

ACKNOWLEDGMENTS.
INFORMAL COLLABORATION AND SYMBOLIC POWER
IN RECENT ANALYTIC PHILOSOPHY

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ABSTRACT

The acknowledgments of academic publications are a rich source of information about the social context of analytic philosophy, as they mention seminars, institutions, funders, and persons who contributed to the publications. In this sense, they allow to chart the socio-cognitive links within the analytic community. In this study, we present the results of a large-scale quantitative analysis of the acknowledgments appeared in 2073 articles published between 2005 and 2019 in five prestigious analytic philosophy journals. The results shed light on the network of informal collaboration that ties together analytic philosophers and on the distribution of symbolic capital in the analytic community, contributing to a better understanding of the sociology of recent analytic philosophy.

Keywords: Quantitative Studies of Philosophy, Analytic Philosophy, Acknowledgments, Collaboration, Symbolic capital, Sociology of philosophy

1. Introduction

In the last two decades, philosophers, historians of philosophy, and various other scholars have given rise to a new research area at the crossroad of meta-philosophy, history of philosophy, and digital humanities, which may be called Quantitative Studies of Philosophy (QSP). In QSP, various methods drawn from fields such as scientometrics, networks science, and computational linguistics are used to investigate quantitatively the discipline of philosophy. Recent examples of QSP include Noichl (2019) and Petrovich and Buonomo (2018), which used *citation analysis* to map the sub-disciplinary structure of contemporary philosophy; Malaterre and colleagues (2019), which reconstructed the historical trajectory of key research topics in the philosophy of science by *topic modelling*; Bonino and colleagues (2020), which used *distant reading* to assess the role and weight of logic in analytic philosophy, and Betti and colleagues (2014), which advanced a *model-based method* for quantitative history of ideas.

As these few examples show, QSP studies collect their data from a vast array of sources, including citation databases (Kreuzman, 2001; Noichl,

2019; Petrovich & Buonomo, 2018), academic job placement statistics (De Cruz, 2018), corpora of academic publications (Bonino & Tripodi, 2019; Malaterre et al., 2019), meta-data of PhD dissertations (Bonino & Tripodi, 2019), and ad-hoc surveys (Bourget & Chalmers, 2014).

In this paper, we aim to analyse quantitatively a further data source that has not yet been investigated in QSP, namely the *acknowledgments of academic publications* in philosophy. As we will show, the large-scale analysis of these data allows us to shed light on the complex *social network* that underlies philosophy, highlighting both *informal collaboration patterns* and *symbolic power distributions* in the philosophical community. The acknowledgments open a window on the thick web of *socio-cognitive links* that tie together the philosophical community and point out the rich *collective nature* of philosophical discussions (Cronin, 2004). They show vividly how the production of philosophical knowledge is not an isolated activity but a social process involving multiple actors (Kusch, 2000; see also Latour, 2005; Bourdieu, 2008).

This study will focus in particular on the acknowledgments appearing in 2073 articles published between 2005 and 2019 in five prestigious philosophy journals: *Philosophical Review*, *Journal of Philosophy*, *Mind*, *Noûs*, and *Philosophy and Phenomenological Research*. As the choice of the journals and timespan shows, the scope of this study is limited to *recent analytic philosophy*. The choice of these five journals was motivated by a twofold consideration. On the one hand, they are largely recognized as the most prestigious venues for discussing analytic philosophy. Investigating who are the persons that are mentioned in the acknowledgments of their articles may then offer precious insights on the structure of the “elite” analytic community. On the other hand, these journals have been already targeted in several other QSP studies (e.g., Bonino et al., 2020; Petrovich & Buonomo, 2018). Keeping the focus on them enables comparability and allows to better understand their role in contemporary analytic philosophy. At any rate, the method used in this paper is not specific to recent analytic philosophy. It can be easily applied to other philosophical areas or traditions, as we hope it will be done in the future.

The rest of the paper is organized as follows. In the next section, the double role of the acknowledgments as rewarding and signalling devices is presented and their meaning as data source is discussed. Then, in the Methodology section, we describe the procedure that was used for extracting the information from the corpus of acknowledgment texts. The following six sections present the results of several quantitative analyses of the acknowledgments data, whereas, in the last section, the main findings are discussed in the light of the concepts of informal collaboration and symbolic power. Lastly, further topics for research on the acknowledgments in philosophy are delineated.

2. Between rewarding and signalling: the double function of the acknowledgments in scholarly communication

During the last century, the acknowledgments have become a standard element of scholarly publications, especially in the Anglo-American world (Salager-Meyer et al., 2011). Philosophy is no exception: the number of articles in *Mind* featuring an acknowledgments raised from 7% at the beginning of the century to 94% at the end of it (Cronin et al., 2003). In the last fifty years, their characteristics and function in the scholarly communication system have been thoroughly studied by researchers in library and information sciences (Desrochers et al., 2017). One of the main results of these studies is that the acknowledgments are an important source of information for investigating the *social context of research* (Cronin, 1995; Cronin & Franks, 2006; Paul-Hus, Díaz-Faes, et al., 2017). This is true also in the case of philosophy, as the following example of acknowledgements taken from a recent philosophical article vividly shows:

The authors would like to thank audiences at the 2006 meetings of the Western Canadian Philosophical Association and the Philosophy of Science Association, both in Vancouver, for their constructive feedback on earlier versions of this paper and related work, as well as the Social Sciences and Humanities Research Council of Canada for financial support. For important comments, the first author is grateful to John Basl, Malcolm Forster, Remy Petit, Alex Rueger, Larry Shapiro, Joel Velasco, and members of the DC History and Philosophy of Biology reading group. The second author would like to acknowledge the work of Allison Dawe as a research assistant in the middle 1990s, which first got him puzzled about the topic of the paper. Both authors thank Ingo Brigandt and Elliott Sober for written comments that have led to improvements. (Barker & Wilson, 2010, p. 61)

As this instance shows, the acknowledgements of a philosophical publication display the rich constellation of events and actors that surrounds the production of philosophical knowledge. This constellation includes the *meetings* in which philosophical papers are discussed, the *institutions* that host philosophical conferences, the *funders* who provide financial support to philosophical research, and, most importantly, the *persons* that contributed in various ways to the articles, providing comments and feedback but also mentorship and moral support. In the literature on the acknowledgments, these persons are called “acknowledgees” (Cronin, 1995). Their role may be so crucial in the genesis of publications that some researchers have proposed to conceptualize them as “sub-authors” of the main publications (Cronin et al., 2003; Patel, 1973; Paul-Hus, Mongeon, et al., 2017).

