FINDING MULTI-CENTERS: USING CROWD-SOURCING TECHNOLOGIES TO IDENTIFY COMMUNITIES OF LANDSCAPE ARCHITECTURE

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1 ABSTRACT

This paper presents findings from website-based analytics identifying social and geographic topic hotspots within the fields of architecture, landscape architecture, and urban design. Three crowd-sourced surveys are utilized to record thousands of user's topic interests and pin-point locations on a global scale. Topics include projects, research, visualization, sustainability, and competitions within architecture, landscape architecture, and urban design. The surveys also identify user locations, topics of interest, day and time of contact, social sharing, and user demographics. Preliminary findings from the crowd-sourced surveys suggest that: a) the social process of making meanings through social media exchanges of knowledge facilitates multi-centered geospatial social groupings according to topical interests, b) imilar social groups topical interests vary by geo-location suggesting place- based meaning formation, and c) traditional groups of planners, architects, and landscape architects share degrees of common topical interests related to competitions, projects, and research topics.

1.1 Keywords

Social media, landscape architecture, crowd sourcing, geo-location

2 GENERALITIES

With the increasing use of Web 2.0 applications facilitating user generated content and exchange, and the exponential growth in social media use, new evaluative methods for understanding the relationship between the individual, community and landscape are emerging (Centola 2010). Gabi identifies intensive networks for the virtual exchange of knowledge, data and information beneath the surface of an expanding built environment (Gabi 2006). Healey describes the knowledge produced by this intensive network as "a social process of making meanings, shaped by the situation, trajectories, activities and values of particular social groupings." (Healey 2007) Hewitt, Taylor and Nassar have identified landscape architecture related organizations, commercial enterprises, educational institutions, individuals and landscape architects employing social media techniques as part of this social process of meaning making and social grouping (Hewitt, Taylor, Nassar 2011). However, no scholarly work to date has examined the broader influence and impacts of social media in shaping communities of knowledge within landscape architecture and related professions. This paper presents findings from website-based analytics identifying social and geographic topic hotspots within the fields of architecture, landscape architecture, and urban design. Three crowd-sourced surveys are utilized to record thousands of user's topical interests and pin-point locations on a global scale. Topics include projects, research, visualization, sustainability, and architecture, landscape architecture, and urban design/planning.

3 ORGANIZATION

3.1 Methodology

Data was mined from twitter feeds of 5 different sources representing the landscape architecture profession and important affiliated professions. The 5 sources included: the APA, the ASLA, World Landscape Architecture, and Architectural Record and Architizer as the AIA was not accessible. Data-mined twitter feeds were then analyzed using GEPHI network graphing software, and displayed to compare the global network connections of the 5 different sources. Analysis graphs displayed prominent network centers and linkages as distinct network graphs to illustrate each sources unique organization of centers and linkages. Data-mined network characteristics were also geo-located within the continental United States and globally to illustrate the geographical characteristics of the APA, ASLA, World Landscape Architecture, Architectural Record, and Architizer networks.

Data-mined tweets from each of the 5 sources that contained hashtag[1] phrases with key words associated with the ASLA, such as; "#landarch, and #landarchsd, were also collected using a Twitter search API[2]. Hashtag phrases associated the APA, World Landscape Architecture, Architectural Record, and Architizer, were selected in a similar manner. A web site was utilized to send twitter messages to the data-mined twitter sources concerning a wide range of topics including: projects, research, visualization, sustainability, and architecture, landscape architecture, and urban design/planning. Data-mined tweets and retweets in response to the website stimuli were then analyzed for lexical diversity associated with professional nomenclature and geo-located. The most active social networks were selected from a list of the top 20 cities that correlated across the APA, ASLA, World Landscape Architecture, Architectural Record, and Architizer sources. The lexicographical content of the tweets from these cities were characterized to illustrate the making of architecture, landscape architecture, urban design/planning, and associated meanings.

4 FINDINGS

4.1 Network, National, and Global Graphs

The following graphs and diagrams represent the network analysis findings of crowd-sourced, data-mined twitter feeds from 5 different sources associated with landscape architecture and important affiliated professions. The graphs and diagrams are presented to describe a specific professional source

[1] Hashtag use has become a unique tagging convention to help associate Twitter messages with certain events or contexts. Prefixed by a # symbol with a keyword, a Twitter hashtag serves as a bottom-up user-proposed tagging convention. (Chang 2010)

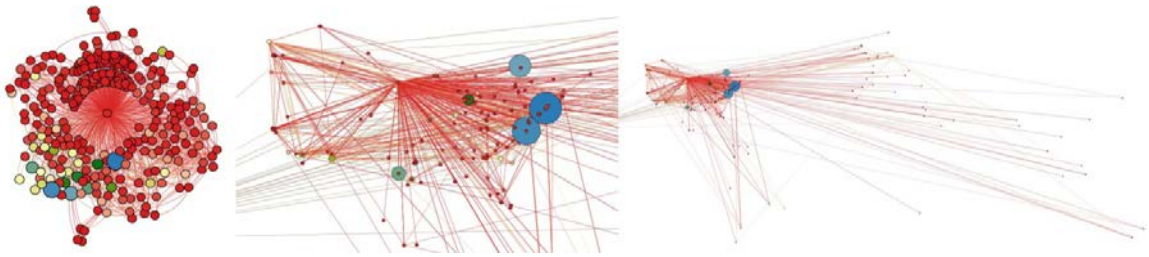

Figure 1. Twitter Network: @apaplanning, Diagram by authors.

networks from three perspectives: 1) graph analytical based on force atlas mapping, 2) national geo-location representing twitter account locations and their influence ranked by number of followers and lines of connection, and 3) global geo-location representing twitter account locations and their influence ranked by number of followers and lines of connection. In general the graphs and diagrams are developed according to three criteria: a) the larger and bluer the nodes, the more followers and more frequent communication between followers, b) the closer the nodes to the center, the greater the interconnection among the general network nodes and followers, and c) the greater the frequency of communication between node and follower the greater the network lines of connection change from red to yellow to green networks.

Analysis of the crowd-sourced data mined from the American Planning Association (APA) suggests that the network is loosely connected, with many followers tenuously interconnected on the periphery of the network, and virtually all of the most influential followers weakly connected to the larger network. National geo-location analysis identified most of the data-mined APAs influential followers on the East Coast, in Toronto, and Texas with significant traffic from several West Coast cities. The converging lines to the North Central United States represent the location of the analysis server. At a global scale, the data-mined followers showed mostly weak connections spread through most continents.

