

# ELINOR OSTROM (1933-2012): A SCIENTOMETRIC PORTRAIT

**Kiran P. Savanur**

Assistant Professor, Dept. of Library & Information Science  
Rani Channamma University, Belagavi-591156, Karnataka, India  
Email: kiranpsavanur@gmail.com

## ABSTRACT

Dr. Elinor Ostrom, was the only Woman, awarded Nobel prize in Economic sciences. Her areas of research were Political and Economics sciences. In her 49 years of productive life, she had collaborated with 272 colleagues and students and has published 378 publications during (1965-2012). The collaboration coefficient was 0.75. The highest collaboration was with James Walker (24). The core journal publishing her paper was: Political Science & Politics (8).

**Keywords:** Scientometric portrait; Publication productivity; Collaboration coefficient; Bradford distribution.

## INTRODUCTION

Scientometric portraits or Biobibliometrics studies are gaining much importance all over the world due to the fact that it applies bibliometric and scientometric concepts and methods to analyze personal and bibliographic data. However, scientists and/or research group is benefited by studying portraits, by highlighting his/her career graph, using indicators like publication productivity, citation analysis according to his biological age, collaborative pattern, authorship, communication channels, synchronous and diachronous citation rates and various other indicators.

Scientometric portrait or Biobibliometrics studies on the individual scientists, including Nobel laureates, are the current focus of scientometric studies (Kademani et al). The Nobel Prize is regarded as the most honorific recognition of scientific achievement. The prestige of the Nobel prize is so great that it enhances the standing of nations and institutions as well as the reputation of its "laureates" (Zuckerman, 1967). It is interesting to note that from 1901-2017, only 49 (5.26%) of women scientists were awarded the prestigious Nobel prize, whereas male scientists have excelled the female scientists by being bestowed 828 (95%) times. The maximum number 15 of females awarded the prestigious Nobel Prize in Peace subject, followed by Literature (13), and Medicine (11). Prof. Elinor Ostrom is the only female Nobel laureate in Economic Sciences.

The present study is an attempt to examine and analyze the scientific work and its impact by Dr. Elinor Ostrom, was an established researcher. Her areas of research were Political and Economics sciences. She has contributed 378 scientific papers, book chapters, and written over 34 books during 1965-2013. This study deals with biographical study of Elinor Ostrom and correlated bibliographical analysis of publications and contributions the technique is called Biobibliometrics (Sen & Gen, 1990) and now popularly known as 'Scientometric portrait' by Kademani and Kalyani to carry out biobibliometric studies on eminent scientists including Nobel Laureates. This type of studies highlighting the works and ideas of the eminent personalities, inspire young information scientists in the field of interest throughout the world.

## OBJECTIVE OF THE STUDY

1. Year-wise contribution of publications
2. To determine prominent collaborators
3. To find out authorship pattern
4. Use of channels of communication

## METHODOLOGY

The complete publication data of Prof. Elinor Ostrom (1965-2013) has been collected from her website. The data transformed into MS-EXCEL spreadsheet consisting of necessary metadata elements, and is organized in a helpful order to analyze the data according to the objectives of the study. Normal count procedure has been

applied and full credit was given to each author regardless of whether he/she happens to be the first author or the last author by allocating one score for each paper (Sangam & Savanur, 2006, 2006a, 2007, 2010).

## ANALYSIS OF RESULTS AND FINDINGS

### 4.2 Gender-wise distribution Nobel prizes

The Nobel Prize is regarded as the most honorific recognition of scientific achievement. The prestige of the Nobel prize is so great that it enhances the standing of nations and institutions as well as the reputation of its “laureates” (Zuckerman, 1967).

