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Transnational Network Formation in the Medium of Cultural Magazines

The Case of Spanish-language ‘*revistas culturales*’ of the Modernismo and Avant-garde Periods (1891–1936)

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Abstract In this research article, we introduce a methodology we developed in order to collect and analyze data from 42 Spanish-language magazines which were published between 1891 and 1936. The example of the imagery found in these magazines will be used here to illustrate some of the research findings which came out of the project “Cultural Magazines from *Modernismo* to Avant-garde: Processes of Modernization and Transnational Networks”. In this project, the focus was both on network formation and on the transnational exchanges established by the cultural magazines examined. Analysis is performed by establishing bimodal networks that enable the examination of transatlantic transfers between Europe and Hispanic America. Beyond the question of transfers, major insights from the project are presented, such as the observation that in the cultural field, taste dominates and limits the number of possible connections between contributors and magazines. The limitations of the chosen methodology lie in the explanatory power of centrality measures applied to bimodal networks, which provide questionable results with respect to relevant research questions. As a remedy, we propose the use of a ‘cultural transfer rate’ which can be calculated from the data established within the project. While this research

project focused on the cultural exchanges facilitated by Spanish-language magazines, further research avenues that can be explored in the future, on the basis of the data provided by the project, are also discussed. The first of these avenues consists of transforming the data at hand into one-mode social networks, which would enable the analysis of the social dimensions relevant to the material, especially with regard to groups of artists and the synergies created within them. The second avenue describes how the aggregation of further data would enable researchers to trace the trajectories of individuals within the network and determine their accumulation of symbolic capital.

1. Introduction: Cultural Magazines as Networks*

In the project “Cultural Magazines from *Modernismo* to Avant-garde: Processes of Modernization and Transnational Networks”, funded by the German Research Foundation (DFG), data from more than 40 Spanish-language cultural magazines were collected. These magazines were published between 1891 and 1936 in Europe and Hispanic America, and embrace two periods, *modernismo*¹ and avant-garde. These magazines were selected according to various criteria, such as the accessibility of the journals in digital format, the variability of publication types, and their geographical and historical distribution.² Most of the magazines have been digitized by the Ibero-American Institute (IAI), which is part of the Prussian Cultural Heritage Foundation. Beyond the IAI, the digital repositories of institutions such as the national libraries of Spain, Chile and México provided the magazines under consideration in several data formats. Optical Character Recognition (OCR) is the exception rather than the rule in the digitized material provided by these institutions. Advanced text mining methodologies such as Named Entity Recognition (NER), topic modeling, word embeddings, or the automatic recognition of images and illustrations, can therefore not be applied. Responding to the lack of data provided by the digitizing institutions and corresponding to our specific research interests, a deep cataloguing was performed within our project. According to the principle ‘who published what, when and where’, approximately 31,500 datasets were collected, with one row per contribution, containing socio-biographical data on more than 3,500 contributors, information on the title and genre of the contribution, date of publication, language, translation, translator etc.³ The term “contributor” designates an individual independently of her or his role, such as editor, writer, visual artist, translator, or other.

One of the possible network analytic approaches to cultural magazines would relate single contributions to the magazines and trace re-publications and re-uses of texts. In our case, such an approach is not easily feasible, since text mining possibilities are quite limited and the re-use of texts and illustrations was not very common in the cultural magazines under scrutiny. Unlike in newspapers,

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1 *Modernismo* is a term particular to the Spanish-speaking world for the literary aesthetics of the last decades of the 19th century, and is not to be confused with the broader term of modernism, as found in the English and North American literary tradition. See, for a brief introduction, Aching (2013).

2 See Ehrlicher, “The Corpus – Cultural Magazines from Spain and Hispanic America”, in: Ehrlicher (2020).

3 The complete dataset has been published; see Ehrlicher (2020).

where news and texts were frequently re-used, in our corpus there are only a few such cases. To present some examples: Mexican poet Alfonso Reyes published his poem “Trópico” on both sides of the Atlantic, in Málaga in the magazine *Litoral* (No. 4, April 1927) and in Habana in *Revista de Avance* (No. 9, August 15th, 1927). Chilean poet-diplomat Pablo Neruda published parts of his poetry anthology “Tentativa del hombre infinito” in the avant-garde magazines *Favorables* Paris *Poema* (Paris, October 1926) and the ninth issue of the Peruvian magazine *Amauta* (Lima, May 1927). The magazine *Prisma*, printed in Barcelona, published a translation of Percy Bysshe Shelley’s “To a Skylark” in its ninth issue (1922), while the third issue of *Amauta* (Lima, November 1926) presented another translation of the same poem, by the poet who had died more than a hundred years earlier. While these few examples impressively indicate transnational linkages between the cultural magazines of our magazine corpus, the limitations imposed by the unavailability of high-quality OCR results render a network approach focusing on a one-mode network formed out of contributions and networks less fertile as it would be in cases where these data are available.

In our approach, data collection therefore took another direction. The two terms designating our research material – the English word *magazine* and its Spanish cognate *almacén* – both have their root in the Arabic word *al-mahzan* and can therefore be understood as ‘warehouse’. This is a fitting term, because the detailed cataloguing performed in the project lends itself well to the conceptualization of the modern literary-cultural magazine as a store or warehouse, in which the history of the ‘commodities’ which have been stored therein can be explored in the very same way as the trade that has been conducted with them.⁴ Conceptualized in such a way, cultural magazines can be understood as intersections between people (contributors, translators, editors) and commodities (texts, images, literary forms, and systems of reference such as reviews).⁵ Cultural magazines therefore distribute immaterial ideas about modernity and form intellectual networks which are aimed at imagined communities even beyond the narrower literary or cultural field. Moreover, technical developments, such as the introduction of facilities for image reproduction, typographical design (as

4 This concept was previously established by Ehrlicher (2014), p. 2.

5 This conceptualization lies crossways to several research areas which represent the current state of research, as there are both data-driven approaches, such as that proposed by Ikkoff and Martínez (2020), or Kotin and Wulfman (2017), which do not focus on networks, as well as qualitative network research, like Bulson (2017), or Asunce Arenas (2012). The approaches to periodical networks published by Murphy (2014) or Fólica, Roig-Sanz and Caristia (2020) appear alongside the one explained in this article. Since our contribution comprises the usually separated fields of *modernismo* and avant-garde studies, it is impossible to provide an extensive overview of both research areas. Rather, we prefer to point to the very few data-driven quantitative studies that can be found within these fields, such as Reynolds (2017) or González, Fuente-Camacho and Barbosa (2018) with respect to Latin American *modernismo*.

seen, for example, in the famous visual poetry created in the avant-garde era), or the evolution of advertising graphics, bear witness to the accelerated exchange of information and commodities. This conceptualization of cultural magazines was instrumental in a data collection which included the acquisition of socio-biographical data on the contributors (sex, country of origin, years of birth and death) and a typology of the genres found in the magazines. During data collection, we classified all of the contributions in the magazines using the following seven categories: Lyricism, Fictional Prose, Drama, Review, Magazine Review, Non-fictional Prose, and Image.⁶ The first three categories were derived from the established genre triad Lyricism, Epic, and Drama, a classification that has been used in the Western world for more than 2,000 years and has thus been naturalized to such a degree that it has become a common part of the social construction of reality.⁷ Three further categories consider the characteristics of cultural magazines: Review, Magazine Review, and Non-fictional Prose facilitate the function of cultural magazines as societal instances for the evaluation of cultural products, and relate the magazines to discourses in the wider cultural field, be they political, philosophical, aesthetic, or other. Finally, all imagery in the magazines was allocated into the category Images. These seven categories are mutually exclusive; in borderline cases, the contributions were classified according to the most prevalent category they adhere to. Visual poetry and picture stories, for example, could both be sorted into one of the textual categories, such as Lyricism or Fictional Prose; however, only the first was classified as Lyricism, as it is the category from which visual poetry developed, whereas the latter was classified as Image, since the visual element predominates. While the classificatory work thus implied an extinction of ambivalences,⁸ the resulting classification did enable a comparability between the magazines which was tailored according to the general research questions of our project. We were interested in learning how aesthetic forms were transferred across national borders, who the agents of this exchange were, and in which way network analysis contributes to a deeper understanding of cultural transfer processes. Quantitative analysis was therefore conducted in two directions: with a focus on the genre networks resulting out of the classification of contributions undertaken during data collection, and by calculating a ‘cultural transfer rate’, enabling us to take transatlantic transfers into account.

6 The system used to establish these categories is comprehensively explained in Herzgssell, “Categorisation as Theory and Practice: Type of Contribution”, in: Ehrlicher (2020).

7 For other examples of such classifications see Bowker and Leigh Star (1999).

8 For a detailed reflection of this epistemological process see Ehrlicher and Lehmann (2019).

2. Understanding the Research Results: Three Approaches

The focus on contributors and genres already allows for the conceptualization of networks, and enables fruitful research on the transnational exchange processes that are at the heart of our project. Even the simple counting of contributions along the aforementioned classificatory lines opens up insights into the profile of magazines – be they devoted to poetry or other text forms – as well as the continual development of the layout and design of the cultural magazines during the length of their run, e.g. through the increase in the number of images (paintings, photographs, woodcuts, line drawings etc.) over time as an indicator of improved printing capacities. Each magazine has a specific profile resulting from the relative distribution of each of the seven categories. There are, for example, cultural magazines which abstain from using images at all, thus underlining the predominance of textual content and their almost exclusive focus on lyricism. Based on the periods established in the research literature on the Spanish-language cultural field, we have divided the entire dataset, comprising 42 magazines published – with two exceptions – in Spain and six Hispanic American countries,⁹ as well as 5,540 contributors, into two smaller datasets, one containing 16 *modernismo* magazines (2,073 contributors; 10,340 contributions spanning the years between 1891 and 1909), and the other containing 23 avant-garde magazines (3,382 contributors; 19,516 contributions spanning the period 1920–1936).¹⁰ The relative numbers for each category can be combined across all magazines pertaining to each of the two periods; this makes a comparison over time possible (see figures 1 and 2).

