting an important new way of looking at global city networks, and revealing the potential for other such studies.

"Where are the Champions of Open Spaces?" on construction site, the Borough, London. Photo by the author, 2004.

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Random, 'Buff Monster' poster in Shibuya, Tokyo.
Photo from buffmonster.com, 2005

The Global Urban Network of Street Art

In a world where for the first time more than half of the world's population lives in cities, there may be no more universal human space than the streets. Dark Manhattan canyons, narrow London passageways, or wide Los Angeles boulevards, all are representative in their own way of the strictures of modern life. These are public spaces, the people's spaces, yet there are few places more controlled and commercialized. Cities and their streets are the ultimate arena for mass cultural production and popular cultural creation; imperializing control and popular resistance. And today, more than ever before, cities are integrally connected in a world system. This dissertation argues that graffiti, or 'street art,' a unique form of spatial self-expression and popular communication, can connect cities and the people in them in a global socio-cultural network.

The study begins by offering a theoretical discussion defining street art, placing it within the context of the cultural studies discourse concerning popular culture, particularly the theories of popular resistance and radical democracy. It then takes the so-called 'global city hypothesis' as a starting block for arguing that despite the commonly posited globalization theory of deterritorialization, cultural practices are still strongly tied to physical places and to individuals within them. In today's increasingly interconnected society, cities form critical nodes along global networks. As such, subcultural expression like street art can form inter-city networks of *multilocal* popular resistance.

The second half of the thesis focuses on analyses of quantitative data that provide evidence of street art 'connecting' cities and people. Information gathered by questionnaire from six 'multi-city street artists' provides the network data linking them to eight selected 'street art cities,' and linking these cities to each other. Empirical social network analysis is used, aided by computer network research software and supported by qualitative evidence. The results produce several network matrices and visualizations representing the ways that eight cities are connected by the work of six artists. The qualities of this demonstrated network are discussed and important questions addressed, with an eye for broader implications and future research opportunities.

Chapter I: Street Art and Global Spatial Popular Resistance

In the globalized socio-cultural space of the 21st Century, people and places are highly connected, and the smallest cultural practice can have global implications. People creating graffiti in multiple localities can form cultural bonds. To make such an assertion, however, requires a cultural approach to globalization and global cities research. Though I will return to these important concepts in greater detail in Chapter II, it is critical first to build a definition of street art as I will understand it in the context of popular culture theory.

This chapter aims to locate street art within this discourse by reviewing key cultural studies texts. This is important to understanding street art not only as a subculture, but as a source of common identity formation, a popular form of implicitly political participation, and valid form of cultural communication that might reasonably form network ties between people and places. In particular, street art has great relevance for looking at the concepts of 'making do,' spatial resistance, and radical democracy, to be discussed in greater detail below. I assert that it is in many ways the preeminent example of popular resistance, spatial resistance, and what I will ultimately call *multilocal* resistance. As such, it is not only the cultural practice of popular resistance, but it *communicates* this meme and does so globally as a common urban phenomenon.

Before tackling such issues, it is wise to set out a number of important working definitions – first and foremost being that most amorphous concept of culture. Sociologist John Tomlinson (1999) defines it as the "ways people make their lives, individually and collectively, meaningful by communicating with one another."(17) For popular culture scholar John Fiske (1989), it is "the active process of generating and circulating meanings and pleasures within a social system."(23) As he writes several years later, "I understand culture, then, to encompass the struggle to control and contribute to the social circulation and uses of meanings, knowledges, pleasures and values."(1993: 13) This study aims to follow such an understanding. We must also find a comfortable meaning for the word 'popular.' Though its implications have been slightly misconstrued in modern English, it is

actually a simple enough word, meaning 'of the people.'[1]   What then, is 'popular culture'?

In his *Understanding Popular Culture* (1989), John Fiske provides an important discussion of the relationship between the commoditization of culture by commercial producers and its subsequent reinterpretation and reimagination by the people themselves to form popular culture. For him, popular culture is formed by everyday people taking homogenous, mass-produced products, images or texts and making them their own. This adapting, personalizing and reimagining of "*their* products for *our* purposes, is the art of being in between production and consumption," which transforms "cultural commodity into a cultural resource." (36, 28) As Fiske eloquently puts it, "people can, and do, tear their jeans."(Ibid.: 26)   This concept of 'pranking,' as it is often termed, is related to the idea of the struggle between the people and the powerful that is central to much popular culture discourse. These youth who tear their jeans are responding to the commercialized environment and giving it popular cultural life. It is only another extension of this for people to mark a street corner, poster a building, or 'adbust' a billboard.

Defining Street Art

Though any exact definition may be contentious, I will take street art to mean *public art that participates in or acts upon its environment, and which uses – as an act of transgression and often illegally – the city's walls, advertisements, abandoned structures and streets themselves as its canvas.*[2] This includes 'classic' spraycan graffiti, but just as often stencils, posters, stickers and even three-dimensional installations; from the simplest sidewalk stencil to the most elaborate mixed-media mural or 'liberated' billboard.   I assert that street art, in all its myriad forms, serves not only as an aesthetic medium for self-expression and resistance, but as a set of cultural practices, forming local and global social networks, which reclaim public space and spread ideas as popular communication.

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[1] The distinctions between popular 'of the people', popular 'well-liked by many people' and the 20th Century term 'pop' have been somewhat blurred. The term now more connotes the latter in everyday usage, particularly in the form 'pop.' See also Raymond Williams, 1983: 236-38.

[2] This definition is consistent with the foremost authorities on the subject, including Jerry and Sally Romotsky, 1976; Michael Walsh, 1996; and Triston Manco, 2004.

It is appropriate at this time also to discuss the difference (semantic, etymological, implicit, practical) between 'graffiti' and 'street art,' if indeed there is one. Some 'graff writers' do not want to be considered artists, while at the same time, some 'street artists' look down on the jumble of random tags, stickers, and corporate advertising flair now covering sign-posts around the world, using the term 'graffiti' pejoratively. (Sudbanthad, 2005) Certainly many taggers are less concerned about responding to cultural commodities or pursuing more thoughtful campaigns than they are with marking turf. Yet while my principle concern is with more wide-spread pieces than a simple gang tag on a bus seat, even this *is* pranking and textual reappropriation with cultural implications. More importantly, among the vast majority of this community as best it can be measured, the terms graffiti, graff, and street art are used fairly interchangeably, as are the terms graff writer and artist. (Ganz, 2004; Rose & Strike, 2004) For fear of becoming mired in an even longer – though admittedly interesting – socio-linguistic debate, I will follow their lead.

Street art, as I understand it in this paper, is at its root one facet of the bricolage urban popular culture known collectively as hip-hop.[3] Emerging out of the post-industrial inner city neighborhoods of New York City in the 1970s, hip-hop today is defined by forms of expression, social practices, and perhaps even a certain awareness or attitude – yet still it is greater than the some of its parts. A common definition would certainly include the popular commoditized musical genre of the same name, but also the other original cultural forms of rap, breakdancing, DJing and graffiti. And yet though graffiti today is a cultural practice all its own, in many ways quite distant from its hip-hop roots, what defines it at its core (and ties it back to hip hop and to all these other forms) is that it is firmly rooted in the complex public-private space of the city and 'the streets.'

Among other things, art is about innovation. One of the most unique aspects of street art is the *way* in which it is innovative. With innovation of content somewhat limiting, street art is *context* innovation. In the famous words of Marshall McLuhan (1964), "the medium is the message."(7) An enigmatic and frequently quoted paradox

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[3] In many senses, of course, graffiti has been around for millennia, arguably going back to the Magdalenian cave paintings of Paleolithic Europe or at least ancient Rome. But modern graffiti and street art, as a global subcultural phenomenon, is widely considered to have had its beginning in the 1970s, or even later. (Ganz, 2004; Chalfant & Prigoff, 1987)

to be sure, but it has real relevance to street art. What McLuhan means is that "the personal and social consequences of any medium - that is, of any extension of ourselves - result from the new scale that is introduced into our affairs by each extension of ourselves, or by any new technology." (Ibid.)

Of course, one could argue that there is nothing innovative about writing on walls. Indeed, chalk drawings, murals and the like are among the oldest forms of art and communication on the planet. But street art is not about decoration or storytelling or anything so close to home, so much as it is about the act of creating it and the goal of making this act public. Be it on a boxcar traversing the country or reclaiming public space in dense, commercialized urban environments, writing on a wall or some other public space *means something* in and of itself. This is what Paul Willis (1990) calls 'common culture,' referring to people's application of their cultural sensibilities and symbolic resources to "the *raw materials of our social and built environment* in the production of meaning." (qtd. in Jackson, 213; my emphasis)   Almost regardless of the message in the image, the fact that someone has stenciled a street corner, etched their name in glass on a bus window, or thrown up a massive 'street logo' on the entire side of a building communicates the real popular resistance behind it.

The cultural practice of graffiti can thus be just as important as the message of the work itself. Street art is so powerful because it is an act of transgression, making use of an overtly public medium to produce its eye-catching (to some even shocking) message, inspiring what Tristan Manco (2004) has called an "urban mythology." (8) It is not always outright illegal, but certainly the bulk of it is.[4] Even those graffiti artists who frequently have gallery shows stress the importance of throwing their tag up with the fear of being caught, the need to write with, near or over other artists, and the importance of getting their work out to the far more public venue of the city streets. (Siegel, 1999; Sudbanthad, 2005)   Furthermore, by taking the 'commodity' of commercialized urban space and pranking – indeed frequently

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[4] In exception, some cities have in fact created 'legal walls,' 'art parks' and public mural programs for graffiti writers to use (Siegal, 1999; Grillo, 2004) and many galleries have been holding exhibits of work by street artists since the 1970s (Siegel, 1999; Davis, 1998; Rose & Strike, 2004)

vandalizing – it with graffiti art, writers begin a process of responding to and reimagining the built environment.

Street art *re-appropriates* the built environment, thereby challenging the power of panoptic authority, and *communicates* this action across the city and across the world. John Fiske writes in his early discussion of the nature of popular culture that, "A text that is to be made into popular culture must, then, contain both the forces of domination and the opportunities to speak against them."(1989: 25) This stems from the earlier work of Stuart Hall (1981), who wrote that "Popular culture, especially, is organized around the contradiction: the popular forces versus the power-bloc."(238) In his *Power Plays, Power Works* (1993), Fiske extensively analyzes the characteristics of power and the way it is used by those who control it, and the way that those with less or weaker types of power seek to gain leverage. The "strong, top-down power" of the power-bloc essentially has the goal of maintaining and extending its control over as much physical, social, historical, and conscious territory as possible. The "weak, bottom-up power," which he labels "localizing power," must be concerned primarily with controlling immediate social surroundings.(11) To a greater or lesser degree, this tension is played out in all aspects of popular culture. For street art, it is a central element.

Spatial Resistance

In the post-industrial era of economic restructuring, societal divisions such as poverty are in far greater flux around the world, and the previously established social order is much less structured, leading to "numerous modes of opposition between the power-bloc and the people."(Fiske, 1993: 9) While the power-bloc is concerned with controlling the environment and reducing opportunities to resist it, the interests of the people are in challenging or changing the controlled environment through "their own use of these alternatives, by finding gaps between them where top-down control can be subverted or evaded."(Ibid.: 23) As Fiske writes, "It is, paradoxically, the elaborateness of the social order that produces both subtly pervasive power and the popular agency to resist it."(Ibid.)

By *agency*, Fiske means the ability to act within the power structure. For the people then, agency is this struggle for some control or, in Fiske's words, "making do with what one has."(1993: 21) This is directly related to his idea of popular culture as a process of textual reinterpretation, as 'making do' is implicit in actions such as ripping one's jeans, adbusting, or tagging. "Making do is an act of social relations," he writes, "and the struggle for control is always involved."(Ibid.) From suburban mallrats to urban adbusters and sticker-bombers, "unemployed youths produce themselves as street art in defiant displays."(Ibid.: 35) Yet agency is always constrained by conditions that are in most cases out of their control. The masses must 'make do' with the cultural commodities provided by the power-bloc. This is exactly what street art does when the controlled, hyper-commercialized urban environment is reappropriated and given meaning by the people. In other words, street art is 'making do' on a grand scale - a large, impacting, visual and spatial form of popular resistance.

Graffiti does this in different ways. Some has an overt, immediate purpose behind it, such as the great deal of street art that might be classified as what author Jeff Ferrell (2001) has called 'urban anarchy.' Tied in with direct action organizations like San Francisco's "Critical Mass" bicyclists and London's "Reclaim the Streets" movement, this graffiti is an attempt to 'reclaim' public space. In London, a spontaneous postering campaign was launched to save an abandoned lot – and centuries old burial ground – from sale to private interests. "Where are the champions of open spaces?" plead the posters, which surround the enclosed property and the rest of the neighborhood. Pez, a local street art legend in Barcelona known for his ubiquitous cartoon fish, has also been known to add anti-development messages. (Figure 1) Perhaps the most common example is the phenomenon known as 'culture jamming' or 'adbusting,' in which corporate advertisements from bus stops to billboards are altered by street artists in ironic and often humorous ways.(Klein, 2002: 279-286)

Figure 1. Pez, "No + Especulacion!! Gracias! No Al Hotel!" at a construction site on Las Ramblas, Barcelona. Photo by the author, 2004.

