



RESEARCH PAPER

**Knowledge Production Patterns of Environmental Sociology: A
Bibliometric Analysis of Top Journals of Sociology**

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PAPER INFO

ABSTRACT

Received:
April 22, 2020

Accepted:
June 15, 2020

Online:
June 30, 2020

Keywords:
Bibliometrics,
Environment,
Knowledge
Production,
Sociology

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Sociology's inability to symmetrically produce knowledge across its sub disciplines has often been under investigation to highlight the academic marginalization of important social issues. This study investigates how the top journals of Sociology have been treating the issue of Environment since 1990s. The published content of six high impact factor journals of Sociology was bibliometrically analyzed for the authorship patterns, methodological, thematic and geographic focus of the environmental issues. By analyzing total of 203 articles focusing environmental issues, we found a perpetual increase in environmental articles over time, with geographic focus on European and United States' environmental issues, and a methodological divide between qualitative and quantitative methods. The study concludes that environmental Sociology, despite being an important sub discipline of Sociology has failed to attract high proportion of publications in top Sociology journals, which may undermine its academic worth.

Introduction

At the dawn of 21st century, environmental Sociology has become a prominent field of inquiry while moving towards new theoretical and methodological premises. Environmental sociologists have been engaged with diversified stakeholders of climate experts, anthropologists, development experts, urban planners, political scientists, economists, biologists while producing accounts by using sociological lens. It has only four decades of old history, from a promising subfield to a new well-established discipline (Pellow and Brehm 2013). Environment first got the attention of social scientists from the disciplines of rural Sociology and traditional human ecology. However, this preliminary work has been overlooked by later sociologists in their writings. In the aftermath of this, sociological interest in the environment resurfaced

when inquiries related to environment began to appear in scholarly journals during 1960s and 1970s (Dunlap & Catton 1979; 1994a; Humphrey & Buttel 1982; Freudenburg & Gramling 1989).

Environmental Sociology as an established field of inquiry emerged in response to the harms of industrialization and degradation of ecosystem in the United States and Europe, with a new lens to focus human beings and their interaction with the environment (Pellow & Brehm 2013). This was termed as new ecological paradigm in which early contributors emphasized and employed the standard sociological views of classical theorists (Pellow & Brehm 2013). However, there was an ongoing strife among sociologists in the 1970s by holding the perspectives of Human Exemptionalism and New Ecological Paradigm about how to look at the interplay of human and environment (see for example Catton and Dunlap 1980; Dunlap and Catton 1979; Dunlap and Van Liere 1978). For instance, we have seen human exemptionalism paradigm against standard and classical sociological thought (Freudenburg 2009; Pellow & Brehm 2013). With interesting theoretical approaches, and rigorous methodology to understand the interrelationship of human and environment, the environmental Sociology had a promising beginning.

To reflect on the emergence and development of this new field of inquiry, Krogman and Darlington (1996) traced the coverage of *Environmental Sociology* in nine peer reviewed Sociology journals. They were of the view that environmental knowledge production in the mainstream Sociology journals had been accelerated during 1990s, which according to them was a promising trend for those who intended to choose this as professional career. At the same time, they expressed their concern that the environmental Sociology, historically, had been receiving far less coverage than the other subfields in the Sociology journals, and thus was threatened to be on a marginalized position. Surprisingly, no serious effort has been made since then to reevaluate the scientific productivity of environmental Sociology to track the knowledge production patterns. We do not know much about the quantitative growth of environmental Sociology literature, its production patterns across geographies, and where does it stand in relation to other subfields, at least for the last twenty-five years.

This study takes up the journey of Krogman and Darlington where they left off. By engaging in the bibliometric analysis of top peer-reviewed journals in the field of Sociology, our goal is to demonstrate the patterns of knowledge production concerning the environmental Sociology since 1990s, and to understand how this subfield of Sociology has evolved overtime. Specifically, our aim is to see the methodological focus of environment related articles, their authorship patterns, geographic focus, gender differences in scholarly production and the productivity of mainstream Sociology journals.

It is also important to clarify here that we took into account the top peer-reviewed journals of Sociology for the reason that they are the principle outlet of scientific knowledge, and they serve as primary vehicle for Sociologists to report their research findings. "Peer-reviewed journals are often seen as an acid test by which

many institutions evaluate sociologists' academic performance, and to derive knowledge production trends" (Krogman & Darlington 1996: 44). In other words, credible journal articles serve as a proxy to determine what is important and valuable in the specialized scientific domain and its subfields.

Literature Review

In this section we explore, what the gender composition has been in Sociology in the past, what was the methodological understandings, productivity of the journals and the geographic concentrations of knowledge production. It is important to note that, some of the findings of this paper are unique in their features. For example, the geographic focus of environmental knowledge which has been never the topic of neither any study nor any sociological analysis which could have enlightened us about this particular area of concern.

Productivity of Journals

There is dearth of research which can locate us to the productivity of generalist Sociology journals for environmental articles. On the productivity of environmental articles specifically the study of Krogman and Darlington (1996) reveals that environmental article has been given less space in mainstream Sociology journals, but with time this trend has changed between 1982 and 1992. They have seen an increase in the environmental articles. In the top tier journals like (ASR, AJS and SF) they find out only 14 environmental articles out of total 3673 published articles. However, in the lower tier (Social problems, Sociological Quarterly, Sociological perspective, Rural Sociology, Sociological Spectrum and Sociological inquiry) they find out 151 environmental articles out of 4652 totals published. This data has been extracted in the period of 1969 till 1996.

By summing both top and lower tier, there were total 165 environmental articles in all nine Sociology journals out of 8325. This tells us that, the total published articles are huge in numbers, but the environmental articles have been very less in that time. However, in four journals (AJS, ASR, SP, SF) which is also the part of my study, they find out total 41 environmental articles out of 4628 published. Apart from these findings, no previous study has considered the productivity of Sociology journals in the field of environmental Sociology.

Gender Composition in Authorship

It is a well-established fact that scholarly publication is critical to women success in their career and also served as a reputation in academic circles. Studies over the past decades have provided a growing literature on the topic of gender and its relationship with knowledge production. Feminist social scientists have explored the area of gender and publication through various dimensions. In this context, previous explanations reveal that less representation in authorship may be due to multiple factors. For example, rewards to women and men in scholarly publication, gender differences in publication rates and gender effects on publication process in Sociology

(Grant and Ward 1991). Other than that, women domestic and professional engagements (Long 1990; Austin & Davis 1985; and Cole & Zuckerman 1987) and their marital life have disadvantageous effects on women publications while some scholars maintain that marital life has no effect if the job status is stable.