By giving public visibility to the informal contributors, the acknowledgments play a key role in the *rewarding mechanism* of science and scholarship; they are the device by which informal collaboration is rewarded and signalled

to the community (Costas & Leeuwen, 2012; Cronin & Weaver-Wozniak, 1995; Desrochers et al., 2018). Mentions in the acknowledgments have been even considered as “supercitations”, as they sometimes attest an intellectual debt significantly higher than that with cited authors (Edge, 1979, p. 106). Accordingly, it has been proposed to use mentions in the acknowledgments to measure the collegial contribution or “helpfulness” of scholars (Oettl, 2012).

However, scholars in library and information sciences have pointed out that rewarding is not the only function of acknowledgments. More subtly, authors use these texts also as *positioning devices*, to signal to other scholars that they are acquainted with key persons in the discipline or that they are affiliated with the “right” intellectual schools (Cronin, 1995). The acknowledgments play thus another, complementary, social function: externalize «tribal affiliations and loyalties» in the scholarly communities (Cronin, 1995, p. 72). Furthermore, authors mention prestigious scholars to increase the perceived quality of their papers, augmenting chances of being published, read, and cited (Berg & Faria, 2008). Perhaps, they may even attempt to influence the editors towards the choice of some reviewers by strategic mention in the acknowledgments.

The occurrence of such a *strategic use* of acknowledgments invites some caution in the interpretation of acknowledgments data, as they may not straightforwardly reflect genuine informal collaboration. At the same time, however, these observations suggest a further motivation for studying the acknowledgments: these texts allow to chart the distribution of “symbolic capital” (Bourdieu, 1975) and “prestige” (Merton, 1988) in the scholarly community. In this sense, philosophers that are highly mentioned in the philosophical publications may play the double role of *active informal collaborators* and *gatekeepers of the philosophical community* (Crane, 1967; Hoenig, 2015; see also Laband & Tollison, 2003).

Note that there is no contradiction between the two roles and, indeed, they may reinforce each other. The more a philosopher is involved in informal collaboration with her colleagues, the more she can influence their work and, hence, shape the community’s philosophical agenda. Conversely, the more a philosopher is perceived as a trend-setter, the more her name will become a valuable resource to exhibit in the acknowledgments of philosophical publications as a badge of quality and relevance, even at the cost of exaggerating the real contribution she had given to papers.

The analysis of the acknowledgments, hence, allows us to investigate in detail both these sociological features of recent analytic philosophy: the informal collaboration patterns and the distribution of symbolic capital.

3. Extracting information from the acknowledgements

As seen above, the acknowledgments contain a rich amount of information about various entities (meetings, universities, funders, and so on). In this

paper, we will focus on some general features of acknowledgment texts (such as their style and average length) and, principally, on the acknowledgees, i.e., the persons that are mentioned in these texts.

The process of information extraction from the acknowledgments included several steps. First, the acknowledgment sections of 2073 research articles published in the five journals during the timespan 2005-2019 were manually collected from the electronic version of articles.¹ Note that the position of the acknowledgments in the document changes over time and journals. In most cases, they are placed in the first or last note of the article and only recently, a specific acknowledgments section has been added to the papers' format.

Table 1 breaks down the articles' corpus by journal. The different journal weights in the corpus reflects the wide difference in publishing rates among them, with *Philosophy and Phenomenological research* publishing almost four times articles than *Philosophical Review* in the considered timespan (see also Supplementary Materials, Fig. 1).

Journal	Articles	Articles (%)
<i>Philosophy and Phenomenological research</i>	675	32,6%
<i>Noûs</i>	483	23,3%
<i>Journal of Philosophy</i>	410	19,8%
<i>Mind</i>	319	15,4%
<i>Philosophical Review</i>	186	9,0%
Total articles	2073	100,0%

TABLE 1. Journal composition of the corpus

To analyse quantitatively the stylistic features of the acknowledgment texts and to get an overview of the social processes mentioned therein, we searched in each string of text for families of keywords that indicate participation to conferences, review, communication process, and the presence of funding.² Moreover, we listed the most common lemmas³ in the whole corpus of acknowledgment texts.

The acknowledgees names were extracted from each string of text with the Named Entity Recognition (NER) module of *spaCy* (<https://spacy.io/>),

¹ We focused on research articles, leaving aside other types of documents such as book reviews, critical notices, and other minor documents. These documents are less common than research articles and they rarely feature acknowledgments.

² See the Supplementary Materials available in (Petrovich, 2021) for the list of keywords used.

³ A *lemma* is the dictionary form of a word. In English, for example, “reads”, “read”, and “reading” share “read” as their common lemma. The lemma should not be confused with the *stem*, that is the part of the word that does not change when the word is morphologically inflected. Using lemmas instead of words allows to work with standardized forms and, hence, to produce statistics of occurrences that are not influenced by inflections.

a Natural Language Processing package for Python. *spaCy* NER is able to recognize named entities and classify them in several categories, including persons, organizations, companies, and locations. We focused on the entities classified as “person” and manually corrected false positives (non-human entities classified as persons) and false negatives (persons not recognized as such by the algorithm).