The gender-wise list of Nobel laureates in six different subject categories is provided in table 1. The table reveals that so far total 923 people and organizations were awarded Nobel prizes from 1901 to 2017. The highest number 214 (23.18%) of Nobel prizes were awarded in the Medical science category. It is interesting to note that only 49 (5.3%) of women have been awarded the prestigious Nobel prize, whereas men have been awarded 847(91.76%) times and the organizations 27(2.92%) times (in Peace Category) between 1901 to 2017. Only one woman, Prof. Marie Curie, has been honored twice, with the 1903 Nobel Prize in Physics and the 1911 Nobel Prize in Chemistry. The maximum number 15 of females awarded the prestigious Nobel prize in Peace subject, followed by Literature, and Medicine. **Prof. Elinor Ostrom** was the only woman Nobel laureate in Economic Sciences.

**Table 1. Nobel Prize awards by Awards by Gender in each Category 1901-2017**

Subject Category	Female Nobel Laureates	Female % of the Total	Male Nobel Laureates	Male % of the Total	Total
Literature	14	28.57%	100	11.8%	114
Chemistry	4	8.16%	174*	20.54%	178
Physics	2	4.08%	205*	24.2%	207
Economics	1	2.04%	78	9.2%	79
Peace	16	32.65%	88	10.38%	104
Medicine	12	24.49%	202	23.84%	214
	49	100	847	100	896

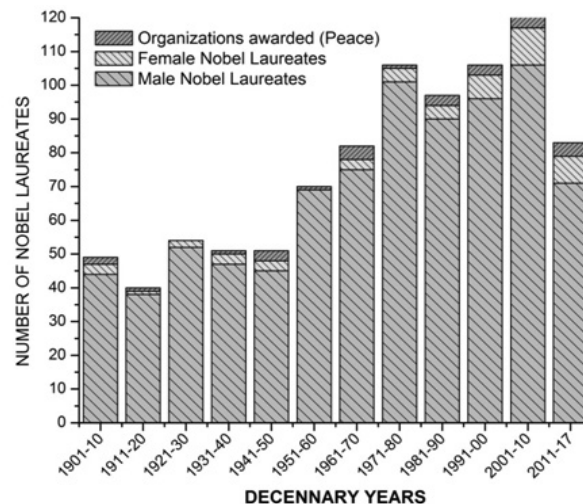
Source: [https://www.nobelprize.org/nobel\\_prizes/lists/all/create\\_list.html](https://www.nobelprize.org/nobel_prizes/lists/all/create_list.html)

The decenary year-wise distribution Nobel prizes to Women and Men scientists is provided in the table-2 and figure-1. It is clear from the following table that the decenary year 2001-10 the highest number 121 (13%) of Nobel prizes were bestowed, followed by decenary years 1971-1980 and 1991-2000 with 106 (11.4%) prizes respectively. The maximum number of (11) women and men (106) were awarded Nobel prize in during 2001-10. There were no women scientists awarded during 1951-60.

**Table 2. Year-wise Women Noble Laureates**

Year	Female Nobel Laureates	Male Nobel Laureates	Organizations awarded (Peace)	Total
1903-10	3 (6.12%)	44 (5.19%)	2 (7.41%)	49
1911-20	1 (2.04%)	38 (4.49%)	1 (3.7%)	40
1921-30	2 (4.08%)	52 (6.14%)	0 (0%)	54
1931-40	3 (6.12%)	47 (5.55%)	1 (3.7%)	51
1941-50	3 (6.12%)	45 (5.31%)	3 (11.11%)	51
1951-60	0 (0%)	69 (8.15%)	1 (3.7%)	70
1961-70	3 (6.12%)	75 (8.85%)	4 (14.81%)	82
1971-80	4 (8.16%)	101 (11.92%)	1 (3.7%)	106
1981-90	4 (8.16%)	90 (10.63%)	3 (11.11%)	97
1991-00	7 (14.29%)	96 (11.33%)	3 (11.11%)	106
2001-10	11 (22.45%)	106 (12.51%)	4 (14.81%)	121
2011-17	8 (16.33%)	71 (8.38%)	4 (14.81%)	83
<b>Total</b>	<b>49</b>	<b>847</b>	<b>27</b>	<b>923</b>

Source: [https://www.nobelprize.org/nobel\\_prizes/lists/all/create\\_list.html](https://www.nobelprize.org/nobel_prizes/lists/all/create_list.html)



**Figure 1. Decenary year-wise distribution of Nobel prize**

### 4.3 Publication Productivity

It is clear from Table 3, the total number of scholarly output published by Prof. Elinor Ostrom were 378 out of which majority of them are scientific papers, book chapters, and she had written over 34 books during 1965–2013. These include 162 (42.85%) single authored and 216 (57.14%) multi-authored papers. The first paper was published in 1965 at an age of 32.