Apart from that, gender politics influence the publication and hence affects visibility within disciplines. Reason include, less resources, little access to participation, fewer rewards and less considerable chances to join research teams in academia. It is surprising that how little importance has been given to such concerning area, which, if remain unexplored will be difficult to mainstream half of our population (Grant & Ward 1991).

The less representation of women authors has been seen to have a causal link to a specific journal and the underrepresentation of women authors in it. For example, Vanderstraeten (2010) explained the scientific communication of Sociology journals and its publication practices in Netherland & Belgium. He explored the historical transition of some local Sociology journals in Belgium with its publication practices. He illustrated that, the participation of women authors in three of the main journals of Sociology named as; *Tijdschrift voor Sociologie* (Journal for Sociology, TvS), *Sociologische Gids* (Sociological Compass, SG) and *Mens & Maatschappij* (People & Society, M&M). He says that female authorship in *Sociologische Gids* (GS) was 11 percent while in that time women hardly have access to publication until 1960s. However, in the last two decades the share of women publication fluctuates from 7 to 25 percent. In other two journals (i. e. M&M and TvS) he says until 1980s almost no women publication can be seen but with the turn of 21st century the share of women publication rises to 30 percent in both journals. Most importantly, he elucidated that there is no available list of authors in these journals so we cannot assume it as a discrimination against women in publication.

In the same manner Rotchford, Willis and McNamee (1990) in their study found total 1082 article in four leading core journals of Sociology with 1672 authors. The time period of their study was 1960-1985. The journals include, *American Journal of Sociology*, *American Sociological Review*, *Social Forces* and *Social Problems*. They identified that women authors in all four prestigious Sociology journals women are underrepresented. Apart from that, they also determined that women are tends to use more qualitative methods and men with much emphasis on quantitative. While Davenport and Synder (1995) find that there is gender bias in the citation of Sociology too. They based their findings on the period 1985-1994. They built this argument by examining 25 Sociology journals as indexed in Social Science Citation index.

More recently, West et al (2013) analyzed extensive scholarly work available on the JSTOR. The study time period last from 1665 till recent 2011. They carried out their study in huge details and covered many disciplines including Sociology. They analyzed the gender composition in different fields and sub-fields. In most areas of Sociology men have been predominantly dominating in social issues, Sociology of communication, social ties, delinquency and deviance, crime, Sociology of education,

social movements, segregation, social structure, religion and henceforth. On the other hand, women most of time wrote on family, sex and sexuality, early childhood, stress coping and household composition. This shows us the underrepresentation of women in the Sociology discipline and its sub-fields. Summing altogether, according to this study in Sociology women composed of 31.5% while men with 68.5%. This is a huge gap for scholar who still believes that the composition of women is relatively equal to that of men.

Methodological Divide

In the field of Sociology, the quantitative methods have advanced rapidly than that of qualitative methods, but the boundaries are melting (Abell 1990). Studies provide us with handful evidences that still there is a clear dividing line between the two methodological orientations (Quantitative and Qualitative) across national and international sociologists. For example, Schwemmer and Wieczorek (2019) have ascertained methodological divide in Sociology by analyzing 8737 abstracts of papers from 1995-2017. They also find out a high time trend of utilization for quantitative methodologies.

In this respect, a paradigmatic adherence sometimes entrenched one methodological use and draws a sharp line of divide between the two by extracting assumption of their own from the philosophy of science. United Kingdom is the best example of this paradigmatic strife where much emphasis is on the use of qualitative methods (Bryman 2008; Gage 1989). Another example of this methodological war we have seen is in Germany where the so called 'Positivismusstreit' and the clash of critical rationalism with critical theory led to methodological and theoretical divide which still exists (Munch 2018).

In more detailed analysis, International Benchmarking Review of UK Sociology report of 2010 explained the divide of methodological orientations in UK. The report points out the innumeracy of British Sociologist in quantitative methods which they attributed to the lack of quantitative training and other statistical measure which another international sociologist uses to measure social reality. However, British Sociologist are robust in the qualitative methods.

The report further quotes;

"A disturbing result of all this is that most British trained sociologists cannot read the quantitative literature in Sociology with any degree of understanding. Furthermore, there appears to be an anti-quant culture - a standard undergraduate methods course will include as much time critiquing the use of quantitative methods as teaching them (although critique presupposes an understanding of what is critiqued). It seems to us that the place to start seriously in quantitative methods training should be at the undergraduate level. Quantitative researchers feel isolated in many (but not all) Sociology departments, which typically have only one or two faculty members with strong quantitative knowledge and may feel more welcome in social policy or education (BSA, HaPS and ESRC 2010: p 23)."

The evidence of this stark differences and lack of quantification in Sociology provides by ESRC report says that, "It may be appropriate to provide some quantification of the lack of quantification. A recent assessment of 146 End of Award reports from ESRC Sociology projects found that only 21% of papers were purely quantitative, and an additional 14% mixed qualitative/quantitative, while 62% were qualitative only. To place the issue in international perspective, we compared the distribution of articles published in the 2008 issues of the *British Journal of Sociology* (BJS) and the *American Sociological Review* (ASR). Of articles in the ASR, 66% were quantitative, compared with just 47% of the articles in BJS. This contrast becomes starker when nationality of the (first) author is considered – for the BJS, most (9/14) of the quantitative articles were by overseas authors, while for the articles by UK authors only 31% were quantitative (BSA, HaPS and ESRC 2010; 23).

The ESRC report paved way for the debate of 'methodological pluralism' in British Sociology in which series of papers has been published to seek the trends of methods across time. For example, Payne, Williams and Chamberlain (2004) conducted a study in order to know the methodological orientations among other indicators. They cover three data sources; BSA conference papers, *Work, Employment and Society* (WES) and some other mainstream journals. In mainstream journals quantitative methods employed 14.3% while qualitative stands 40.6%, BSA conference with 10.8 percent of quantitative and 47.1% qualitative. This percentage for WES is different for with 38.3% quantitative and 40.4% qualitative. They further asserted that, there should be no less qualitative inquiries but more quantitative ones. Hence, they did not identify any methodological pluralism in the mainstream British Sociology journals.