The extracted names, however, could not be used in their raw form because of the presence of several variants of the same name, a common problem in the analysis of acknowledgments data (McCain, 2018). For instance, diminutives (e.g., “Tim Williamson” in place of “Timothy Williamson”) occurred frequently because of the informal style of several acknowledgments. All these variants were manually checked and reduced to standard versions. The final list of acknowledgees included 5774 distinct names.

After extraction and cleaning, further data on the acknowledgees were collected. First, each acknowledgee name was split in the first name and surname, manually checking for ambiguous cases.⁴ Then, the algorithm for automatic gender recognition implemented in the R package *gender* (<https://github.com/lmullen/gender>) was used to attribute a gender to each acknowledgee based on the first name. Blank attributions and numerous ambiguous cases were manually checked by searching on Google Image the acknowledgee’s name.⁵ No gender could be attributed in 116 cases (2%).

In addition to first name, surname, and gender, we attributed to each acknowledgee also their academic affiliation and bibliometric statistics. This was done by a Python script that searched automatically each acknowledgee name in the multidisciplinary database Scopus and retrieved the relevant information from Scopus’ bibliographic records.⁶ Since the affiliation of a scholar may change over time, the script searched the affiliation of the person in the year in which she was mentioned in the acknowledgments, i.e., in the year of the acknowledging article.⁷ The retrieved affiliation data included the name, city, and country of the institution of affiliation.⁸ The bibliometric statistics included the number of citations received in Scopus and the number of publications indexed in the same database.⁹ The extraction procedure performed quite well, as it was possible to compute these

⁴ Spanish names were particularly difficult to manage, as they are frequently composed by multiple names and surnames.

⁵ E.g., names such as “Kit” that are used both for females and males or names such as “Andrea” that are used for different genders in different languages.

⁶ The Python package *pybliometrix* was used to query Scopus’ APIs (Rose & Kitchin, 2019).

⁷ If no publication was available in Scopus for that specific year, another publication was searched in the interval [acknowledging year \pm 2 years].

⁸ For scholars with multiple affiliations, only the first recorded affiliation was retained. Note that Scopus uses standardized versions of affiliation names.

⁹ These two metrics were calculated at the time of Scopus extraction and *not* in the year of the acknowledging article, differently from affiliation data.

variables for 53% of the acknowledgees in our corpus. For those mentioned five times or more, the recall rate increased to almost 90%. Note that expect a recall rate of 100% is highly implausible because not all the acknowledgees are academics and not all academics have their publications indexed in Scopus.

At the end of this procedure, each acknowledgee in the corpus was characterized by a set of ten variables divided in four categories, summarized in Table 2.

Category	Variable
Biographical data	First Name
	Surname
	Gender
Affiliation data	Institution
	City
	Country
Bibliometric data	Publications
	Citations
Mention data	Mentions

TABLE 2. Overview of the acknowledgees' variables considered

In the next sections, we will present the results of various analyses conducted on this rich database.

4. The style of acknowledgements in analytic philosophy

A first quantitative overview of the acknowledgments textual corpus already reveals the key role of various processes, actors, and contexts in the production of recent analytic philosophy.

The most frequent lemmas of the corpus (Table 3) belong to the semantic spheres of gratitude (“thank”, “helpful”, “grateful”) and intellectual exchange (“comment”, “discussion”), attesting at the same time the role of university contexts (“university”, “audience”) and academic practices (“paper”, “audience”, “anonymous”, “referee”).

Rank	Lemma	Occurrences
1	thank	2271
2	University	2115
3	comment	1731
4	paper	1511
5	helpful	1177

6	anonymous	988
7	referee	939
8	audience	879
9	discussion	790
10	grateful	776

TABLE 3. Top 10 most occurring lemmas in the acknowledgments corpus

The occurrence of specific families of keywords (Table 4) confirms the significant weight of *collective practices*, with conferences and meetings being cited in almost 40% of the articles featuring an acknowledgement. Interestingly, in addition to specific names, which will be examined in detail in the following sections, the analysis highlights the role of collective entities such as the “audience” of conferences, which is mentioned in 43% of the articles (the term occurs 879 times in the whole corpus). The reviewers play an even more important role, as they are mentioned in 57% of articles. Their related lemmas occur respectively 988 and 939 times. However, it is difficult to judge how many of these mentions are genuine thanks for the reviewers’ contribution and how many are mere adherence to academic etiquette. Compared to reviewers, the editors seem to play a less prominent role, as they appear in only one article out of ten.

As to the processes of “peer interactive communication” (Cronin, 1995) in which ideas, comments, and suggestions are exchanged between philosophers, they are mentioned in various forms in almost 90% of the articles, showing again how the production of philosophical knowledge is nurtured by a dense web of intellectual exchanges. Or, at least, that this is the image of analytic philosophy that analytic philosophers communicate in their acknowledgments. Interestingly, the vocabulary of peer interactive communication includes mainly words denoting positive contributions (“comments” occur 1688 times, “helpful” 1193 times, “feedback” 309 times). By contrast, words expressing negative feedback, such as “criticism” and related terms, appear only in 7% of the acknowledgments. This may indicate that philosophers overstate positive contributions and downplay conflict in their acknowledgments.