Quinquennial period-wise trends in the publication of single-authored papers, multi-authored papers and the cumulative number of papers seen in Figure 2. The author does not have any publication from 1966–1967, 1969. Her highest productivity was in 2009 with the output of 23 papers (age 76), followed by 20 papers each in 2008, 2010 and 2012 (ages 75, 77 and 79) and 19 papers in 2006 (age 73). Thus, the 73rd to 79th years of his life were most productive. The fifty percentile productivity life was 37 at 68 years of age. The total productivity life of the author spans 49 years starting from the age 32. Hence productivity coefficient (SEN & GAN, 1990) amounts to 0.75. This indicates Prof. Elinor Ostrom was more active in her second half of professional career.

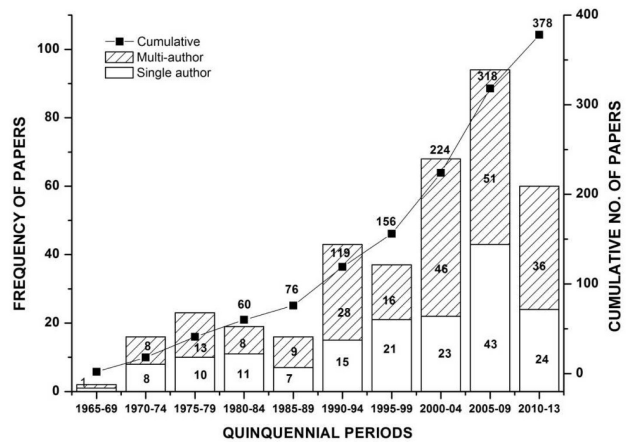


Figure-2. Productivity & collaboration of Prof. Elinor Ostrom

Table 3. Single and multiple authored publications

APL	YEAR	1 aut	2 aut	3 aut	4 aut	5 aut	6 aut	7 aut	8 aut	9 aut	10 aut	> 10 aut	MT	Total Papers	AA
1	1965	0	1	0	0	0	0	0	0	0	0	0	1	1	32
4	1968	1	0	0	0	0	0	0	0	0	0	0	0	1	35
6	1970	1	1	0	0	0	0	0	0	0	0	0	1	2	37
7	1971	2	1	0	0	0	0	0	0	0	0	0	1	3	38
8	1972	1	0	0	0	0	0	0	0	0	0	0	0	1	39
9	1973	2	2	1	0	0	0	0	0	0	0	0	3	5	40
10	1974	2	2	1	0	0	0	0	0	0	0	0	3	5	41
11	1975	3	0	0	0	0	0	0	0	0	0	0	0	3	42
12	1976	4	2	1	0	0	0	0	0	0	0	0	3	7	43
13	1977	1	2	0	0	0	0	0	0	0	0	0	2	3	44
14	1978	1	0	4	1	0	0	0	0	0	0	0	5	6	45
15	1979	1	1	1	1	0	0	0	0	0	0	0	3	4	46
16	1980	3	0	0	1	1	0	0	0	0	0	0	2	5	47
17	1981	0	1	0	0	0	0	1	0	0	1	0	3	3	48
18	1982	2	0	1	0	1	0	0	0	0	0	0	2	4	49
19	1983	5	0	0	0	0	0	0	0	0	0	0	0	5	50
20	1984	1	0	1	0	0	0	0	0	0	0	0	1	2	51
21	1985	2	3	0	1	0	0	0	0	0	0	0	4	6	52
22	1986	3	0	0	1	0	0	0	0	0	0	1	2	5	53
24	1988	0	0	1	1	0	0	0	0	0	0	0	2	2	55
25	1989	2	0	0	0	1	0	0	0	0	0	0	1	3	56
26	1990	1	0	1	0	0	0	0	0	0	0	0	1	2	57
27	1991	2	3	4	0	0	0	0	0	0	0	0	7	9	58
28	1992	4	2	2	0	1	0	0	0	0	0	0	5	9	59
29	1993	3	8	3	0	0	0	0	0	0	0	0	11	14	60
30	1994	5	0	3	0	1	0	0	0	0	0	0	4	9	61
31	1995	2	2	0	0	0	0	0	0	0	0	1	3	5	62
32	1996	3	2	0	0	0	0	0	0	0	0	0	2	5	63