Yet graffiti can also be more simple, and even positive in a sense, as with the art of those for whom street art can be another way to partake in "the joy and creativity of sharing public space" which, even if mischievous, helps brighten up the big city.(Castells, 2004: 158) Michael De Feo, New York's 'Flowerguy,' began adding a little two-dimensional greenery to Manhattan in 1993. Today, thousands of his simple, cheerful flower designs are growing on walls, street lights and electrical boxes in cities all over the United States and Europe. (Figure 2) "I'm continually amazed," he says, "at how much fun and how many smiles a simple little flower can spread in such a big place." (De Feo, 2005: webpage)

Figure 2. De Feo, 'Flower' on Park Avenue. Photo by De Feo, 1994.

Placing it squarely within the popular culture discourse, journalist Pitchaya Sudbanthad (2005) sums up street art well:

"The prints, stencils, stickers, and other objects await discovery by a passing pedestrian… but unlike nearly everything else that decorates our public space, these communications are not hawking the latest shoes or the newest low-carb beer. Street art is many things. It is a resistance against the notion that only paid-for corporate advertising can take hold in our visual commons; the monopoly is to be broken. Street art appears underneath and along side of sanctioned billboards, sometimes replacing them. Other times, it appears on bare walls far from most people's gaze. A public playfulness. It is a gift, a knowing nod, to those who notice."

(webpage)

Chapter II: (Re)Placing Global Culture

Having defined street art and the important communicative significance of popular resistance, this section goes back to review the theories of globalization and global cities research in cultural terms. In this context, the theoretical groundwork for a global cities network based on street art is built. To begin with, it is again necessary to establish some working definitions. The wider discourse on globalization is massive, and worthy of far more space and attention than can possibly be given here. That said, I define globalization, with gratitude to many scholars, as a *process*

which was catalyzed, and continues to be spread, by increasing social, economic, political, and cultural *flows* of people, information, and ideas across political borders; and which implies growing inter-connectedness around the world.[5]

Transnationally, cultural identity can take many forms, from direct connections like duel-citizenships to more subtle ones as through world music. Consider two popular definitions of cultural globalization: "a complex set of interacting and often countervailing human, material, and symbolic flows that lead to diverse, heterogeneous cultural positionings and practices which persistently and variously modify established sectors of social, political, and cultural power."(Lull, 1995: 150); "the intensification of worldwide social relations which link distant localities in such a way that local happenings are shaped by events occurring many miles away and vice versa."(Giddens, 1990: 64)

Let it be said at this point that we are not talking about the formation of a *single* global culture.[6] Rather, I am interested in something more subtle, what Mike Featherstone (1993) describes as "a higher density of interchanges" and "an increase in a wide variety of cultural flows which increase transnational encounters."(173) Subcultures like street art can spread through global communication and through transcultural similarities in the basic formation of popular culture.

One way of looking at the globalized world is Manuel Castells' (1996) concept of the 'network society.' Another complex issue that cannot be afforded here the detailed treatment it warrants, the network society essentially refers to the highly interconnected world in which we find ourselves under the revolutions in information and communication technology that have occurred since the 1970s and which, today, provide for seemingly endless network-forming economic, political, and social connections. Castells argues that "networks constitute the new social morphology of our societies." (469)

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[5] This definition owes particularly to Arjun Appadurai, 1996; John Tomlinson, 1997; and Negus & Román-Velázquez, 2000, among many others.

[6] Some sociologists *have* discussed the possibility, as a result of 'outside pressure' from some ecological or extraterrestrial threat, or even 'at home' in the form of a global federation of nations or the triumph of a particular religion or corporation, but such projections are merely that. See, for example, Mike Featherston, 1993 and Roland Robertson, 1991.

Popular Culture Goes Global

In the words of Geeta Kapur (1998): "Globalization, which has a great deal to do with selling commodities, including units of the culture industry… comes with the theory that people around the globe negotiate at every turn and recycle/refunctionalize the foreign inputs anyway, to arrive at a hybrid fecundity."(202-03) If we accept Fiske's argument that cultural meaning is given to commodities as a result of popular interpretation, than the logic of popular culture at a global level is implicit in Kapur's explanation. So long as "shared consumption patterns, similar work experiences and a worldwide circulating repertoire of images and icons" remain important elements in the shaping of cultural identities, global popular cultures or subcultures are possible, and indeed likely. (Short & Kim, 1999: 80)

Among the 'cultural forms' that have thus been made available for consumption and interpretation around the world are mass marketing, pop advertising, and the generally commercialized cultural commodity that is the urban built environment. When combined with global communication technologies to spread its specificities and unite different practitioners and observers around the world, the ingredients are all there for the globalization of street art. Christian Strike (2004) sums this up eloquently:

> "Tony Silver and Henry Chalfant's influential 1983 documentary 'Style Wars' on PBS touched off an explosion of imagery to the world, now indelible in the minds of tens of thousands of would-be graffiti writers… Pandora's Box had been opened; graffiti art was now global, mutating through and with cultures beyond hip-hop." (233)

Perhaps the most interesting and dynamic example of a truly global popular culture can again be found in hip-hop generally. The "essential expression of Black American urban poor"(Tomlinson, 1997: 182) is now essentially a global commodity, and a global culture.(Chang, 2004) More theoretically speaking, Paul Gillroy (1992) invites "an explicitly transnational and intercultural perspective" with the concept of the 'Black Atlantic,' a way of understanding black identity, diaspora and modernity.(15)   In a survey of this supra-national cultural form, Ulrich Beck (2000) writes that:

> "Africa is not a fixed geographical magnitude, not a separate place on the global, but a transnational idea and the staging of that idea. This is intentionally organized at many different places in the world: in the Caribbean, in the ghettoes of Manhattan, in the Southern states of the USA, in the *favelas* of Brazil, but also at Europe's largest street carnival in London." (27)

Popular subcultures can be viewed in a not dissimilar way. Street art is a form of expression available to almost anyone with the interest in taking part, anywhere in the world. As New York street artist Swoon remarks about her work:

> "This initial action led me to think about participating visually and socially in the creation of the city in ways I never would have had the chutzpah to imagine before, and so I think there must be other people out there having this same experience."
> (qtd. in Sudbanthad, 2005: webpage)

It is this accessibility, mixed with its inherent communicative potential, that helps make street art a powerful form of mass popular expression despite the resistance of structures of power, and thus an important example of *radical democracy*.

This theory argues that, despite its immense value, there are clearly limits to traditional electoral democracy as a means for the people to participate in the public sphere and impress their interests upon state and society, so truly popular expression becomes the obvious outlet. The 'urban anarchy' of Pez and others is a perfect example. "Throughout the United States, Central and South America, as well as in Europe, there is considerable use of walls as public media," write influential street art chroniclers Henry Chalfant and James Prigoff (1987), what they call an "extensive area of political communication" throughout the world. (90)

Furthermore, in the era of globalization, ideas of citizenship and even cultural identity are being drastically reshaped. (Negus & Román-Velázquez, 2000; Sassen, 2002) As Nadine Dolby (2003) asserts, "Identities are formed and reformed within (and in resistance to) structures of power."(262) The idea of radical democracy then, holds that "private acts (of consumption, of cultural production, of identity) are inherently part of the public domain – which reaches far beyond the strictures of state politics."(Ibid.: 268) Those who are politically marginalized, and everyday people all over the world, can thus still exercise important cultural agency with potentially substantial implications. Dolby gives the example of young people using the text of mass cultural commodities and youth culture to exercise their *own* agency and citizenship despite the lack of any formal political power. "In this way," she writes, "young people are not just refashioning private spheres and private identities, but are contributing to the transformation of public spheres, citizenship, and democracy." (Ibid.: 269)

In the network society, people, places and cultures "connected by neither geography nor biology" are now able to communicate and have become connected in entirely new ways. (Lipsitz, 1988: 150) Urban spatial politics and social movements, for example, have taken on a new global character. Annual May Day demonstrations – the marches, protests and other events in demand of labor rights held in unison in cities throughout the world – are one example of this.(Cobban, 1999) The synchronized events of the global environmental, women's, and anti-capitalist movements are others, transnational political issues which, through global communication and collaboration, lead to dynamic "cross-border peoples' networks."(Sassen, 2002: 221) A commonly posited trait of today's globalizing world is the trend towards deterritorialization,[7] yet, as these last examples may suggest, place is still important despite 'post-Westphalian' economic and social flows. Many of the cultural forms and social practices that contribute to identity are highly territorial and continue to be understood in relation to place. (Negus & Román-Velázquez, 2000)

The Global City Hypothesis

The continuing importance of place is one of the primary assertions behind the idea of the world or global city, and the global urban system as a way of viewing the world in the Information Age. Though an academic discourse linking cities to the processes of globalization had been developing since at least the early 1980s,[8] the most influential paper on the subject was John Friedman's (1986) statement of the 'world city hypothesis.' He describes it as a 'framework for research' about "the spatial organization of the new international division of labour," consisting of a number of theses that give cities a critical place in the world economy.(69) More recently defined by Saskia Sassen (1991, 2001), the concept of the global city is essentially that the processes of economic globalization and restructuring have created "a new strategic role for major cities" as command centres and 'global service centres' in the world system.(2001: 3) Castells' (1996, 2000) also builds on

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[7] Nestor García Canclini (1995: 229) describes deterritorialization as "the loss of the 'natural' relation of culture to geographical and social territories." John Tomlinson (1999: 106) argues that "globalization fundamentally transforms the relationship between the places we inhabit and our cultural practices, experiences and identities," and calls deterritorialization 'the cultural condition of globalization.'

[8] According to Gottmann (1989: 62), the term 'world city' (*Weltstadt*) can be traced back to Goethe, who applied it to Paris and Rome at the turn of the eighteenth and nineteenth centuries apparently to denote the leading cultural centres of his world.

this, with his discussion of the 'space of flows,' the space of the network society upon which cities are integral nodes.

Much of the global cities discourse is concerned with defining and then ranking global cities. The basic idea, Friedmann writes, is that "World cities can be arranged hierarchically, roughly in accord with the economic power they command."(1986: 25) He ranks their global competitiveness and connectivity based upon the presence of major financial and manufacturing centers, international institutions, corporate headquarters, transportation hubs, immigration destinations, rapidly growing business services sectors, and population size. Many others have added to this as well, though as John Rennie Short and Yeong-Hyun Kim (1999) note, the most frequently used indicators in ranking cities are command functions, financial markets, producer services, and telecommunications infrastructure.(24-25) Through many comprehensive studies on global cities, their hierarchy, and network, the global city hypothesis has proved a dynamic and incredibly revealing way of looking at globalization, the world economy, and contemporary society. Yet, even though the two are fundamentally linked, very few studies have taken a cultural studies approach or provided discussion of the implications for cultural globalization.

According to Sassen (2001), global cities function in four new ways: as command points for the global economy; centres of finance and specialized service firms; as sites of production; and as markets for the products and innovations produced in them.(3) Why not add some cultural function to these criteria? Surely global cities also function as key sites for the interplay between all this marketed production and the teaming masses for whom it is intended? As Michel de Certeau writes, "spatial practices in fact secretly structure the determining conditions of social life."(96)

The most common way of bringing cultural considerations into global cities research has been through the idea of the 'media city' as a site of production for global mass-cultural commodities. A study by Stephen Krätke (2003), for example, compares the number of global media firms and their enterprise units in cities, identifying seven Alpha, 15 Beta, and 17 Gamma 'global media cities.' New York, London, Paris, and Los Angeles are ranked highest. Similarly, Mitchell Moss (1987) and Deborah Leslie (1995) analyze the worldwide locations of major advertising

firms and identify the top international centers of advertising, respectively. The same four cities rank at the top again, along with Tokyo and Chicago.

While probably the most tangible, and certainly the most approachable (in terms of gathering and summarizing already-available information), this approach may not be the most revealing in the long term. Krätke's study fails to take account of cultural production, global audience reception, or the effects of certain cities and media producers projecting their 'cultures' onto others. Another study that takes a more popular culture studies approach to global cities research is that by Michael Curtin (2003) on television production centers. However, while his analysis touches on broader cultural implications, it is still primarily concerned with the culture industries rather than the reception of their products or the truly *popular* culture being created in global cities.