Keywords family	Articles	% on articles with acknowledgments
Conferences, meetings, seminars, etc.	777	39,9%
Audiences	843	43,3%
Reviewers	1108	56,9%
Editors	201	10,3%
Peer interactive communication words	1731	88,9%

<i>All previous five families</i>	40	2,1%
Criticism	137	7,0%
<i>Articles with acknowledgments</i>	1947	100,0%

TABLE 4. Weight of keywords families in the acknowledgments corpus

These analyses reveal that *collegiality* is taken in significative consideration by the authors of our corpus. In their acknowledgments, analytic philosophers represent analytic philosophy as a collective enterprise characterized by a strong sense of community, in which discussions are moments of improvement and mutual enrichment rather than conflict or tension. Such an image resonates with a diffuse self-representation of analytic philosophy, which goes back to the times of Russell and logical empiricists, who praised the collective organization of philosophical research (Richardson, 2008). The frequent informal style we find in the acknowledgements, where persons are frequently mentioned by their diminutives and academic titles are almost never used, is another sign of a widespread sense of belonging to an (elite?) community.¹⁰ The following quote vividly shows how far the informality of the style can go:

I am extraordinarily grateful to two anonymous readers for *Noûs* who went beyond the call of duty in making this a much better paper than it would have been if it was solely mine. The first I owe a beer and a handshake. The second owes me a good stiff drink. Many thanks to you both. (Ismael, 2008, n. 1)

5. Acknowledgments intensity and funding incidence

Intensity of acknowledgment is defined by Cronin and colleagues (2004) as the percentage of articles in a discipline that feature an acknowledgment. Previous research has shown that the intensity of acknowledgments in *Mind* raised steadily during the Twentieth century, reaching 94% in 1999. Our corpus confirms this trend, with 1947 articles out of 2073 (94%) featuring an acknowledgment. The intensity oscillates in the five journals between the 97% of *Philosophical Review* and the 91% *Journal of Philosophy* but it is always above 90%.

The average length of the acknowledgments is 65,4 words (standard deviation = 47,5; median = 57). The distribution of acknowledgments length is highly skewed, with few “giant” acknowledgments containing more

¹⁰ Another feature of analytic philosophy articles which may deserve further investigation is the frequent use of insider jokes and puns in the titles of articles. This is a remarkable feature, given the common accuse of “word playing” charged by analytic philosopher to their “Continental” counterparts. Moreover, these titles diverge significantly from those used in the natural sciences, to whose standards analytic philosophy frequently aspire to.

than 300 words that condition upwardly the mean (Supplementary materials, Fig. 3). Both the high acknowledgment intensity and the average length of these texts confirm that they have become a standard feature of philosophical publications.

The same cannot be said for external funding. Of the 1947 articles with an acknowledgment, only 322 (16,5%) mention some type of funding (external grants, fellowships, etc.). However, the percentage of funded articles has increased over time in all five journals, apart from *Mind* (Supplementary materials, Fig. 4). Analytic philosophy, nonetheless, remains distant from the sciences, where more than 50% of the papers are externally funded (Costas & Leeuwen, 2012).

6. The acknowledgees population

The 1947 articles featuring an acknowledgment mentioned a total of 5774 distinct acknowledgees, with an average of 8,3 acknowledgees per article (standard deviation = 8; median = 6). Again, the distribution of acknowledgee per paper is highly skewed, with 6 articles mentioning 50 persons or more. The maximum number of acknowledgees mentioned in a single publication is 72, whereas 127 articles mention only one acknowledgee. These statistics are striking when compared with the rate of co-authorship in the corpus (Supplementary Materials, Fig. 2). Only 254 articles (12%) are co-authored, so that the overall average number of co-authors per article is slightly higher than 1 (1,2). Only 26 papers are authored by 3 authors or more and no article has more than 4 co-authors. The significant discrepancy between the incidence of co-authorship, on the one hand, and the number of persons mentioned in the acknowledgments, on the other hand, shows that, similarly to other humanities and social sciences areas, also in the case of analytic philosophy the co-authorships are not a reliable measure of collaboration rates, as they systematically *underestimate* them (Paul-Hus, Mongeon, et al., 2017). Note that the acknowledgees population partly overlaps with the population of 1391 distinct authors (1079 persons appear in both groups) but it is 4,1 times bigger, with 4695 persons that are not authors of the corpus.

This remarkable difference between a relatively restricted elite of formal contributors (the authors) and a much larger group of informal collaborators raises interesting questions about the *practice of authorship* in contemporary analytic philosophy: what contribution is needed to be recognized as the formal author of an analytic publication? What is the threshold between sharing suggestions and ideas and receiving the authorship of a paper? In times when academics are increasingly evaluated for their publication performance, this threshold may even change under the pressure of academic evaluation systems (Rijcke et al., 2016).

The acknowledgees population is characterized by a significant *gender imbalance*. Women represent only 22% of the population, whereas men are 77%. If the population is segmented into three groups based on the number of mentions received, the proportion of women in the highly mentioned group (acknowledgees receiving 20 mentions or more) is even lower (10% against 90% of men). In fact, in the ranking of the most mentioned persons (see below), the first woman appears only at the 16th rank (Supplementary Materials, Table 1). In the other segments, the quota of women is higher (18% in the group of acknowledgees with 6 to 19 mentions, 22% in the group of acknowledgees with 1 to 5 mentions¹¹), but it never equals the 50%. Investigating the causes determining this significant gender gap is beyond the scope of this paper and we refer the reader to the increasing literature on gender disparities in philosophy (Hutchison, 2013; see also the literature cited in Wilhelm et al., 2018). What our data can add to the ongoing discussion is that, interestingly, the quota of women in the acknowledgments is 5 percentage points *higher* than the quota of female authors in the corpus, which is equal to 17% (237 out of 1391 distinct authors).¹² Hence, if we consider the acknowledgees population as a representative (i.e., non-distorted) sample of the overall Anglo-American analytic philosophy population, then our data may signal the presence of a *gender bias* against women authors in the top five journals of analytic philosophy, as their proportion is lower than expected based on the overall analytic population. This result is in line with other research on the representation of women in philosophy journals (Katzav, 2020; Wilhelm et al., 2018). Further research, however, is needed to investigate the causes of this gender disparity.