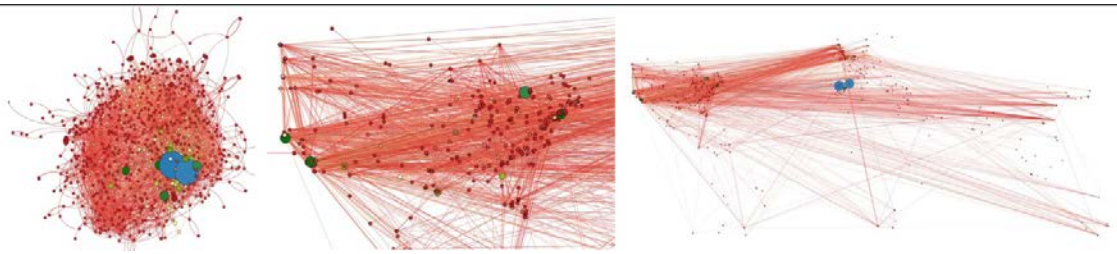

Figure 2. Twitter Network: @asla, Diagram by authors

Analysis of the crowd-sourced data mined from the American Society of Landscape Architects suggests that the network is very densely connected, with many followers interconnected throughout the network, and virtually all of the most influential followers well-connected to the larger network from its center. National geo-location analysis identified data-mined ASLA followers throughout the United States, Canada and Mexico with many moderately influential followers and multiple lines of communication. The converging lines of the analysis server are not visible in the diagram. At a global scale, the data-mined followers showed many weak connections spread through most continents, but concentrated in Europe, and East Asia. There were several influential nodes in Central Europe.

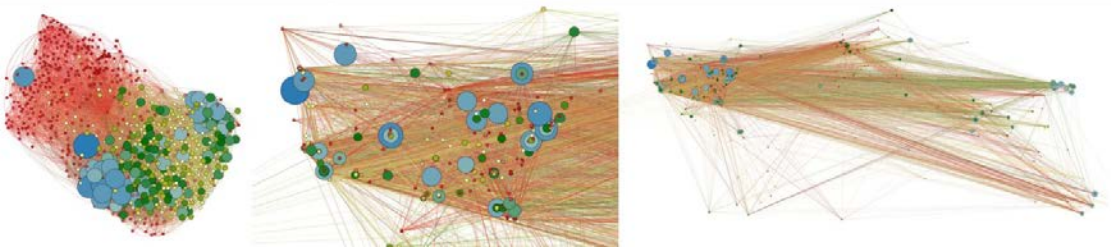

Figure 3. Twitter Network: @wlandscapearch, Diagram by authors

Analysis of the crowd-sourced data mined from World Landscape Architect (WLA) suggests that the network is the most densely interconnected, with many followers intensely interconnected throughout the network, and the most influential followers spread throughout the larger network from its center to periphery. National geo-location analysis identified data-mined World Landscape Architect followers throughout the United States, Canada and Mexico with many moderately and very influential followers and multiple lines of intense communication. The converging lines of the analysis server are not visible in the diagram. At a global scale, the data-mined followers showed many intense connections spread through most continents except South America and Africa, and concentrated in Europe, Australia and East Asia. There were several influential nodes in England, China, Australia and Japan.

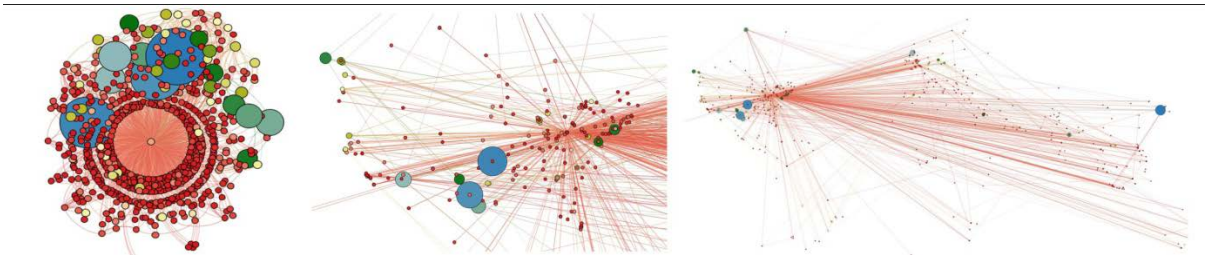

Figure 4. Twitter Network: @archrecord, Diagram by authors

Analysis of the crowd-sourced data mined from Architectural Record suggests that the network is loosely interconnected, with many followers intensely interconnected in discrete groups throughout the network, and the most influential followers on the periphery. The network seems to be made up of mostly moderately influential followers with concentrations in the East and some very influential followers in the South Central United States. The converging lines of the analysis server are visible in the Mid-West. At a global scale, the data-mined followers showed a moderate amount of weak connections spread through most continents, and concentrated in Europe, Australia and East Asia. There were several influential nodes in Europe, China, and especially Japan.

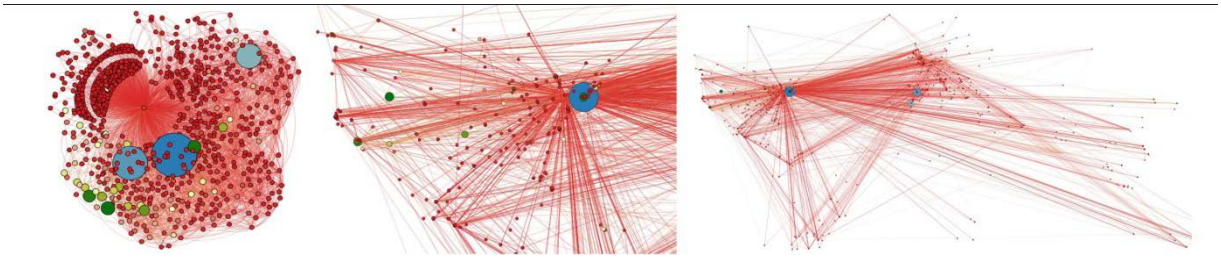

Figure 5. Twitter Network: @architizer, Diagram by authors

Analysis of the crowd-sourced data mined from Architizer suggests that the network is very interconnected, with many moderately influential followers interconnected throughout the network, and the most influential followers near the network center. National geo-location analysis identified data-mined Architizer followers throughout the United States, Canada and Mexico with many moderately influential followers and multiple lines of communication, and one highly influential follower in New York serving as a hub of networking. The converging lines of the analysis server are visible in the diagram. At a global scale, the data-mined followers showed many connections spread through most continents, and concentrated in Europe and South America. There were several influential nodes in Europe and considerable interconnection between Europe and South America.