In the above discussion of gender composition is representing general domain of Sociology but not that of environmental Sociology. In the domain of environmental Sociology, we did not find any relevant study which could have shed light on it. So, we consider general sociological domain in order to have some indirect relevance.

Materials and Methods

This article seeks to demonstrate the knowledge patterns of Environmental Sociology in six high impact factor Sociology journals. The study draws upon Krogman and Darlington's (1996) research with certain differences. Firstly, their study covers 27 years of period between 1969 and 1996, while present research covers the period between 1990 and 2018. Secondly, their study consists upon 9 Sociology journals with lower tier and high tiers. Our study takes six high impact factor journals which include American Journal of Sociology (AJS), American Sociological Review (ASR), Annual Review of Sociology (ARS), Social Forces (SF), Social Problems (SP) and British Sociological Association-Sociology (BSA-Sociology). Thirdly, four journals (ASR, AJS, SF and SP) from our study were also the subject of the study in Krogman and Darlington's (1996) analysis, which helped us to compare the findings of both time periods.

Classical Bibliometrics was utilized as research design to carry out this study. It quantifies the academic outputs of people and institutions which then is complemented through qualitative explanations (Ball 2017). However, the current study was based on output analysis of the Bibliometrics. Output analysis is the quantifications of publications through multiple angles. As Ball pointed out that the “The basic parameter for a Bibliometrics output analysis is the amount of academic output by a person, institution, country or other group (aggregated on different levels)” (2017:19). By counting the publications and summing up one could know the productivity of authors, institutions, geographic region, countries, journals and research organizations. However, only quantification of publications does not reveal much if it is not relatable to the causal and intervening factors.

For this purpose, in this study some other factors of quantifying nature were explored such as: (i) Gender composition in authorship, (ii) Methodological orientations of the articles (iii) Geographic location of the research (by geographic location of the research we mean the location of the environmental issue(s) on which the article has been written) (iv) Author’s geographic affiliations (as discerned from the institutional affiliations).

In furtherance, the data collection procedure was followed with utmost care for its validity. We found total 203 environmental articles by employing advance search on the respective websites of all six journals included in the study. The journals were selected for their highest impact factors, established by the Web of Science (2017) in the field of Sociology as depicted in Table 1. Keeping in view the feasibility issues and predicaments that we face in the absence of some standardize uniform database of journals we had to rely on web of science to select our sample of journals based on impact factor. These journals include; American Sociological Review (ASR), American Journal of Sociology (AJS), Annual Review of Sociology (ARS), Social problems (SP), Social Forces (SF) and British Sociological Association-Sociology (BSA-Sociology).

Table 1
Journals and Impact Factor

Journal	Impact factor (2017)
Annual review of Sociology	6.733
American Sociological Review	5.063
American journal of Sociology	3.764
BSA-Sociology	2.537
Social Forces	2.156
Social Problems	2.071

Source: Web of Science (2017)

It was a difficult task to categorize and isolate environmental articles from that of others. For that purpose, we firstly conceptualize the range of environmental issues and then took that conceptualization into a broader framework for the inclusivity of environmental articles. In this respect, we used Dunlap and Jorgenson’s (2012) definition of environmental problems. They are of the view that, environmental

problem is a common but vague concept. Ecology, according to them, has some functions to play and which is necessary for the function of society and environment. Further, they conceptualize environmental problems with respect to three contributing functions of it.

Firstly, environment provides us with the basic necessities of life that is resources which includes food, water, air and shelter. To ecologist, it is the basic function of environment to facilitate us in "*sustenance base*", and the environment serves as a supply depot for human societies. Dunlap and Jorgenson (2012) assert that when the sustenance base of our environment face overuse then it translates to environmental problems in the form of shortage and exploitations which pave way for environmental destructions.

Secondly, the consumption process of our resources produces waste and humans produce more waste than any other species on earth. So, the environment then serves as a '*waste repository*' in order to absorb the waste or turn it to useful or harmless substance. When the absorbing capacity exceeds by the waste it becomes water and air pollution. Finally, the human has to have a place to live. In this regard, environment provides us with this place a '*habitat*'. Where we live, work, play, travel (in the form of homes, shops, factories, transportations system and recreational settings). Thus, environment provides us habitat to live but, when we overuse it then it converts to overpopulation, overcrowding from a city to the entire planet earth.

For example, taking one function from the environment may lead to the impairment of other two. That is, when an area is used for the waste dumping it becomes unsuitable as living space. In like manner, when the hazardous material expands from one area to other then natural resources like water can no longer remain potable for both humans and animals. Finally, when an area of natural habitat is converted to living space for human beings, the area can no longer be served as a supply depot or a habitat for wildlife.

The mismatch among three functions produces environmental destruction and may cause different forms of environmental problems. We broadly take this definition of environmental problems as yardstick for extracting environmental articles from selected journals. Thus, we expect that all environmental articles will be found under the umbrella of this conceptualization. That is, all environmental issues will conform to this categorization and the problems addressed in environmental articles will come under these broader themes of environmental problems.

In order to extract environmental articles, we used the publisher's search functions at each of the six journals' web sites. We began our search by, entering the syntax of 'environment' in the search query as "anywhere" to find all the possible publications carrying the stem word and its variations. We were expecting that this word has more chances of inclusivity than others for the identification of environmental articles. We filtered our search results for the duration of publications

between 1990 and 2018; for excluding review articles, book reviews, editorials, abstract, case reports, product reviews, letters and introductions.

The time period of these data sources was onward from January 1990 to December 2018. There are couples of factors to draw the rationale for selecting this specific duration. First, Krogman and Darlington (1996) had already covered the take off period (1969-96) of environmental Sociology. Second, with turn of the decade of 1990, the environmental Sociology began to establish its institutional roots when some environmental departments and research centers were established, and research papers began to appear in abundance in different peer-reviewed journals (Laska 1993; Dunlap and Catton 1994; Krogman and Darlington 1996).

After getting filtered result of our search, we inspected each of the extracted articles to determine if it confirms to our conceptual framework or not. The inspection of each article was done due to the fact that, the word 'environment' may be used in some other context as well, like organizational environment, school environment, political environment etc. Thus, we excluded non-environmental articles based on our conceptualization after extensive search and filtration criteria.