The media are a main source of cultural construction. As Marie Gillespie (1995) writes, "The acceleration of global flow by communications technologies means that cultural forms are available for worldwide consumption on a mass scale."(15)   Furthermore, because mass consumption of the same "worldwide circulating repertoire of images and icons" is critical in the shaping of cultural identities, there are important implications of certain cities being sites of cultural production, not in terms of any number of firms so much as in the pervasiveness of those cultural commodities that represent cities (or cultures or people) to others. (Short & Kim, 1999: 80)

Another approach we might take to analyzing the cultural significance of global cities is to examine the presence of cultural institutions, such as major museums, the theater or even playing host to the Olympic Games. Not only do these things leave a cultural mark on people around the world and garner worldwide media attention, they are almost requisite hallmarks of 'global city-ness' in and of themselves. (Ibid.: 82-86)   More cultural similarities in these things could conceivably make one city "feel" more like another. When a city-dweller from the US travels to a metropolis in Europe, she may well feel completely at home and not at all 'foreign' when strolling from the modern art museum to the Starbucks to the sports stadium… and likely right past a conceivably familiar piece of graffiti. We could say this shared

experience connects cities and city-dwellers.   And, in the words of Peter Taylor (2004), "Connections are the very *raison d'être* of cities." (i)

Global City Networks

An obvious extrapolation of the global cities hypothesis is the concept of a global city network. Among many, David Smith and Michael Timberlake (2002) have been influential in asserting that we might "conceive of world cities as nodes in multiple networks of economic, social, demographic, and information flows."(118) Peter J. Taylor, Jon Beaverstock, and others at the Globalization and World Cities study group and network (GaWC) at Loughborough University have also done extensive work on networking, primarily using corporate firms and other tangible indicators in their matrices. (GaWC website, 2005)

In his book *World City Network* (2004), Taylor addresses what he calls the 'second nature of cities,' their external relations with one another that he argues are regularly neglected in urban studies. In Taylor's words, "it is 'second nature' to cities to be connected to one another."(i)   Much of the book is about measuring these 'world city network relations,' including an empirical global urban analysis of the type conducted on a smaller scale in the second half of this dissertation. Taylor's work serves as a model for much global urban network analysis, including this one.

A study of urban subculture and the networks it forms can add much-needed social and cultural considerations to the flourishing academic discipline of global cities research, in which a cultural studies approach has generally been lacking.[9] As Martin Albrow (1997) notes, even analyses that have taken a more cultural approach have often "focused on links with international finance, on urban development, and on the more emphatically international lifestyles of jet-setters and yuppies. Scant attention has been paid to everyday life."(43)   In order to discuss the possibility of a cultural global cities network, we must explore possible indicators of this connectivity.

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[9] Although *some* authors have introduced social and cultural considerations (Knox, 1995; Alleyne-Dettmers, 1997; Short & Kim, 1999; Sassen, 2002), the global cities discourse as a whole has been much less thorough in its analysis of cities and urban networks in terms of cultural globalization.

Looking at media and communications, human travel and migration, social, political and religious movements, and everything from pop styles to sub-cultural trends, we can begin to see the factors involved in bringing global culture to the urban and urban culture to the global, in a cultural global city network analysis. Such a dialectic break down not only puts some more tangible images in our heads, it immediately suggests some possible criteria for analyzing the relative global cultural impact of cities, and the links between them. There are of course myriad possible criteria we might look to. A sensible place to start is with the extensive work of Taylor and colleagues at the GaWC, as mentioned above. They have shown that one very useful way of studying networks is the statistical comparison of physical representatives of global city functions and connectivity, such as corporate firms. While comparing 'global service firms' would provide little new insight for my goals here, there are many alternatives we might use to examine cultural connectivity. Instead of law firms, for example, we might look at the locations of news bureaus, ad agencies, and architecture or design firms.[10]   Other indicators could include immigration, tourism, or the number of embassies, consulates, conference centers, or universities.

Popular Culture as Indicator of Global Urban Networks

Less tangible concepts, such as transnational styles, trends, and pop culture 'scenes,' also represent and connect cities, even when the physical presence of firms may not show it. The global fashion scene, for example, could be said to impress trends upon urbanites everywhere and connect major hubs such as New York, Milan, Paris, Tokyo and others. All eight 'street art cities' ultimately used in this study's empirical research have annual fashion weeks. In their book on expansion projects for the designer Prada, Rem Koolhaas and his colleagues identify five 'epicentres' (Milan, LA, New York, San Francisco, and Tokyo) and list hundreds of Prada retailers in cities from Bangkok to Berlin, going so far as to suggest this as a way of viewing the world. (Koolhaas & OMA/AMO, 2001: 3, 7)

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[10] Krätke (2003) and others' work mentioned above makes use of such indicators.

To take another relevant example, the work of 'signature architects' can also be seen in cities all over the world, regardless of where their firm is based. The 656 major architecture firms listed in *The Phaidon Atlas of Contemporary World Architecture* (2004) represent projects in more than 100 cities in 75 countries. Frank Gehry alone has designed landmark buildings in Paris, Los Angeles, Kobe, Bilbao and many more.(Mathews, 1998) Cities with the most projects of "contemporary world architecture" (a good indicator of at least one sort of global urban culture) include London, Amsterdam, Paris, Tokyo, Mexico City, and Los Angeles. (Phaidon Press, 2004)

Many of the most interesting examples of urban cultural interconnectivity come from alternative, youth, and sub-cultures, among the most important of which is of course hip-hop. All the elements of hip-hop have great communicative value, from rap lyrics to the (slightly) more subtle values communicated by subject matter, attitude and imagery.[11] People communicate social identity and subcultural membership through cultural practices, which can translate beyond traditional customary, ethnic, or national lines. (Osumare, 2002: 31) Street art does this on many levels.

All art is a form of communication that transcends language codes and class, value, and interest barriers. Yet a creative expression does not acquire meaning as art or communication unless it is received by someone and given social significance.[12] Fiske (1991) writes:

> "one of the defining characteristics of texts in the popular domain is that they should be treated as unfinished and inadequate in themselves: they are 'completed' only by the productivity of popular readers and by their relevant insertion into readers' everyday lives." (108)

These are the qualities that make texts in the popular realm accessible to be appropriated and reimagined by anyone, and exactly why the public nature of street art is so critical to it. Not only does it take a very public commodity – urbanized public

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[11] Christopher Smith (1997) discusses the communication inherent in the hip-hop performative practice of 'representing.' Similarly, Halifu Osumare (2002) describes breakdancing as a more 'spatial' expressive public enactment of the complex personal and social influences that form hip-hop popular culture more widely.

[12] As Raymond Williams (1983: 72) points out, to communicate is quite simply to "make common to many, impart." Further debate has centered on the importance of reception of communications, and the difference between communication as transmission or communication as sharing. In this vain, I strongly assert that communication requires not only that something be 'imparted' (as speech, text, image, any media) but also that it is received by some audience to become "a common or mutual process"? (Ibid.)

space – as its canvas in the first place, but the aesthetic and social value of the texts it creates are emphatically public as well.

Furthermore, just as the hints of dominant culture within hip-hop's otherwise resistant message enable it to "sustain the world-wide dispersion that it currently enjoys," so do street art's textual similarities with commercial advertising strategies broaden its audience.(Smith, 1997: 350)   Even if we question the real communicative, socializing value of art in general, if we can take as a given that advertising is a powerful form of communication, we could also certainly consider street art to be the same. In this sense, as a form of artistic self-expression *and* mass communication, street art provides both direct connections between people and more general shared cultural experiences for the urban community (and communities) at large. As such, what Dolby calls "loci of change and transformation" can and do occur anywhere and everywhere, even in coordination with each other, to take the popular culture and communication of graffiti art to the streets of the world. (Dolby, 2003: 268)

Multi-local Resistance

Like the global economy, social movements, and cultural identity, in the 'space of flows' place remains critical to popular resistance. Despite its global potential, the social network created by street art is most certainly a place-based phenomenon.   It is not about the culture of the world, but rather it is a global network of *local* expressions of culture and resistance in which place is extremely important.

Historically cities contain human civilization's greatest concentrations of wealth and power, but also of culture and of humanity itself. This complexity makes them ideal breeding grounds for subculture and ripe for social network analysis.(Flanagan, 2002: 110, 115)   It also makes them the primary site for the power struggle between the people and the power-bloc. We need only look to any number of increasingly panoptic modern cities, where the urban environment becomes the location not only for popular culture, but popular resistance as well.   De Certeau (1984) writes that, "if in discourse the city serves as a totalizing and almost mythical landmark for socioeconomic and political strategies, urban life increasingly permits

the re-emergence of the element that the urbanistic project excluded."(96) Indeed, as Saskia Sassen (2002) has shown:

> "The space of the city accommodates a broad range of political activities – squatting, demonstrations against police brutality, fighting for the rights of immigrants and the homeless – and issues – the politics of culture and identity, gay and lesbian and queer politics. Much of this becomes visible on the street." (221)

What's more, such popular agency is particularly difficult for the power-bloc to control in cities. In de Certeau's words:

> "The language of power is in itself 'urbanizing,' but the city is left prey to contradictory movements that counter-balance and combine themselves outside the reach of panoptic power… Beneath the discourses that ideologize the city, the ruses and combinations of powers that have no readable identity proliferate; without points where one can take hold of them, without rational transparency, they are impossible to administer." (95)

Fittingly, the conflict between the people and power-bloc can be viewed in spatial terms, the conflict between 'stations' and 'locales.' In Fiske's conception, stations are the controlled, panoptic spaces created by imperializing power to keep people in their place, while locales are the spaces that localizing power produces by "confronting, resisting or evading imperialization."(1993: 12) Localizing power is concerned primarily with "strengthening its control over the immediate conditions of everyday life" and functions "to produce and hold onto a space that can…be controlled by the subordinate who live within it."(Ibid.) This localizing agency is demonstrated by individual cultural practices that empower people in the urban environment. Street art, with its essential tactic of visually reimagining public space, is just this sort of resistance.

As Iain Chambers (1993) writes, instances of popular resistance occurring in many different cities all over the world, "do not suggest an integration with existing hegemony or the mainstream of metropolitan life, but rather with the shifting, mixing, contaminating, experimenting, revisiting and recomposing that the wider horizons and the inter-trans-cultural networks of the metropolis both permit and encourage."(190) Furthermore, places themselves have meaning and are given identities through people's interaction with and transformation of them. Keith Negus and Patria Román-Velázquez (2000) describe how 'place identity and identification' can develop:

"…by people appropriating, transforming and using particular areas of the city for specific cultural practices. This not only involves interactions between people and buildings, but numerous cultural practices and interactions between different groups of people, and not just identities made exclusively within or amongst the specific groups of people in question." (336)

This is popular culture and communication occurring in many locations at the same time, each one distinct, and yet all with important similar practices, performativities, and imagery, contributing to a worldwide expression of popular resistance to the influence of the power-bloc. This is *multilocal* resistance.

Street art embodies the term. It is an undoubtedly local form of spatial resistance, and yet this local resistance is now being played out at hundreds and thousands of sites around the world, giving common identity for urban places and the people in them. Books like Chalfant and Prigoff's *Spraycan Art* (1987), Tristan Manco's *Street Logos* (2004), and Nicholas Ganz's *Graffiti World* (2004), as well as countless magazines and websites document the truly staggering size of this global phenomenon. As Manco observes, street art has grown from humble beginnings to become a modern global network where "across the world these simple logo-tags or signs are becoming widespread, with each city having its own exponents."(8) Likely there is not a single town, village, or subway car on earth without *some* graffiti, let alone a single city.

Chapter III: Research Design and Methodology

Theoretically and empirically, this study is a network analysis. Having suggested the ways that street art can connect global cities and the people in them, the next sections aim to empirically demonstrate this global urban network, and its properties. This chapter describes the methodology for the network analysis that follows.

Network Analysis

Though the idea of 'network' is extremely general, it can be said basically that networks represent relational ties among sets of actors. In the words of Peter Monge and Noshir Contractor (2003), "Communication networks are the patterns of

contact that are created by the flow of messages among communicators through time and space."(3) Network analysis is the empirical, social-scientific study of these networks and their properties. It takes as its subject the key components of network data: actors (nodes) and their relations (ties or links).

The important difference between network nodes and the subjects or sample elements in other empirical social science research is that nodes are rarely sampled independently. "Often network studies don't use 'samples' at all," write Robert Hanneman and Mark Riddle (2005), "at least in the conventional sense."(1.3) Rather, they may examine all the actors in a given population, or a select sample from some broader population not included in the analysis. In other words, the nodes, their relations, and the network they form are the single object of study, and any wider 'conclusions' may only be carefully drawn as further reasoned hypotheses. (Ibid.)

