

# Quantitative Network Analysis in Investigating Global Processes of Contemporary Artistic Production



Kvantitativna mrežna analiza  
u istraživanju  
globalnih procesa suvremene  
umjetničke produkcije

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## SAŽETAK

Sociološka teorija tvrdi da se polje globalne umjetnosti u posljednjim desetljećima razvilo do karakteristično globalne razine funkcioniranja kroz pojavu novih globalnih institucionalnih mreža, globalnog diskursa o umjetnosti i novih, specifično globalnih umjetničkih hijerarhija. Koncept nastajuće umjetnosti, specifično globalne umjetnosti koja se paralelno proizvodi u mnoštvu umjetničkih jezika i mjesta dobro se uklapa u ovaj sociološki model u povijesti umjetnosti. Istodobno, povijesnoumjetnički i sociološki diskursi također dijele razumijevanje da ovaj suvremeni oblik globalnog funkcioniranja i dalje nosi naslijeđene nejednakosti i dinamiku moći moderniteta te njegova imperijalističkog i kolonijalnog nasljeđa. Shodno tome, dok sociološki diskurs nastoji otkriti prevladavajuće odnose centra i periferije u umjetničkoj produkciji trenutačnih globalnih kulturnih polja, globalni povijesnoumjetnički diskurs nastoji dekonstruirati univerzalizirajuće pojmove u svojoj diskurzivnoj strukturi i dekolonizirati svoj pogled prema umjetnosti koja je proizvedena izvan tradicionalnih zapadnih umjetničkih središta. Digitalni zaokret u povijesti umjetnosti pojavio se na ovoj sceni u drugom desetljeću 21. stoljeća i brzo izazvao strahove od ponovnog oživljavanja univerzalizirajućih tendencija u diskursu polja. To je uglavnom bilo zbog prirodno-znanstvenoga epistemološkog utemeljenja primijenjenih računalnih alata i očuvane dinamike moći unutar povijesnih podataka, što otežava prikazivanje digitalnih i dekolonizirajućih pristupa u globalnoj povijesti umjetnosti kao kompatibilnih. Dok sve veći broj istraživanja prihvaća izazov uporabe digitalnih podataka, alata i metoda u potrazi za otkrivanjem neispričanih priča, umjetničkih praksi i novih aspekata umjetničke produkcije u povijesti umjetnosti na globalnoj razini, mnogo je manji broj istraživanja koja se fokusiraju na suvremenu globalnu umjetnost uz kombinirani digitalni i kritički pristup. Stoga ovaj rad razmatra načine na koje kvantitativna mrežna analiza pridonosi našem razumijevanju suvremene umjetnosti i umjetničke produkcije u trenutačnom globalnom kontekstu kroz tri recentna istraživanja.

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## ABSTRACT

This paper investigates ways of which quantitative network analysis can contribute to a critical theory-informed global art history of contemporary art and artistic production. Critical, global and digital approaches came together in the art historical discourse of recent years to discuss art and artistic production in prior forms of globality. Yet, there remains a question of how these approaches can join forces to investigate art that is produced in the current phase of globalization in an art field that is, according to sociological understanding, characteristically global in structure and functioning. The paper considers this question by discussing three recent research projects. The results show that, when integrated into a more complex methodology, network analysis enables researchers to grasp the specificities of art market functioning, collection-building practices and the transformation of a local art scene in the contemporary global art field. Furthermore, the way network analysis is currently applied in digital art historical research gears the discourse towards a more holistic and theoretically more embedded direction. However, while it focuses solely on institutional questions, it also leaves works of art and aesthetic matters aside.

## KEYWORDS

network, global art field, contemporary art, critical theory, digital art history, global art history