The study has some methodological limitations. First, it only offers quantitative analysis of knowledge production in environmental Sociology and is not extended to judge the quality and reception of the academic publications. Second, it is based only on top tier Sociology journals (published from the global North) and does not include journals with low impact factor or from global South. Third, this research is limited to the scholarly knowledge production in the field of Sociology and does not cover other fields or specialized journals. We are conscious of the fact that there is much environmental research published outside the category of Sociology journals and sometimes in higher impact factor journals (e.g. environmental studies, demography and geography). However, including those was beyond the scope of this study.

Results and Discussion

In the following section results have been presented with the help of figures and tables. What stand out in all findings are the multiple aspects of environmental knowledge which comprise of its geographic focus, productivity of journals with respect to environmental knowledge, methodological focuses, gender composition and institutional affiliations of the authors. The result of our study reveals that from 1990 through 2018, the six journals published a total of 203 environmental articles, or we can say only three percent of all articles (i.e. 6366) which they published in these journals.

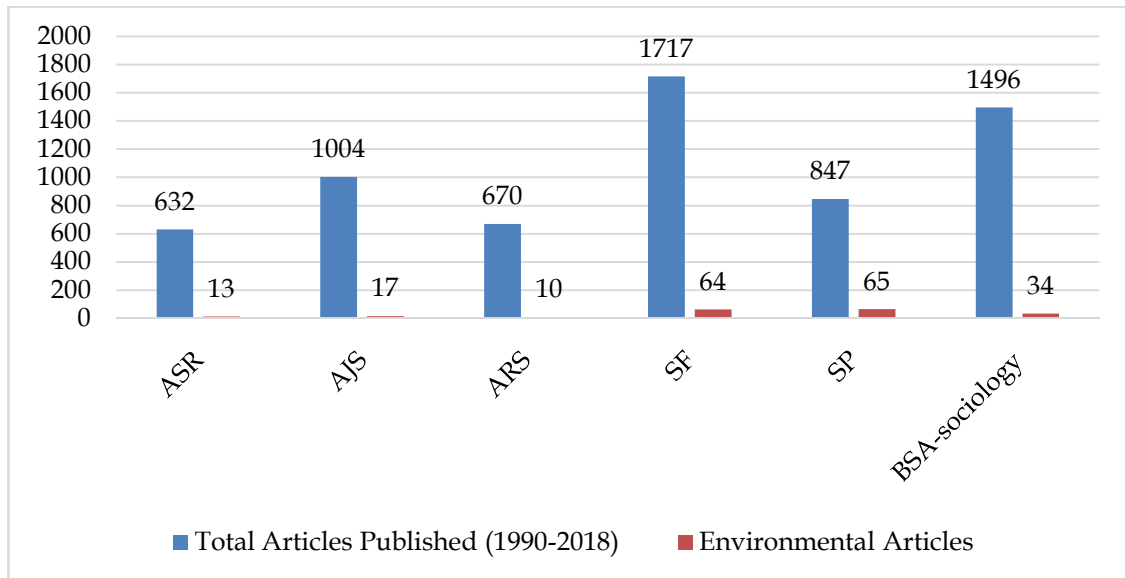


Figure No.1 Journals' Productivity

In the above figure the blue color shows the total number of articles published in each journal while the dark red color indicated environmental articles. Unsurprisingly, the number of environmental articles in comparison to total articles published is very low. The highest number of environmental articles we have seen comes from two journals which is *SP* (with 65) and *SF* (with 64). While, 3rd highest number of environmental articles were published in *Sociology* journal (i.e,34). However, the top Sociology journals like *ASR*, *AJS*, and *ARS* has the lowest number of environmental articles. Apart from that, each journal has their specific pattern of publication that is, *ASR*, *AJS*, *Sociology* all are bi-monthly, *ARS* publishes on issue per year, *SP* and *SF* are both quarterly peer reviewed journals. Elsewhere, acceptance rate of paper also matters. Summing all, the number of less environmental articles top impact factor was a finding of Krogman and Darlington (1996).

Interestingly, in their study they find out that the top three journals (like *AJS*, *ARS* and *SF*) publish only 14 environmental articles in that time collectively. However, in our study these journals published a total of 94 environmental articles. The numbers show us a much higher receptivity to environmental articles now, in contrary to past. Most importantly, by comparing it to our study we were aware that there are differences in time period and journals. But our study includes four journals of their study which are *AJS*, *ASR*, *SF* and *SP*. By comparing it from another dimension, theirs four journal out of nine published a total of 41 environmental articles out of 4628 their all articles.