Individual nodes are often described in terms of their *attributes*, measures of different properties of which any node can have many. Some examples of attributes that are assigned to individual nodes include:

- Degree: the number of direct links with other nodes
- In-degree and out-degree: the number of 'incoming' or 'outgoing' directional links to or from other nodes
- Prestige: the extent to which a node is the object or source of centrality, accounting for directionality in asymmetric relationships

Network ties are described in terms of *relations*. Relations often specify links of variable strength, which could include "data, information, knowledge, images, symbols, and any other symbolic forms that can move from one point in a network to another or can be cocreated by network members."(Monge & Contractor, 2003: 3) Typical measures of relations of use to this analysis include:

- Direct or indirect links: whether the path between two nodes is mediated by one or more others
- Multiplexity: the extent to which two actors are linked together by more than one relationship
- Strength: the "quantity of the relation," the amount of intensity, time, intimacy, or reciprocity of the connection
- Direction or symmetry: the extent to which a link goes from one actor to another, or to which the relationship is bidirectional. Links can be directional or non-directional

As with other analytical methods, there are scales of measurement for network data. Nominal measurements (often called *binary*) simply record the presence or absence of a tie, while ordinal scales reflect gradations of tie strength. This study makes use of both binary and grouped ordinal measures.

Network data are customarily organized in matrices. When relations are binary, the entries are 1 or 0 to show the presence or absence of a tie. If the relations are valued, then numbers are entered into the matrix to represent the strength of the relation between each pair of nodes. Graphs are also useful for visualizing patterns among data. Network analysis primarily uses relatively simple graphs consisting of points (nodes) and lines (ties) called *sociograms*. (Hanneman & Riddle, 2005: 3.1) Relations are either present or absent, and when ties are directional, so too are the lines on the graph, with arrowheads representing the direction. With ordinal data, the measure of size is placed on the arrow and is represented by the arrow's thickness or colour. Node attributes can also be represented in sociograms, with varying colours, shapes and sizes.

Nodes: 'Street Art Cities'

This study is designed to present a city-to-city network connected by the locations of global street artists' work. A most telling network population would of course be all the cities in the world, or perhaps all the cities over 2 million persons, or 10 million, or something along these lines. Unfortunately, this would demand a volume of analysis far beyond the scope of this study. To limit the size of the network population to a manageable number, this study sought to determine (albeit subjectively and in a fairly limited fashion approachable in a Master's dissertation) a short list of the best cities to study.[13]

As such, a population of eight of the most 'important' cities for street art was selected, as implied by a combination of personal experience and a survey of major

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[13] It is not uncommon in network analysis to select a group of units of observation such as this for any number of social-scientific reasons, or simply because there is reason to suspect that a network exists among it. (Hanneman & Riddle, 2005: 1.4)

online, photographic, and textual resources documenting global street art.[14]   The decision was also made in light of the existing global cities literature and its established 'regulars.' The cities are Amsterdam, Barcelona, London, Los Angeles, New York, Paris, San Francisco and Tokyo. Other important cities are no doubt left out, and this population of eight cannot claim to be anything more representative than that. All are important on a variety of levels however, recognized global cities[15] that one can confidently hypothesize are major nodes in a global urban network of street art. They are also actors for which other useful data are readily available that allow one to make some reasonable predictions about a larger global city network.

Ties: 'Multi-City Street Artists'

In deciding what subjects would provide the requisite data for artist-based connectivity between cities, a number of options were potentially available. The most apparent links may be between artists who are actually members of the same 'crews' or collectives.[16] Yet while many of these *are* multilocal, many others are not. Furthermore, they represent connectivity between multiple artists more than they do between artists and cities, and such data would be less representative than desired.

The system of linkages between websites on the Internet is also an obvious manifestation of a directional peer-to-peer network. What with the amorphous and generally deterritorialized nature of the Internet, however, connecting any such network data to eight real cities would require a great deal more theoretical reasoning. Furthermore, while links between websites are certainly a valuable indicator of the global nature of street art in their own right, this study is concerned with the 'real' cultural ties between cities on the level of cultural practices on the streets.

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[14] These included, among others, Aitch, 1999; Ganz, 2004; Manco, 2004; Rose & Strike, 2004; published profiles and interviews in magazines and online, Wooster Collective, Art Crimes and the other websites listed in Appendix A, and more, as well as previous research (2004) by the author. All sources listed in bibliography.

[15] In the terms of the GaWC 'Inventory of World Cities,' they represent five 'Alpha', one 'Beta' and two 'Gamma' world cities. (GaWC, 2005)

[16] Originally, many graffiti writers from the same neighborhoods formed crews, groups of youths who would often paint the same tags – a tactic also employed by street gangs to mark territory. Though graffiti crews (and of course gangs) still exist, many artists have formed or joined 'collectives,' usually larger groups of individuals often in multiple cities or even multiple continents.

An excellent source of data to suggest the linkages between cities, in terms of number, strength and direction of connectivity, are street artists who themselves work in multiple cities. Six individuals were selected for their perceived multi-city nature and close ties to at least one of the eight cities in the hypothesis. They are the Parisian artist Invader, New York's famous 'Flowerguy' Michael De Feo, Californian artist 'Above' known for the wooden arrows he hangs above cities, a female poster artist from New York known as Swoon, LA's Random, known for his bubbly 'Buff Monster' posters, and the mysterious French sticker-bomber Influenza.

Data Collection and Representation

The first street artist, Invader, makes meticulously recorded 'invasion' data available on his website, showing not only his presence or absence in a city but also expressing the strength of that presence by the number of pieces thrown up there - quantitative data that would make possible a most useful ordinal breakdown by city for each artist. Unfortunately, most artists are not as meticulous in keeping track of the exact number of pieces they have placed in every city. A method of collecting data for each of the chosen artists was required which could produce compatible matrices for the network analysis. Several options were considered.

Theoretically, one could take an anthropological approach and attempt to collect the requisite data from each of the cities by traveling around and recording the number of pieces by each artist. Of course, this is a practical impossibility for all but the most intrepid researcher due to time and financial constraints, and even then due to the sheer magnitude of such a task in eight of the world's major metropolises, where many pieces are taken down shortly after they are put up.

Much more practically, one might attempt to gather data from the Internet. This is appealing not only because of the obvious convenience, but as already discussed, a great deal of information about individual artists and their work is available online. Each of the chosen artists have websites (Appendix A) that display photos of their work, many times noting what cities the pieces are in. Yet sifting through the Internet can be an even murkier task than scouring city streets, and most street art websites provide little in the way of the sort of numerical data

provided by Invader. If they do, they do so in wildly different ways, presenting problems from a methodological standpoint. With no constant easily available, data were best collected by directly contacting the subjects, via email questionnaires, sent to each of the selected artists.

This data collection tool was designed with network analysis in mind. The most important data to gather were a 'yes or no' response to the question of presence in each of the eight cities, then a 0 to 3 rating of relative strength of presence for each. With questions phrased in several ways, the questionnaire provided opportunities for different expressions of presence. It also contained several other questions relevant to the study, with the goal of receiving some valuable qualitative responses to add to the analysis. (see sample, Appendix B) Results were also confirmed and augmented by secondary sources.

In the results, individual artist-by-city data are presented in 1-by-8 *egocentric* network matrices, showing either binary or ordinal presence scores. The 0 to 3 ordinal scale showing relative strength is reminiscent of that used by Taylor (2004) in constructing his "10-city x 3-firm service value matrix," an aspect of his network analysis study that informs much of my own. Such a scale creates a sort of 'common denominator' for a wide variety of data from different artists to be represented on a single scale.

With each artist's data collected, data matrices were created using UCINet social network analysis software,(Borgatti, et al. 2002) and then placed into visualization software, NetDraw, to create revealing sociograms. (Borgatti, 2004) Different network visualizations representing the city-to-city connectivity created by the work of all six artists were compiled to better illustrate results relevant to different hypotheses. Three different measures of ties and node characteristics were used to construct full network matrices representing different aspects of the street art network:

- *Vitality*: Based on the overall presence of art from all street artists in the study, vitality measures how 'important' a node is among the six artists. This is the total summed value of the weighted (ordinal) presence of all the artists in a city, out of a possible 18.
- *Connectivity*: Binary artist-by-city data are used to show which cities are connected to each other, and by whom. This reveals direct and indirect connections, as well as the multiplexity of ties for different city-pairs.
- *Productivity and Prestige*: Taking an artist's home city as a hub from which all other directional ties radiate out, and each of the other seven cities as potential nodes, data for directional connectivity between cities is compiled. This gives each node an in-degree 'prestige' rating and an out-degree productivity rating, showing how much of a receiver a city is of street art from other locales or how much multi-city graffiti emanates from a city to others.

Chapter IV: Results

Artist 1. A Global Urban Invasion

This chapter presents data for each of the six artists and eight cities in the study. By way of further introduction to the process, I begin by describing Invader's data and individual results in the greatest detail. Based in Paris, the mysterious street artist is one of the most global on the planet, covering at least 26 cities with mosaic aliens as part of his 'urban invasion reality game,' for which maps are even available. (Invader, 2004) The 'invasion' data provided on his website, (Invader, 2005) includes exactly how many pieces and where they are in each city that has visited (see also Appendix C) As described above, these raw data are converted into first binary, then ordinal results for the eight cities:

	Amst.	Barça	LA	London	NY	Paris	SF	Tokyo
Invader	1	1	1	1	1	1	0	1

Table 1.1: Unweighted binary matrix for Invader, by city.

	Amst.	Barça	LA	London	NY	Paris	SF	Tokyo
Invader	1	1	2	2	2	3	0	2

Table 1.2: Weighted ordinal (0-3) matrix for Invader, by city.

The binary matrix shows Invader's presence or absence among the eight cities in the study, while the ordinal matrix shows a clear order among them.[17] After his home-base of Paris (with 519 pieces and growing), Los Angeles is the most highly connected with 123 pieces from five separate trips, followed by New York, Tokyo, London (all between 50 and 100), Amsterdam and Barcelona (fewer than 50 pieces). This is reflected in the weighted matrix as the data are converted into the ordinal scale, with 3 going to Paris, 2 for those above 50, and 1 for those with less. San Francisco, which has not been invaded at all, scores 0. Non-directionally, we can then say that Invader's art connects seven cities. If we consider Paris as a hub for Invader, it can be construed also to represent one-way out-degree ties between Paris and the other cities. Thus, simple but revealing pictures of Invader's own network among the chosen cities become clear.

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[17] In order to represent strength of presence in the matrices, rather than raw numbers (which range from 0 to 519 for Invader and may not even be reliably quantifiable for any other artists) that would result in massive variance in intervals, strength of presence is converted into an ordinal scale, compatible with the questionnaire results.

As described above, data for the other five artists were collected by email questionnaires.[18] The selected artists generally responded in quite good faith, answering questions and even offering up further information.(sample, Appendix D) Even the responses of those who chose to do so more 'qualitatively' still clearly gave useful ordinal levels of measurement for the 'relative strength' among the eight cities. (sample, Appendix E) Many data were also confirmed and augmented by secondary sources.

Artist 2. Flower Guy

Michael De Feo, better known in New York street art circles as Flowerguy, is a legend in his own time. Though he started out stenciling a variety of different designs in the early 1990s, he came up with his famous flower design in 1993 – what Tristan Manco (2004) calls "a positive symbol that simply conveys the idea of creativity growing out of the urban environment."(32) De Feo has since plastered thousands of the cheerful silk-screen designs (as well as others) across the city, the country, and the world. (Ganz, 2004: 53)

	Amst.	Barça	LA	London	NY	Paris	SF	Tokyo
De Feo	1	0	0	0	1	1	1	0

Table 2.1: Unweighted binary matrix for De Feo, by city.

	Amst.	Barça	LA	London	NY	Paris	SF	Tokyo
De Feo	2	0	0	0	3	2	2	0

Table 2.2: Weighted ordinal (0-3) matrix for De Feo, by city.

De Feo's results show a fairly scattered presence, in four of the eight cities beginning at home in New York to San Francisco in the west and Amsterdam and Paris in the east. Like many American street artists he has worked extensively in Europe – though in his questionnaire responses he did offer a short list of other cities in which he has also worked, nearly all of which were in the United States.

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[18] Beyond Invader's data (Appendix C), complete questionnaire responses from two of the five other artists, Michael DeFeo and Random, are appended as well (Appendices D and E). Copies of the other responses are available from the author upon request.

Artist 3. Rock 'n' Roll, Ice Cream, Porn and LA

Random is a prolific LA-based artist, who describes his work as "inspired by rock 'n' roll, ice cream, porn and LA." (qtd. in Manco, 81) He is best known for the cartoony Buff Monster, a mischievous character who appears in various forms from little scrawlings on flattened spraycans to huge bubbly, pink murals. Most commonly, the Buff Monster turns up cheerfully posted to an electrical box, frequently accompanied by another sign nearby reading: "Buff Monster Says: Don't Do Graffiti!" "I really think that LA needs more pink clouds," he says, "and if I don't do it, then no one else will." (Ibid.)

	Amst.	Barça	LA	London	NY	Paris	SF	Tokyo
Random	0	1	1	1	0	0	1	1

Table 3.1: Unweighted binary matrix for Random, by city.