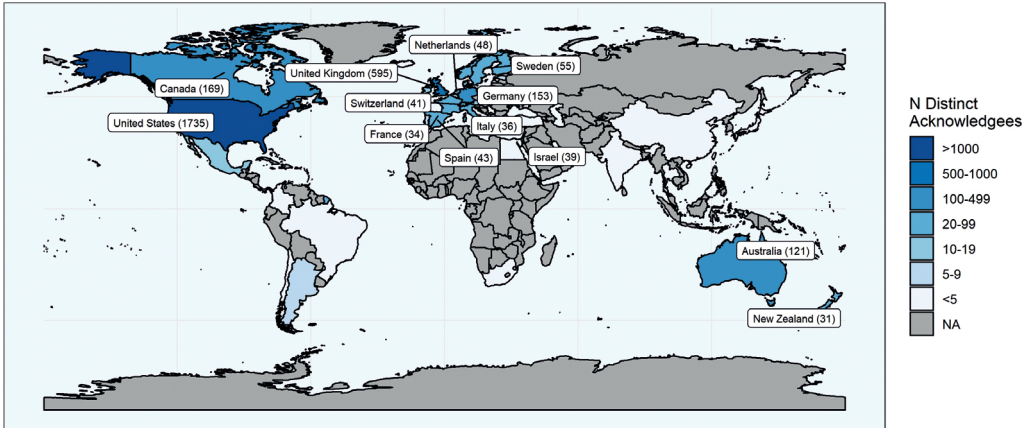
From the point of view of geographic distribution, the acknowledgees are based in 47 different countries (Figure 1). However, they are mainly concentrated in the Western world and, in particular, in the English-speaking countries. The United States are the most represented country (also because of their academic population size), with 1735 acknowledgees, followed by UK (595), Canada (169), and Australia (121). Continental Europe countries, except for Germany (153), follow at distance, whereas Latin America, Asia, and Africa are almost absent.

The dominance of the English-speaking world is confirmed also at the level of cities, with New York, Oxford, and London counting more than 100 acknowledgees each, and of single institutions (Table 5). The universities with the highest number of acknowledgees are again placed in UK, US,

¹¹ A chi-squared test shows that the differences between these three quotas are statistically significant ($\chi^2(2, N = 5774) = 13.856, p < 0.000$).

¹² Again, a chi-squared test shows that the difference is statistically significant ($\chi^2(1, N = 7033) = 13.613, p < 0.000$).

Geographic distribution of Acknowledgees
 5774 Acknowledgees from 47 countries



The number of acknowledgees from each country is shown in brackets. Labels are shown only for those countries with more than 30 acknowledgees.

Figure 1. Geographic distribution of the acknowledgees. Acknowledgees that changed country during the timespan are attributed to all their countries of affiliation.

Canada, and Australia. The first non-English-speaking institution (the LMU in Germany with 22 acknowledgees) ranks 18th. These results corroborate previous findings on the *insularity* of analytic philosophy, which seems to be especially concentrated in and focused on the English-speaking world (Schwitzgebel et al., 2018).

University	City and Country	Number of distinct Acknowledgees
University of Oxford	Oxford (UK)	63
New York University	New York (US)	56
Rutgers University–New Brunswick	New Brunswick (US)	47
University of Toronto	Toronto (Canada)	44
Princeton University	Princeton (US)	43
University of Southern California	Los Angeles (US)	36
University of St Andrews	St Andrews (UK)	35
Australian National University	Canberra (Australia)	34
Massachusetts Institute of Technology	Cambridge (US)	33
University of Notre Dame	Notre Dame (US)	33

TABLE 5. Top ten institutions by number of distinct acknowledgees affiliated with them. Acknowledgees that changed affiliation during the timespan are attributed to all their affiliations.

7. Most mentioned acknowledgees and distribution of mentions

Table 6 shows the top ten most mentioned acknowledgees in the corpus, with mentions broken down by journal. The ranking is dominated by David Chalmers, a true outlier with 103 mentions (+27 mentions compared to the second rank occupied by Timothy Williamson). As the broken-down data show, these highly mentioned philosophers collect their mentions in all the five journals.¹³ All of them are affiliated with prestigious institutions in the English-speaking world. No woman appears in the top ten.

Rank	Acknowledgee	J Phil	Mind	Nous	Phil Rev	PPR	Tot
1	David Chalmers	20	18	31	10	24	103
2	Timothy Williamson	9	19	22	11	15	76
3	Jonathan Schaffer	13	12	21	3	23	72
4	James Pryor	11	8	16	13	21	69
4	John Hawthorne	8	10	18	12	21	69
5	Cian Dorr	11	14	20	10	11	66
6	Theodore Sider	10	9	21	8	13	61
7	Robert Stalnaker	4	14	15	11	13	57
8	Jason Stanley	6	6	25	7	12	56
9	Ernest Sosa	4	6	12	2	29	53
10	Stephen Yablo	7	9	14	8	13	51
10	Agustin Rayo	4	13	15	5	14	51

TABLE 6. Top ten most mentioned acknowledgees, with mentions broken down by journal.

The most interesting feature of the ranking, however, is the fact that the philosopher in the first rank collects more than twice the mentions of those in the tenth rank. This significantly *unequal* distribution of mentions is confirmed at the level of the global acknowledgees population: the distribution of acknowledgees according to the number of mentions they receive is remarkably *right skewed*, with few highly mentioned acknowledgees and most of the acknowledgees being mentioned only once.

In fact, the average acknowledgee receives 2,9 mentions (standard deviation = 5,1; median = 1), 3418 acknowledgees (59,5% of the total) receive just 1 mention, and only 101 (1,7%) collect 20 mentions or more. The stock of 17119 total mentions of the corpus is therefore *unequally distributed*,

¹³ The higher mentions collected in *Philosophy and Phenomenological Review* are due to the higher weight of this journal in the corpus. If a person was mentioned multiple times in the same acknowledgments, the mention was counted only once.