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Kombinirajući mrežnu analizu s intervjuima, prvi rad, koji su napisale Sanja Sekelj i Željka Tonković, pokazao je da je Sorosev model utjecao na funkcioniranje i modificirao strukturu lokalne hrvatske umjetničke scene u dvije faze nakon 1990.: isprva je pomogao u održavanju međunarodnih i regionalnih veza tijekom rata, a zatim je, u suradnji s lokalnim inicijativama, pridonio nastanku „nezavisne umjetničke scene” koja je funkcionirala prema novim promišljanjima međunarodnog umrežavanja i suvremenih umjetničkih praksi. Kombinirajući mrežnu analizu s istraživanjem iz sekundarnih izvora i deskriptivnom statistikom, drugi rad, koji su napisali Marilena Vecco, Simeng Chang i Roberto Zanola, pokazao je da je segment globalnoga umjetničkog tržišta iz kontinentalne Kine postao međunarodno integriraniji i utjecajniji nakon kineskog procvata tijekom prijelaza u novo tisućljeće, i to izgradnjom strategije internacionalizacije kroz povezivanje s najvažnijim umjetničkim sajmovima na teritorijalno različitim lokacijama i izgradnjom internacionalnih galerijskih portfelja kako na relaciji Zapad–Istok, tako i onoj Istok–Istok, umjesto da se isključivo okrene zapadnim umjetničkim centrima. Naposljetku, kombiniranjem mrežne analize sa statističkom validacijom poveznica u trećoj istraživačkoj studiji, koju je napisala Júlia Perczel, bilo je moguće pokazati specifične načine na koje su se Tate, Centre Pompidou i MoMA oslanjali na globalno institucionalno polje i odabirali određene izložbene prostore kao referentne točke za izgradnju CEE segmenta svoje globalizirajuće kolekcije nakon 1990. Iako su se sva tri ključna muzeja najviše oslanjala na prethodne izbore drugih zapadnoeuropskih i američkih institucija, rezultati su pokazali da su sva tri muzeja također odabrala grupu izložbenih prostora koja su ih okarakterizirala jednog u odnosu na drugi, upućujući na pristup kroz koji istodobno i surađuju i natječu se kao ključni akteri za simboličku dominaciju unutar polja.

Navedeni radovi pokazuju da, kada se integrira u metodologiju istraživanja na način koji u obzir uzima kontekst studije slučaja, mrežna analiza nadopunjuje globalne pristupe utemeljene na kritičkoj teoriji u potrazi za boljim razumijevanjem suvremenih procesa globalne umjetničke produkcije. Također ukazuju na to da se integriranjem digitalnih i kritičkih napora diskurs o suvremenoj umjetnosti okreće u holističkim i sociološki informiranim, ali i institucionalnim smjeru, za koji se trenutačno čini da se udaljava od pristupa zainteresiranih za estetska i materijalna pitanja u suvremenoj umjetnosti.

#### KLJUČNE RIJEČI

mreža, polje globalne umjetnosti, suvremena umjetnost, kritička teorija, digitalna povijest umjetnosti, globalna povijest umjetnosti

#### THE GLOBAL ART FIELD AND ART HISTORICAL APPROACHES TO IT

The art historical notion of emergent global art in the contemporary art world resonates well with the sociological model of an unfolding global art field in recent decades. Research shows that starting from the 1980s, globally spanning institutional networks of biennales and art fairs developed;<sup>1</sup> from the 1990s onwards, a post-national, cosmopolitan global discourse on art and aesthetics has been constructed,<sup>2</sup> and from the 2000s, global databases (such as *Artfacts*, *Artprice*) and rankings (such as the *ArtReview's* Power 100) have been built.<sup>3</sup> Larissa Buchholz argues that through these mechanisms, a novel level of global artistic production emerged that is characteristically transnational in scale and functions through its specifically global institutional system, discourse and hierarchies.<sup>4</sup> These three features provide this novel global level with relative autonomy from the level of national art fields in the global system.<sup>5</sup> This sociological model resonates well with the art historical narrative of an emergent, unified, global gaze along the notion of global art in the contemporary phase of globalization, which — instead of following a singular trajectory of Western art — is parallelly produced by the multiplicity of contemporary cultures with diverse artistic languages.<sup>6</sup>

Besides the notion of global art in a global art field, art historical and sociological discourses are also in synchrony in the elaboration of a critical approach towards the global from the mid-2000s. The global turn in art history has often been seen as grounded in the critical academic study of postcolonialism and especially in the corresponding debates in the literary studies of the 1980s.<sup>7</sup> However, in a recent historiographic analysis, Béatrice Joyeux-Prunel demonstrates that while feminist theories and psychoanalysis did affect discursive practices of the discipline from the 1980s, its global approaches remained rather universalistic until the 2000s.<sup>8</sup> Joyeux-Prunel argues that an art historical approach that attempts to take a decolonized stance towards the global and deconstruct universalistic assumptions in the traditional art historical discourse is thus a phenomenon of the 2000s and is a response much more to the experience of a globalized art market rather than a longstanding heresy of the postcolonial debates in the literary studies of the 1980s.<sup>9</sup> As such, the attempt to develop a decolonized global stance in art history can be aligned with a corresponding discursive shift in cultural sociology: after the early narrative of cultural globalization as a process of decentralization and diversification,<sup>10</sup> the mid-2000s observed the elaboration of a counter-discourse that highlighted prevailing territorial inequalities and harsh centre-periphery relations in the new global level of production in cultural fields from book translation through the film industry to the visual arts.<sup>11</sup>