Taken as a whole, the different network graphs illustrate the great variation between the social networks of the five data-mined organizations. The networks range from 1) loosely connected with many tenuous interconnections at the periphery, and most influential followers weakly connected to the larger network; to 2) very densely and extensively connected with most influential followers well connected; to 3) very densely interconnected with influential followers sharing a wide range of interconnections; to 4) loosely interconnected, with many followers intensely interconnected in discrete groups and the most influential

followers on the periphery, to 5) very interconnected, with many moderately influential followers, and the most influential followers intensely interconnected.

4.2 Geo-located Cities: Total Traffic, Organic Traffic, Email Subscriptions, and Content

The following graphs and diagrams illustrate urban geographical and lexicographical content of social networks related to architecture, landscape architecture, and planning. Geographical and lexicographical analysis of crowd-sourced, data-mined twitter feeds, web site content, and email subscriptions were focused on topic preferences shared between these three kinds of crowd-sourced data. Preference topics included: projects, research, visualization, sustainability, and architecture, landscape architecture, and urban design/planning. A website called "The Architecture Report" was utilized to disseminate articles and videos concerning preference topics with great lexical diversity (unavailable through twitter alone), alerting the identified twitter sources of new articles and video as posted every several hours over a three month period. Email subscriptions were included as data sources to better simulate contemporary social media network components. Preference topics indicated in twitter, web site and email data were geo-located and topic hotspots were identified based on proximity to urban areas. Totals from all three data sources were developed, and graphs were generated to illustrate total traffic and individual traffic amounts from the twitter feed, website (google organic traffic), and email subscription data.

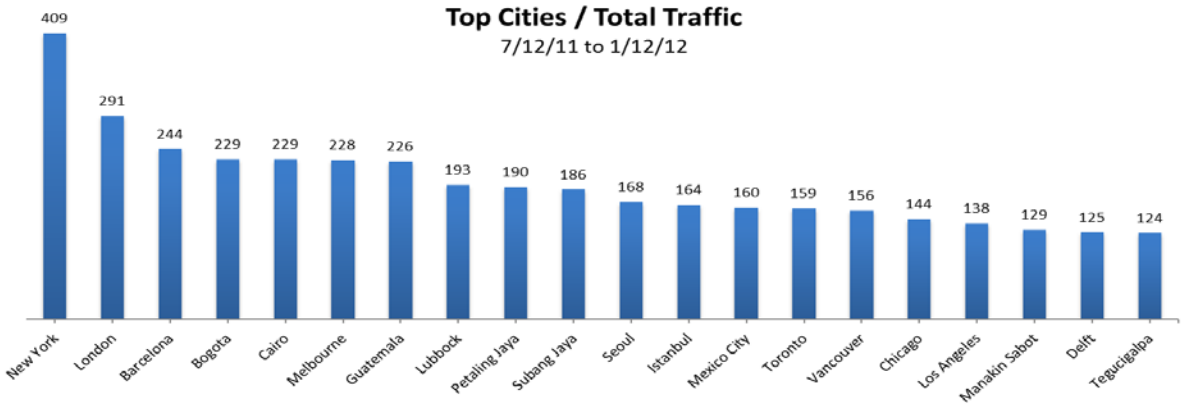

Figure 6. Top Cities: Total Traffic All Sources (07.12.2011 to 01.12.2012) Diagram by authors

Figure 6 illustrates the geo-located urban areas with the greatest amount of crowd-sourced twitter feeds, web traffic and email subscriptions associated with the preference topics. The 20 most active cities in total source communication represent major cities within all urbanized continents. Total source communications associated with those cities ranged from 409 to 124 with an average communication per city of app 194.

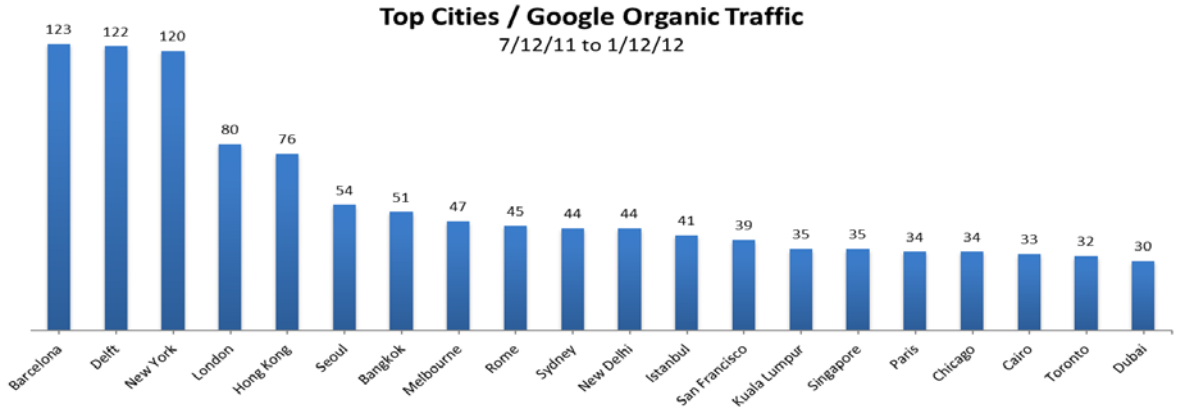

Figure 7. Top Cities: Google Organic Traffic (07.12.2011 to 01.12.2012) Diagram by authors

Figure 7 illustrates the geo-located urban areas with the greatest amount of crowd-sourced web site communications. Crowd-sourced organic concentrations develop from the clustering of shared social media communication among a consistent group of individuals via website. The 20 most active cities in organic traffic represent major cities within all urbanized continents. Source communications associated with those cities ranged from 123 to 30 with an average communication per city of app 56.