The relative percentages of each category already provide some interesting insights. The printing of dramas, for example, was not very common by the *modernismo* period; in the avant-garde era, it became negligible. The presentation of Fictional Prose in cultural magazines declined from 11.44% in the *modernismo* period to 3.71% in the avant-garde period, as did Lyricism, which declined from 24.6% to 18.9%. The largest relative increase can be noted for the two categories Non-fictional Prose and Review, which counted towards all contributions which provided commentary, information, or explanation regarding the literary and

9 The two exceptions are little magazines with extremely short runs: *Creación/Création*, which was first edited by Vicente Huidobro in Madrid (1921) and then continued in Paris (two more numbers and a supplement published in 1923 and 1924). Also Paris-based was the little magazine *Favorables Paris Poema*, which printed only two issues in total (both in 1926).

10 The attentive reader will have noticed that there are three other journals which were not included in this binary division. They are to be positioned as journals in the transition zone between *modernismo* and the avant-garde, in the ambiguous in-between of *pos-modernismo*, a term first conceptualized in the highly influential anthology of Federico de Onís (2012, first edition in 1934), and a Spanish coinage which again must not be confused with its English cognate.

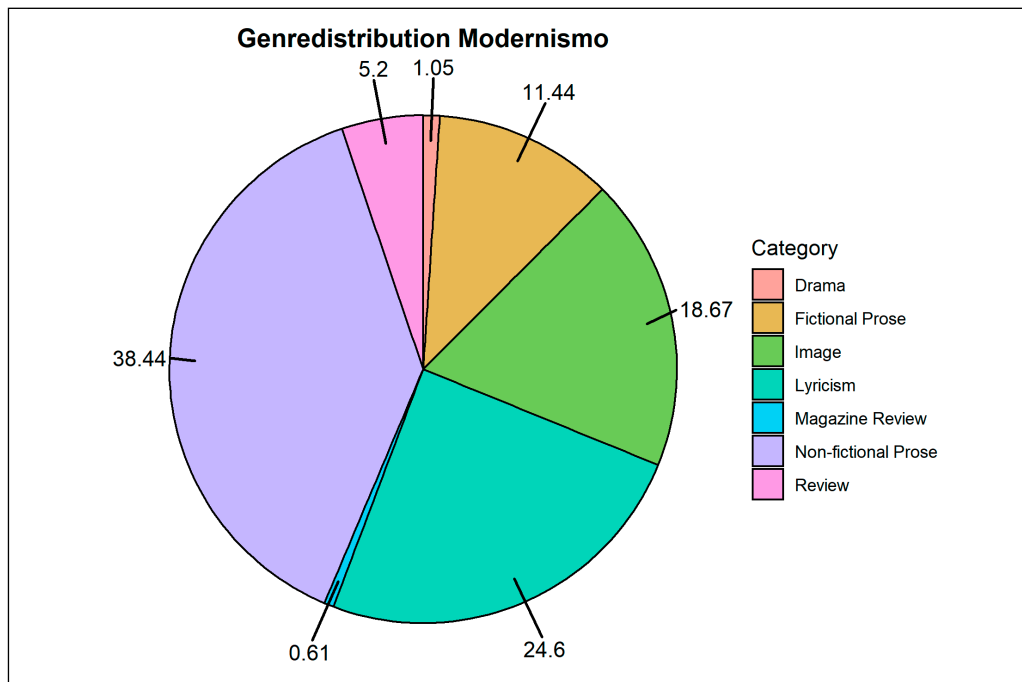


Fig. 1 Relative percentages of each of the seven categories in the *modernismo* dataset.

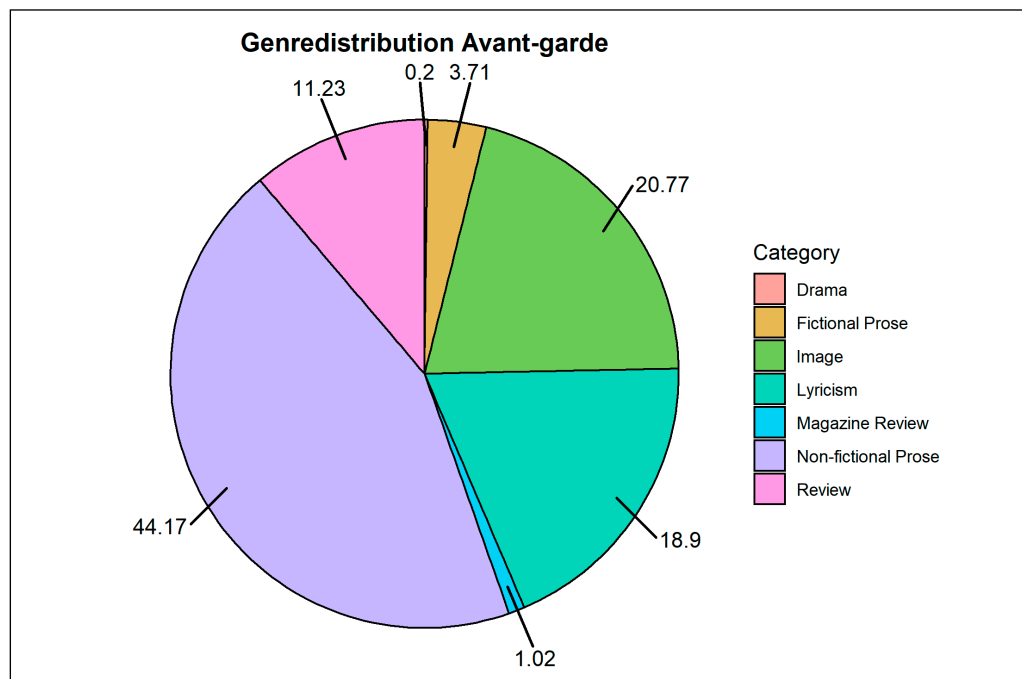


Fig. 2 Relative percentages of each of the seven categories in the *avant-garde* dataset.

cultural field; in this area, the relative percentage of contributions increased from 38.44% to 44.17% (Non-fictional Prose) and 5.2% to 11.23% (Review). Interestingly enough, the relative percentage of the category Image remains nearly stable; there is a slight increase from 18.67% to 20.77% between the *modernismo* and avant-garde periods.¹¹ Generally speaking, these numbers speak of a certain shift from original content in the categories Lyricism, Non-fictional Prose, and Drama, to those categories providing a means of exchange within the cultural and literary fields (Non-fictional Prose, Reviews and Magazine Reviews). This could be taken as a first indicator of the growing dynamics of the field of literature and the importance of printed periodical publications finding a place within it. In terms of readership, these numbers reveal that in the *modernismo* period the audience devoted their attention to reading original 'creative' content, whereas in the avant-garde period the focus was more on the societal debate around the cultural issues facilitated by the cultural magazines.

2.1 Magazines and Genres: Images in Two Periods

The classification of all 31,500 contributions from 42 cultural magazines allows us to not only establish a profile for each magazine, but also to ensure the comparability of these contributions across magazines. Genre classifications thus present intersectional features characteristic of all magazines. We extracted all the data per genre from the entire database and constructed networks out of the resulting datasets. Because it rarely occurred that the same contribution was published twice, we constructed contributor-magazine networks for each class of genre for the purpose of answering our research questions. In other words, we took all datasets pertaining to one of the seven genres as the starting point, and treated contributors and magazines as nodes, while the contribution (provided by the magazine contributor) established the edge which linked the two different types of nodes to each other. These contributions, from various individuals to the several magazines which house a genre, form a bimodal (or bipartite) network, since contributors and magazines are not of the same type – quite obviously people and paper are different. The edges on this graph can be weighted based on the number of contributions per individual to each magazine. For the purpose of this overview article, we chose the genre Images, as for readers who may not be familiar with Spanish-language cultural magazines this category is most self-evidently understood, while allowing us to exemplify our analytic approach. In order to en-

11 Since only the number of contributions was counted, rather than the space allotted to each image or textual contribution on a single page (or several pages), these relative percentages might be intriguing. Determining and comparing the share of each contribution in terms of space still presents a huge challenge, if one recalls the differing sizes of the several cultural magazines, although there may be some technical solutions to this issue in the near future.

able a comparison over time, we constructed two bimodal networks, one for the *modernismo* period (1891–1909), the other for the avant-garde era (1920–1936).

The datasets for the genre Images comprise 296 edges, provided by 276 contributors to twelve magazines from the *modernismo* period. The first insight to be read from these numbers is that there are four magazines pertaining to the *modernismo* corpus which do not contain any images. This is already a quantitative indication that these cultural magazines (*Revista Nueva*, *El Nuevo Mercurio*, *Renacimiento* and *Vida Nueva*) oriented their overall design towards the model of printed books, rather than towards the opposite pole, that of printed newspapers.¹² For the construction of the network visualization, we dismissed all contributors who contributed to only a single magazine, as this would by definition exclude them from the exchange we are interested in. The resulting edgelist consists of 38 edges with 18 contributors and eight magazines. This massive reduction was surprising, insofar as it shows that in the *modernismo* period, there were obviously many illustrators and visual artists who contributed to only one magazine. Amongst them is not only Pablo Picasso, who published 26 of his early modernist works in *Alma Española* (Madrid), but also the most prolific (in terms of the number of contributions) of the modernist illustrators in our corpus, Tomás Júlio Leal da Câmara, who contributed to only a single magazine, *La Vida Literaria*. The same applies to other prolific artists, such as Christian Franzen (30 contributions to *Alma Española*), and Inocencio Medina Vera (28 contributions to *La Vida Literaria*). While these visual artists may be known only to experts in the period of Spanish *modernismo*, it is notable that in the network comprising those who contributed to more than one magazine, there are also individuals who are still well-known today. Seven of Peter Paul Rubens' works, for example, were printed in *Alma Española* and *La Vida Literaria* (both magazines printed in Madrid), and two works by El Greco were printed in *Helios* (Madrid) and *Luz* (Barcelona). Both of these artists are good examples of the visual tradition established by Spanish *modernismo*, and of the fact that the typical modern drive towards a 'new' aesthetic did not imply a rupture with the past. According to our focus on magazines as platforms for transnational exchanges facilitated by the editors and contributors, we have decided to present the exchange network

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- 12 When we speak of 'cultural magazines', we do not aim to refer to a fixed type of printed periodical publication, but use it as an umbrella term to name all the products which were situated between the daily and weekly newspaper press on one side, and the book market on the other. This intermedial position is, according to Frank, Podewski and Scherer (2010), one of the outstanding structural features of the 'little archive' of cultural magazines. Our quantitative analysis shows that, even before you study the concrete layout of a magazine, you can deduce by numbers its position within this intermedial space. Although this might not seem useful if you analyze just one specific magazine, it will swiftly become so if you want to 'read' 42 of them or, by extension, the hundreds or thousands that in reality formed the publication sphere of modernity.