Upon the digital turn in art history in the 2010s, for many, historical datasets and the natural-scientific-epistemics-based network approach seemed to contradict rather than develop

1 Gardner, Green, *Biennials, Triennials and Documenta*; Sassatelli, "Symbolic Production in the Art Biennial."

2 Cicchelli, *Plural and Shared*; Regev, "Postlude."

3 Buckermann, "Ranking Art."

4 Buchholz, "What Is a Global Field?," 44.

5 Buchholz, "What Is a Global Field?"

6 Belting, Buddensieg, Weibel, *The Global Contemporary*.

7 Jones Nelson, "Global Turns in US Art History."

8 Joyeux-Prunel, "Art History and the Global," 429.

9 Joyeux-Prunel, "Art History and the Global."

10 Appadurai, "Disjuncture and Difference in the Global Cultural Economy."

11 Buchholz, Wuggenig, "Cultural Globalization Between Myth and Reality;" Crane, "Cultural Globalization and the Dominance of the American Film Industry;" Heilbron, "Towards a Sociology of Translation."

this relatively new, postcolonial-theory-informed global approach to art. Regarding the data, researchers highlighted that while it is a key attempt of postcolonial-theory-informed global art history to tell the untold stories of marginalized cultures and territories, data, if it existed at all,<sup>12</sup> is often hazy and discontinuous due to historical power relations affecting what and how to document and preserve,<sup>13</sup> making it difficult not to reinforce prior dominant positions. Also, while deconstructing the perspective of these dominant positions as natural and neutral is a chief attempt of critical theory, contemporary global databases that obtain a wide temporal and topographical span often imply the same natural and neutral perspective on a given phenomenon.<sup>14</sup> This can mask the fact that “raw data is an oxymoron,”<sup>15</sup> and that automatized data gathering does not neutralize, only mask the inequalities within the system that affected data construction in the first place. Next, the fact that computational tools of data and network science are often used in an atheoretical way in the humanities hinders the natural scientific ground of the epistemic considerations within and brings in notions of objectivity and detachment that have very different connotation in the humanities than in the natural sciences,<sup>16</sup> while also paving the way for what has been called the problem of “interloping physicist.”<sup>17</sup> Finally, network visualization has been criticized for collapsing the complexity of art historical phenomena into nodes and ties across place and time.<sup>18</sup> Accordingly, while the article of Maximilian Schich et al. “A Network Framework of Cultural History” made it to *Science* and a *Nature* video in 2014,<sup>19</sup> it also became a case to demonstrate most of these possible negative aspects a digital art history project can have, from naturalizing historical phenomena through implying an observer-independent position to oversimplifying complex historical processes via fancy visualization.<sup>20</sup> Similarly, the remake of Alfred Barr’s famous chart on the birth of Cubism and Abstract Art (1936) into a social network of the involved artists raised critiques about replacing the heterogeneity and complex interdependence of artefacts, discourses, people and places with homogenous social connections and propagating an anachronistic entrepreneurial attitude towards their perception.<sup>21</sup> In short, digital and computational methods have been considered to carry the threat of making a novel space for the re-emergence of universalizing assumptions that have been under deconstruction lately by a critical and global turn in art history, now based on natural scientific epistemic considerations and neoliberal science-policy changes.<sup>22</sup>

Accordingly, research attempts have been made to address the challenge of applying data and network analysis in art historical research in such a way that complements rather than contradicts a postcolonial-theory-informed discourse on art. Researchers started to build various bottom-up databases based on grounded research<sup>23</sup> and use global databases in curated ways rather than in their totality.<sup>24</sup> Concerning a network approach, attempts have been made to produce several visualizations of the same data in order to provide parallel perspectives on a single phenomenon,<sup>25</sup> and also to