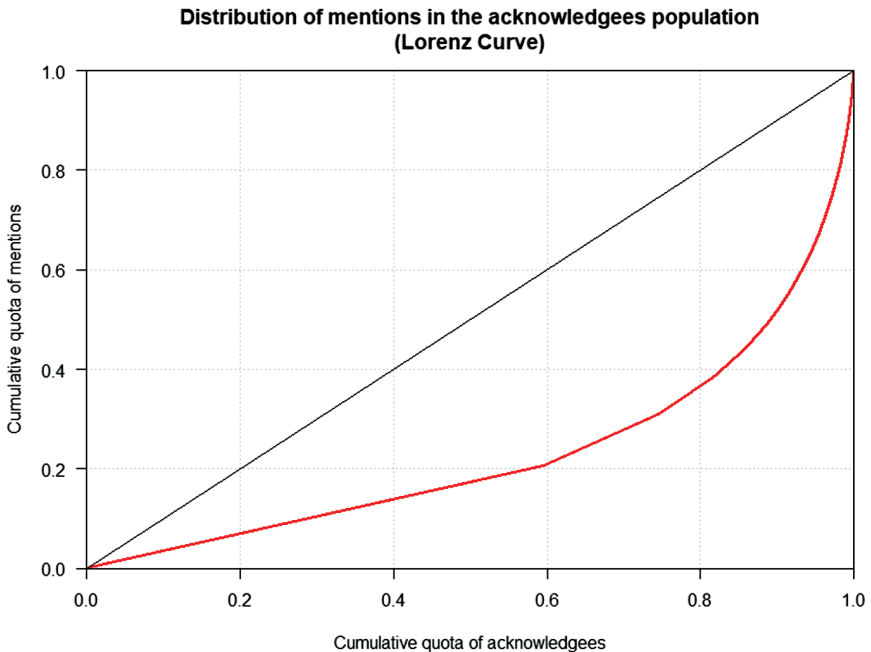


Figure 2. Distribution of mentions in the acknowledgees population

with the top 20 most mentioned researchers (≥ 35 mentions) collecting alone 8,1% of all the mentions.

To represent the inequality, the Lorenz curve and the related Gini coefficient are useful. The Lorenz curve plots the proportion of the total mentions (y-axis) that is cumulatively collected by the bottom x percent of the population (x-axis). Hence, the $x = y$ line represents perfect equality in the distribution. Figure 2 shows the Lorenz curve of our corpus (in red) against the line of perfect equality. The curve shows that the bottom 60% acknowledgees receives only 20% of the total mentions.

The Gini coefficient is the ratio of the area comprised between the equality line and the Lorenz curve over the total area under the equality line. It ranges between 0 and 1: a value of 0 expresses perfect equality, i.e., every member of the population has the same number of mentions, whereas a value of 1 expresses maximal inequality, i.e., only one member collects all the available mentions. The Gini coefficient of our population is equal to 0.54, confirming the high level of inequality in the distribution of mentions.

Skewed distributions like this are common in the social world, the paradigmatic example being the distribution of income studied originally by Vilfredo Pareto (De Bellis, 2014). They are originated by the presence of cumulative advantage mechanisms, by which the “rich get richer”. The

same mechanisms operate in the allocation of prestige and symbolic power in science and scholarship, where they produce a concentration of these properties in a small segment of the population (Merton, 1988; Nielsen & Andersen, 2021; Price, 1976; Seglen, 1992). Therefore, the unequal distribution of mentions we found in our corpus supports the idea that at least some of the acknowledgees are mentioned to trade on their symbolic capital, and not primarily because of their contribution to papers. These strategic mentions further increase the prestige of the mentioned philosophers and make their mention even more valuable, producing the typical feedback loop of cumulative advantage that underlies the kind of distribution we found.

On the other hand, if the acknowledgments were given by authors only to reward informal collaboration, the skewness in the distribution should be interpreted as reflecting a great inequality in the propensity to collaborate among the acknowledged philosophers. Data would tell that most of them would be rather *uncollaborative*, whereas a rather narrow fraction of the community would be extremely helpful, which seems unplausible.

8. Factors affecting the number of mentions

To better understand the factors that influence the number of mentions received by an acknowledgee, we tested on our data a multiple regression model that considered five different characteristics of the acknowledgees: the number of citations gathered on Scopus, the total number of publications, the number of articles published in the “top five” journals,¹⁴ the affiliation with an institution placed in an English-speaking country, and the gender. The model is described by the following equation, where betas indicate the coefficients that will be estimated using the data and epsilon the error or noise of the model:

$$\text{Mentions} = \beta_0 + \beta_1 \text{Cits} + \beta_2 \text{Pubs} + \beta_3 \text{TopPubs} + \beta_4 \text{AngloAmerican} + \beta_5 \text{Gender} + \varepsilon$$

The former three independent variables of the model may be considered as alternative measures of prestige in the scholarly community, whereas the latter two variables account for sociological factors.¹⁵ By the multiple regression, we measure how much these factors correlate with the dependent variable, i.e., the number of mentions.

¹⁴ These are the five journals considered in this study.

¹⁵ These are dummy variables. The former takes the values of 1 if the affiliation is placed in US, UK, Canada, or Australia, 0 otherwise. The latter is 1 for males and 0 for females.

The estimated coefficients associated with each independent variable are presented in Table 7, along with their standard error and statistical significance.