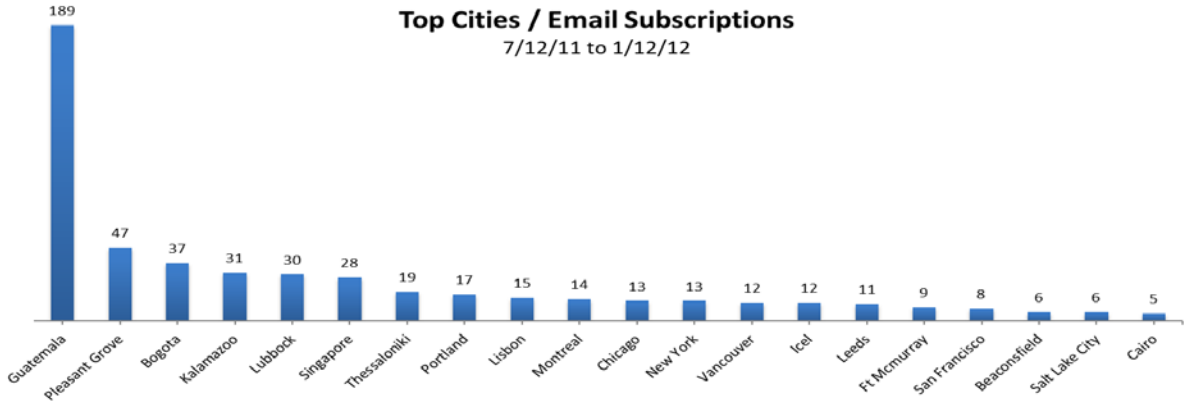

Figure 8. Top Cities: Email Subscriptions (07.12.2011 to 01.12.2012) Diagram by authors

Figure 8 illustrates the geo-located urban areas with the greatest amount of crowd-sourced email subscriptions. Email subscriptions represent another form of website/social media content communication among individuals. Because Guatemala City exhibited nearly 4 times as many email subscriptions as the second greatest subscription total, it was eliminated from analytical consideration of the whole as an outlier. Email subscriptions associated with those remaining cities ranged from 47 to 5 with an average communication per city of app 17. Taken as a whole the crowd-sourced, geo-located data analysis related to twitter traffic, web site traffic and email subscriptions above suggest: 1) network user participation on all urbanized continents, 2) wide variation in the rankings of cities among the three crowd-sourced data sets, and 3) significant differences between the cities in the email list and the other two data sets. Taken as a whole, the three data sets above identified five highly ranked cities based on their averaged rankings in the three data sets, and the city's total amount of traffic. New York City exhibited the highest average ranking and total traffic amounts (5.3 and 645), followed by Barcelona (>8 and 367), London (>8.7 and 371), Bogota (>9 and 316), and Melbourne (>11.3 and 275). Of these five, only New York, Cairo, and Chicago exhibited rankings and traffic amounts in all three data sets.

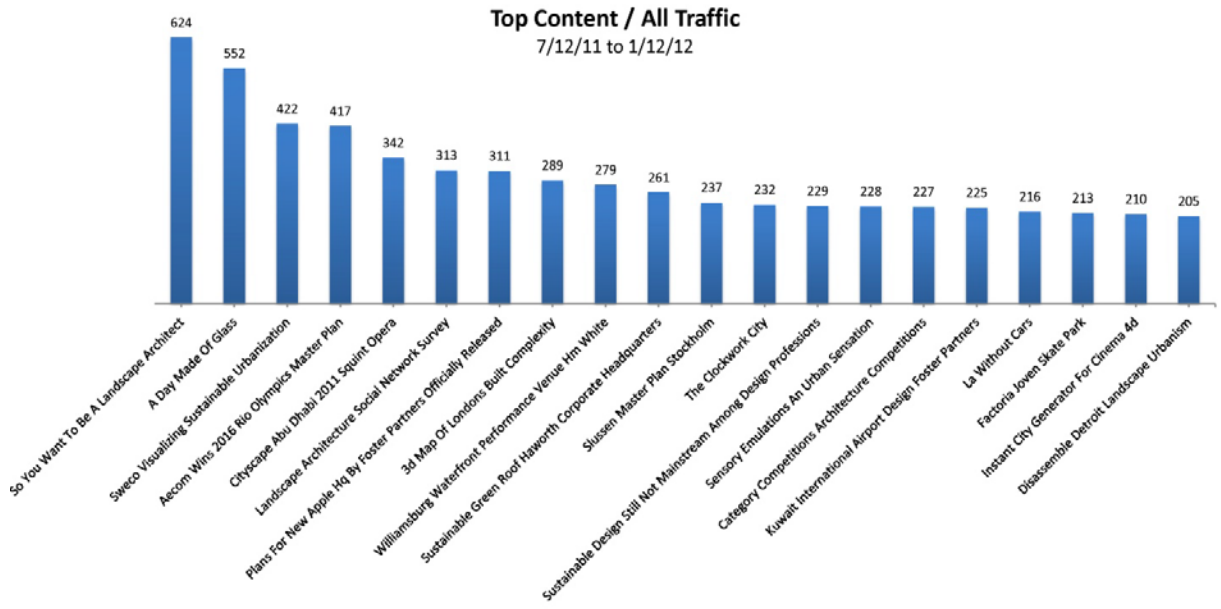

Figure 9. Top Content: All Traffic Sources (07.12.2011 to 01.12.2012), Diagram by authors

While the geo-location of the twitter, website and email traffic data is useful in understanding social media user geographic concentrations, and to better understand those concentrations within the larger network of communications (as illustrated in figures 1-5), understanding the lexical content of the communications is especially worthwhile to differentiate user topic interest between the different cities. Lexicographical analysis of these communications offers a useful method to achieve this goal. Lexicographical analysis of the crowd-sourced data, twitter feeds were analyzed for frequency of content. Figure 8 illustrates the specific topic content and frequency of those twitter feeds, derived from web site articles and videos addressing issues of cinema, urbanism, firms, the web site itself, rivers, consumption, facades, to name just a few. The frequency per specific topic ranged from 149 to 57, with an average of approximately 88 per topic. The most highly communicated topic areas among all the twitter feeds addressed cities, computer technology and visualization, specific firms, architecture, urban design, specific projects, and the landscape. Very little communication topics recognized sustainability or research. A significant number of topics focused on particular cities.