- 12  
Moravec, “Network Analysis and Feminist Artists.”
- 13  
Porras, “Keeping Our Eyes Open.”
- 14  
Kienle, “Between Nodes and Edges.”
- 15  
Gitelman, Jackson, “Introduction.”
- 16  
Kienle, “Digital Art History ‘Beyond the Digitized Slide Library’.”
- 17  
Erikson, “Formalist and Relationalist Theory in Social Network Analysis,” 220. The sociological discourse faced the same challenge as the humanities regarding the atheoretical usage of network analysis. In her seminal paper, Emily Erikson argues that the case is not so much that the field of social network research is atheoretical or theoretically ignorant, but rather that it can be characterized with a theoretical *incoherence*: most often, it is applied through an *ad hoc* mixing of the elements of the in themselves well-defined sociological traditions of formalism and relationalism. Erikson argues that it is this incoherence and theoretical confusion that is conceived as being atheoretical and which leads to vague wording, ill-defined research questions and a misfit of theory and practice, as well as hindering the capacity to situate even high-quality contributions and arrange them into a coherent research trajectory. In addition, it also makes the field much more vulnerable to what has been called the idea of interloping physicists. See *Ibid.*
- 18  
Kienle, “Digital Art History ‘Beyond the Digitized Slide Library’.”
- 19  
Schich, Song, Ahn, Mirsky, Martino, Barabási, Helbing, “A Network Framework of Cultural History.”
- 20  
Kienle, “Between Nodes and Edges.”
- 21  
Patkowski, Reiner, “Inventing Abstraction, Reinventing Our Selves.”
- 22  
Bishop, “Against Digital Art History;” Brown, *Undoing the Demos.*
- 23  
Langmead, Helmreich, Ladd, Gao, Lin, Palmer, Posthumus, Zhang, Brosens, Beerens, De Prekel, Lamqaddam, Micklewright, Mirza, Simavi, Smith, “Network Analysis + Digital Art History.”
- 24  
Zamora-Kapoor, Godart, Zhao, “Networks on the Walls: Analyzing ‘Traces’ of Institutional Logics in Museums’ Permanent Exhibitions;” Brandellero, Velthuis, “Reviewing Art from the Periphery;” Buchholz, “Rethinking the Center-Periphery Model.”
- 25  
Marcel, “Toward Data-Driven Art Studies.”
- 26  
Puc, “Exhibition Networks in the ‘Globalized’ Contemporary Art Field.”
- 27  
Venturini, Jacomy, Jensen, “What do We See When We Look at Networks.”
- 28  
Lincoln, “Tangled Metaphors.”
- 29  
Joyeux-Prunel, “Graphs, Charts, Maps.”
- 30  
Buchholz, “What Is a Global Field?;” Sassen, *Sociology of Globalization.*
- 31  
Hall, “Old and New Identities, Old and New Ethnicities.”
- 32  
Hall, “Museums of Modern Art and the End of History.”

use visualization not as an end-product but an integral and recursive part of the research process.<sup>26</sup> Recently, the method of Visual Network Analysis (VNA) has been developed to make strategic use of heterogeneity in humanities data and ambiguities in network visualization rather than flatten them out.<sup>27</sup> Concerning theoretical works, the history of the network concept from its initial usage as a metaphor to its becoming a formal analytical tool in art historical research has been mapped,<sup>28</sup> and ways in which quantitative and statistical tools can help reconsider existing hierarchies in the field have been discussed.<sup>29</sup>

Yet, we lack a sufficient understanding of the ways in which network analysis can aid critical global approaches, specifically towards contemporary global art and artistic production. The contemporary form of globality differs from that of modernity: while the latter had been primarily centred around the nation-state system, in the last decades, a novel, relatively autonomous, specifically global level of functioning emerged through the aforementioned processes of globalization in the field of art.<sup>30</sup> While this novel, specifically transnational level of functioning carries its inherited inequalities, it also demonstrates a novel, characteristically global structure, functioning and power dynamics. Its specificities, as Stuart Hall argues, can be best perceived by exploring the new ways in which elements of a disintegrated past system reconfigure under new conditions.<sup>31</sup> For example, postcolonial time should not be understood as the end of colonialism but as the period when contradictions in the way dependencies had been functioning in old colonial societies are reconfigured in societies of both the ex-colonizers and the ex-colonized.<sup>32</sup> Thus, while attempts at eliminating imperialistic and colonial elements in the discursive structure of art history have been predominantly used in the critical examination of art in the modern era of globality, there remains a question of what forms this approach can take while considering contemporary global art and art production and what we can learn about their specificities. Finally, there also remains a question of how network analysis can help this endeavour, given that network analysis as an analytic tool and the global databases often used with it are the products of the same global era as the object of investigation.