Fig. 3 Visual artists contributing to more than one cultural magazine in the *modernismo* period.

on a world map, where each magazine is presented as a red point fixed to its place of publication, while contributors (blue points) are attached to these nodes by edges (see figure 3).

As can easily be read from the network visualization (figure 3), nearly all of the visual artists contributing to more than one magazine worked in Madrid. They seem to have been bound mainly to the cities or nations to which they belonged. For obvious reasons, it was easy for them to contribute to magazines which were printed where they lived. By contrast, there are only two artists who contributed to cultural magazines on both sides of the Atlantic: Ramón Cilla Pérez, who made a single contribution to each of the magazines *Luz i Sombra* (Santiago de Chile)

and *La Vida Literaria* (Madrid), and Albert Lynch, a Parisian painter of German-Peruvian ancestry who likewise published one contribution each in *Instantáneas* (Santiago de Chile) and *Luz* (Barcelona).¹³ The exchange of imagery during the *modernismo* period was quite obviously limited to Spain and most particularly to Madrid, while transatlantic exchange proved to be the exception rather than the norm.

By contrast, in the avant-garde period we see an intense exchange across the Atlantic and between magazines. For this era, datasets for the Images genre comprise 723 edges, provided by 568 contributors to 20 magazines. As we observed for the *modernismo* period, these numbers change massively if the only contributors considered are those who have contributed to more than one magazine. This reduced dataset comprises 103 edges, established by 84 contributors contributing to 19 magazines. Only one little publication (*Sur*, Málaga) is not connected by a contributor to other magazines; this is not surprising, since there are only eight images found among the 39 contributions to this little magazine. Almost all of the most prolific visual artists contributed to more than one magazine, although there were notable exceptions, such as Peruvian artist José Sabogal Diéguez and his pupil Julia Codesido, who contributed solely to the Lima-based avant-garde journal *Amauta* (35 and 20 contributions, respectively),¹⁴ as did Carlos Enríquez (26 contributions to the *Revista de Avance*, Habana), and Ramón Puyol (21 contributions to *La Gaceta Literaria*, Madrid). As figure 4 shows, prolific and well-known (even today) avant-garde artists participated in an intense exchange, which also crossed the Atlantic.

Amongst these visual artists is Norah Borges, the sister of Jorge Luís Borges; she is the most prolific contributor of imagery, with 89 images printed in ten cul-

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- 13 It is worth taking a closer look at both cases, because they illustrate a tension that is typical of the aesthetics of the *fin de siècle* as a whole and thus also for the Spanish-speaking *modernismo*: the conception of a 'pure' aesthetics, apparently timelessly removed from industrial modernity, which was accompanied by a deep involvement in the processes of this modernity and its superficial aspects. Ramon Cilla Pérez, who was born in Salamanca (and usually only went by the names 'Cilla' or 'Chiflatis'), achieved his outstanding status in the Spanish-speaking world as a humorous caricaturist of the social elites and their habits; his work thus represents the 'fashionable' side of modernism, the 'up to date', or, to quote Baudelaire with his famous statement in *Le Peintre de la Vie moderne*, "le transitoire, le fugitive". At the other end of the spectrum, the paintings of Albert Lynch show female beauty in classical clothes and in deep harmony with nature, expressing the 'other side' of modern art, "l'éternel et l'immuable" (Baudelaire 1976, p. 695).
- 14 In this case, the production of images is not only exclusive to the magazine, but also particularly programmatic and formative for its objectives. It is only Sabogal's visual language, a series of cover images that impressively make the Aztec cultural tradition appear as an elementary force, that gives *Amauta* its unique profile, whereas the texts published therein take a more pluralistic approach. For the iconic program of *Amauta*, see Nungesser (1997).

tural magazines on both sides of the Atlantic. Furthermore, well-known representatives of the avant-garde movement such as Pablo Picasso (33 contributions to eight magazines), Salvador Dalí (25 contributions to six magazines), Joan Miró (16 contributions to two magazines), Giorgio de Chirico (eight contributions to two magazines), and Henri Matisse (six contributions to four magazines) participated in the transatlantic cultural exchange. We can also deduce from the data that, in contrast to *modernismo*, the formation of tradition was not writ large in the avant-garde period. Whereas the names of Francisco de Goya (six contributions) and Paul Gauguin (five contributions) are in the category of individuals who were published posthumously, neither of these two was printed in more than one magazine. Only three works by Paul Cézanne, who died in 1906, were printed in two magazines on both sides of the Atlantic.

It is worth taking the example of Pablo Picasso's presence in the corpus for a short excursus, in order to discuss in more detail the materials that have so far only been formally evaluated in our quantitative analyses. We will use this particularly prominent case to reflect on some fundamental methodological problems of quantitative analysis. If we compare Picasso's role in the two sub-phases of the periods we investigated, *modernismo* and the avant-garde, it becomes obvious that his presence as a visual contributor is based on quite different logics of authorship. In the *modernismo* period, Picasso was, as already mentioned, only present in one magazine – the Barcelona-based *Arte Joven* – and there with original contributions with which he directly positioned himself as a central member of the new art aesthetics propagated in this magazine. As the art director of this magazine, Picasso was not only responsible for the overall visual design, but also produced a series of drawings of writers who were also contributors to the magazine – Camilo Barghiela, Francisco de A. Soler, Pío Baroja – complemented by self-portraits of the young Picasso and a number of drawings, mostly showing young females.¹⁵ At this moment, in his artistic beginnings, Picasso did not yet have the capital of a classic avant-garde artist; he only acquired this during his cubist phase in Paris. In the avant-garde period, however, he is present in the examined corpus of Spanish-language avant-garde magazines, but is no longer a direct contributor, rather a representative of the already consecrated early visual avant-gardes. His presence thus served as a positive role-model for the Hispanic avant-gardes when they started with their publications after the end of World War I in the 1920s, for example in *Reflector* (Madrid 1920), where we find two reproductions of Picasso's works explicitly identified as reprints. These are authorized by Paul Rosenberg and accompanied by an article by Guillermo de Torre on the painter, celebrating his famous compatriot, in his typical neologism-filled 'ultraist' idiom, as a "confluent vertex of the angular overcoming and innovating

15 For the importance of the magazine and Picasso's role in it, see Herrera (1997) and Reißler-Pipka (2013).

currents” and “precursor and epigone, simultaneously, of the boldest and most intense movements that have fertilized all contemporary painting”.¹⁶

Picasso’s example thus illustrates a fundamental problem of quantifying evaluations, which must necessarily break down the complex dynamics of cultural exchange and circulation into formally defined criteria in order to create countable units. The detection of overarching patterns (e.g. the frequency of distribution), which is only made possible through the ‘datafication’ of aesthetic materials in cultural magazines, must necessarily overshadow the individual case analysis, which is usually the focus of qualitative examination within the in-depth study of the semiotic dimensions of transfer processes. Any critical quantitative analysis (as we certainly claim to offer here) is of course aware of this statistical reduction and will accordingly not naively claim to provide the only possible perspective on cultural exchange. Where it discloses its data basis, however, it enables precisely such hermeneutic individual case studies as the one carried out here in all brevity with Picasso’s case history, albeit on a different basis that is intersubjectively falsifiable through the accessibility of the data. Exceptions to the rule can always be found. For the avant-garde period, for example, it is true that the considerably broader and more diversified circulation of Picasso’s works – compared to the *modernismo* period – testifies to his status as a contemporary classic of the avant-garde and no longer presupposed the artist’s direct commitment to the journals, but only the reputation or – to use Bourdieusian terminology – the symbolic capital acquired. However, an exception to this rule can also be found in the magazine *Litoral*, namely an original contribution by Picasso in the famous October 1927 issue of the magazine dedicated to Luis de Góngora.¹⁷ This issue, in addition to the illustration by Picasso, also features a drawing by Salvador Dalí and a cubist work by Juan Gris; it thus can be assumed that Picasso contributed an original work to the magazine not only out of sympathy for his native city of Málaga where *Litoral* was published, but also for reasons of prestige, in view of the equally important presence of the second “classic” of Cubism and the work of Salvador Dalí, the new rising star among Spanish avant-garde painters.

From our network, we can in any case draw a great number of insights. Compared to the visualization for the *modernismo* period, the density of the network is stunning. In all the network visualizations presented here, the Fruchterman-Reingold algorithm was applied to highlight the number of edges (or contributions) connecting contributors and magazines; this results in contributors participating in the transatlantic exchange being positioned in the Atlantic. With regard to transatlantic exchange, it can be observed that the second most prolific and transatlantically publishing visual artist of the avant-garde period was Spanish painter Gabriel García Maroto, who published 44 of his works in five magazines

16 *Reflector* 1 (December 1920), p. 11–12.

17 *Litoral* 5–7 (October 1927), p. 50.



Fig. 4 Visual artists contributing to more than one cultural magazine in the avant-garde period.

on both sides of the Atlantic. It can also be noted that the second most prolific female visual artist was Maruja Mallo, who published 2 images in the *Revista de Avance* (Habana) and 13 in the *Gaceta Literaria* (Madrid). Furthermore, the French-born Jean Charlot and the US-born Edward Weston are notable artists for their respective roles influencing the upsurge in woodcuts in Mexico (Charlot) and fostering indigenous traditions (Weston). Of course, such observations and explorations into the deep background of the published images are more relevant for art historians and other experts in the field than for an overview that aims at a methodological discussion. Nevertheless, these examples underline that the data collected within our project do provide a rich basis for further qualitative examinations. As the example of the Image category demonstrates, the broad con-

ception of the classificatory scheme does not account for aesthetic and stylistic features, but rather focuses on a distant explanation of what we found in the network structures. However, the approach developed within the project establishes the fundament from which qualitative analyses (and in the case of the textual genres, hermeneutic interpretations and close readings) can depart.