Ordinary Least Squares (OLS) regression results for the model <i>Mentions</i> (<i>N</i> = 3171)				
Explanatory variable	Coefficient	St. Error	<i>t</i>-statistic	<i>p</i>-value
Citations	0.004	0.000	13.758	< 2e-16 ***
Publications	-0.012	0.006	-1.905	0.056882 .
TopPubs	2.129	0.087	24.436	< 2e-16 ***
Gender (dummy: Male = 1)	0.277	0.246	1.127	0.259753
AngloAmerican (dummy: AngloAmerican = 1)	1.299	0.229	5.680	1.47e-08 ***
(Intercept, β_0)	1.078	0.282	3.824	0.000134 ***
Residual standard error: 5.584 on 3165 degrees of freedom				
Multiple R-squared: 0.2786, Adjusted R-squared: 0.2775				
F-statistic: 244.5 on 5 and 3165 DF, <i>p</i> -value: < 2.2e-16				
<i>Significance codes:</i> 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1				

TABLE 7. Results of the multiple regression

Only two of the independent variables produce a statistically significant and sizable effect on the dependent variable: the number of publications in the top five journals and being affiliated with an Anglo-American university. The former is the factor that mostly influences the number of mentions received. Other things equal, each article published in these journals provides a bonus of around 2 mentions. Affiliation with Anglo-American universities, on the other hand, grants a bonus of 1.3 extra mentions *ceteris paribus*. Also being male provides a bonus of 0.3 mentions, although this effect is not statistically significant. These numbers may appear small, but, if we consider that 60% of the acknowledgees receive only 1 mention, we better appreciate how a bonus of 1 or 2 mentions can make a crucial difference in the ranking.

The above statistical model explains about 30% of the variance in the number of mentions, i.e., it captures only partially the factors that explain the number of mentions received by an acknowledgee. The remaining variance is due to other characteristics that are not accounted for in the model. They may include the acknowledgees' helpfulness, academic power, institutional reputation, or others. At the same time, however, it highlights the relevance of *prestige* in determining the number of mentions, providing further support to the idea that mentions are given also in function of the symbolic power of the acknowledgees in the community. Moreover, it furtherly confirms that Anglo-American institutions play a disproportionate role in recent analytic philosophy, as they provide extra visibility to their affiliated.

9. Co-mention network and communities of acknowledgees

In our last analysis, we modelled our data as a *network* made of two type of nodes: papers and acknowledgees, connected by the relationship of mentioning. A link between the two is drawn when a paper mentions an acknowledgee. From this two-mode network, we derive a new network by an operation called “projection”, shown in Figure 3 (Petrovich, 2020). In this new network, which contains only acknowledgees-nodes, two acknowledgees are connected if they are mentioned together in the same paper, i.e., when they are co-mentioned.¹⁶ The strength of the link is set proportional to the number of co-mentions. The resulting *acknowledgees co-mention network* allows us to study the relationship between the acknowledgees and individuate communities of frequently co-mentioned acknowledgees.

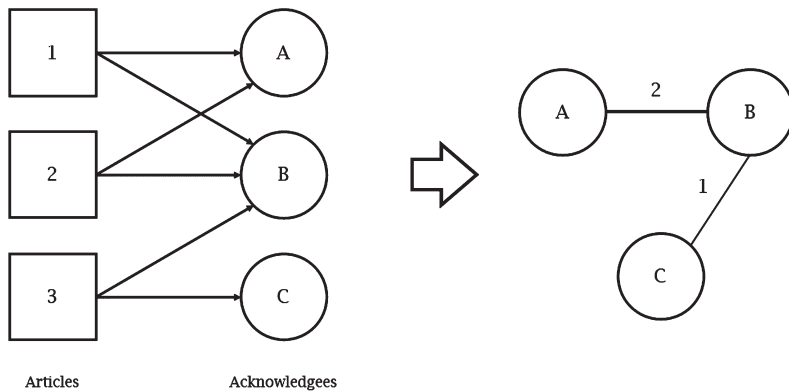


Figure 3. Projection. A two-mode network made of articles mentioning acknowledgees (on the left) is transformed in a one-mode network made of co-mentioned acknowledgees (on the right). The strength of the link in this new network is equal to the number of co-mentioning articles

Figure 4 shows the acknowledgees co-mention network of the most mentioned acknowledgees in our corpus (≥ 10 mentions, $N = 327$). In this visualization, the size of the nodes is proportional to the number of mentions, whereas their relative positions reflect their co-mentioning relations. Two acknowledgees that are frequently mentioned together are placed closer on the map. Lastly, the color of the nodes represents the cluster they are attributed to by the community detection algorithm (Waltman et al., 2010).

The network is characterized by a tight structure, with five clusters and a high density of inter-cluster links, showing that recent analytic philosophy is a dense and highly interconnected community. The centrality of highly

¹⁶ Cronin (1998, p. 38) called this procedure “biographic coupling”.