#### NETWORK ANALYSIS AND A CRITICAL-THEORY-INFORMED APPROACH TO ART IN CONTEMPORARY GLOBALITY

To consider the ways in which quantitative network analysis can enhance a critical global approach in investigating contemporary art and artistic production, this second part of the paper focuses on three selected pieces of research. To do so, I searched for the keywords “network analysis” + “digital art history” + “contemporary art” on Google Scholar, which gave 91 results, then repeated it without “digital art history,” which increased the results to 2020 in total (to 1580 since 2015 and to 968 since 2020), including journal papers,



book chapters, preprints, manuscripts, and conference presentations. This second, broader category comprised many theoretical and review papers,<sup>33</sup> as well as papers that used network analysis in a qualitative sense or as a conceptual metaphor.<sup>34</sup> It also comprised research which used network analysis as a quantitative tool but the research itself was interested in questions not specifically linked to contemporary art and artistic production even if the empirical data was derived from it.<sup>35</sup> I focused on papers that built on the method of quantitative network analysis and had its research interest specifically in the topics of contemporary global art and artistic production such as the global art market,<sup>36</sup> in the processes of internationalization,<sup>37</sup> in artistic recognition and value assignment,<sup>38</sup> or post-1989 transformation of local art scenes.<sup>39</sup> Finally, I selected three papers for further discussion that use quantitative network analysis in methodologically novel ways and not only have a global gaze but also evoke critical attempts towards the contemporary global functioning. In the remainder of this second part, I will present them through four dimensions: their topic of interest, their data, their methodological use of quantitative network analysis, and their contribution to our understanding of the global contemporary art world.

The first paper, entitled “‘We All Came from Soros’: Continuities and Discontinuities in the Croatian Visual Arts Scene in the 1990s and 2000s,”<sup>40</sup> focuses on the Soros organizations’ activity in the Croatian art scene during and after the Yugoslav Wars. In avoiding giving a “universalist assumption” of how the Soros model was supposed to function, the authors aimed to infer an embedded understanding of the ways in which the social actors of the Croatian art scene actually localized this model and the ways in which it modified the structure and functioning of the scene. Methodologically, they integrated quantitative network analysis with qualitative interview analysis by building on the relational sociological understanding that social relations, which can be modelled as ties in social network analysis, are constantly reshaped through the way social actors interpret reality.<sup>41</sup> First, to obtain the relevant data, they investigated 4497 art critiques from four Croatian periodicals from the period between 1994 and 2006 and extracted the institutions that organized contemporary art events (817 in total, 380 located in Croatia and 437 elsewhere, predominantly in Europe and the US). Then, they constructed two networks: one for the period between 1994 and 1998, and another for the period between 1999 and 2006. Both networks represented institutions as nodes that were connected if they collaborated in the organization of the same artistic event in the given timeframe, and the more they collaborated, the stronger the tie was between them in the corresponding weighted undirected networks. During the qualitative part, they conducted 29 semi-structured interviews with key actors (artists and art professionals) about their networking practices and the culture of the scene during the given period. Together, the quantitative and qualitative analysis showed that initially, one Soros Foundation organization, the SCCA-Zagreb, played a key role in bridging the topological community of

Zagreb-based venues with other network clusters comprising mainly venues from other regions and from abroad. The SCCA-Zagreb helped to maintain regional and international collaborations and the cultural values of the socialist period amidst the nationalist upheaval in cultural policies during the war. Later, in the second period, towards the end of the war, other Soros Foundation organizations also appeared in the scene (e.g. CDA, OSI Croatia, mi2, SCCAs in Ljubljana, Sarajevo, Belgrade, and Bratislava) and they provided financial support and international networking opportunities via their collaborations with newly born initiatives in the Croatian art scene. A topological analysis showed that through their agency, these Soros organizations contributed to the emergence of a completely new topological community in the second period, the members of which embraced and developed totally new strategies of art making: this is the segment that the authors identified as the “independent art scene” of the post-1999 period. Thus, network analysis combined with qualitative interview analysis enabled the researchers to embed the functioning of the Soros organizations into the structure of the local Croatian art scene during the first decade after 1989 and detect both the structural modifications and the ways of art making it facilitated among the social actors of the scene.