2.2 Contributors to Magazines: The Most Prolific and the Best Linked

One alternative to investigating transnational and transatlantic exchanges is to focus on the contributors as agents of exchange, regardless of the genres in which they participated. Other than the genre networks which have been formed by extracting data from our database, the focus on contributors can potentially take the entire dataset into account. Even for these two reduced datasets, analysis cannot be conducted in a straightforward manner. The main reason lies not in the volume of the data, but in the fact that a contributor-magazine network is necessarily a two-mode network, also known as an affiliation or bipartite network.¹⁸ These are a particular type of network with two sets of nodes, where ties are only established between nodes belonging to different sets. A contributor-magazine network has to be a bimodal network, given that magazines serve as communication channels and aesthetic platforms for the contributors and editors, and contributors and printed matter are not of the same type. In a way, magazines bring contributors together within an issue and thus provide the chance to establish social relationships, regardless of whether or not these chances are then used by the agents. But since the ‘meeting’ of two contributors only takes place in an abstract sense and not, for example, as a face-to-face meeting in real-life, such constellations should not be mindlessly conflated into one-mode networks. We will come back to the question of two-mode networks later in this section.

The volume of data becomes more manageable when one takes into consideration that about half of the 3,382 contributors in the avant-garde period provided only one contribution to a magazine, and less than a third of all contributors (1,073 of 3,382 contributors of that period) provided more than two. In this sense, the inspection of the number of contributions per contributor provides interesting insights. At first glance, the graph (figure 5) seems to follow a power-law distribution. On the left side, there is a single contributor – Spaniard Ernesto Giménez Caballero, editor of the newspaper-like *Gaceta Literaria* – with an outstanding 407 contributions, followed by the renowned avant-garde writer Ramón Gómez de la Serna, with 165 contributions. In this graph, the curve rapidly flattens and ends with the classical “long tail” of contributors with only one or two contributions each. Indeed, if we also integrate all of the contributions provided by anonymous contributors (3,792 contributions) and the editorial staff

18 Borgatti (2009), p. 8281. A pre-print of this contribution is available at <http://www.analytictech.com/borgatti/papers/2modeconcepts.pdf>.

(1,231 contributions), this curve would follow an 80:20 distribution characteristic of power-law graphs, whereby 20% of the contributors provide 80% of contributions (in our case, 767 contributors provide 15,363 contributions, or 79%, as opposed to 2,615 contributors providing 4,117 contributions, or 21%).

A second glance at the graph with the most prolific contributors in the avant-garde period reveals why such a chart (and the network resulting from it) is not easy to read. Firstly, in this regard, the functions and social roles of the contributors are mixed. Besides the prolific editor Ernesto Giménez Caballero, we find editors Jorge Mañach (105 contributions), Guillermo de Torre (99 contributions), Bernardo Ortiz de Montellano (71 contributions), José Carlos Mariátegui (57 contributions), and Evar Méndez (52 contributions). Secondly, we also find editorial staff to be amongst the most prolific contributors: men such as César M. Arconada (147 contributions, mostly to *La Gaceta Literaria*), Mexican Jaime Torres Bodet (52 contributions, mostly to *Contemporáneos*), and Israel Zeitlin (the latter better known under his pseudonym César Tiempo, who was naturalized as Argentinian in 1924 and part of the editorial department of the Argentinian magazine *Claridad*). The third group of prolific contributors is formed out of avant-garde artists with high symbolic and social capital, such as Ramón Gómez de la Serna (165 contributions), visual artist and art critic Norah Borges (90 contributions), and Norah's brother Jorge Luís Borges (80 contributions), to name but a few.

An inspection of the table of most prolific contributors reveals some consequences for network analysis as well, since the number of contributions form the weight of the links between contributors and magazines. Crucial in this regard is the fact that editors tend to publish their contributions in their own magazines (as do editorial staff in the magazines they work for). Ernesto Giménez Caballero, the editor of *La Gaceta Literaria*, is a good example here. Out of our total corpus, 403 of his contributions were published in *La Gaceta Literaria*, while his other four documented contributions were published in the magazines *Amauta*, *Litoral*, *Martín Fierro*, and *Revista de Avance*. As editors or editorial staff, these persons occupy a privileged position. Because of their high symbolic capital, they are invited to publish in other magazines as well, thus receiving symbolic credit from others. Such agents are well connected in the network as a whole, in spite of the greatest proportion of their contribution being focused on a single magazine. For this reason, the people showing up in the graph documenting the best-connected contributors linked to avant-garde magazines show the same mixture of diverging social roles (figure 6).

In this regard, with contributions to eleven magazines, the best linked contributors are Spanish avant-garde artists Gerardo Diego and Ramón Gómez de la Serna, followed by Argentinian siblings Jorge Luís and Norah Borges, then Uruguayan writer Ildefonso Pereda Valdés. Notable in this graph are also the French artists Jean Cocteau (contributions in eight magazines), Paul Éluard and Paul

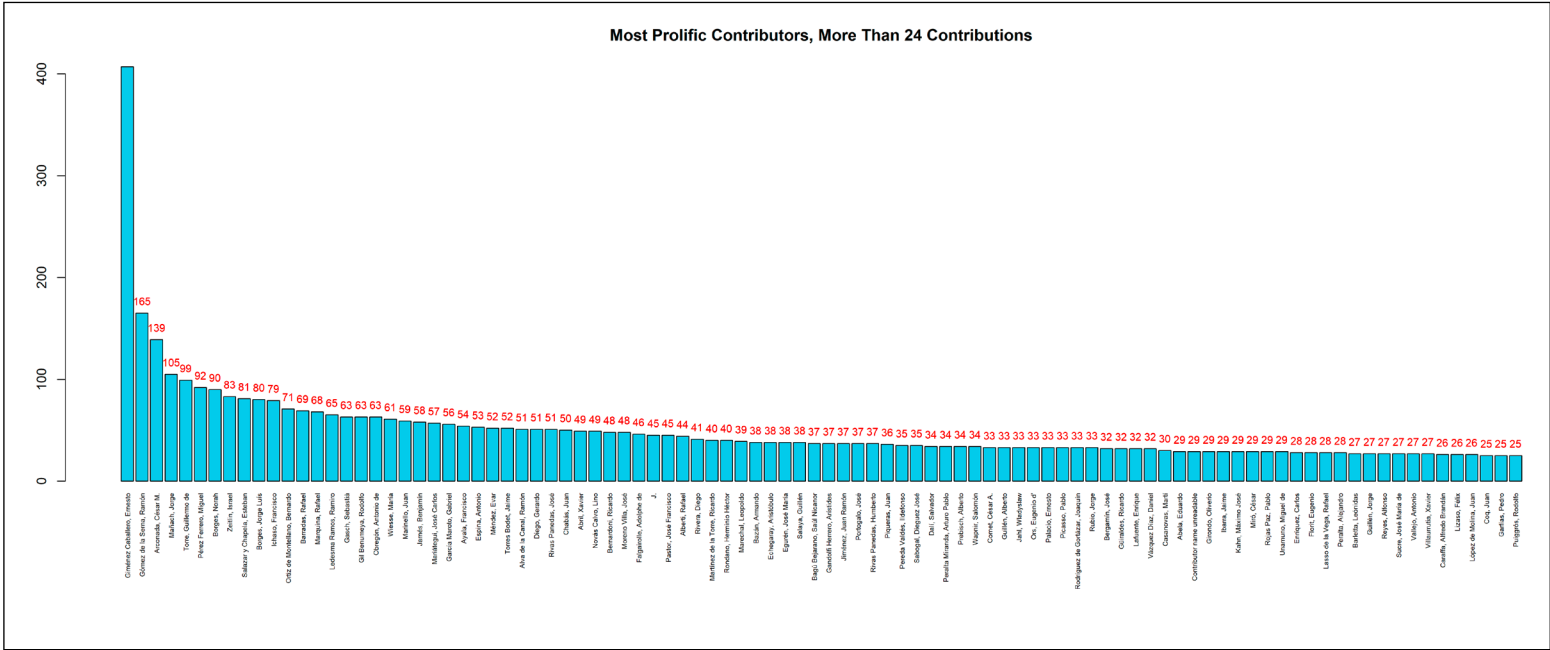


Fig. 5 Number of contributions per contributor in the avant-garde dataset (23 magazines, 19,516 contributions).

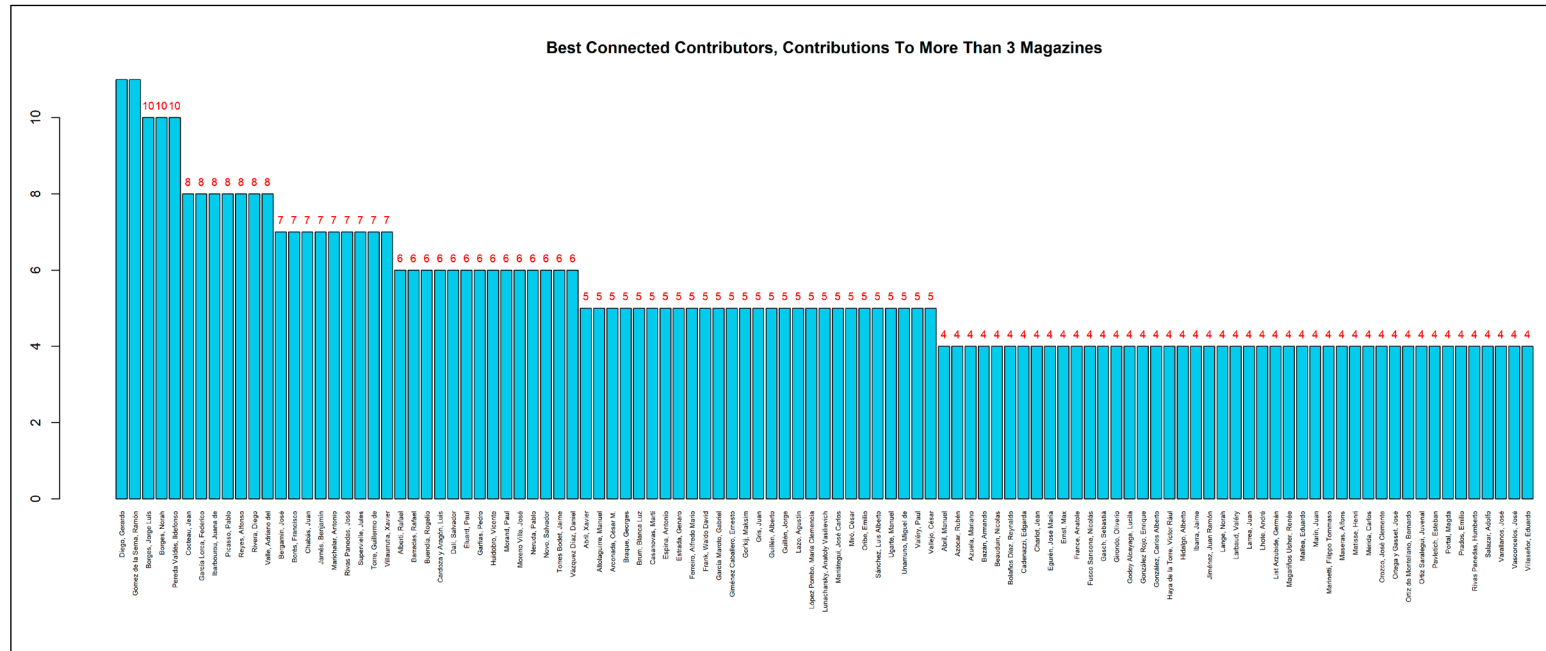


Fig. 6 Number of magazines to which a contributor contributed in the avant-garde period.