4.3 Select Cities: Landscape Architecture, Architecture and Urban Planning Topics via Twitter

To this point, analysis of professionally oriented twitter-feed networks related to architecture, landscape architecture, and urban design/planning has illustrated network characteristics, and their national and global reach. Similarly, analysis of twitter feed, website, and email subscriptions according to geo-location and general lexical content has illustrated concentrations of social media use in cities, and broad topical interest in computer technology, firms, architecture, urban design, and the landscape. Analysis of specific geo-located lexical content, however, was needed to clearly differentiate specific attitudes associated with a given urban geo-locations and the professions. Differentiated urban attitudes associated with the professions, and geo-locations were mined from the crowd-sourced twitter data, related to landscape architecture, architecture, and urban design/planning. Figure 10 illustrates the geo-located cities with the greatest amount of crowd-sourced twitter feeds associated with the landscape architecture as a topic. The 20 most active cities in total twitter feeds identify major cities within all urbanized continents. Source communications associated with those cities ranged from 45 to 7 with average twitter feeds per city of app 16. The most active cities for landscape architecture topics included: Petaling Jaya and Subang Jaya Malaysia, Melbourne Australia, London UK, Orel Russia, and New York US.

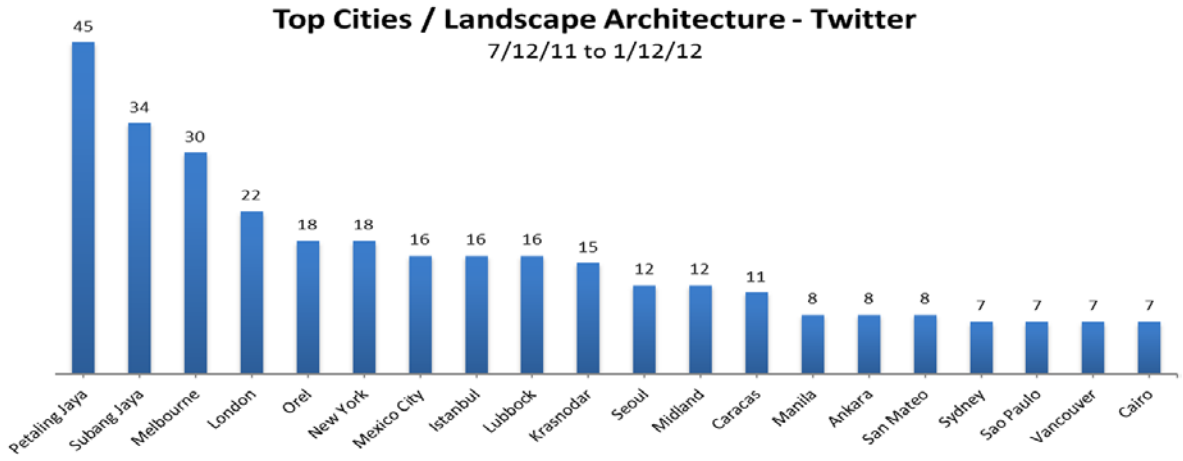

Figure 10. Top Cities: Landscape Architecture Topics via Twitter (07.12.2011 to 01.12.2012), Diagram by authors

Figure 11 illustrates the geo-located cities with the greatest amount of crowd-sourced twitter feeds associated with the architecture. The 20 most active cities in total twitter feeds identify major cities within all urbanized continents. Source communications associated with those cities ranged from 52 to 6 with average twitter feeds per city of app 14. The most active cities for architecture topics included: Vancouver, Canada, London, UK, Subang Jaya and Petaling Jaya, Malaysia, Krasnodar, Russia, and Athens Greece.

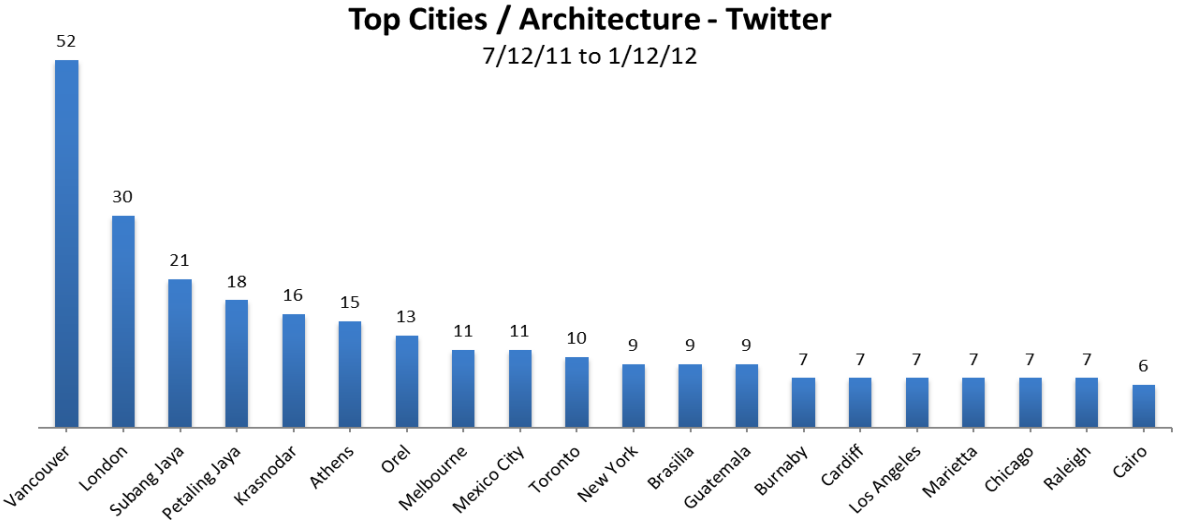

Figure. 11. Top Cities: Architecture Topics via Twitter (07.12.2011 to 01.12.2012), Diagram by authors

Figure 12 illustrates the geo-located cities with the greatest amount of crowd-sourced twitter feeds associated with urban design/planning. The 20 most active cities also identify major cities within all urbanized continents. Source communications associated with those cities ranged from 27 to 5 with average twitter feeds per city of app 10. The most active cities for urban design/planning topics included: London, UK, Orel, Russia, Istanbul, Turkey, Melbourne, Australia, Vancouver, Canada, and Seoul, Korea. Taken as a whole the crowd-sourced, geo-located data above suggests: 1) representation of cities in all urbanized continents, and 2) wide variation in the rankings of cities among the crowd-sourced data sets for landscape architecture, architecture, and urban design/planning. Taken as a whole, the three data sets identified six of the most highly ranked cities based on their average rankings in the data sets, and their total amounts of traffic: New York, London, Petaling Jaya, Melbourne, Orel, and Krasnodar.