The second paper, entitled “Contemporary Art Fairs in Mainland China: From Local to International Status?,”<sup>42</sup> focuses on the way the Mainland China segment of art fairs developed a strategy to become more international and embedded in the global art market between 2007 and 2019. While traditional art historical approaches often considered internationalization as westernization or emigration from the peripheries to artistic centres,<sup>43</sup> this research aimed to reveal internationalization as a phenomenon of parallel processes towards multiple directions. Theoretically, this paper is located in the realm of art market studies that builds on research in cultural economy, international relations and sociology besides art history. The research focused on the twelve art fairs specialized in contemporary art in mainland China from 2007,<sup>44</sup> and data was gathered on the 5527 participation records of galleries on them over time from *Artlinkart*. Methodologically, the authors combined network analysis with classification based on descriptive statistics and desk research. First, the authors analyzed the geographical scope of the galleries participating in the art fairs in Mainland China. Results showed that the art fairs that had an international portfolio (more than 50% of the participants were outside of China) could be split into two groups: one that hosted galleries from Europe and the US and another that focused rather on galleries from Asia outside Mainland China. Next, a network analysis was conducted to measure the second dimension: each art fair’s embeddedness in the global network of art fairs. For this part, besides the twelve Chinese art fairs, the nineteen globally most prominent art fairs were also considered based on desk research. The results showed that, apart from the Western flagship art fairs (e.g. the Art Basel, the Frieze, FIAC, ARCO), half of the key players are today located in Asia and the Middle East (e.g.

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Dahlgren, Wasielewski, “The Digital U-Turn in Art History;” Kienle, “Between Nodes and Edges;” Kolečnik, “On Digital Art History;” Lozano, “Mapping Art History in the Digital Era.”

34

Hachmann, “Network Analysis in Literature and the Arts;” Morgner, “The Evolution of the Art Fair;” Morgner, “The Art Fair as Network.”

35

Basov, “The Ambivalence of Cultural Homophily;” Braden, Teekens, “Reputation, Status Network, and the Art Market;” Giuffre, “Sandpiles of Opportunity.”

36

Vecco, Chang, Zanola, “Contemporary Art Fairs in Mainland China;” Yogev, Grund, “Network Dynamics and Market Structure.”

37

Marcel, “Toward Data-Driven Art Studies;” Puc, “Exhibition Networks in the ‘Globalized’ Contemporary Art Field;” Vecco, Chang, Zanola, “Contemporary Art Fairs in Mainland China.”

38

Fraiberger, Sinatra, Resch, Riedl, Barabási, “Quantifying Reputation and Success in Art;” Perczel, “Is Structure Context or Content?”

39

Sekelj, “Qualitative Approaches to Network Analysis in Art History;” Sekelj, Tonković, “‘We All Came from Soros’.”

40

Sekelj, Tonković, “‘We All Came from Soros’.”

41

As opposed to a more formalist approach towards social network analysis. See: Erikson, “Formalist and Relationalist Theory in Social Network Analysis.”

42

Vecco, Chang, Zanola, “Contemporary Art Fairs in Mainland China.”

43

Casanova, *The World Republic of Letters*; Vlachou, “Why Spatial? Time and the Periphery.”

44

Shanghai Art Fair, CIGE, Art Beijing, SH Contemporary, Art 021, Photo Fairs Shanghai, West Bund Art & Design, Art Asia Shanghai, Art Shenzhen, Art Chengdu, Jingart, BJ Contemporary.

Art Taipei, Art Dubai, Beirut Art Fair, Abu Dhabi Art, India Art Fair, Art Fair Tokyo), depicting the contemporary global art market as a multcentred entity. Then, due to an observed new wave of gallery openings after 2012 in China, through a weighted undirected network construction, two networks were made: one for the period between 2007 and 2012, and another for the years between 2013 and 2019. Art fairs were the nodes of the network, and the tie between them equalled the number of galleries that participated in both art fairs. To infer the embeddedness of each art fair, their weighted degree centrality was calculated. Considering the two dimensions (types of internationalization and embeddedness in the global art fair network) together showed the following results: initially, the global embeddedness of even those Chinese art fairs that had international gallery participation remained low, irrespective of whether being West-oriented (e.g. Shanghai Contemporary) or Asia-oriented (e.g. CIGE). However, during the second period, older art fairs became more embedded and emergent new art fairs functioned with higher network embeddedness right from the beginning (e.g. West Bund). The results reinforce the understanding that the global art market is multcentred, and these new centres are located in a territorially decentralized way. Furthermore, the depicted processes frame a novel strategy of gaining international embeddedness and influence in the global art market not simply by a process of “Westernization” but rather through developing connections in multiple directions, both on a West-East and an East-East dimension.