Morand (six magazines), as well as Georges Braque and Paul Valéry (five magazines). Furthermore, some of the visual artists were able to distribute their work amongst a range of magazines: Norah Borges (contributions to ten magazines); Pablo Picasso and Mexican artist Diego Rivera (eight magazines); and Uruguayan painter Rafael Barradas and Salvador Dalí (six magazines) being the most prominent examples. Editors like Chilean poet-diplomat Vicente Huidobro (six magazines), Ernesto Giménez Caballero and José Carlos Mariátegui (five magazines) can also be found. Best linked does not necessarily imply prolificity: Ildefonso Pereda Valdés had his 35 contributions distributed over eight magazines, while Spanish poet José Moreno Villa published 48 contributions in six magazines. An extreme case of this can be seen with Spanish poet Manuel Abril, who published only nine contributions in four magazines.

Moreover, it should be noted that this graph definitely does not follow the rule of power-law distribution, as did the graph for the most prolific contributors. While prolificity is relevant for the weight attributed to an edge in a network, the number of links (or edges) in a network is decisive for the determination of hubs. Albert-László Barabási has become famous for the identification of scale-free networks, in which the degree distribution follows a power law. He notes:

Power laws mathematically formulate the fact that in most real networks the majority of nodes have only a few links and that these numerous tiny nodes coexist with a few big hubs, nodes with an anomalously high number of links.¹⁹

Other than Barabási's examples – for which the Internet is ultimately the model, whereby every node potentially can link to every other node – the data from which the networks of cultural magazines are formed do not adhere to power laws; there are no 'hubs' linked to half of the magazines to which they could have potentially contributed. The reasons for this may theoretically lie in the construction of the magazine corpus, since it may have technically been impossible for the contributors to make contact with a majority of contemporary magazines, especially with regard to the time period under examination (1891–1936), when mail across the Atlantic was slow and travelling expensive. But beyond our corpus of historically bound and geographically distributed magazines, we would like to formulate a more general hypothesis concerning the logic of cultural networks: we generally doubt that networks in the cultural sphere adhere to the power-law distributions characteristic of the Barabási-Albert model. What drives us to formulate this hypothesis is the simple fact that, in the cultural field, *taste* dominates and thus limits the number of possible connections between contributors and magazines. Taste refers to subjective judgments of harmony or disharmony that lead to group inclusion or exclusion. Because publication involves an aesthetic decision, not every contributor is welcome to publish in every cultural magazine.

19 Barabási (2009), p. 70.

Rather, Bourdieusian *distinction* prevents the acceptance of a publication in every contemporary magazine, which are therefore distributed and differentiated between the several artistic groups and factions in the cultural field of a given time. For these reasons, such networks cannot be scale-free in the sense that Barabási conceptualized them; even for the hubs in the network, it is not possible to scale their links up to the vast majority of magazines.

A second major methodological insight comes from the structure of the contributor-magazine network and its conceptualization as a bipartite graph. Two-mode networks are characterized by nodes in one mode being reachable only through a node from the other mode. This trait of two-mode networks imposes certain limitations with regard to their analysis. Basically, there are three approaches.

(a) The first approach is to treat the bipartite graphs as one-mode graphs and apply the standard analytical tools of social network analysis.²⁰ In our case, this would lead to having the major magazines, with their hundreds of contributors, taking the highest-ranking positions in most of the centrality measures (eigenvector, closeness, betweenness etc.). Certainly, this is not a desired outcome, and in general it is for this reason that two-mode networks are rarely analyzed in their original form.

(b) The second approach is to analyze each mode independently using metrics that are specialized for use with two-mode networks. This approach implies the transformation of the data into one-mode networks containing only one type of nodes, and then to analyze them as usual. The transformation procedure is often referred to as projection and can also be applied to weighted two-mode networks.²¹ We followed this approach for the analysis of the contributor-magazine network by applying the projection technique developed by Newman.²² Originally, Newman had studied scientific collaboration networks; the application of this projection method thus seemed to be appropriate, since the citation networks Newman deals with (scientist-collaborative group networks) resemble the data we have at hand. On this basis, we calculated degree, closeness, and betweenness centralities.²³ Since we were particularly interested in betweenness as an indicator of the potential mediation activity within the network, the table below shows the results for the fourteen contributors with the highest betweenness score.

20 Borgatti (2009), p. 8281. See also Borgatti and Everett (1997).

21 Opsahl (2013). See also Opsahl et al. (2010).

22 Newman (2001a) and Newman (2001b).

23 These calculations were done using the package ‘tnet’ in R, the environment for statistical computing. See Opsahl (2009), pp. 104–122. This thesis is also available at <http://tore-opsahl.com/publications/thesis/>.

Node	Degree	Closeness	Betweenness
Giménez Caballero, Ernesto	5	0.0051455084	2672103
Borges, Norah	10	0.004532786	2642620
Mariátegui, José Carlos	5	0.0036892506	1939933
Zeitlin, Israel	3	0.0028495031	1930251
Gómez de la Serna, Ramón	11	0.0046217184	1107634
Mañach, Jorge	3	0.0048802187	988443
Moreno Villa, José	6	0.0043899019	620540
Méndez, Evar	3	0.0034897053	613365
Abril, Xavier	5	0.0032261895	457977
Torres Bodet, Jaime	6	0.0038680435	448699
Barradas, Rafael	6	0.0042837309	363465.5
Ortiz de Montellano, Bernardo	4	0.0044222172	342158
Marinello, Juan	3	0.0037914151	340397
Borges, Jorge Luis	10	0.0042915641	321359

Tab. 1 Centrality scores for 14 avant-garde contributors, ordered according to betweenness score in descending order.

In comparison to what has been reported above, this table shows the outcomes of the analytic calculations resulting from a network with a few major nodes (the larger magazines) connected to thousands of other nodes (the contributors), and of the uneven distribution of weights through the number of publications per contributor. The calculation of centralities favors editors and editorial staff because of the high number of their contributions. Important and well-connected personalities such as Norah and Jorge Luis Borges, as well as Ramón Gómez de la Serna, have a smaller betweenness value in comparison to the prolific Ernesto Giménez Caballero, as well as other editors and editorial staff, such as José Carlos Mariátegui, Israel Zeitlin, and Jorge Mañach. The case of Israel Zeitlin is especially revealing. Most of his 83 contributions were published in the large Argentinian magazine *Claridad*, the others appearing in *Martín Fierro* and *Proa*; all three magazines were published in Buenos Aires, and because two of them are amongst the larger magazines in our corpus, Zeitlin received a high betweenness score. This example reminds us that betweenness is detached from the country or region in which the magazines were published. From the perspective of what is at the center of our research project – the analysis of transnational cultural transfers – these calculated values present strange if not distorted results. How-

ever, even if these calculations do not directly answer our research questions, they provide valuable insights, such as, for example, that there are only 72 contributors with a betweenness score larger than 0. Given the large number of contributors overall, it would not have been easy to identify this small number of contributors serving as mediators between magazines.

Beyond the calculation of centrality scores, two-mode networks imply important impediments to the application of further formal methods. To our knowledge, procedures for the calculation of cliques or communities in bipartite graphs remain undeveloped. The results of these analyses would be quite interesting for the determination of artistic groups through algorithmic calculation, compared to what classic qualitative research has revealed so far.

(c) The third approach described by Borgatti is to analyze both modes of a two-mode network simultaneously, using a bipartite adjacency matrix. Interestingly enough, Borgatti highlights that the standard ways to visualize two-mode networks also apply to bipartite graphs, and that “this bimodal visualization is often extremely effective for transmitting a holistic understanding of the whole dataset.”²⁴ In view of what the calculation of the betweenness score presented above revealed to us about the small number of mediating artists and their detachment from the geographic location, we took the approach of visualizing the best-linked contributors on a map and compared the results for both the *modernismo* and avant-garde periods.

Figure 7 shows the eight best-linked contributors of the *modernismo* period, all of them having contributed to at least seven magazines. At first glance, the transatlantic transfer put into effect by some of the best-linked contributors becomes visible. A closer inspection, however, reveals that two of the contributors, the Spaniard Jacinto Benavente (who was awarded the Nobel Prize for Literature in 1922) and the Catalan modernist Santiago Rusiñol²⁵ contributed only to magazines printed in Spain. Moreover, the only Hispanic American among the best-linked contributors is Rubén Darío. More than half of his publications (55 out of 92) were printed in Hispanic American magazines. Salvador Rueda (68 publications in ten magazines), Emilia Pardo Bazan (18 publications in seven magazines), and Miguel de Unamuno (48 publications in eight magazines) represent Spaniards whose works have been published in Hispanic American magazines. Heinrich Heine (ten publications in seven magazines) can be seen as a peculiar

24 Borgatti (2009), p. 8284.

25 The terminological concepts of modernist aesthetics in the Iberian peninsula become even more confusing, since the Catalan *modernisme* – due to the specific impact of the Catalan bourgeoisie and its economic power, which is best known for the architecture of Antonio Gaudí – is not exactly identical to Spanish *modernismo*, although it is similar and therefore comparable.