	Amst.	Barça	LA	London	NY	Paris	SF	Tokyo
Random	0	2	3	1	0	0	2	2

Table 3.2: Weighted ordinal (0-3) matrix for Random, by city.

One particularly notable thing about Random is that rather than European or American in orientation, if anything he appears to be more 'Pacific.' After of course a major presence in LA, his data show sizeable connectivity with San Francisco and Tokyo rather than London, and actually no presence in Paris or even New York.

Artist 4. The Souls of the City

Swoon, one of a relatively small number of well known female street artists, has been making art on the streets of New York since the late 1990s. Her pieces are often life-size, like photographic stills or ghostly impressions left by passers by that have been described as "an attempt to capture the city life that passes them by, a snapshot of a constantly changing scene."(Manco, 114) Swoon describes graffiti as "the soul of a city swelling past capacity and spilling out onto the walls" and "a peripheral element in every city" that she has visited. (Curry, 2003: webpage) "While each place has its own vernacular," she writes, "the presence of the writing on the walls were a constant."(Ibid.)

	Amst.	Barça	LA	London	NY	Paris	SF	Tokyo
Swoon	0	0	0	1	1	1	1	0

Table 4.1: Unweighted binary matrix for Swoon, by city.

	Amst.	Barça	LA	London	NY	Paris	SF	Tokyo
Swoon	0	0	0	1	3	2	1	0

Table 4.2: Weighted ordinal (0-3) matrix for Swoon, by city.

Swoon's interest in the global nature of street art is reflected in her fairly global reach, though from the results among the eight cities in this study it is clear she has not strayed too far from her base in New York, at least in terms of putting up her own artwork.[19]

Artist 5. Âbove the Streets

Another Californian artist, Above, is known for his renderings of what he calls "the most familiar image known to man, an arrow."(qtd. in Manco, 44)   Above is an interesting case, in many ways a truly 'cosmopolitan' street artists. From the literature, published interviews, and my own questionnaire results, it is clear that his work cannot easily be said to emanate directionally from just one city. While originally from California where he started out writing on freight trains and subsequently working heavily in both San Francisco and Los Angeles, his extensive body of work while living in Paris for years and his apparent current 'transatlantic' orientation mean his linkage data could be considered relatively symmetrical between these three cities and directionally from all of them. Still, for the sake of consistency and greater ease in the network analysis and with all do respect to the truly very cosmopolitan artist himself, Los Angeles was selected as the hub node for Above's art. He has covered all these places and more with arrow stickers, stencils, spray paint, and even hundreds of wood slats that hangs from wires and cables above city streets. (Ganz, 24)

	Amst.	Barça	LA	London	NY	Paris	SF	Tokyo
Above	0	1	1	1	0	1	1	0

Table 5.1: Unweighted binary matrix for Above, by city.

	Amst.	Barça	LA	London	NY	Paris	SF	Tokyo
Above	0	2	3	2	0	3	3	0

Table 5.2: Weighted ordinal (0-3) matrix for Above, by city.

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[19] In her responses to the email questionnaire, Swoon did note that she has worked extensively in Berlin, a city not included in this analysis.

For Above, the ordinal data are particularly important, and represent the rather equal presence in LA, Paris and San Francisco. He also works heavily in every city he hits – "I apply myself 100% to each given city I work in," he says. This is represented in the matrix by the lack of any '1' scores, and only the difference between the heavy presence in London and Barcelona and the very heavy presence in his three transatlantic bases of operations. Perhaps most interesting is that while he has worked extensively in these five, he has not done any work in New York, geographically right in the middle of them all.

Artist 6. Infecting Public Space

Originally from Surinam, Influenza now conducts his operations from headquarters in Paris and Rotterdam. His name is fitting for his "interventionist actions," often retouching existing signs or adding strange, thought-provoking words to the built environment. He is known for covering a single site with dozens and even hundreds of stark, black and white stickers of authoritative words, the names of diseases, or simply flu flies. (Manco, 26)

	Amst.	Barça	LA	London	NY	Paris	SF	Tokyo
Influenza	1	1	0	1	0	1	0	0

Table 6.1: Unweighted binary matrix for Influenza, by city.

	Amst.	Barça	LA	London	NY	Paris	SF	Tokyo
Influenza	1	1	0	1	0	3	0	0

Table 6.2: Weighted ordinal (0-3) matrix for Influenza, by city.

Influenza is the most 'regional' and among the least 'global' of the six multi-city street artists in the study. All of his results among the eight are for European cities, and the six other cities he offered up in his response are European as well.

Not reflected in these data, and impossible to quantify, is the extremely global "Art of Urban Warfare" phenomenon that Influenza is credited with creating. To play this "game," anyone who wants to partake spray-paints stencils of soldiers in one of three different colours in any city anywhere in the world. "The winner of the game is the army with the strongest global coverage. The underlying aim is the conquest and free use of public space."(Manco, 27) As Influenza says in his questionnaire response:

> "the art of urban warfare is running globally, from Johannesburg to oslo. From mexicocity to kuala lumpur. From melbourne to san fransisco. jerusalem to minsk."(sic.)

Chapter V: Analysis and Interpretation

In the analysis of this hypothesized network, a number of specific research questions will be addressed: What properties does this network have? What cities are more connected, which are more peripheral outliers? Are some cities greater receivers and others greater producers of street art connectivity? What effect do node attributes have on these ties? What effects do geographic proximity, city size, or 'real' connectivity have? There are several different ways of compiling the data to better represent these different aspects and answer these questions.

Vitality

Because global cities research is often as concerned with *which cities* are the 'most global' or most connected as it is with the actual relational properties of the network, it can be useful first of all to look at overall importance of individual actors. In other words, which of the eight cities has the 'most' street art as represented in data from the six artists?

	Amst.	Barça	LA	London	NY	Paris	SF	Tokyo
Invader	1	1	2	2	2	3	0	2
De Feo	2	0	0	0	3	2	2	0
Random	0	2	3	1	0	0	2	2
Swoon	0	0	0	1	3	2	1	0
Above	0	2	3	2	0	3	3	0
Influenza	1	1	0	1	0	3	0	0
Total (rank)	*4 (7)*	*5 (6)*	*8 (3)*	*7 (5)*	*8 (3)*	*13 (1)*	*8 (2)*	*4 (8)*

Table 7: Compiled ordinal artist-by-city data expressing overall vitality of Street Art City

Paris is clearly the most 'heavily hit' city by the six artists in the study, what might be called a 'star.'(Monge & Contractor, 2003: 32) This is partly a result of effectively (including the 'cosmopolitan' Above) having three artists based there, though it would be the most central of the eight cities regardless. Three cities are tied for second most overall street art presence, with scores of 8 each. In the vitality hierarchy (see also Appendix F) I will place San Francisco second because none of the artists in the study are based there (or, including Above, just one) and it still rates so highly; Los Angeles and New York tie for third place. Next comes London, followed by Barcelona, and then Amsterdam and Tokyo tied for lowest centrality with

presence scores of 4 each. Amsterdam gets the slight edge because its scores come from three artists, rather than just two (as discussed under Connectivity, below).

Of course, these results are only minimally valuable and it is no coincidence that the three 'hub' cities scored among the highest – they have a significant handicap in this regard. Also, in an urban network analysis we need to know not just which cities are important, but which cities are connected to which others. The above chart is an incomplete network matrix, as it does not show relational ties.

Connectivity

To create a more complete matrix, artist-to-city data must be converted into city-to-city data. For an expression of simple ties between actors, we start with the binary data, compiled in Table 4.08 below:

	Amst.	Barça	LA	London	NY	Paris	SF	Tokyo
Invader	1	1	1	1	1	1	0	1
De Feo	1	0	0	0	1	1	1	0
Random	0	1	1	1	0	0	1	1
Swoon	0	0	0	1	1	1	1	0
Above	0	1	1	1	0	1	1	0
Influenza	1	1	0	1	0	1	0	0

Table 8: Compiled binary artist-by-city matrices.

It is easy to see from this chart which cites are connected to each other by which artists. To convert these data into an 8-by-8, city-by-city matrix, every time a city is connected to another by the same artist, a score of '1' is placed in the corresponding cell. Having set aside directional considerations for the moment, we are concerned only with determining which other cities any one city is connected with by the shared presence of a street artist's work.

This simple, reciprocal matrix only shows basic connectivity, however, and reveals anti-climactically that every city is at least 'indirectly' connected with every other by shared presence of least one artist's work. More interesting however are the *number* of ties connecting any city-pair, representing the number of artists that provide the connection (a possible total of 6) – the multiplexity. Compiled in Table 9,

these provide a more valuable idea of how strongly cities are connected by the artists.

	Amst.	Barça	LA	London	NY	Paris	SF	Tokyo
Amst.	X	2	1	2	2	3	1	1
Barça	2	X	3	4	2	3	2	2
LA	1	3	X	3	2	2	2	2
London	2	4	3	X	2	4	3	2
NY	2	2	2	2	X	3	3	1
Paris	3	3	2	4	3	X	3	1
SF	1	2	2	3	3	3	X	1
Tokyo	1	2	2	2	1	1	1	X
Total	*12*	*18*	*15*	*19*	*17*	*18*	*15*	*10*

Table 9: City-by-city matrix expressing multiplexity, composite for six artists.

From this matrix, a more complex network begins to show itself. The strongest tied city pairs are Paris-London and Barcelona-London. Most cities are poorly connected with Tokyo, and it is the least connected in general. Of course, Tokyo and other less connected cities like Amsterdam are at least *indirectly* connected to every other thanks to the most global street artists like Invader, but they lack significantly in multiplexity. A new way of describing a node is thus available to us. When totaled, these data allow us to rank cities in terms of how many different connections they have with others, in a connectivity index. In addition to the 'vitality' score, we can now talk about a city's 'connectivity' score. (Appendix F)

For a more visual impression of connectivity and the relationships that create it, a sociogram is useful. In this case, we can easily create a visualization of the network that looks like this:
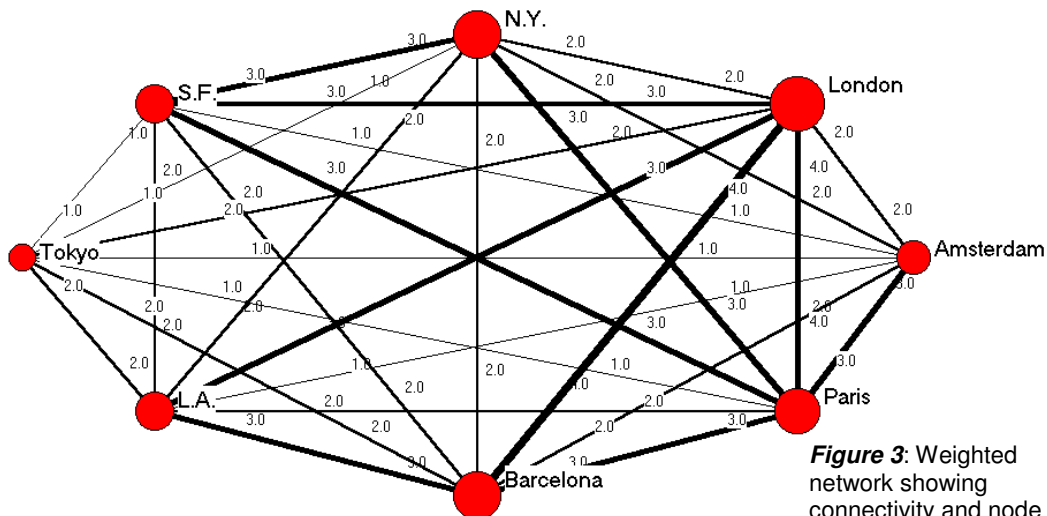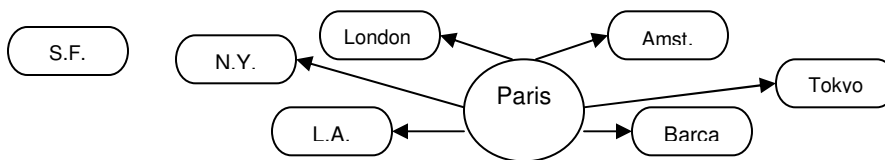

Figure 3: Weighted network showing connectivity and node multiplexity.

This sociogram provides a visceral representation of connectivity, with the multiplexity demonstrated by different widths of the ties and the sizes of the nodes. Many network analyses stop after demonstrating connectivity in such a way, but there is a third dimension of network connectivity that is also of interest in a global urban network analysis, for which data were also collected.

Directionality

Beyond who is connected to whom, in view of the globalization and cultural studies context of this study, it is of interest to examine in what direction the flows of street art connectivity travel between cities. Directionality is perhaps best first thought of in unweighted terms. If each artist's home city is considered a 'hub' from which the connectivity provided by her or his art 'flows' to others, artist-to-city data are easily converted into city-to-city data. Binary results are easily visualized to show directional connectivity from each artist's home city to the others. Using a simple sociogram, Invader's results (Table 1.1) look like this:

Figure 4: Unweighted directional network showing connectivity by Invader from Paris to other cities.