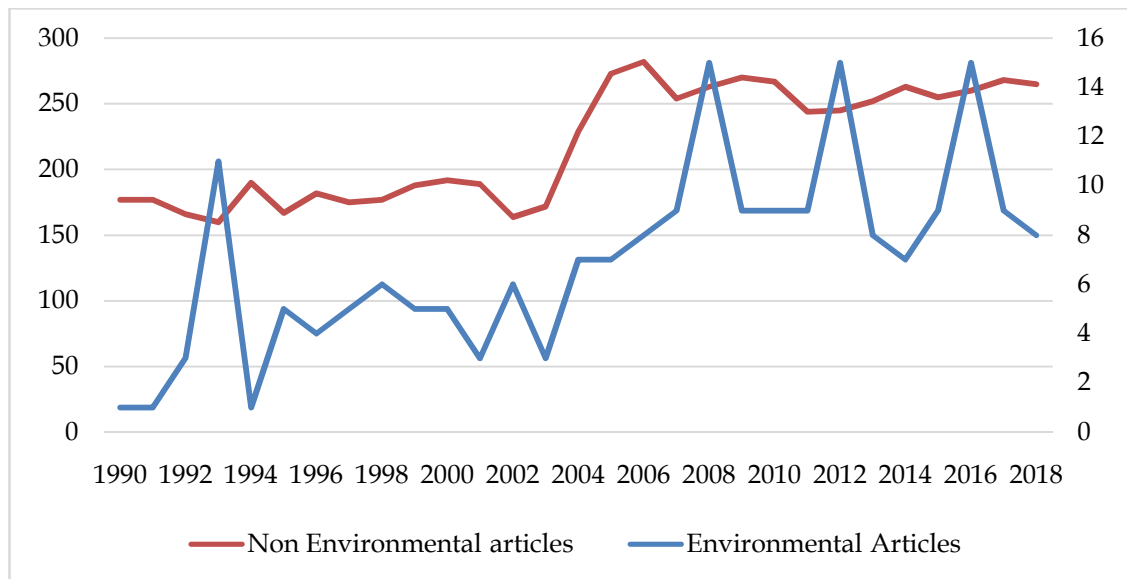


Figure No. 2 Trendline for Environmental Articles over time

The above (Figure 2) reveals the trend of environmental articles for almost three decades in comparison to Non- environmental. We can see a huge divide between two categories environmental and non-environmental articles. There can be two possible explanations for the behavior of the trend. Firstly, it indicates the occasional increase in environmental articles across time with three times fifteen and one time eleven in 2008, 2012, 2016 and 1993 respectively. Secondly, the non-environmental articles peaked in 2004 as well as a general increase in environmental articles onward from 2004 and in the forthcoming years. One possible reason for the rise in 2004 in both categories could be the limitation of our study as we were not able to find out ASR articles before 2004. On the home page of ASR there are all issues available online onward from 2004 to date. However, for our study we were not able to locate the data of the years 1990-2003 as the issues of these years were not available online. In consequence to that, both the categories of articles shown an increase, but we cannot deny the fact of increase in environmental articles in the last 10 years of our study's time period.

Moreover, some authors like (that Laska 1993; Dunlap and Catton 1994; Krogman and Darlington 1996) maintain the argument that 1990 was the takeoff time for the environmental Sociology as articles related to environment appears in different Sociology journals. The above trend line indicates different view for their argument as we have seen the rise in environmental articles with the turn of century and we predict that the rise in environmental debates will further enhanced to new premises and understandings.

In addition to this, in our aim to address the geographic focus of environmental articles written on numerous dimensions, we have found increasing geographic concentration to two main regions i.e. United States (USA) and Canada and Europe. Figure 3 below displays the geographic locations of environmental issues upon which these studies have taken place. It is apparent from these figures that more than half of

the environmental articles had a focused on environmental issues of the USA and Canada which is 54.7%. It is pertinent to note that the environmental discourse has been started in USA some decades ago and now more contribution also coming from there. However, the second highest numbers of environmental articles have been published on the environmental issues of Western Europe with 13.3%. On contrary to this, other regions of the world have been found with negligible representation. For instance, Asia and Other regions has been location for 4.9% of articles respectively. In like manner, South/Latin America and Global focus behaving in the same way with 2.5%.

It is imperative to clarify what categories like “other”, “no location” and “global focus” means for us. Firstly, the category “No location” includes those environmental articles which have no specific geographic particulars. For instance, some environmental articles have been written on the subject of environmental Sociology, its academic conceptualization and other academic issues of it. Secondly, the category, “global focus” means those environmental articles where the geographic focus of the articles was inclined to specific country but has a global eye different country at a time. For instance, there were two such journal articles which have focused on the comparison of different environmental issues in the developing world, developed and less developed countries. The total frequency of such articles has been seen only 5.

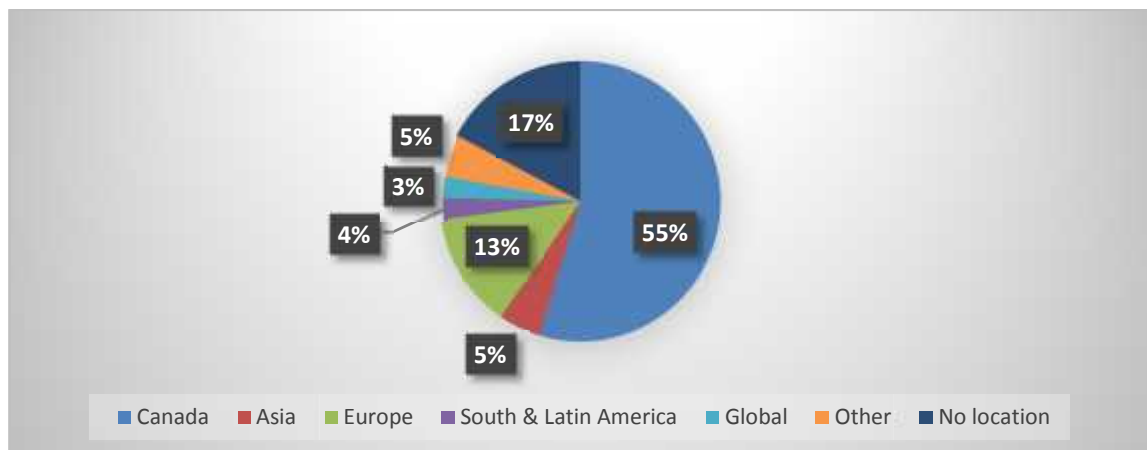


Figure No. 3 Geographic Focus of Environmental issues in the Articles

Finally, the third category “Other” means those environmental articles which did not comes under our coded regions. Only, 4.9 percent of articles have been detected with such particulars. By summing “other” and “no location” it makes a total of 22.1 percent articles. Overall, the finding suggests more focus on the developed part of the World and less or negligible concentration in regions likes South/Latin America and Asia.