Fig. 7 Best-linked *modernismo* contributors

case: he died in 1856, and was therefore translated into Spanish and printed in Spanish and Hispanic American magazines without being actively involved in the distribution and reception of his works. Thus he can be seen as a ‘literary forefather’ for the transnational modernist movement. To sum up, the dominance of European contributors speaks of a large transfer of modernist literature from Europe to Hispanic America during the modernist era. This affirms one of the presuppositions of *modernismo* research, that it was not really an ‘American’ affair. It also questions another, namely that it was only directed towards Paris as the “capital of 19th century” in cultural terms, as per Walter Benjamin.

In comparison to the graph for the *modernismo* period, the visualization for the avant-garde period in figure 8 presents quite a different picture. All of the



Fig. 8 Best-linked avant-garde contributors

five best-linked contributors have contributed to at least ten magazines *and* been published on both sides of the Atlantic. Of the five best-connected contributors, three come from Hispanic American countries (Jorge Luís and Norah Borges, and Ildefonso Pereda Valdès).²⁶ The integration of Hispanic American contributors into magazines printed in Europe can be seen from the share of their publications: Jorge Luís Borges had 21 of his 80 contributions printed in Spanish-language

²⁶ This picture does not change much if the number of contributors is enlarged to the 12 contributors having published in at least 8 magazines: 6 out of 12 come from Hispanic America (Juana de Ibarbourou, Alfonso Reyes and Diego Rivera, adding to those already named above, all of whom were published on both sides of the Atlantic).

European magazines, Norah Borges contributed 55 of her 90 works to magazines printed in Spain, and Ildefonso Pereda Valdés had eight out of 35 works printed in three European magazines. These numbers not only speak of an intensified exchange between both sides of the Atlantic, but also of a more balanced transfer from Europe to Hispanic America and vice versa, when considered in the comparative context of the *modernismo* era more generally.

2.3 Cultural Transfer as a Calculated Ratio: Contributors and Magazines

The data we collected and analyzed present strong evidence for the transnational exchange that was already taking place during the *modernismo* period towards the end of the 19th century. But while the networks constructed out of the acquired data indicate that there is a lot of exchange within the corpus of magazines under scrutiny, as well as *who* the agents of this exchange are, they do not answer questions on the *intensity* of exchanges between Europe and Hispanic America. Because we were interested in learning who could be identified as facilitators of cultural transfers, and because the centrality measure ‘betweenness’ is not beneficial for answering this question in bimodal networks, we developed a measure which we call the ‘cultural transfer rate’. This rate is based on the idea that the circulation of aesthetic ideas and forms *across the Atlantic* can be regarded as an effort of cultural transfer. Amongst the socio-biographical data we collected for each contributor is the ‘country of origin’. In contrast to nationality, which can change over the course of a lifetime, the country of origin is a stable category insofar as the place of birth cannot be changed. As a first approximation for an estimation of the transatlantic cultural transfer, a ratio is calculated: the number of contributions published by a contributor on the other side of the Atlantic (as opposed to his/her country of origin) divided by the total number of contributions by this contributor. Technically, the datum ‘country of origin’ serves as the indicator of the cultural region (Europe or Hispanic America) to which the contributor is assigned, and the publication place of the cultural magazine serves as the corresponding indicator. Calculated for the roughly 3,500 contributors which we were able to identify, this ‘cultural transfer rate’ provides an approximation of the identification of persons which we have elected to call “cultural brokers”, a term that has been introduced by Richard Jean So and Hoyt Long into network analysis.²⁷ The ratio is an approximation, given that (for example) all persons who were born in Europe and migrated early in their lives to Hispanic America will automatically receive a high ratio even if they cannot be considered as being self-evident cultural brokers. As always, numbers therefore have to be checked for their explanatory power with regard to the research question.

27 See Jean So and Long (2013), p. 172. The term itself was first used by anthropologist Clifford Geertz; see Geertz (1960).

It is not by chance that the concept of “brokerage”, as introduced by Ronald Burt, is accompanied by the idea of “structural holes”, spaces that exist between closed and densely structured areas such as magazines. These holes impede synergy and exchange between different fields of knowledge and innovation. The connectors between different areas fill these gaps, and “brokerage is the action of coordinating across the hole with bridges between people on opposite sides of the hole, and network entrepreneurs, or brokers, are the people who build the bridges.”²⁸ However, both Burt as well as Jean So and Long used unimodal networks to determine the brokers within their networks. By contrast, the ‘cultural transfer rate’ we introduced helps to identify these cultural brokers by narrowing the focus to a small, manageable set of actors, qualifying their transfer merits by connecting them to transatlantic exchanges.

The analysis based on the ‘cultural transfer rate’ yielded interesting results insofar as the most prolific or best-linked authors do not necessarily have a high transatlantic transfer rate. As we have seen with the best-linked *modernismo* contributors, Nicaraguan poet Rubén Darío presented strong ties with Hispanic America, and 37 of 92 of his works in our corpus were published in Europe, which results in a transfer rate of 0.4. By comparison, Spanish journalist and poet Salvador Rueda published 35 of the 68 works in our corpus in Hispanic American cultural magazines, which results in a transfer rate of 0.51 – that is, slightly more than half of his works were printed on the other side of the Atlantic. In the avant-garde period, this decoupling of cultural transfer merits from the number of linkages becomes even more visible. Despite their travels around Europe and their known strong ties to European avant-garde movements, Argentinian Jorge Luís Borges and his sister Norah, as well as Uruguayan poet Ildefonso Pereda Valdés, exhibit cultural transfer rates of around 0.33, that is, a third of their contributions being published in Europe. The Spaniards Ramón Gómez de la Serna (165 contributions) and Gerardo Diego (51 contributions) show an even lower transfer rate, below 0.2 in the period under study (Gómez de la Serna was exiled in 1934 to Argentina). This observation is revealing insofar as it underlines that leading personalities of cultural movements – in terms of prolificity and linkedness – do not necessarily assume the task of serving as connectors between two continents. This function is clearly taken over by second- and third-tier contributors, who populate the space between magazines published on both sides of the Atlantic.

To give a rough idea of the most salient results within this overview: in the *modernismo* period, internationally lesser-known figures such as the Spaniards Manuel Reina (0.79) and Ramon de Campoamor (0.63), as well as Venezuelan Miguel Sánchez Pesquera (0.97) and Mexican Amado Nervo (0.57) complement the well-known Guatemalan writer, journalist and diplomat Enrique Gómez Carrillo (0.92), who clearly distinguishes himself in terms of symbolic, social and

28 Burt (2005), p. 18. For an explanation of “brokerage”, see *idem.* pp. 11–13.

economic capital, or the well-linked Spanish poet and precursor of *modernismo* Salvador Rueda (0.51). In contrast to these cultural brokers, prestigious French writers and poets such as Paul Bourget (0.96), Edmond de Goncourt (0.88), Catulle Mendès (0.88), Marcel Prévost (0.85), or Émile Zola (0.5) demonstrate their importance to and influence upon the modernist movement in Hispanic America and thus of their high symbolic capital; however, since their works needed to be translated and reprinted, rather than being actively promoted by their creators, it is questionable whether they can be regarded as cultural brokers. Romantic poet and essayist Heinrich Heine, who had already died when his works were translated and republished in Spanish, was mainly received in cultural magazines in Spain; only three out of ten of his works were published on the other side of the Atlantic. In the case of deceased contributors, it is obvious that they could not have actively provided their contributions; however, it is debatable who the agents of cultural transfers are with regard to the case of translations.²⁹

Similar results can be noted for the avant-garde period, during which Uruguayan Julio J. Casal (0.95, founder of the magazine *Alfar*, which was first published in Galician A Coruña), Chilean Vicente Huidobro (0.89), and Venezuelan Rufino Blanco Fombona (0.75) were active both as poets and diplomats and based their cultural brokerage on their mobility. Amongst the more prestigious artists, Spanish painter and writer Gabriel García Maroto (0.63) and writer and philosopher Miguel de Unamuno (0.52) profited from their cultural capital by contributing to several genres. Again, a range of French avant-garde artists, including Paul Valéry (0.82), Paul Éluard (0.75), and Jean Cocteau (0.71), benefited from their symbolic capital and were reprinted in Hispanic American magazines. High-profile avant-garde writers such as Guillermo de Torre (0.13), Juan Chabás (0.04), or José Bergamín (0.1), on the other hand, cannot be considered cultural brokers.

With respect to the whole corpus of cultural magazines, there is a clear functional change between the two periods of *modernismo* and the avant-garde. In the phase of *modernismo* there existed three cultural magazines with high cultural transfer rates. In the case of the magazine with the highest, *Revista Azul*, about a third of its 1.679 contributions (0.31) came from contributors originating from the other side of the Atlantic, notably from the French literature scene. The much smaller *El Nuevo Mercurio*³⁰ had 29% of its 285 contributions delivered by

29 Though there is no evidence for it, it is most probable that the editors of the cultural magazines took the decision on which text should be translated, since this involves an economic decision. However, in the cultural magazines themselves, no proof of the degree of involvement of the authors can be found.

30 This Spanish-language magazine, founded and directed by the aforementioned Enrique Gómez Carrillo, was published in Barcelona in 1907, although it was headquartered in Paris where Gómez Carrillo lived. Its direct model was the *Mercure de France* where the Guatemalan writer had previously been responsible for the Spanish literature re-

Hispanic American contributors,³¹ while *La Biblioteca* (Buenos Aires, 390 contributions) received around a quarter (0.24) of its contributions from Europe. This picture changed profoundly during the avant-garde period, when there were only small cultural magazines with one or two issues, such as *Vida Americana* (Barcelona), *Favorables Paris Poema* (Paris), *Creación/Création* (Madrid/Paris) and *Irradiador* (México D.F.). These generally had a cultural transfer rate of 0.27 or higher; the only larger example is that of *Prisma* (Barcelona), which received 29% of its 401 contributions from contributors in Hispanic America. These examples point mainly to the international network of the editors of these short-lived publishing endeavors and thus to the social capital by which these cultural entrepreneurs distinguished themselves.