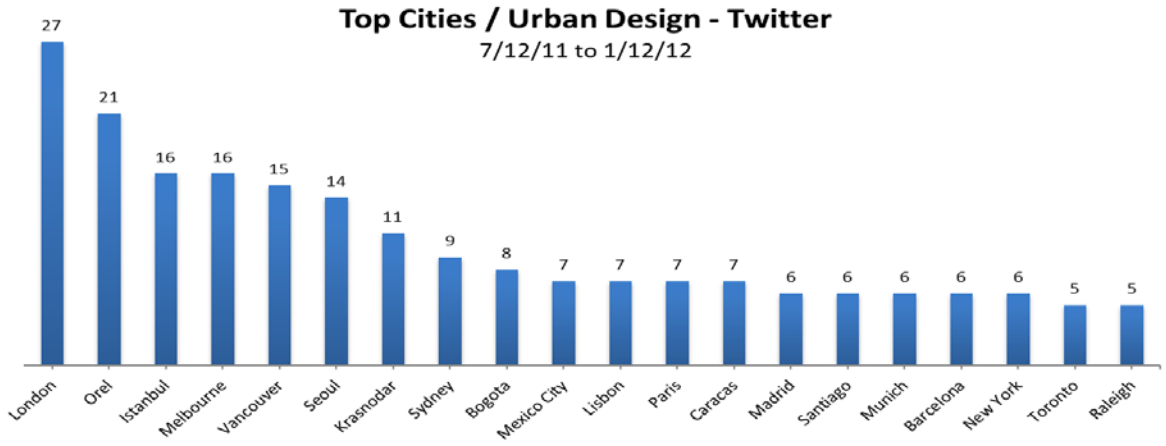

Figure 12. Top Cities: Urban Design/Planning Topics via Twitter (07.12.2011 to 01.12.2012) Diagram by authors

Figure 13 illustrates the six cities according to average ranking and combined twitter traffic from the architecture, landscape architecture, and urban design/planning twitter feeds. New York City exhibited the second highest average ranking and total twitter traffic amounts (2.3 and 80), followed by London with the highest average ranking and the second highest twitter amounts (1.7and 63), then Petaling Jaya (5.0 and 57), Melbourne (4.7 and 52), Orel (7.3 and 42), and Krasnodar (11.7 and 33).

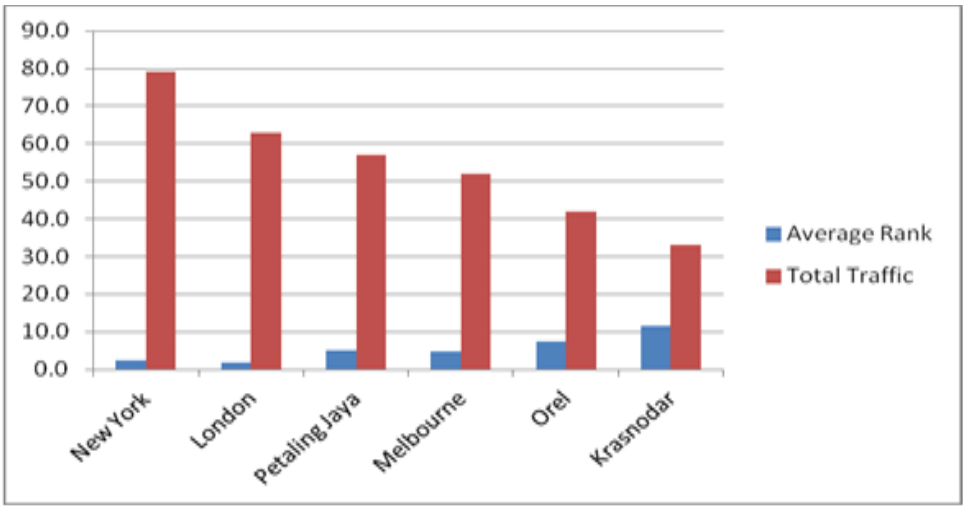

Figure 13. Top Cities: Urban Design/Planning Topics via Twitter (07.12.2011 to 01.12.2012), Diagram by authors

4.4 Geo-located Cities: Lexicographical Analysis Graphs

In order to better understand the specific professional attitudes of cities, geo-locations were mined from the six top cities in Figure 13 using the Twitter API and geo-locational extraction at an extent of 5 kilometer Euclidean distance from the city center.

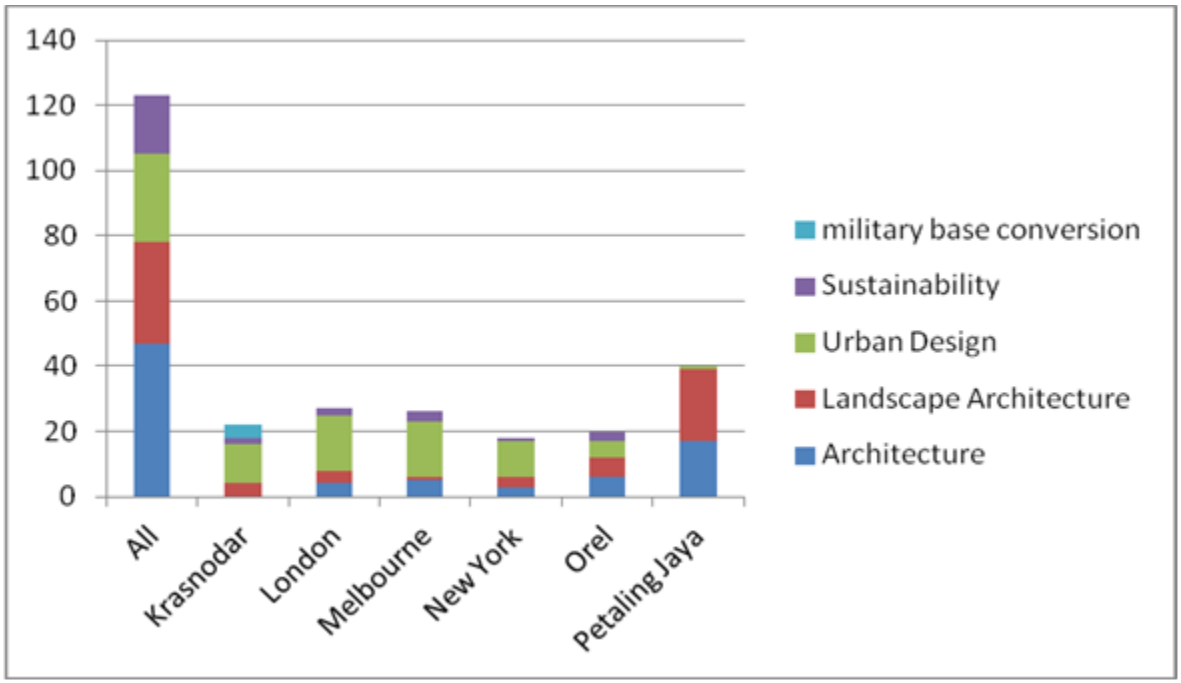

Figure.14. Lexical Content from all cities, Krasnodar, London, Melbourne, New York, Orel, and Petaling Jaya, Diagram by Authors