The ideal representation shows both strength and connectivity, so ordinal strength of presence matrices for each artist are next compiled into a new, ordinal artist-by-city matrix:

	Amst.	Barça	LA	London	NY	Paris	SF	Tokyo
Invader (Paris)	1	1	2	2	2	X	0	2
De Feo (NY)	2	0	0	0	X	2	2	0
Random (LA)	0	2	X	1	0	0	2	2
Swoon (NY)	0	0	0	1	X	2	1	0
Above (LA)	0	2	X	2	0	3	3	0
Influenza (Paris)	1	1	0	1	0	X	0	0

**Table 10**: Weighted ordinal (0-3) artist-by-city matrix

To visualize this implied city-to-city connectivity in a sociogram like Figure 4, the only difference for an ordinal matrix is that the strength of connectivity is represented in width and numbers along each tie. If we created individual graphs for each artist, we would end up with two each for Los Angeles, New York and Paris. In other words, directionally speaking, we are at this point really only looking at the way these three cities are connected to each other and to five other cities. Data for two artists from the same city are thus combined into a single row for that city. Using Los Angeles as an example, if Random has a presence of *X* in Paris and Above has a presence of *Y* in Paris, then in the city-by-city matrix, row 'L.A.' gives column 'Paris' a value of *X+Y.* This process is carried out for each pair of artists in each city, producing the matrix in Table 11 below.

	Amst.	Barça	LA	London	NY	Paris	SF	Tokyo	Total
L.A.	0	4	X	3	0	3	5	2	17
New York	2	0	0	1	X	4	3	0	10
Paris	2	2	2	3	2	X	0	2	13
Total	4	6	2	7	3	7	8	4	

Table 11: City-by-city matrix expressing directional connectivity from hub cities, with total out-degree for each hub and total in-degree for each city.

Among the sample, clearly only these three cities can be out-degree 'producers' of connectivity. Paris is outwardly connected to more cities because of Invader's exceptionally global reach, while Los Angeles registers as the 'biggest' producer primarily because this study counts Above's data as originating there, despite his powerful presence elsewhere as well.

Which cities are the major in-degree 'receivers' of street art can be better seen in a graph. The use of different shapes to denote the hub cities and different colors to help define some of the ties make it even easier to visualize the direction of street art flows from producers to receivers.
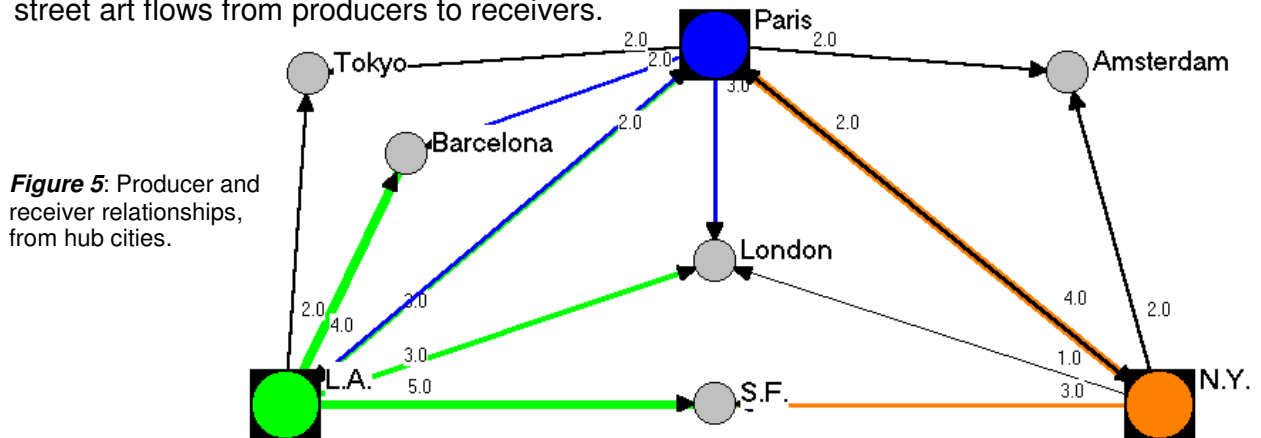
Figure 5: Producer and receiver relationships, from hub cities.

Among the sample, San Francisco is clearly a huge receiver of street art from the other two U.S. cities, and London and Paris are both major global receivers. It is notable that the two Los Angeles artists are clearly very active in Northern California, more so even than Parisian artists are in any of the other nearby European cities. Another surprising find, starkly visualized in Figure 5, is that New York and Los Angeles appear *completely* unconnected by the work of their respective artists! These data can be misleading however, because just as the vitality index (Table 7, Appendix F) is skewed in favour of hub cities, the totals in Table 11 leave them at a disadvantage. While this does make Paris' standing all the more impressive, it suggests the need to go one final step further in analyzing the complete eight-city network.

Composite Weighted Directional Connectivity for Complete Network

The end goal in demonstrating the global urban network of street art remains a complete matrix representative of directional connectivity between all eight cities. While we now have this for three hubs, directional connectivity data from the other five cities must also be compiled. Direct connections from these cities do not exist among the six artists surveyed, but the other cities are still connected in *indirect* relationships implied by the shared presence of an artist's work. To create a complete matrix then, general connectivity data must be combined with directional strength of presence data.

To reconcile differences in the strength measure above and the multiplexity measure in Table 4.09, reciprocal connectivity scores for the five non-hub cities must simply be thought of as directional in their reciprocity – two-way flows of indirect connectivity. An indirect tie is scored an ordinal strength of '1' (low strength of presence) both from *City A* to *City B* and from *City B to City A.* (Monge & Contractor, 32)   In nodes with more than one indirect link, a '1' is scored for each tie. Thus, if we remove the direct ties from the basic connectivity matrix (Table 9) to show only indirect ties, we are left with the following matrix:

	Amst.	Barça	LA	London	NY	Paris	SF	Tokyo
Amst.	X	2	1	2	2	3	1	1
Barça	2	X	3	4	2	3	2	2
LA	1	1	X	1	2	1	0	1
London	2	4	3	X	2	4	3	2
NY	1	2	2	1	X	2	1	1
Paris	1	1	1	2	1	X	3	0
SF	1	2	2	3	3	3	X	1
Tokyo	1	2	2	2	1	1	1	X

Table 12: Weighted city-by-city matrix expressing mulitplexity of *indirect* directional ties

To complete the picture, these data must be combined with the data for direction and strength of *direct* ties that we already have from the artists (Tables 10 and 11). Essentially, the data in Table 11 is 'added' to the matrix in Table 12, giving the following complete 8-by-8 matrix and corresponding network visualization.

	Amst.	Barça	LA	London	NY	Paris	SF	Tokyo
Amsterdam	X	2	1	2	2	3	1	1
Barcelona	2	X	3	4	2	3	2	2
L.A.	1	5	X	4	2	4	5	3
London	2	4	3	X	2	4	3	2
New York	3	2	2	1	X	6	4	1
Paris	3	3	3	5	3	X	3	2
S.F.	1	2	2	3	3	3	X	1
Tokyo	1	2	2	2	1	1	1	X
Total	*13*	*20*	*16*	*21*	*15*	*24*	*19*	*12*

Table 13: Weighted directional city-to-city matrix showing direct and indirect connectivity.
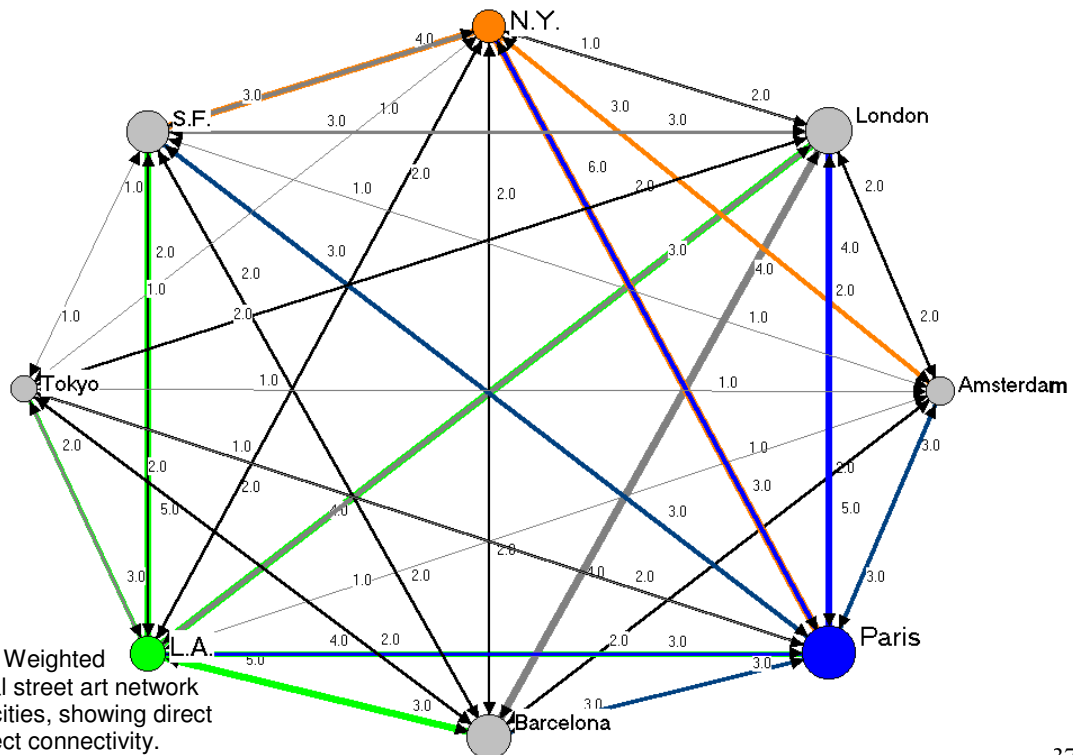
Figure 6: Weighted directional street art network for eight cities, showing direct and indirect connectivity.

Totaling the directional data, as in Table 13, shows total 'in-degree' for each city (represented in Figure 4.4 as node size). In these terms, Paris is again the most 'popular,' clearly a sort of 'street art Mecca' at least among the six artists. London and Barcelona also receive a good deal of attention, the latter perhaps symbolic of its international reputation as something of a street art 'walk of fame.'(Wooster Collective, 2003) Amsterdam and Tokyo are again the most peripheral. This visualization provides the most 'complete' picture of the eight-city network of global street art.
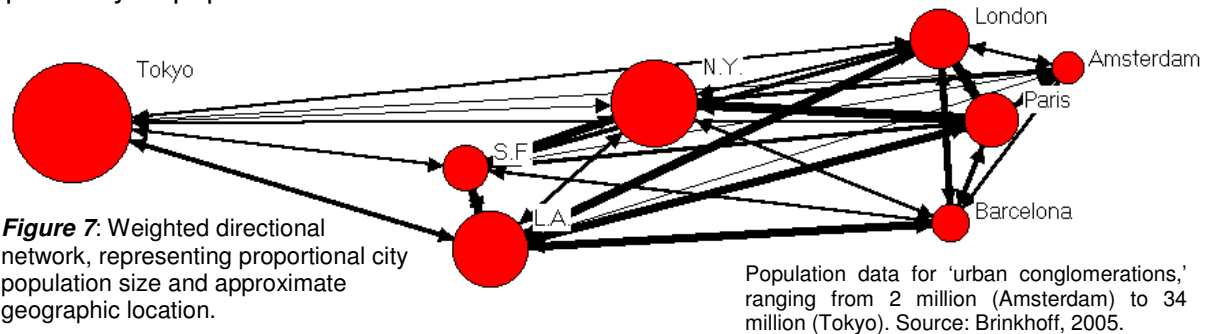
Interpretations

From looking at the variety of available data, we can begin to see that some artists and some cities are more central and important nodes in the network. As stated in Chapter III, results for network data among a non-random population such as the eight cities in the study cannot provide for any empirically valid assumptions or assertions at a broader level or any larger population, as the network actors are not a statistically representative 'sample.' Still, the similarities in the three major computations and network visualizations confirm their individual and combined values to the street art network analysis.

We have also created three indices hierarchically listing the eight Street Art Cities in terms of vitality, connectivity, and now weighted directionality, which can provide for most useful comparisons. Furthermore, when we average these three indices together we can create an overall hierarchy, the Street Art City Index. (compiled in Appendix F) With all of this in hand, we are able to test a number of other specific ideas, things which may help increase the value of a limited network analysis such as this and suggest broader implications.