The observations made here thus lead to paradoxical insights into the functioning of this specific cultural field. Leading personalities in terms of prolificity and linkedness do not necessarily thrive as contributors on both sides of the Atlantic, even though the dense web of cultural magazines provides an optimal network for such cultural brokerage. Rather, second- or third-tier writers and poets are responsible for the transatlantic transfer, an observation that argues for a functional differentiation in this cultural field. And it is in the earlier phase of *modernismo* in the period under scrutiny that cultural magazines can be found capitalizing on the import of cultural products from the other side of the Atlantic. On the whole, the cultural transfer rate provides valuable clues to the transfer that has taken place across the Atlantic, especially in light of the large number of contributors involved in it. However, this rate does not take important factors for cultural transfer into account, such as the mobility of the contributors, their status as migrants, or the social or cultural capital of the contributors which caused editors to translate the works of such contributors. These factors, as well as the variety of roles involved in cultural transfers and their varying degree of agency, refer to the points of transition between quantitative and qualitative analysis; as such, the calculated cultural transfer rate yields valuable results for further qualitative research.

ports. For Gómez Carrillo's literary career and the importance of magazines within it, see Ehrlicher (2015).

- 31 Enrique Gómez Carrillo is very clear about his intention to contribute to a renewed transatlantic exchange when he explains the goals of the *Nuevo Mercurio* in the first issue's editorial: "Its program is very simple and boils down to the following: to establish the fraternal bond between the intellectuals of Spain and those of Spanish America, who until now have lived not only not knowing each other, but even disdaining each other." Gómez Carrillo (1907), p. 3.

3. An Alternative Approach: Cultural Magazines as Contributor-Contributor Networks

While presenting some major results of our research project in terms of the transnational transfers along genres and performed by contributors to cultural magazines, we simultaneously discussed the methodological implications and impediments which we encountered during our research. A major constraint for the application of standard metrics and algorithms common in network research is the fact that the data we collected ('who published what, when and where') had to be conceptualized as two-mode networks, whereby contributors and genres/magazines form two distinct classes. As has been shown above, the analysis of bi-modal networks has proven to be fruitful for the analysis of genres as instances of *cultural exchange*, which is at the heart of our project. However, *social* network methods have mostly been developed to study one-mode networks with a single, usually dichotomous and nondirectional relation; for two-mode networks, on the other hand, the analytical possibilities are limited.³² A shift of focus towards the *social aspects* of transnational cultural exchanges would transform the two-mode contributor-magazine networks into contributor-contributor networks, thus eliminating magazines as a separate set of nodes and facilitating the possibility of fully applying social network analysis. These contributor-contributor networks could be conceived of in two ways:

- a) Contributors could be linked to all of their fellow contributors within a single issue of a magazine, which would also comprise the contributions provided by editors and editorial staff. This means that instead of linking contributors with the magazine in which their contribution was published, the respective column would be filled in such a way that every contributor would be linked to every other contributor. The column containing the publication date of the magazine issue would be left untouched. In this way, every single issue of a magazine forms a small community of contributors.
- b) Contributors could be linked to all their fellow contributors within a single issue of a magazine, but in contrast to version (a), the column containing dates is split into two, with one column containing the publication date of the issue and a second column containing the publication date of the last issue in the lifetime of the magazine. In this way, the community of contributors formed by every single issue persists until the end of the lifetime of the magazine.

32 Already in 1994, Wasserman and Faust noted these limitations in their standard work on social network analysis: "By and large, it is rare for methods to be developed initially and explicitly for valued relations, two mode networks, and especially multiple and longitudinal relations and ego-centered networks. [...] However, centrality and centralization measures for multiple relations have not been developed, nor have measures of centrality and centralization for two-mode networks." Wasserman and Faust (1994), p. 729.

In essence, in order to be able to analyze the social aspects of cultural magazines, we propose to broaden our approach, to re-use the data we published, and to restructure the two-mode contributor-magazine networks (which we analyzed above) into one-mode co-publication networks. In the future, such an approach would enable the application of classical metrics and algorithms established in social network research. Because in such a network design all nodes represent social actors, it would enable the investigation of the social dimensions of cultural products, such as magazines. The application of community-detecting algorithms would become possible; in our case, this could certainly lead to pertinent insights into the formation of artistic cliques in the form of groups performing co-publication. Our research group has already worked into this direction by calculating the number of contributions per contributor for each magazine. We divided the total number of contributions per magazine by the total number of contributors. This simple measure already provides insights into the production structure of a magazine, since magazines equipped with editorial staff have a significantly higher ratio of contributions per contributor than magazines published by editors with a broad social network providing the contributions. To give just two examples from our corpus: for the newspaper-like *Gaceta Literaria* (1927–1930), published in Madrid by the prolific Ernesto Giménez Caballero and his team, one observes a ratio of 5.922034 publications per contributor; for a small magazine like *Creación/Création*, published in 1921 and 1924 in Madrid and Paris respectively by diplomat-poet Vicente Huidobro, the ratio is only 1.4333 contributions per contributor. This analysis shows that publications that extend themselves over many years obviously avail themselves of editorial staff, because while small, short-lived publications can exploit the transnational network of their editors, they soon cease to exist precisely because they lack editorial staff.

Beyond these metrics, contributor-contributor networks would enable the detection of co-publication patterns across magazines, in the sense of ‘who published most often together with whom’, which again would support the identification of artistic cliques. Technically, this could be implemented by determining who published together with whom in every single issue of a magazine, and then summing up these linkages over the lifetime of each magazine and across magazines. Moreover, the approach described in this section would enable insights into the social structure of the literary/artistic field formed by cultural magazines, since it would carve out the contrasts between competing artistic groups, and would enable insights into the mechanisms of distinction between cultural magazines, since, as has been discussed above, not every contributor is welcome to contribute to every magazine.

Furthermore, the creation of contributor-contributor networks (including columns for publication dates) would facilitate the investigation of how hubs are established, because the *rich-get-richer algorithm* developed by Barabási

and his research team could be applied.³³ Even if the networks analyzed here are not scale-free, one might hit a motherlode by digging deep into network archaeology to learn more about *network growth* and *preferential attachment* in cultural fields; these latter two metrics have been described by Barabási as constitutive for the establishment of hubs. As taste in cultural fields is governed by social preference and is dependent on recommendation systems (hence the large number of reviews in cultural magazines), it becomes obvious that opinions and estimations published in such magazines act as essential influences on aesthetic choices – which are in turn the complements of what is termed *preferential attachment* by Barabási. With regard to single contributors, it seems quite worthwhile to follow their individual trajectories in the timeframe while they became hubs in the network, and to algorithmically differentiate between the progress made by nodes which are present early in networks and, by contrast, those of latecomers. Certainly, in the cultural field, a “Matthew effect”³⁴ can also be observed, where already well-connected contributors are invited to publish in more and more magazines. But as has been described above, there seem to be limitations on the increase in connectivity of individuals. Certainly, it would be rewarding to better understand these limitations and to determine whether they apply only to cultural networks of the bygone eras examined in our project, or whether they are a property of cultural networks per se.

Beyond the focus on individual artists, contributor-contributor networks could potentially uncover structures characteristic of magazine evolution. Determining the fluctuations in the assortment of contributors would on the one hand enable insights into who becomes a regular contributor to a magazine beyond the editorial team, who has to be regarded as an irregular contributor, and who has switched to another magazine. For the magazines, it would be revealing to see to what extent they depend on the presence of prominent contributors in terms of prolificity and connectedness. It would also be interesting to see whether or not the departure of these prominent contributors portends the end of the magazine’s run, or which other factors contribute to the cessation of the print product. Finally, the start of new endeavors by duplicating contents and reviving productive network structures could be traced, thus throwing light on the characteristics of newly established magazines.

4. Prospects: Paths for Future Research

The 31,500-entry dataset from the 42 cultural magazines which we collated in our research project seems to be quite a weighty basis for research. A database this large is on the edge of what can be kept in synopsis by humans. However,

33 Barabási (2009), pp. 79–91.

34 Merton (1968).

the challenges we discussed in this article provoke the question of which research questions could be answered if even more data were available – and this will certainly be the case in the future. Technically, the aggregation of further data does not pose a real challenge. Since we provided VIAF IDs for the contributors wherever possible, relevant data can be collected automatically if a tool like OpenRefine were to be used.³⁵ Wikidata, the Gemeinsame Normdatei provided by the Deutsche Nationalbibliothek, and Social Networks and Archival Context (SNAC)³⁶ would be important starting points for the aggregation of data on the contributors. These data expose further social networks such as spouses, unmarried partners, friendships, family ties, and correspondences. Moreover, bibliometric data are available via APIs; their collection could add another network layer if the data on monographs and anthologies published by the contributors and editors as well as the pertinent publishing houses (which themselves form hubs in a related network) were aggregated. Since data collection more often than not tends to become an end in itself, we would like to propose here a promising path for future research, wherein the data from cultural magazines provide the starting point.

This research perspective would focus on the trajectories of individuals within the network. Analogous to the study presented by Fraiberger et al. (2018), it would be fruitful to explore to what extent the recommendation systems (reviews, literary prizes, fellowships, grants, presentations at artistic fairs, publication in prestigious publishing houses etc.) can be correlated with the increase in linkages within the network, thus documenting the accumulation of symbolic capital.³⁷ The tracing of representative biographical trajectories through the network could facilitate estimations of prestige and the effects of its accumulation. By answering questions such as ‘in which cultural magazine did artist xy publish before he was invited (or allowed) to publish in a certain other magazine?’ or ‘in how many cultural magazines had artist xy publicized contributions in order to publish more than 15 books afterwards?’, statistical analyses of biographical trajectories could reveal insights into the mechanisms of becoming an established artist in the literary field.³⁸ For the investigation of literary prestige, it is poten-

35 We were able to identify 3,587 of the 5,540 contributors (65%) and compiled socio-biographical data for most of them. See <https://openrefine.org/> for more information on this tool and the reconciliation services with linked open data APIs it provides.

36 SNAC provides information on the holdings of archives worldwide; social networks are then created out the available data; e.g. friendships and acquaintances can be traced via letter exchanges. See <https://snaccooperative.org/> for further information.

37 In this regard, Ted Underwood’s study is relevant, since he is able to show – though not from a network analysis perspective – that the fact that a book has been reviewed at all can be regarded as a predictor of a constant literary production, regardless of whether or not these reviews were positive. See Underwood (2019), pp. 68–110.

38 See Fraiberger et al. (2018) and Barabási (2018), pp. 54–73.

tially useful to introduce values analogous to what is termed “fitness”,³⁹ which are assigned to each node in a network. These values could come, to give an example, from Bourdieu’s conception of the different types of capital, such as high cultural capital (variability with respect to different genres used as a characteristic of prolific artists), high symbolic capital (being translated or reprinted), and high social capital (as is typical for editors and editorial staff).⁴⁰ In other words, the multirelational networks that result from data aggregation are in need of more measures to be introduced to fully exploit the potentialities of social network research.