Figure 14 illustrates the different categories of lexical content in the twitter feeds from the six geo-located cities above, as well as a column dedicated to the lexical content shared by all six cities. The graph indicates that most of the data-mined twitter feeds (123) are shared by all six cities with the largest concentrations of content related to architecture (44), landscape architecture (32), urban design/ planning (29), and sustainability (18). Amounts of twitter feed content specific to the six cities range from 40 to 18, with an average of app. 25.2 given 121 total specific twitter feeds.

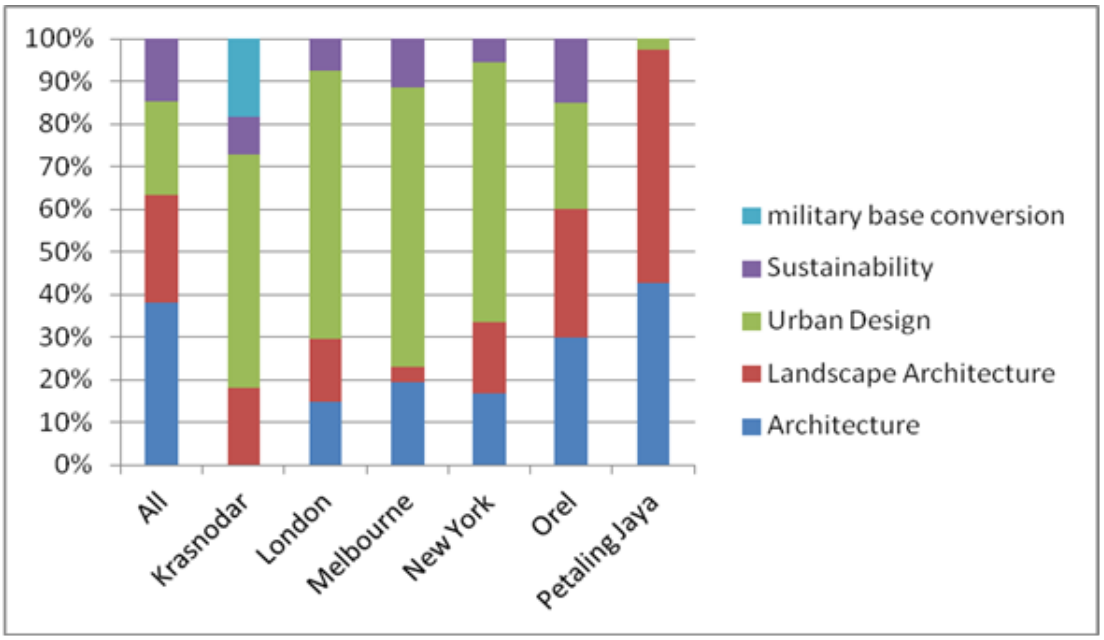

Figure. 15. Proportional Content from all cities, Krasnodar, London, Melbourne, New York, Orel, and Petaling Jaya, Diagram by authors

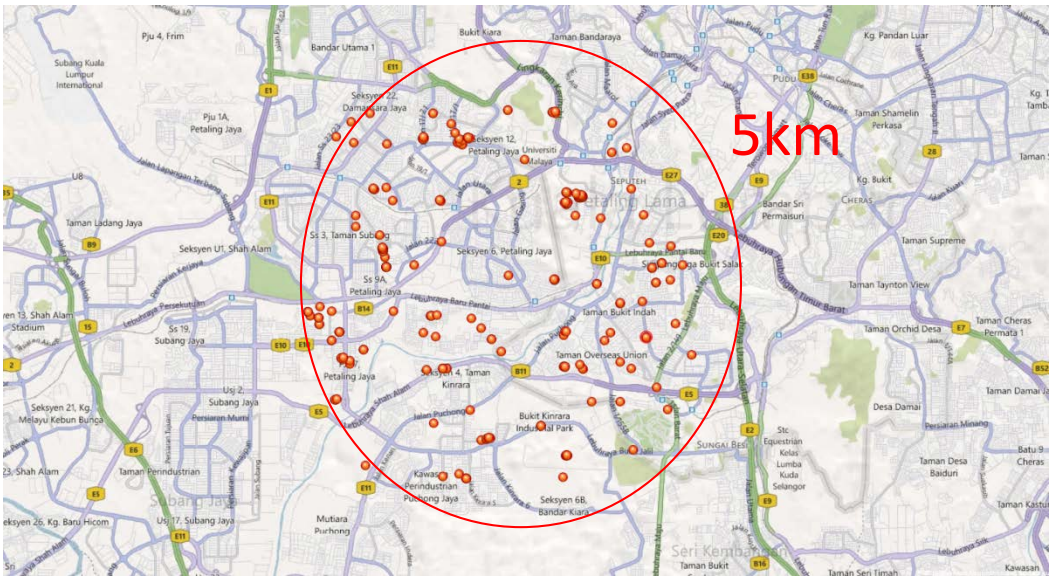

Figure 16. Petaling Jaya: Sample Extraction of Tweets, Diagram by authors

Figure 15 shows the proportional distribution of lexical content among the six cities. Distinctive twitter feeds specific to each city include lexical content related to varying proportions of architecture, landscape architecture, urban design/planning, sustainability, and military base conversion. Krasnodar, London, Melbourne and New York are relatively more interested in urban design than other cities, while Krasnodar is especially interested in military base conversion. Melbourne is less specifically interested in landscape architecture, but shares greater specific interest in sustainability with Orel. Petaling Jaya is specifically interested in architecture and landscape architecture at the expense of all other specific interests, and is more interested in architecture and landscape architecture than any of the other cities, while Orel"s specific interests more closely resemble the general interest of all cities. America.