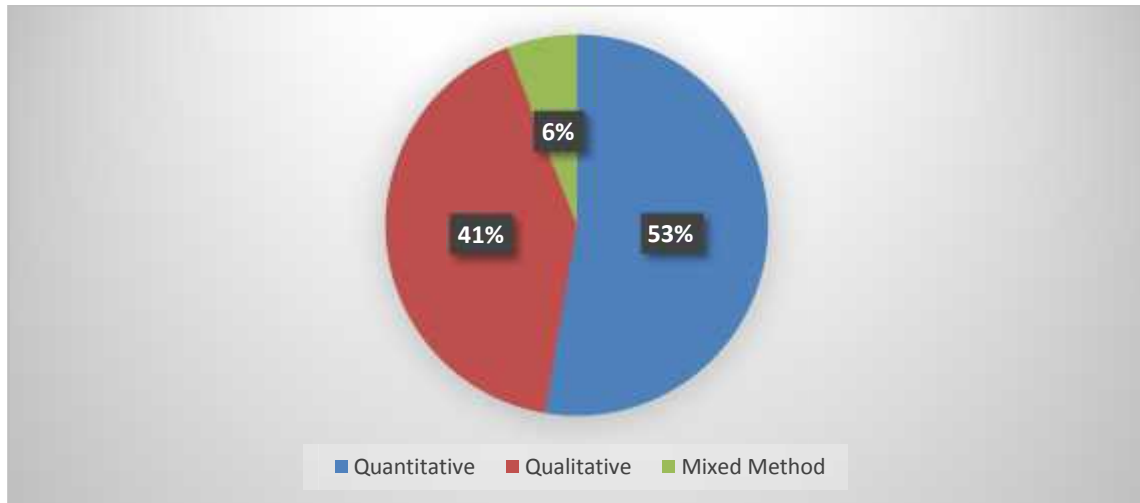


Figure No. 4 Methodological Orientation of environmental articles

One of the important and interesting findings of our study was the methodological focuses of environmental articles as shown in the above figure (4). Before proceeding to methodological focuses it is important to understand the classification scheme that was employed. In majority of the articles the scholars explain methods for approaching the environmental issues. However, there were some articles which are difficult to categorize in one area of quantitative, qualitative or mixed method. For instance, those articles that measure the issue through numerical and statistical data, we coded it as quantitative. On the contrary, those which implied simple description and explorations of the issue with the help of themes, and elaborative details are coded as qualitative. Some articles implied both qualitative and quantitative approaches, and those did not specify the research design as mixed method approach. Similarly, some studies are considered as mixed method because of explicitly employing both the quantitative and qualitative methods.

As shown in the figure (4), more than half of environmental articles (i.e. 52.7%) were quantitative, whereas 41.4% were qualitative, and only 5.9% used mixed method approach. When we find out this, our next much related and interesting finding was, to know what the methodological orientation would be when compared to this regional categorization. We found that, there is a methodological divide clearer in the sub-field of environmental Sociology literature. This is very interesting on the part of American and European methodological polarization in environmental Sociology. That is, in the USA more quantitative methods have been employed to environmental issues and considerably less on qualitative. On contrary, the same trend is followed in the European Region where an increasing emphasis has been seen in the qualitative while less in the quantitative. Below figure (5) represents these regional methodological divides among six Sociology journals.

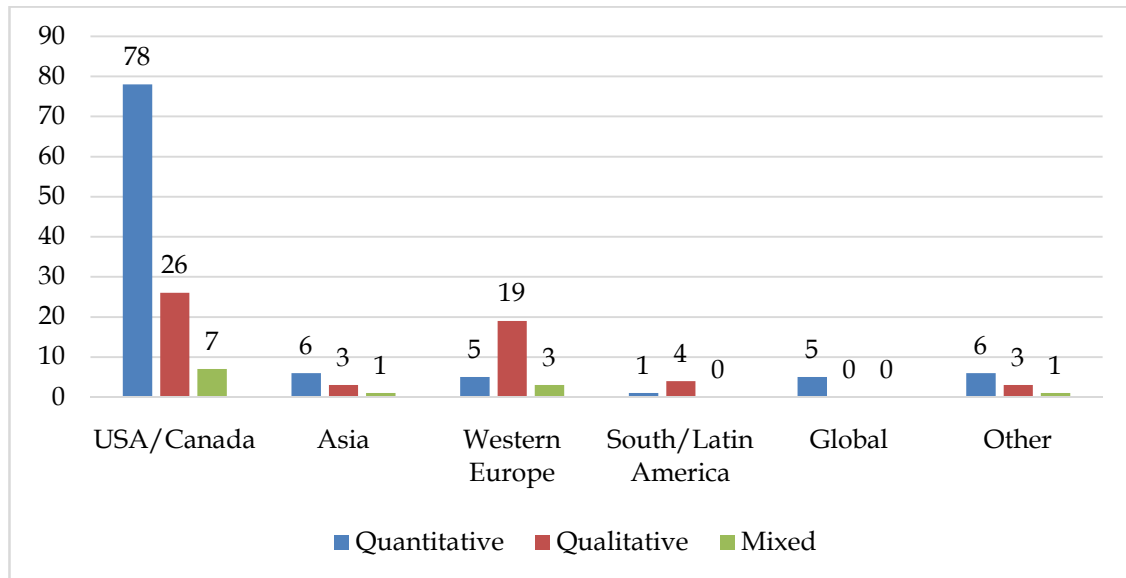


Figure No.5 Methodological focuses across regions

In the above figure, the blue color denotes quantitative methods, dark-red shows qualitative while light green indicates mixed method approach. It is important to mention that 17.2 percent of articles which we found with no specific location were excluded from this finding because it will serve no linkage with any region. However, in the USA and Canada the highest number of articles have been found with using quantitative methods i.e. 78 while this number for qualitative is 26 and only 7 for mixed methodological approach. Western Europe where we also find out more concentration of environmental articles shows an increasing emphasis on the qualitative with numbers standing for qualitative 19, quantitative 5 and mixed with only 3.

The remaining regions have slight variation that is in the 'global focused' environmental articles we found that there were only quantitative but no qualitative and mixed methods used. In the same pattern, in Asia these numbers for quantitative, qualitative and mixed stands as 6, 3 and 1 respectively. The "other" category behaves same as Asian region.

In addition to this, one important finding of our study was the institutional affiliations of those authors who wrote environmental articles. For that purpose, to know this, we simply coded this affiliation from the articles. Every journal article has mention of author's affiliation and addresses. However, we did not cover it through the prestige of the institution or their rankings. For us, the best source to know the affiliation of authors was these articles. In case if there is no mention somewhere of the author's address and affiliations, then we just Google it and get information from there. Our finding reveals that there were total 363 authors in all environmental articles. In our study, we also detect 5 as the highest numbers of co-authors in some papers.