The last paper, entitled “Is Structure Context or Content? A Data-Driven Method of Comparing Museum Collections,”<sup>45</sup> set out to embed the Central-Eastern-European part of the collection of Tate, Centre Pompidou and MoMA into a broader institutional context. It aimed to reveal the institutional contingencies of collection building of even the most consecrated museums as opposed to the traditional art historical notion that artistic canons naturally emerge based on universal aesthetic values.<sup>46</sup> It operationalized the CEE region through the Visegrád-states (Poland, Slovakia, Czech Republic, Hungary), the ex-Yugoslavian countries and Romania and focused on the acquisitions between 1990 and 2016. It built on the museums’ collection data to infer the acquisitions and on *Artfacts* to obtain the artists’ pre-acquisition exhibition data. In total, the dataset comprised 242 artists and their 12260 exhibitions held in 4401 venues in 1256 cities of 82 countries. Based on the relational sociological understanding that an artist’s identity is not a fixed entity but constantly evolves through the relational situation of exhibition events that are held at the institutions, the research aimed to capture and compare the relational structure of the institutions that contributed to the artists’ identity formation at each collection. Using a network approach, first, it defined a weighted undirected network for each museum where nodes referred to institutions, and two institutions were connected with the weight of a tie that equals the number of artists that they both exhibited in the artists’ pre-acquisition period. Then, statistical filtering was applied as a proxy of the museums’ agency in

selecting certain institutions from the global field as reference points in their collection-building endeavour. This filtering retained only the connections that implied a stronger co-exhibition practice between two venues than would have been expected simply based on their individual exhibition practices and the number of artists in the given collection. As a result of the filtering, only less than 5% of all connections remained in each of the networks, leading to the drop-out of more than 60% of all venues. The results show that while the Tate, the Centre Pompidou and the MoMA rely most strongly on other Western European and US venues’ pre-selections from the region, they all also have a group of venues on which they uniquely rely and which differentiates them from each other. In a nutshell, once traditional core museums started to territorially decentralize their collection, network analysis revealed specific ways in which they build unique maps of the new global institutional space comprising the venues on which they rely to build both a valid and a self-differentiating representation of previously marginalized territories in their collection.

## DISCUSSION

While they integrated data and network usage into situated methodological approaches, the three papers contributed to our understanding of art and artistic production in the contemporary global art field in three key ways. While Sekelj and Tonković built data from investigating art critiques from digitized periodicals, Vecco, Chang and Zanola, as well as Perczel, made use of born-digital contemporary global databases (*Artfacts*, *Artlinkart*) and combined them with additional sources (museum collections, institutional websites). As for network analytics, all three papers constructed networks in similar manners (i.e. weighted undirected networks), but network analysis became an element of a more complex methodology uniquely developed to meet the specificities of each case. Accordingly, to validate the links in the three cases, network analysis was combined with qualitative interview analysis, desk research, and statistical filtering respectively. In the first case, this complex methodology enabled Sekelj and Tonković to switch perspectives and, instead of investigating the (global or regional) network of the Soros organizations to infer a general understanding of its intended functioning, examine the way these organizations were actually embedded into the organizational network of the local Croatian art scene and the Soros paradigm of contemporary art as it was interpreted by its local art professionals. In the second case, the methodology enabled Vecco, Chang and Zanola to investigate Mainland China art fairs’ process of internationalization not simply as a process of Westernization and building relations with Western blue-chip art fairs but as parallel processes of connection building towards a multitude of directions globally. Finally, instead of reinforcing a naturalized notion of canon formation, in the third case, the methodology enabled Perczel to map the specific global institutional network Tate, Centre Pompidou and MoMA

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Perczel, “Is Structure Context or Content?”

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Joyeux-Prunel, “Graphs, Charts, Maps;” Vlachou, “Why Spatial? Time and the Periphery.”

relied upon in their attempt to construct a valid yet unique representation on the art of the Central-Eastern-European region while they built territorially more inclusive global collections in the contemporary global art field after 1989. In addition, the presented papers demarcate three main ways in which this line of research affects the discourse: it gears it towards a more holistic, more sociological and more institutional approach in the investigation of contemporary global artistic production. In the remaining part of this section, I will discuss these three general effects.

The three presented papers gear the discourse towards a more holistic approach of global artistic production based on social actors' agency rather than their territorial location. While the traditional art historical approach has been criticized for focusing only on a few (often the most consecrated) actors,<sup>47</sup> through empirical network analysis, all investigated research embedded the practices of the considered actors into the context of many other actors active in the given time and space. Furthermore, while traditional attempts have been often criticized for adjusting the research boundaries to national borders,<sup>48</sup> the network approach enabled researchers to not simply enlarge the territorial scope of each research potentially global but also to demarcate its actual boundaries through the activity of the participating actors rather than their territorial location. Each paper depicts a different map of the global, contributing to the understanding of globality as being constantly produced and reproduced as a social field rather than a fixed context of contemporary art making.