What is currently not feasible is the relationization of the contents of the contributions with network positions.⁴¹ OCR has for the most part not been performed for the Spanish-language cultural magazines which we examined in our research project, and even if they were printed in Antiqua and thus reliable results could be expected, OCR will most probably not be performed on material which has already been digitized. As a first step, it would be helpful to identify the literary works which have been reviewed in the cultural magazines, which would in turn support an analysis of the relationship between the recommendation systems and the creation of prestige, as described above. Ultimately, networks drive success and are thus responsible for the recognition of an artist. In this sense, the opinions of peers influence aesthetic choices and purchase decisions, and thus fuel the preferential attachment of which Barabási speaks. The creation of artistic prestige can therefore be understood as a collective phenomenon created within networks, measured by how a community reacts to the performance of an individual artist.

References

- Aching, Gerard. 2013. “The Temporalities of Modernity in Spanish American *Modernismo*: Darío’s Bourgeois King”. In *The Oxford Handbook of Global Modernisms*, edited by Mark Wollaeger and Matt Eatough, 109–128. New York: Oxford University Press.
- Albrecht, Steffen. 2002. “Netzwerke als Kapital. Zur unterschätzten Bedeutung des sozialen Kapitals für die gesellschaftliche Reproduktion”. In *Bourdieu’s Theorie der Praxis. Erklärungskraft – Anwendung – Perspektiven*, edited by Jörg Ebrecht and Frank Hillebrandt, 199–224. Wiesbaden: Westdeutscher Verlag.
- Asunce Arenas, Aránzazu. 2012. *Barcelona and Madrid: Social Networks of the Avant-Garde*. Lewisburg, PA: Rowman & Littlefield.

39 Barabási (2009), p. 95.

40 See Albrecht (2002) for an example of how to reconcile Bourdieu’s conception of the literary field and the different sorts of capital with network analysis.

41 See Purschwitz (2018) for such an approach.

- Baudelaire, Charles. 1976. "Le peintre de la vie moderne". In *Œuvres complètes*, edited by Claude Pichois, vol. 2., 683–724. Paris: Gallimard.
- Barabási, Albert-László. 2018. *The Formula. The Universal Laws of Success*. New York: Little, Brown and Company.
- Barabási, Albert-László. 2009. *Linked. How Everything is Connected to Everything Else and What It Means for Business, Science, and Everyday Life*. New York: Plume.
- Borgatti, Stephen P. 2009. "Two-Mode Concepts in Social Network Analysis". In *Encyclopedia of Complexity and Systems Science Vol. 9*, edited by Robert A. Meyers. New York: Springer, 8279–8291. DOI: 10.1007/978-0-387-30440-3_491
- Borgatti, Stephen P., and Martin G. Everett. 1997. "Network analysis of 2-mode data." *Social Networks* 19: 243–269.
- Bowker, Geoffrey C. and Susan Leigh Star. 1999. *Sorting Things Out. Classification and Its Consequences*, Cambridge, MA/London, England: The MIT Press.
- Bulson, Eric. 2017. *Little magazine, world form*. New York: Columbia University Press.
- Burt, Ronald. 2005. *Brokerage and Closure. An Introduction to Social Capital*. Oxford: Oxford University Press.
- Ehrlicher, Hanno. 2014. "Introducción". In *Almacenes de un tiempo en fuga. Revistas culturales en la modernidad hispánica*, edited by Hanno Ehrlicher and Nanette Reißler-Pipka, 1–10. Aachen: Shaker.
- Ehrlicher, Hanno. 2015. "Enrique Gómez Carrillo en la red cosmopolita del *modernismo*". *Iberoramericana. America Latina – España – Portugal* 15 (60): 41–60.
- Ehrlicher, Hanno, and Jörg Lehmann. 2019. "Datenerhebung als epistemologisches Labor – Überlegungen am Beispiel der virtuellen Forschungsumgebung *Revistas culturales 2.0*" In *Forschungsinfrastrukturen in den digitalen Geisteswissenschaften. Wie verändern digitale Infrastrukturen die Praxis der Geisteswissenschaften?* Edited by Martin Huber, Sybille Krämer, Claus Pias, 40–57. Frankfurt am Main: CompaRe 2019. URN: urn:nbn:de:hebis:30:3-519028.
- Ehrlicher, Hanno. 2020. "Revistas culturales históricas en lengua española desde el modernismo hasta las vanguardias: procesos de modernización y formación de redes transnacionales. Spanish-language Cultural Magazines from Modernismo to Avant-Garde: Processes of Modernization and Transnational Network Formation." DARIAH-DE. DOI: 10.20375/0000-000d-1c6f-6
- Fólica, Laura Virginia, Diana Roig-Sanz, and Stefania Caristia (eds.). 2020. *Literary Translation in Periodicals: Methodological challenges for a transnational approach*. Philadelphia: John Benjamins Publishing Company. DOI: 10.1075/btl.155

- Fraiberger, Samuel P., Roberta Sinatra, Magnus Resch, Christoph Riedl, and Albert-László Barabási. 2018. "Quantifying reputation and success in art." *Science*, Vol. 362, Issue 6416: 825–829. DOI: 10.1126/science.aau7224
- Frank, Gustav, Madleen Podewski, and Stefan Scherer. 2010. "Kultur-Zeit-Schrift. Literatur- und Kulturzeitschriften als 'kleine Archive'". *Internationales Archiv für Sozialgeschichte der deutschen Literatur* 34 (2): 1–45. DOI: 10.1515/iasl.2009.013
- Geertz, Clifford. 1960. "The Javanese Kijaji: the changing role of a cultural broker." *Comparative Studies in Sociology and History* 2: 228–249.
- Gómez Carrillo, Enrique. 1907. "Dos palabras al lector". *El Nuevo Mercurio* 1: 3–4.
- González, José Eduardo, Fuente-Camacho, Montserrat, and Marcus Barbosa. 2018. "Detecting Modernismo's Fingerprint: A Digital Humanities Approach to the Turn of the Century Spanish American Novel." *Review: Literature and Arts of the Americas*, 51 (2): 195–204. DOI: 10.1080/08905762.2018.1540577
- Herrera, Javier. 1997. *Picasso, Madrid y el 98: la revista Arte joven*, Madrid: Cátedra.
- Ikoff, Ventsislav, and Pablo Martínez. 2020. "Quantitative analysis of translations in Spanish-language periodical publications (1900–1945): A methodological proposal." In *Literary Translation in Periodicals. Methodological challenges for a transnational approach*, edited by Laura Virginia Fólica, Diana Roig-Sanz, and Stefania Caristia, 317–328. Philadelphia: John Benjamins Publishing Company. DOI: 10.1075/btl.155.13iko
- Jean So, Richard and Hoyt Long. 2013. "Network Analysis and the Sociology of Modernism." *Boundary 2*, 40:2, 147–182. DOI: 10.1215/01903659-2151839
- Kotin, Joshua, and Wulfman, Clifford (eds.). 2017. Special Issue: Digital Archives, Avant-Garde Periodicals. *The Journal of Modern Periodical Studies* 8 (2): 119–250. DOI: 10.5325/jmodeperistud.8.2.v
- Merton, Robert K. 1968. "The Matthew Effect in Science." *Science* 159(3810): 56–63. DOI: 10.1126/science.159.3810.56
- Murphy, Stephen J. (ed.). 2014. Special Issue: Visualizing Periodical Networks. *The Journal of Modern Periodical Studies* 5 (1): 1–135. DOI: 10.5325/jmodeperistud.5.1.fm
- Newman, M. E. J. 2001a. "Scientific Collaboration Networks. I. Network Construction and Fundamental Results." *Physical Review E* Vol. 64, 016132. DOI: 10.1103/PhysRevE.64.016132
- Newman, M. E. J. 2001b. "Scientific collaboration networks. II. Shortest paths, weighted networks, and centrality." *Physical Review E* Vol. 64, 016132. DOI: 10.1103/PhysRevE.64.016132
- Nungesser, Michael. 1997. "Mariátegui und die Bildenden Künste, untersucht am Beispiel der von ihm herausgegebenen Zeitschrift *Amauta*". In José Carlos Mariátegui, edited by José Morales Saravia, 111–128. Frankfurt a.M.: Vervuert.

- Onís, Federico de. 2012 [1934]. *Antología de la poesía española e hispanoamericana (1882–1932)*, edited and introduced by Alfonso García Morales. Sevilla: Renacimiento.
- Opsahl, Tore. 2013. “Triadic closure in two-mode networks: Redefining the global and local clustering coefficients.” *Social Networks* 35 (2): 159–167. DOI: 10.1016/j.socnet.2011.07.001
- Opsahl, Tore, Agneessens, Filip, and John Skvoretz. 2010. “Node centrality in weighted networks: Generalizing degree and shortest paths.” *Social Networks* 32 (3): 245–251. DOI: 10.1016/j.socnet.2010.03.006
- Opsahl, Tore. 2009. *Structure and Evolution of Weighted Networks*. London: University of London (Queen Mary College).
- Purschwitz, Anne. 2018. “Netzwerke des Wissens. Thematische und personelle Relationen innerhalb der halleschen Zeitungen und Zeitschriften der Aufklärungsepoche (1688–1818).” *Journal of Historical Network Research* 2: 109–142. DOI: 10.25517/jhnr.v2i1.47
- Reynolds, Andrew. 2017. “‘Somos ya legión’: Mapping Modernista Poetics and Literary Production.” *Modern Languages Open* 3 (3): 1–19. DOI: 10.3828/mlo.v0i0.94
- Rißler-Pipka, Nanette. 2013. “The paradoxes of *Arte Joven*: high and low culture before the rise of the avant-gardes”. In *Between Folk and Highbrow: Popular Culture and Its Functions in 20th Century Avant-garde Magazines*, ed. by Hanno Ehrlicher. PHIN: Philologie im Netz, Beiheft 6, 48–64. <http://web.fu-berlin.de/phn/beiheft6/b6t04.htm>
- Underwood, Ted. 2019. *Distant Horizons. Digital Evidence and Literary Change*. Chicago/London: University of Chicago Press.
- Wasserman, Stanley, and Katherine Faust. 1994. *Social Network Analysis: Methods and Applications*. New York: Cambridge University Press.