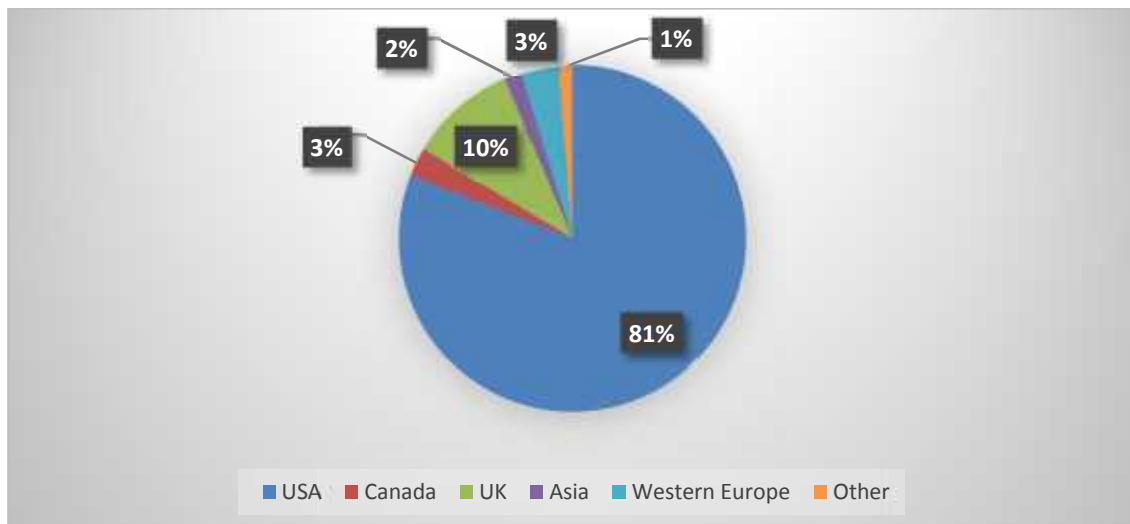


Figure No. 6 Geographic location of the Authors

The total authors (i.e. 368) have been further classified into geographic regions of the institutions so that we can further elaborate this finding. This classification has been done for the purpose to know the share of authors with respect to each region. In the region wise share of institutional affiliations of authors, the highest quantity belongs to USA which is 80.9%. This is a remarkable outcome. The highest share of authors from the USA hold true when it compares to the geographic focus of environmental issues as shown in the Figure (3) that for 111 articles the geographic was US/Canada. Moreover, United Kingdom (UK) behaves second highest with the 10% of author's institutional affiliations. Other regions such as Asia, Western Europe and Canada are hardly 10% collectively.

Last but not the least, our final finding was related to gender composition in authorship. In our study at time of coding, we identified the total authorship of all environmental articles but, hand in hand we were able to determine the male and female authorship as a distinctive category of findings which reveals much in gender and feminist discourses. One cannot ignore this important aspect of many disciplines where the gender differences in authorship are huge. However, our study, in contrary to our expectation reveals that in environmental Sociology literature under these six journals male dominates in authorship. That is, nearly seventy percent (i.e. 69%) of authors were male and the remaining 31% were female.

One cannot be assuming freely that in environmental related articles these journals are biased by seeing that it has less authorship in the domain. In this regard, it is important to highlight that, there could be many possible explanations and reasons to answer this question of gender differences in authorship. As previous studies show us that less authorship from women may be due to multiple factors such as having more lucrative position than authorship, other life choices better for them, or a lack of access to opportunity, different life situations and less engagement in academic circles. In Sociology we see comparatively a considerable female authorship but still in

environmental related articles less representation of women as authors is a big question in front of the scholars and academicians.

We then extend this finding for the purpose to see gender composition across other journals. Notwithstanding, that women wrote less, in the *BSA-Sociology* journal there were exactly equal percentage of male and female author (i.e. 50% each). Apart from this, in all other journals we witness less proportionality for women authors. The journals which published more articles have more gender gap in their authorship at least a case with our findings. For instance, in *SP* journal 77.6% authors of environmental articles were male while only 22.3% authors stand female.

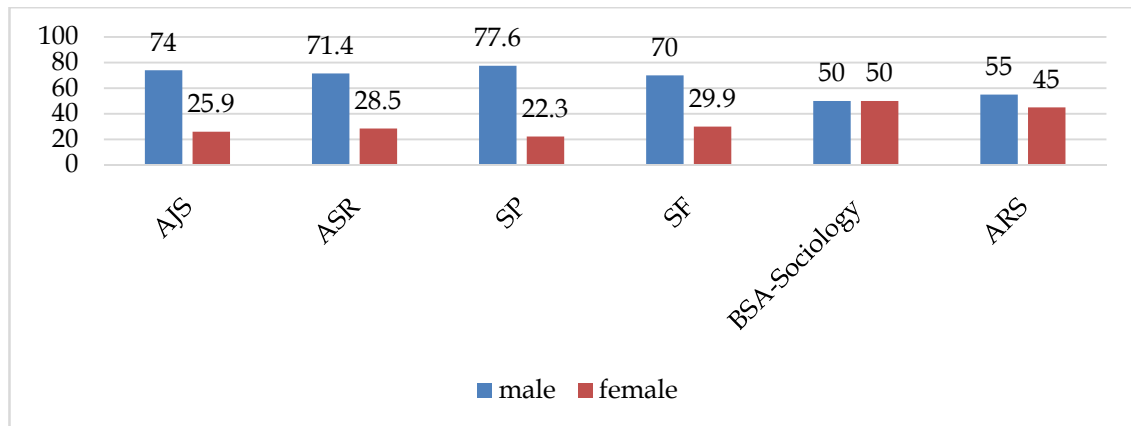


Figure No. 7 Sex of the Authors across Journals

In the same pattern in *SF* journal there were only 29.9% female authors in comparison 70% male authors. Moreover, in *AJS* there were total 27 authors in which male and female share was 74% and 25.9% respectively. However, we can see that *AJS* and *ASR* are nearly the same in gender composition; same is the case with *SP* and *SF*. In *ARS* there were 55% male authors and female with only 45%.

Discussion

Keeping in view our core objectives, this study discovered some interesting results. We found total 203 environmental articles in six top Sociology journals (*ASR*, *AJS*, *ARS*, *SF*, *SP* and *BSA-Sociology*). This finding has some differences with the findings of Krogman and Darlington (1996), where they find 165 journal articles of environment in nine journals (low and top tiers) in the period onward from 1969 till 1996. In our study, for instance, the total environmental articles from 1990-1999 were 42 which increased to 72 onwards from 2000-2009. However, in the last period of time which starts from 2010 and lasts till 2018 this numbers jumped to 89. Despite, these differences with time period of and the gap of years, this finding confirm and suggest continued growing qualities through yearly variations.

In comparison to the productivity of the journals in Krogman and Darlington study, our study has different journals i.e. we included those four journals which were

also present in their analysis. Those four journals were American journal of Sociology, American sociological review, Social problem and Social forces. They find total 41 environmental articles while we found this number 159 which shows a huge variance and growing nature across time specifically in regard to these four impact factor journals.

Perhaps, the most striking finding of our study was the geographic focuses of environmental articles which clearly make distinctions on the part of USA/Canada and Europe and other regions. It also suggests the concentration of environmental discourse in these two regions. This may be in part due to the initiation of environmental discourse in these regions. As we came to know that other parts of the world have less apparent in the context. The smaller number of environmental articles from other parts of the regions raises a question that is whether those regions have less environmental issues. Or then, the all journals are whether UK based, or USA based that's why the focus of environmental articles are less from other parts of the world?