It would be useful, for example, to look into why some cities routinely score so highly and others so low. In every computation of the network data, Amsterdam and Tokyo fair 'lowest' in terms of both connectivity and prestige. This is curious, for while Tokyo likely does not benefit from its lack of geographic proximity to the other cities, Amsterdam is extremely close to Paris, not to mention Barcelona and London, suggesting some other reason for its apparent lack of 'popularity.' If not distance, could it perhaps be its size? Questions like these invite a number of different tests

that we might run on the data to determine the impact of things like geographic proximity or population size on network ties.

Figure 7: Weighted directional network, representing proportional city population size and approximate geographic location.

Population data for 'urban conglomerations,' ranging from 2 million (Amsterdam) to 34 million (Tokyo). Source: Brinkhoff, 2005.

The related question of regionalism is also of interest: Do American cities connect more with other American cities? Influenza's art is strongly regional in favour of Europe, but among the four American artists it is less clear. All of them have worked in San Francisco, where Los Angeles artists have an especially strong presence, yet there are only few and indirect links between Los Angeles and New York. Random seems to have a more 'Pacific' orientation, though he and Invader could also be called the most global. Tokyo is most strongly connected with L.A., but indirectly it is more closely tied to Barcelona than it is to San Francisco. Looking at the network in more 'realistic' terms in Figure 7, we could say that distance may be important in describing Tokyo's isolation but not Amsterdam's, and we can see that population size is clearly an unimportant variable among these cities – Amsterdam *is* the smallest of the eight cities, but Barcelona and San Francisco are also quite small and are among the most highly connected, while disconnected Tokyo is more than 10 million people larger than its nearest competitor. What other ways might we look at differences in connectivity?

Street Art Connectivity / 'Real' Connectivity

This study has asserted that the connectivity among Street Art Cities' is 'real' connectivity, created by the work of individual artists on the street. It is particularly interesting and important then, to compare all these network results with some indicator of the cities' 'real' direct, socio-cultural interconnectivity. One good indicator of this is its number of actual connections with other cities, particularly via air travel. Besides being important components of a city's aspirations to 'world city

status' in and of themselves, airline networks and their associated infrastructure are among the few indicators available of real inter-city connectivity and offer the most visible manifestation of global city interaction. So are more important or more connected street art cities also cities with the highest 'real' international connectivity?

David Keeling (1995), Smith and Timberlake (1995) and Short and Kim (1999) have all conducted studies on the global airline network. In particular, Short and Kim provide a most useful analysis of based on data for passenger flows and number of connections between cities around the world. Their study produces ranks for 30 cities and the strength of connectivity between major city pairs.

Data for total number of air routes are available for all eight Street Art Cities. As with many global city studies, London, Paris and Tokyo score very highly in Short and Kim's study, paradoxical results when compared with my own (see Appendix G) in which London and Paris score highly in terms of street art-based connections but Tokyo scores very low. Likewise, Barcelona and San Francisco place very low in number of air routes while they are highly connected in this study. Relative rankings for Los Angeles and New York, however, are fairly corresponding. [20]

Using data for total passengers travelling between cities, Short and Kim also produce a list of 'city-pairs' with the greatest connectivity. This invites comparison with a hierarchy of the 'street art city-pairs' with the strongest connectivity, easily compiled from the data in Table 13 (Appendix G).   According to Short and Kim's data, Paris-London is by far the most highly connected city-pair in the world in terms of air passenger connectivity; it is second most connected in terms of street art. The number one city-pair in terms of street art is New York-Paris, which also ranks highly in Short and Kim's results. Again, Barcelona is significantly more connected by street art than it is by actual airline linkages, as, less extremely, is Los Angeles. The Los Angeles-London city-pair, however, corresponds nicely in both indices. Overall, while there are some interesting and perhaps even meaningful similarities that we can take from these comparisons, we cannot say that the size and strength of street art connectivity is directly tied to air travel connectivity.

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[20] More recent data from studies by Gugler (2003) and Timberlake et al. (2001) produce values of relative centrality of cities per air passenger trips, which also bring in Amsterdam and Los Angeles as more highly connected, and show less relative centrality for Tokyo.

There are many other such comparisons one could make and tests one could run on these network data if time and space allowed, though clearly more extensive research on different indicators is also needed. With this study's relatively small data set, any abnormalities could just be a factor of the six artists chosen, their unique, social ties, personal impressions and preferences, or simple circumstance. More general assertions can only be hypotheses until they too are demonstrated. Yet either way, the existence of any sort of global connectivity on the basis of popular spatial resistance has important implications.

Theoretical Implications

These results prove that global popular culture can provide useful indicators for global city networks theory. The fact that the eight-city global urban network of street art illustrated above is seemingly affected by conditions beyond the obvious suggests unique potential and merits considerable further research. By looking at indicators such as pop culture, common spatial identity, and the shared cultural practices of radical democracy and popular resistance, we can develop ways of measuring cultural interconnections between cities.

The existence of such ties created by the spread of popular, multilocal spatial resistance simultaneously in many sites around the world also has implications for traditional communication studies. Regarding the popular notion of the death of the public sphere, for example, through popular culture "Closure is never total; openings, cracks, and fissures always exist."(Dolby, 2003: 276)

Street art is "a prominent political space" for public participation, discourse, and the enactment of "cultural citizenship."(Ibid.) Electoral politics are not at all the only place that we can look to find expressions of participation, agency and power within society. Through simple acts of popular resistance, people can "recognize the power of the everyday, and work to reshape and rebuild a citizenship that embraces us all."(Ibid.) With multilocal resistance, "many sites become potential loci of change and transformation, including people's small, often discounted everyday acts."(Ibid. 268) When these individual or group practices become public through cultural citizenship,

"the site of the public sphere can be transformed, in multiple ways" providing great democratic potential. (Ibid. 274-75)

As Patrick, member of the New York street art collective Faile, explains, "Not everybody can dedicate their time and work all to art, but they have now learned through seeing street art in action that they, too, can have a voice and a free platform to participate."(qtd. in Sudbanthad, webpage) Habermass might just be happy to hear it. That this is occurring at different levels in many different cities, and even being transmitted personally by dozens of multilocal agents around the world is what is truly remarkable.

Chapter VI: Further Opportunities and Concluding Thoughts

This network analysis has demonstrated the existence of one sort of global cultural network based on street art, revealing the potential for other such studies. With cultural global city networks established as a valuable level of analysis in globalization and global cities research, further research possibilities are apparent. Certainly there are many different nodes and indicators one might use, different ways of gathering data from different sources.

Certainly one could look at more cities. Berlin, for example, is a city that came up several times in the email responses and other research, as did Boston, Rome, Seattle and others. Including more cities from vastly underrepresented developing regions would also be desirable, though at this time there mention of any such cities appears too infrequent and irregular to conduct an analysis even on the modest scale of this study. Judging from a variety of resources, just as all globalizing processes are often uneven, the street art 'scene' is simply less connected to the global south.[21]

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[21] Furthermore, any number of factors from resources to personal freedoms to simple exposure and access could lead to really less street art in poorer nations as well. In the sense that street art is a form of social protest, it is perhaps not surprising to see it far more in the cities of the developed world yet absent from many of the very same countries and regions in which the so-called 'anti-globalization movement' has also failed to manifest itself. (Castells, 2004: 159) In this sense, if indeed we do see any global cultural form beginning to take shape, we must realize it is a segmented one.(Castells, 2004: 159)

A related approach could be to look at the whole network (all cities) of a single prolific artist such as Invader, who has worked in cities as 'far afield' as Dhaka. One need not then depend on the corroboration of other artists to look at a simple cohesive, global network, with data even measured in real numbers at an interval level.

One could look at the effects of using different artists, selected for different qualities. A major imbalance in the world of street art seems to be one of gender, for example, so it could be most revealing to examine what different properties a global urban network would have if only female artists were used to provide connecting data.[22] Again though, it is impossible to be sure exactly how many women are involved, because even among those street artists who do have something of a public presence, few have a public face and most use a pseudonym or tag.

There are other possibilities in terms of relations, as many different types of independent media provide the connecting elements for the subcultures that we can see on the street. Certainly the Internet is one of these, allowing for self-promotion, social network formation, even very definite coordinated street art missions among multiple artists in multiple cities.[23] In the insightful words of Christian Strike (2004), "graffiti culture has spawned a vast underground network, allowing crews to communicate with each other on a global level – a network that includes magazines/fanzines, books, and web sites." (232)

The sheer number of web sites – from artists, collectives, galleries, and casual observers – is overwhelming. Simply following links from one site to another could yield seemingly endless hours of surfing, and affirms how interconnected the entire community is around the globe.[24] Tracking and recording even close to all of these interconnected sites would be a mammoth task, but is not inconceivable.

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[22] There are most certainly female writers, such as French artist Fafi, East LA's local hero JERK, and of course New York's Swoon included in this analysis. Yet the vast majority of street artists do seem to be men, perhaps due to the potential physical dangers involved or to stereotypes or bias from either side.(Knapp, 18)

[23] Take for one example the 2002 "Don't Copy Me" phenomenon, in which dozens of artists threw up their own interpretations of that phrase around the world in just a few weeks. The idea behind the project, organized by the online collective ekosystem.org, was to "create an independent and international graffiti project that would take place simultaneously across the world." See Manco, 2004: 123.

[24] Certainly the number of sites directly connected to each other within just one or two degrees of separation must run into the thousands.

At the end of the day though, the Internet can only ever be one part of the street art scene that is, by definition, tied to the context of very real public spaces – the streets. In reality, as Strike writes, "The connectors and their creators have constituted a mostly non-virtual information highway, enabling these subcultural groups to mix and morph quickly, to form a part of this thing we call 'street culture.'"(2004: 238)   Random writes in his questionnaire response that, despite the advantages of the web, "its good to travel and see how it really is."

Ultimately, due in no small part to its very nature as a subversive (and illegal) culture, detailed information or statistics about street art are few and far between. Al Matthews (2004), who has been covering street art for CNN.com since 2000, has written that "a complete and up-to-date account is probably impossible."(webpage) Any study of street art is thus likely to leave many things to be desired, but the possibilities are equally endless.

Conclusion

I have argued that street art creates networks and connects people on many levels. It can be a way to access the urban community with a design or message, provoking a reaction and making people more aware of and even active in their surroundings.   At the same time, it provides real direct connectivity between cities and the people in them not only through broad 'scene-wide' subculture, but through the shared experience of popular resistance in multiple interconnected localities around the world.   This study broached questions critical in gaining a better understanding of the way in which an urban subculture such as this can form global networks, arguing that cultural connections between the world's major cities may be just as powerful as economic ones.

Through network analysis, I have demonstrated the real connectivity created by the work of multi-city street artists between eight major cities.   Using newly compiled data and first-hand observations, a complete 8-by-8 city-by-city matrix representative of directional connectivity between eight cities was built and illustrated.   This shows that, at least in the context of the case study conducted herein, there is a global urban network of street art.

Who knows what the future holds for graffiti? Certainly there is great potential in a subculture of spatial resistance in cities around the world, both directly and indirectly connected by popular communication. With multiple localities come multiple resistances. In Michael De Feo's words, "Hopefully street art will topple the structures of image consumption, and public space and its unfortunate parallel with advertising, or at least continue to make people smile." (qtd. in Sudbanthad, webpage)

Invader, giant 'Space Invader,' on building in Melrose, Los Angeles.
Photo from space-invaders.com, 2002.

Appendix A – Street Art Websites

Primary Multi-City Street Artists' Websites

Space Invaders - Invader (Paris): www.space-invaders.com

Flowerguy – Michael De Feo (NY): www.mdefeo.com/

Buff Monster - Random (LA): www.buffmonster.com

Swoon (NY): www.wearechangeagent.com/swoon/#

Above (LA): www.goabove.com/

Influenza (Paris): http://flu01.com/

Selected Websites of Other Artists and Collectives

Wooster Collective: www.woostercollective.com

Ekosystem: www.ekosystem.com

OBEY – Shepard Fairey (LA): www.obeygiant.com

Keith Haring (NY): www.haring.com

Pez (Barcelona): http://lawebdelpez.com/

D*Face (London): www.stolenspace.com/

DAve – Dave Warnke (SF): www.davewarnke.com/

Kenji Hirata (Nagasaki / NY): www.kenjihirata.com/

Frangipani Gallery (Tokyo): www.frangipani.info/gallery/TokyoStreetArt

Appendix B – Sample Email Questionnaire *

Dear _____,

Besides just being a huge fan of your stuff, I'm a grad student in global communications at the University of Southern California writing my dissertation on graffiti/street art and I'm writing to humbly ask if I might subject you to a short, painless interview (just 7 questions), via email.

I know, a thesis on street art is probably becoming pasé, but I hope you might find this interesting enough. I'm writing on what I'm calling the 'global cultural network of street art' - sort of the way that street art connects people, places and the idea of 'popular resistance' around the world. And, as you know, not only is the graffiti subculture a global one, but many writers like yourself are actually travelling and throwing pieces up in many cities (invader being an excellent example of this).