The discourse is also geared towards a more sociologically referenced network approach in understanding art-making in contemporary globality. While all three papers are already aligned with an interdisciplinary approach (digital art history and art market studies), they all justify the usage of network analysis through sociological references. Vecco et al. do so only in general terms by referencing Howard Becker, similar to other research that uses the network concept in a qualitative way or as a metaphor in their investigation of contemporary art.<sup>49</sup> Sekelj and Tonković, and Perczel use sociological references in order to justify the operationalization of nodes and ties through the concepts of “agency” and “relational situation” of relational sociology (citing Harrison White, John W. Mohr, Mustafa Emirbayer and John Goodwin). Pierre Bourdieu, a third widely referenced author concerning networks and culture, is only used for his concepts of field and capital in these papers, but not regarding network usage. This is interesting since one of the most vivid debates of the last decade in cultural sociology is centred around the similarities and differences of Pierre Bourdieu's and Harrison White's approaches towards network analysis and the possibility of reconciling their stances in a joint network framework of culture.<sup>50</sup> An additional conceptual characteristic of these papers is that, while the notion of the “artworld,” “art world,” “art field,” “art scene,” “network” and “relational structure” are all used in reference to the social space of inquiry, they are not used coherently between (and sometimes

even within) papers, making it more difficult to arrange various contributions into a more coherent discourse.

Finally, the discourse seems to be necessarily geared towards an exclusively institutional analysis of contemporary global art, leaving aesthetic matters and works of art in hindsight. All three methodologies of network analysis are directed towards questions of institutional functioning in the global art field. On the one hand, this is understandable given that institutional analysis is closely linked to critical endeavours in art historical research, and it has even been argued that contemporary art is an institutional rather than an aesthetic matter.<sup>51</sup> On the other hand, however, leaving the object of art aside strongly reduces the heterogeneity of entities participating in the global processes of art and artistic production. Accordingly, in recent years, there has been an emergent research agenda observable in the sociology of art that aims to turn from an institutional approach towards a more object and artefact-focused sociology of artistic production within the relational research agenda.<sup>52</sup> Along this endeavour, attempts have been made to connect Kantian aesthetics with social action,<sup>53</sup> and theories of Arthur C. Danto with those of Pierre Bourdieu and social network analysis.<sup>54</sup> To conclude, the discourse in the sociology of art is in the process of developing agenda towards a more artwork and object-oriented relational approach, one that carries the promise of finding common grounds with art historical discourse, either through network analysis or nurturing both sociologically and aesthetically informed global approaches, where critical and network endeavours complement rather than contradict one another.

## CONCLUSION

Global, critical and digital approaches in art history resonate well with the corresponding approaches of cultural sociology on contemporary globalization. Upon this ground, the aim of this research was to investigate ways in which network analysis, an approach well established in sociology, can complement critical endeavours of global art history towards matters of contemporary art. Inspecting the body of work done at the intersection of quantitative network analysis, research on contemporary art and a postcolonial-theory-informed global approach to art, three papers were presented in detail, considering the four main dimensions of data usage, network methodology, the topic of interest and contribution to the understanding of contemporary global art making. These papers demonstrate that, when integrated into research methodology in case-sensitive ways, network analysis complements critical-theory-informed global approaches in the quest to better understand contemporary processes of global artistic production. They also show that integrating digital and critical endeavours seems to gear the discourse on contemporary art towards a more holistic and more sociologically informed, but also more institutional direction, one that currently seems to diverge from approaches interested in aesthetic questions and object-related matters of contemporary art. It is precisely this that demarcates the direction of future research: finding ways in which the digital and the critical in art historical discourse can join forces in discussing not only institutional but also aesthetic questions and object-related matters of contemporary art.

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Vlachou, "Why Spatial? Time and the Periphery."

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Joyeux-Prunel, "Graphs, Charts, Maps."

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Morgner, "The Evolution of the Art Fair;" Morgner, "The Art Fair as Network."

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Bottero, Crossley, "Worlds, Fields and Networks;" de Nooy, "Fields and Networks;" Serino, D'Ambrosio, Ragozini, "Bridging Social Network Analysis and Field Theory through Multidimensional Data Analysis."

51

Esanu, *The Postsocialist Contemporary*.

52

Hanquinet, Savage, "Contemporary challenges for the sociology of art and culture: An introductory essay."

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Martin, Merriman, "A Social Aesthetics as a General Cultural Sociology."

54

Rule, Bearman, "Networks and Culture."



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