In response to the last concern, that five of the six journals under this study has been based on USA and less on UK centric that is why the geographic focus shows more skewness for USA. It is important here to clarify that, we did not select these six journals on the basis of any region, country or other geographic location but through high impact factors. Thus, the geographic focus of environmental articles stands for what the data shows. Hence, to explain this concern we thus claim that if the journals has been selected on the basis of regions and each journal has equal proportion then it might be possible to draw conclusion on the basis of regions.

One of the traditions used for the global inequalities in sciences is decolonizing theory (Kerr, 2014; Mignolo, 2011; 2018 and Santos, 2007, 2014, 2018). By looking into the geographic focuses of environmental articles of this study, decolonizing theorist, will possibly interpret that the West maintain its hegemony of knowledge production by not giving space to alternative research forms and explanations. In this regards Santos (2014) used the word *epistemicide* which refers to global science hegemonic structure overlook peripheral epistemologies and knowledge. These power relations pave way for epistemic monoculture where the West holds the whole structure of knowledge. In the same way this tradition also asserted the need for a cognitive justice which will enable the norms of plurality of knowledge by ensuring that peripheral members of the academic community also have a voice and weightage (Santos 2007 & Visvanathan 1997)

More specifically, Schott's (1998) study reveals the regional dominance of Western countries in natural science. He also extracted data from the Web of Science. However, such geographical skewness is huger in social sciences and humanities than natural sciences (Demeter 2019). Apart from this, Nye (2004) goes beyond just dominance and says that social sciences are the means of global control and facing a hegemonic bias. Demeter (2019) makes a connection between the global knowledge production patterns and its relationship in maintaining the power structure of its existing system. He also argued that, in the social sciences there exist a double-edged

Mathew Effect in which the peripheral academics are not in the position to fully participate in the mainstream system of knowledge production. Demeter (2019) argued that in social sciences 75% of studies comes from United States and Western Europe. He analyzed data from the Web of Science and maintains that the center of all social science disciplines and its knowledge production is either US or Western Europe while other regions have very marginalized position.

Previous research has explored the uneven dominance academic capital regionally. For example, most important paper in this respect is that of Bonitz, Bruckner and Scharnhorst (1997). In their study they claim that there are very few core countries which produce more than that of any other peripheral countries. They developed the concept of Mathew Effect which account for not only micro level academic capital of a researcher but also for countries and regions. They stated that “a minority of countries, expecting a high number of citations per scientific paper, gains more citations than expected, while the majority of countries, expecting only a low number of citations per scientific paper, achieves fewer citations than expected. In the spirit of Merton, we called this effect the ‘Matthew Effect for Countries’” (Bonitz, Bruckner & Scharnhorst 1997: 408).

In the same way, various other studies have confirmed that the global share of knowledge production in science is unequal. That is, there are very few successful countries and majority of countries are invisible to be seen in such practice. See for example (Azoulay et al. 2013; Lee & Sohn, D. 2016; Makkonen & Mitze 2016; Perc 2014; Schmoch & Schubert, 2008 and Zanotto et al. 2016).

Similarly, the methodological focuses of environmental articles have also been observed in the dichotomies. Owing to the less focus and greater on quantitative methods our study confirms the methodological divide of Schwemmer and Wieczorek (2019) in the field of environmental Sociology with respect to our six journals. It has been observed in various literatures that in the USA there is much emphasis on the quantitative strand of methodologies while UK with qualitative (see also Kerlin 2000; Bryman 2008; Payne, Williams & Chamberlain 2004; and Gage 1989).

In total 363 authors share of USA is 294, Canada with 10, UK 37, Asia 11, and Western Europe with 11. One can easily be convinced that if the highest number of articles were written mostly in the USA, then too its institutional affiliation will be the same. It is important to see why environmental knowledge and its authorship patterns have less proportionality to other regions? It is high time for environmental sociologist to see such patterns of knowledge productions in detailed analysis, especially in Sociology journals.

In the total authorships, the number of female’s authors were 114 while the remaining 249 authors were male. This finding is very close and not revealing more information. However, we came to know the total male and female authors collectively. This finding needs further breakdown to what are the patterns of authorship in detail. For instance, do women write as first author or men? Do women

and men have co-authorship papers in environmental Sociology or not? What are the patterns of first and last author? How many women and men write papers separately as single authors?

On the part of our finding, we have seen reflections of clear sex based division of academic labor with male dominancy in producing sociological literature on environmental issues. For instance, the female authors are 31% of the total 363 authors and for male this percentage is 69%. One can easily be convinced with the unequal preferences in authorship. It is still a question that, whether female author write less on the issues of environment as compared to male counterpart? Or can we ignore the gender equality discourse in the authorship patterns of scholarly works? Prior researches highlighted gender division in scholarly works but where environmental Sociology specialty stands, is appeared in this study especially with reference to the context of top six Sociology's journals.

Apart from this, our paper is a new addition to the newly emerged conceptual framework of Wilder and Walters (2018). They developed two concepts of *contribution studies and productivity studies*. Based on the characteristics of 'contribution studies', ours study confirms this framework and added a more value to it. Contribution studies according to them are those that evaluate contribution from contributors such as departments, universities, and other to a well-defined body of literature. Firstly, in these studies a publication outlet has to be identified which will be included in the analysis. For instance, in our study the publication outlets were these top six Sociology journals which contain Sociology's literature. Secondly, the contribution study has to have the list of contributors which in our paper were consist upon those authors who published in these six journals, but we did not identify each author particularly but as a whole we measure their contribution to the sub-field of environmental Sociology.

Conclusion

The study concludes that environmental Sociology has not been much successful in attracting the attention of Sociologists for knowledge production during recent past. The asymmetrical distribution across gender, geography and methods suggests that the sub discipline might go under crisis if it arbitrarily engages that intellectual community to produce knowledge in the global knowledge market where academic division of intellectual labor is carefully being examined for all the variables involved. However, the findings of the study have limited methodological scope. We could analyze the publications from only six top ranked Sociology journals, whereas the scope of knowledge produced in this domain can contain books, chapters and other vast majority of knowledge production sources. It could be much more interesting to see the patterns of knowledge production in this domain across sources and with relatively larger scope, where the sources from both the global South and North could be taken into account.

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