A sample of the lexical content shared by all six cities includes: building health, mixed use development, computing, social networks, landscape mapping, skyscrapers, capital city urban design, green urban design, sustainable design, participation, landscape urbanism, sustainable design, and consumption. A sample of specific lexical content of the twitter feeds from Krasnodar include: military base conversion, urban edge design, design for veterans, sustainable technology, and urbanism. A sample of specific lexical content of the twitter feeds from London include: 3-D computing, ecosystem services, infrastructure, megacities, and urban network analysis. A sample of specific lexical content of the twitter feeds from Melbourne include: transportation digital technology, mapping technology, visualization, infrastructure, and urban visualization. Sample feeds from New York include: urban network analysis, global urban design, school design, media, landscape urbanism, and urban edge design. Sample feeds from Petaling Jaya include: architectural visualization, infrastructure, and green roofs. America.

5 DISCUSSION

The paper has proposed that the use of crowd-sourced, social media, data-mined from twitter feeds, web site traffic and email subscriptions, can identify professional networks in terms of their network characteristics, geography and interests. This process of identification and characterization utilized crowd-sourced twitter feeds from five professional groups (the APA, ASLA, WLA, Architectural Record, and Architizer) to develop network analysis graphs and network geo-location maps at national and global scales. The process has also used crowd-sourced twitter feeds, web site traffic, and email subscriptions to identify, geo-locate, and lexicographically characterize social network activity related to major urban areas throughout the world associated with architectural, landscape architectural, and urban design/planning professional networks. And the process utilized crowd-sourced twitter feeds to identify, geo-locate, and lexicographically characterize specific professional topical interests within six cities with the greatest amount of social network activity within the global network. America.

Findings from these three analytical methods have identified distinctly different networks among the five professionally oriented social networks surveyed with great variation in connectivity, and influence.

Many are multi-centric and some more uni-centric. All of the social networks are global in scale reaching all urbanized continents with the majority of connections in North America, Europe, Asia, and Australia. The reach of the five social networks is extensive throughout the continental United States with most networks primarily multi-centric and some more concentrated in New York City, the north east, and the southern central United States. Findings concerning the cities most active with social networks reaffirm user participation on all urbanized continents, and illustrate wide variation in the rankings of cities based on twitter, web site or email data sets. Of more than 60 surveyed cities, only New York, Cairo, and Chicago exhibited rankings in all three data sets, reinforcing the idea of great variation among social network types. The most highly communicated general topical areas among all social media not specifically identified with each city addressed, computer technology and visualization, specific firms, architecture, urban design, specific projects, urbanism, and the landscape. A significant number of topics focused on particular cities. Very few topics specifically recognized research or sustainability per se (which upon reflection may reflect the potential limitations of our methodology in identifying a broader range of lexographical inferences suggesting greater interest in these topics).

Specific lexicographical findings concerning the six cities with most active social networks suggest widely shared topical interests among the cities representing all urbanized continents except South America and Africa. The six cities (New York, London, Petaling Jaya, Melbourne, Orel, and Krasnodar), however, exhibit distinctive specific topical interests that are proportionally distinct from all cities common interests, except for the city of Orel, which might be considered a model city for shared interests. Petaling Jaya is perhaps most unique in terms of its more exclusive interest in just architecture and landscape architecture.

As a whole the findings from these three studies help form the basis for an initial description and definition of professional social networks globally, nationally and locally. They provide initial descriptions of how and where the professionally oriented members of these networks interact, communicate, and reside. They provide initial understandings of shared and distinct differences in interests and meanings among the social network members directly related to place. And they suggest hierarchies of social network influence among urban areas throughout the world.

6 CONCLUSSION

The paper has sought to examine the broader influence and impacts of social media in understanding communities of knowledge within landscape architecture and related professions. It has presented methods that combine crowd-sourcing techniques with related web-site, social media and geo-location data and techniques to identify and differentiate social network characteristics and geo-locations of the most active socially networked cities throughout the globe. Preliminary results suggest a varied landscape of interconnection, location and topical orientation with many common themes connecting the identified cities. While these methods and findings are preliminary, they are definitive in the sense that no other such scholarly work exists to date concerning these issues related to our professions. Future scholarly endeavors offer potentially important correlations with network analysis work related to socio-ecological systems management, public health and urban design, mobility and transportation, and the creation of social and political capital.

7 REFERENCES

Aberbach, J. D., & Christensen, T. (2001). Radical reform in New Zealand: crisis, windows of opportunity, and rational actors. *Public Administration* 79:403-422.

Adler, P., & Kwon, S. (2002). Social capital: Prospects for a new concept. *Academy of Management Review*, 27(1): 17-40.

Centola, D. (2010). The spread of behavior in an online social network experiment, *Science*, 329(5996):1194-1197.

Danter K. J., Griest, J. L.,Mullins, G. W. & Norland, E. (2001). Organizational change as a component of ecosystem management. *Society and Natural Resource,* 13: 537-547.

Folke, C., Hahn, T., Olsson, P. & Norberg, P., *Adaptive Governance of Social-Ecological Systems* (2001), Centre for Transdisciplinary Environmental Research, Department of Systems Ecology, Stockholm University, SE-10691 Stockholm, Sweden

Gabi S., Thierstein, A., Kruze, C., & Glanzmann, L. (2006). Governance Strategies for the Zürich-Basel Metropolitan Region in Switzerland, *Built Environment*, 2: 157-171.

Hamilton, L. C., Haedrich, R. L. & Duncan, C. M. (2004). Above and below the water: social/ecological transformation in northwest Newfoundland. *Population and Environment* 25:195-215.

Hampton, K. (2002). Place-based and it mediated "community." *Planning Theory and Practice*, 3(2): 228-231.

Hampton, K., & Wellman, B, (2003). Neighboring in netville: How the internet supports community and social capital in a wired suburb*. City & Community*, 2(4), 277-311.

Haythornthwaite, C, (2005). Social networks and internet connectivity effects. *Information, Communication & Society*, 8(2), 125-147.

Healey, P. (2007). *Urban Complexity and Spatial Strategies*, London.

Hewitt, R. R., Nassar, H., & Taylor, G. (2011). The Nature of Social Technology: The Use of Social Media in the Landscape Architecture Profession and Education, *Selected Papers CELA*

Scheffer, M., F. & Brock, W. W. (2003). Slow response of societies to new problems: causes and costs. *Ecosystems*, 6: 493-502.

Turner II, B. L., Clark, W. C., Kates, K. W., Richards, J. F., Mathews, J. T. & Meyer, W. B. (eds) (2003), *The earth as transformed by human action*. Cambridge, UK,