I'm going to look at a number of artists (including hopefully yourself) and examine the way their graff/stickers/posters connect people and cities. If you have time I would be most grateful for just a few quick responses to these 7 questions, which are really more about trying to collect some data than deep prose anyway :) If not, of course I completely understand. Thanks very much for your time either way, I really appreciate it.

peace,

██████

Questions:
1) How important would you say it is for you to get your stickers/posters/graff up not just 'all city,' but in many cities?

2) Do you feel like street art can 'connect' cities and the people in them?

3) Which of the following cities have you done work in:

LA:
SF:
NY:
Paris:
Tokyo:
London:
Barcelona:
Amsterdam:

4) Even if you don't know exact numbers, can you estimate how much work you've done in the following cities:

LA:
SF:
NY:
Paris:
Tokyo:
London:
Barcelona:
Amsterdam:

5) Please rate from 1-3 (or 0) the relative amount of pieces you've thrown up in each of the following cities:

LA:
SF:
NY:
Paris:
Tokyo:
London:
Barcelona:
Amsterdam:

6) Do you feel a part of any sort of global or multi-city street art 'scene'? How much are different scenes in different cities connected?

7) How significant do you think the web is to street art's 'global presence' or connectivity?

* Sent to each of the selected artists.

This data collection tool was designed to gather the most important data for the network analysis, namely 'yes or no' response to the question of presence in each of the eight cities, then an ordinal 0 to 3 rating of relative strength of presence for each. With questions phrased in several ways, the survey provided opportunities for different expressions of presence.

Some survey results were also confirmed and augmented by secondary sources.

Appendix C – Space Invader "Urban Invasions"

I. Number of pieces by city

<u>PARIS</u>
Ongoing: 519

<u>LOS ANGELES</u>
Wave One: 41
Wave Two: 24
Wave Three: 28
Wave Four: 11
Wave Five: 19
Total: 123

<u>NEW YORK</u>
Total: 85

<u>TOKYO</u>
Total: 75

<u>LONDON</u>
Wave One, 1999: 49
Wave Two, 2003: 6
Total: 55

<u>AMSTERDAM</u>
Total: 26

<u>BARCELONA</u>
Total: 17

<u>ALSO INVADED:</u>
Aix en Provence • Anvers • Montpellier
Grenoble • Bern • Avignon • Lausanne •
Geneva • Pau • Cleremont Ferrand
Lyon • Hong Kong • Rotterdam • Berlin
Perth • Melbourne • Dhaka • Manchester • Marseille

Source: Compiled by the author from Invader (2005) "Around the World: The Invasions," *Space Invaders* website.

Appendix D – Questionnaire Response from Michael De Feo

From: M. De Feo - The Flower Guy <████████@yahoo.com>
Date: Jun 15, 2005 5:33 PM

Hello █████,

Thanks again for considering me for your dissertation on street art.

You may want to check out this round table discussion I recently participated in with Swoon, Dan Witz, Marc and Sara from Wooster and Patrick of Faile:

http://www.themorningnews.org/archives/personalities/roundtable_street_art.php

If you haven't heard it yet, check out Wooster's third podcast, "Documenting Street Art" (it's on the left hand column of the site) ... the audio is from a panel lecture I organized for the Small Press Book Fair in NYC last December... aside from myself, some of the panelists include Dan Witz, Swoon, Martha Cooper, Skewville, etc...

Here are my responses to your questions:

:::

1) How important would you say it is for you to get your stickers/posters/graff up not just 'all city,' but in many cities?

First of all I love to travel. Nothing beats new places and new faces... there is so much to see and learn about out there. New cities breathe new life into my work... it's an amazing feeling to see you work up in a new environment. It's an entirely new interaction. In this regard, I try to get my work in as many new cities as possible. From the perspective of "getting ups", of course it's a good thing. You're sharing your work with a whole new audience... you've got to spread the love.

2) Do you feel like street art can 'connect' cities and the people in them?

Absolutely... the internet is helping this a lot.

3) Which of the following cities have you done work in:

LA: not yet
SF: yes
NY: yes
Paris: yes
Tokyo: not yet
London: not yet
Barcelona: not yet
Amsterdam: yes
Utrecht, Munich, Brighton, Seattle, Boston: yes

4) Even if you don't know exact numbers, can you estimate how much work you've done in the following cities:

LA:
SF: lots
NY: too numerous to count... in the tens of thousands
Paris: lots
Tokyo:
London:
Barcelona:
Amsterdam: lots
Utrecht, Munich, Brighton, Seattle, Boston: lots

5) Please rate from 1-3 (or 0) the relative amount of pieces you've thrown up in each of the following cities:

LA:0
SF:2
NY:3
Paris:2
Tokyo:0
London:0
Barcelona:0
Amsterdam: 2
Utrecht, Munich, Brighton, Seattle, Boston: 2

6) Do you feel a part of any sort of global or multi-city street art 'scene'? How much are different scenes in different cities connected?

When I started doing work in the streets of NY in the early 90's, I didn't personally know anybody that did street art aside from the graff artists I went to school with. Now, with the internet fueling the popularity of street art, the scene is global. Artists from around the world now know each other's work and each other... it's fantastic.

7) How significant do you think the web is to street art's 'global presence' or connectivity?

See my answer in the link above to the roundtable discussion.

:::

Thanks again for thinking of me and let me know how it goes!

cheers,
 - Michael

Note how responses to Question 3 provide clear 'presence or absence' data for each city, easily converted into binary network scores. The response to Question 5 (as also implied by Question 4) provides obvious data on 'relative strength' of presence for a grouped ordinal matrix.

Appendix E – Questionnaire Response from Random

From: Random <███████@buffmonster.com>
Date: Jun 4, 2005 7:12 PM

████ -

yes, I'm super busy, but i got some answers for you. good luck with all. I went to USC.

Random

::

1) How important would you say it is for you to get your stickers/posters/graff up not just 'all city,' but in many cities?

Not very important. There are lots of people that have done lots of stuff in lots more places. I like to go on adventures and putting up posters is always an adventure. Putting the posters in different places is fun, and maybe adds more legitimacy to what I'm up to.

2) Do you feel like street art can 'connect' cities and the people in them?

Yeah, sure. Each place is still distinct.

3) Which of the following cities have you done work in:

SF: yes
NY: no
Tokyo: yes
London: yes
Paris: no
Barcelona: yes
Amsterdam: no

4) Even if you don't know exact numbers, can you estimate how much work you've done in the following cities:

LA: lots
SF: some
NY: none
Tokyo: some
London: a few
Paris: none
Barcelona: some
Amsterdam: none

5) Please rate from 1-3 (or 0) the relative amount of pieces you've thrown up in each of the following cities:

LA:
SF:
NY:
Tokyo:
London:
Paris:
Barcelona:
Amsterdam:

I think presence is a personal thing. I wouldn't even know how to measure presence. If you don't care about street art, or don't notice things in general, the measured presence is zero for everyone. Conversely, if you love one artist, you'll notice him everywhere he is and make a big deal out of it, and then the presence is big. Regardless, you can always walk a city an not see much of any one person. I don't go full out and put stickers on every single thing I walk past, but I do put up lots of stickers when I travel.

6) Have you ever communicated, worked or otherwise been 'associated' somehow with other "multi-city" writers/artists like Shepard Fairey, Invader, Robbie Conal, Banksy, KAWS, Mike DeFeo, etc?

yes.

7) How significant do you think the web is to street art's 'global presence' or connectivity?

the web makes it so you don't have to travel to see what other people are doing. But like any other media, there is an inherent editing going on, the proportion and variety of work on a site is never the same as it in reality, so its good to travel and see how it really is.

Note how, although respondent does not adequately answer Question 5 in quantitative terms, his more 'qualitative' answers to Question 4 provide equally useful relative strength of presence data ('none,' 'a few,' 'some,' 'lots'), easily converted into the ordinal 0-3 scale used in the matrices.

Appendix F – Indices of Different Measures of Node Properties

Vitality Index

City	Score
1. Paris	13
2. S.F.	8
3. L.A.	8
4. N.Y.	8
5. London	7
6. Barcelona	5
7. Amsterdam	4
8. Tokyo	4

Cities ranked by overall weighted presence of street art from six artists. See also Table 7, p. 31.

Connectivity Index

City	Score
1. London	19
2. Barcelona	18
3. Paris	18
4. N.Y.	17
5. S.F.	15
6. L.A.	15
7. Amsterdam	12
8. Tokyo	10

Cities ranked by total number of connections (multiplexity) with others from shared presence of same artists' work. See also Table 10, p. 34.

Weighted Directionality Index

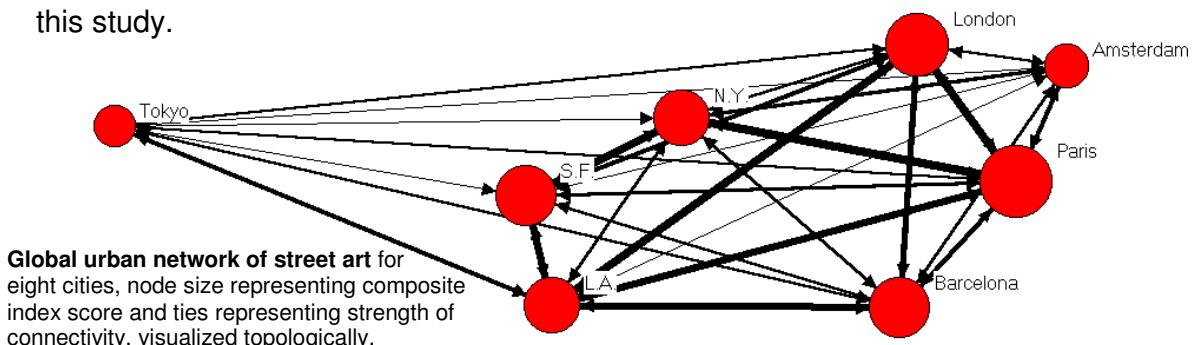| City	Score
1. Paris	24
2. London	21
3. Barcelona	20
4. S.F.	19
5. L.A.	16
6. N.Y.	15
7. Amsterdam	13
8. Tokyo	12

Cities ranked by total weighted in-degree value from direct (hub city-to-city) and indirect (shared presence) links from six artists. See also Table 13, p. 37.

Composite Street Art City Index

City	Score
1. Paris	18.33
2. London	15.66
3. Barcelona	14.33
4. San Francisco	14.00
5. New York	13.33
6. Los Angeles	13.00
7. Amsterdam	9.66
8. Tokyo	8.66

In order to create a composite index of street art cities, representing overall node importance and connectivity, scores for each city from the above indices were averaged to produce the Composite Street Art City Index. This hierarchy shows the cities in order of overall strength in the network of eight cities connected by the work of six international street artists from Los Angeles, New York and Paris.

Paris is the clear 'star' of the network. The City of Light is number one in terms of total presence of graffiti art and in-degree reception of graffiti from elsewhere, and is among the most strongly connected both directly and indirectly by street artists. Amsterdam and Tokyo are more clear 'isolates' in the network, scoring lowest in all regards. The high showing of London, as well as Barcelona and San Francisco, is evidence of their importance as 'cultural world cities' and even 'world cities of street art,' at least among the six artists considered in this study.

Global urban network of street art for eight cities, node size representing composite index score and ties representing strength of connectivity, visualized topologically.

Appendix G – Street Art Connectivity / 'Real' Connectivity

Street Art Connectivity Index
(see Appendix G)

City	# Connections
1. London	19
2. Barcelona	18
3. Paris	18
4. New York	17
5. San Francisco	15
6. Los Angeles	15
7. Amsterdam	12
8. Tokyo	10

Ranking among eight cities, by number of different direct or indirect (unweighted) connections by six street artists.
See Table 9, p. 33.

'Air Routes: The Evolving Urban Hierarchy'

City	# Air Routes
1. London	53
2. Paris	35
3. Tokyo	24
4. New York	22
5. Amsterdam	20
6. Los Angeles	17
7. San Francisco	7
8. Barcelona	6

Ranking among select eight cities only from data for 30, by number of air routes over 100,000 passengers per year (1994) in each direction.
Source: Short & Kim, 1999: 48.

Street art connectivity between major city-pairs

City-pair	Score
New York – Paris	6
Paris – London	5
L.A. – Barcelona	5
L.A. – S.F.	5
Barcelona – London	4
L.A. – London	4
L.A. – Paris	4

City-pairs listed with score of 4 or more in strength of connectivity in one direction. With reciprocal or repeat pairs, stronger direction listed.
See Table 13, p. 37.

'International air flows between major city-pairs'

City-pair	Passengers
Paris – London	3.6 mil
London – New York	2.5 mil
Amsterdam – London	1.8 mil
New York – Paris	1.2 mil
L.A. – Tokyo	1 mil
L.A. – London	1 mil
London – Tokyo	1 mil

Selected city-pairs from data for 24 with 1 million or more passengers per year (1994) in both directions.
Source: Short & Kim, 1999: 43

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