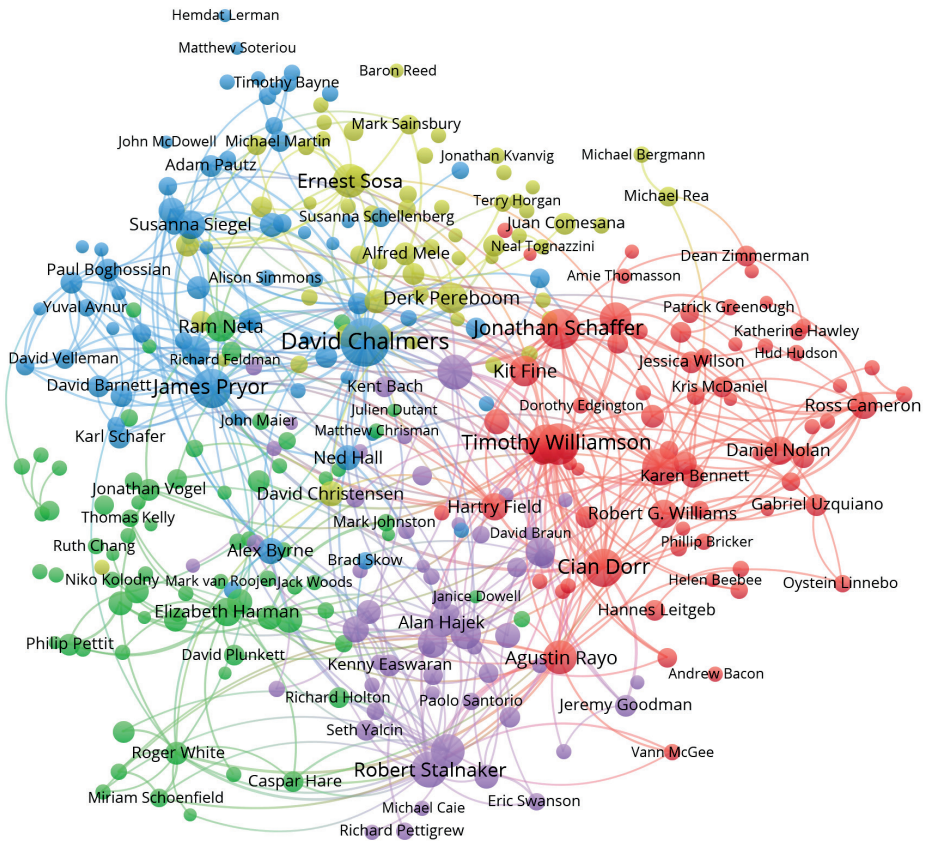


Figure 4. Acknowledges co-mention network (N = 327, threshold = 10 mentions, Resolution = 0,9). Visualization produced with VOSviewer (van Eck & Waltman, 2010). In Fig. 5, of the Supplementary Materials, a genderized version of the network is provided

mentioned acknowledgees such as David Chalmers and Timothy Williamson confirms that they play a crucial role in the social network of analytic philosophy, furtherly highlighting their high symbolic capital in the community.

Clusters are partially associated with philosophical areas: the red cluster hosts several metaphysicians, the blue cluster philosophers of mind, the green cluster philosophers specialized in ethics and moral philosophy, the violet cluster philosophers of language and several formal epistemologists. However, the association between areas and clusters is weakened by the fact that epistemologists are found in all clusters. This seems to indicate a special role for epistemology in recent analytic philosophy.

Clusters are associated only mildly with institutional structures, i.e., they do not seem to reflect a division based on affiliations. Some clusters contain

mainly persons affiliated with some universities, but, in general, persons from the same cluster are scattered in different institutions (Table 8).

Therefore, the co-mention network shows that persons are mentioned together in the acknowledgments even if they do not belong to the same philosophical specialty and are not affiliated with the same institution. This shows that the relationships expressed in the acknowledgments *cross sub-disciplinary and institutional divisions*, confirming the tight internal connectedness of recent analytic philosophy.

Affiliation	N of acknowledgees	Cluster				
		Red	Green	Blue	Yellow	Violet
New York University	27	8	2	14	0	3
Rutgers University– New Brunswick	19	6	2	3	2	6
University of Oxford	18	9	4	4	0	1
Massachusetts Institute of Technology	18	3	9	2	0	4
Princeton University	13	2	8	0	0	3
Harvard University	13	0	3	8	1	1
University of Southern California	13	4	5	0	1	3
Australian National University	13	2	3	3	1	4
University of Michigan, Ann Arbor	13	1	1	1	0	10

TABLE 8. Weight of the most represented affiliations in the network's clusters

10. Conclusions and future research topics

In this paper, we have presented the results of a large-scale quantitative analysis of acknowledgments in recent analytic philosophy. As we have seen above, the acknowledgments result from two distinct, albeit interrelated and sometimes overlapping, social processes: on the one hand, the rewarding of informal collaboration, on the other hand, the strategic signaling of academic acquaintance.

From our data, it is difficult to assess whether one of the two processes is prevalent in recent analytic philosophy. At the level of the individual acknowledgments, it is probably impossible to establish whether a specific acknowledgee is mentioned because of genuine contribution or name-dropping. Moreover, the very notion of “informal collaboration” may account for a wide range of interactions: sometimes, a slight nod in agreement from a respected scholar may be a contribution as crucial as hours of discussion.

Also, the kind of contribution that deserves a mention in the acknowledgments probably change from one author to another.

If the motivations behind the single acknowledgments lie beyond the grasp of our analysis, nonetheless our results tell something about the *aggregate effects* of the individual behaviours. The concentration of mentions in few, highly mentioned acknowledgees, for instance, says that a cumulative advantage mechanism is probably active in recent analytic philosophy. The results of the multiple regression similarly shows that prestige indicators, such as publishing in prestigious journals, and affiliation to English-speaking universities, play a role in determining how many mentions an acknowledgee receives. At the aggregate level, hence, an inference to the best explanation suggests that the strategic use of the acknowledgments cannot be excluded. At the same time, however, the most frequent words in the acknowledgments, the high acknowledgments intensity, the presence of many lowly mentioned acknowledgees, and the structure of the co-mention network, which partly reflects philosophical subdisciplines, attest the reward of informal collaboration is widely diffused in recent analytic philosophy. Hence, the value of acknowledgments as source of information about informal collaboration patterns cannot be underestimated.

Moreover, the analysis of the acknowledgees population has provided new statistics that may be useful in the discussion of important issues, such as the underrepresentation of women or the insularity of analytic philosophy.

However, we think that the study of the acknowledgments in philosophy is far from being complete. There are many ways in which this preliminary work may be extended. For instance, the acknowledgments and acknowledgees in other philosophical traditions or journals or time periods may provide material for insightful comparisons. Who are the most mentioned persons in Continental philosophy publications? Are the acknowledgees mentioned in analytic philosophy “less prestigious” journals the same of those we found in the “top five” analytic philosophy journals? Further analyses may focus on the degree of *homophily* between authors and acknowledgees (McPherson et al., 2001). Do authors tend to acknowledge persons that are similar to them, in terms of, for instance, seniority, gender, or research topic, or not? Do junior authors tend to mention senior authors more frequently? Lastly, the co-mention network, which is based on social relationships between authors, may be compared with networks based on measures of intellectual proximity, such as co-citation or bibliographic coupling, to better understand the relation between the social and intellectual structure of philosophy.

With this paper, we hope to have shown that these and other analyses deserve to be performed. Acknowledgments may provide many new insights on the discipline of philosophy, its social structure and scholarly practices.

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