33	1997	5	2	1	0	0	0	0	0	0	0	0	3	8	64
34	1998	6	0	2	0	0	0	0	0	0	0	0	2	8	65
35	1999	5	0	0	3	2	1	0	0	0	0	0	6	11	66
36	2000	5	3	2	2	0	1	0	0	0	0	2	10	15	67
37	2001	5	2	1	2	2	0	0	0	0	0	0	7	12	68
38	2002	4	3	2	2	0	1	0	0	0	0	0	8	12	69
39	2003	3	6	4	2	0	0	0	0	0	0	0	12	15	70
40	2004	5	6	3	0	0	0	0	0	0	0	0	9	14	71
41	2005	7	2	3	1	0	1	0	0	0	0	0	7	14	72
42	2006	6	10	2	0	0	1	0	0	0	0	0	13	19	73
43	2007	8	4	3	1	0	0	0	0	0	0	2	10	18	74
44	2008	8	8	2	2	0	0	0	0	0	0	0	12	20	75
45	2009	14	7	1	0	0	0	0	1	0	0	0	9	23	76
46	2010	10	6	2	1	0	0	0	0	0	1	0	10	20	77
47	2011	7	5	2	3	0	0	0	0	0	0	1	11	18	78
48	2012	6	6	2	4	1	0	0	0	0	0	1	14	20	79
49	2013	1	0	0	1	0	0	0	0	0	0	0	1	2	80
		162	103	56	30	10	5	1	1	0	2	8	216	378	

APL = Age of Productive Life. MT = Total of multi-authored publications. TP = Total Publications.  
AA = Biological age of the Author.

#### 4.4 Authorship credits of researchers

**Table 4. Authorship credit of researchers collaborating with Elinor Ostrom in chronological order**

Sl. No.	Total Authors	1 aut	2 aut	3 aut	4 aut	5 aut	6 aut	7 aut	8 aut	9 aut	10 aut	> 10 aut	Total	CAS	Period
1	Elinor Ostrom	162	103	56	30	10	5	1	1	0	2	8	378	378	1965 -13
2	James Walker	0	3	11	6	1	1	0	1	0	0	1	24	559	1996-12
3	Ostrom Vincent	0	10	2	2	1	0	0	0	0	1	1	17	697	1965-11
4	Roger B. Parks	0	3	6	3	2	0	0	0	0	1	0	15	764	1973-89
5	Gordon P. Whitaker	0	2	6	3	2	0	0	0	0	1	0	14	515	1973-89
6	Roy Gardner	0	2	9	2	0	0	0	0	0	0	0	13	778	1990-01
7	T. K. Ahn	0	4	5	1	1	1	0	0	0	0	0	12	848	1999-2010
8	Wai Fung Lam	0	2	3	4	1	1	0	0	0	0	0	11	883	1992-11
9	Nagendra Harini	0	10	0	0	0	0	0	0	0	0	0	10	665	2006-12
10	Marco A. Janssen	0	3	4	1	0	1	0	0	0	0	0	9	630	2004-10

11	Agrawal Arun	0	4	0	2	0	0	0	0	0	0	2	8	387	1986-12
12	Shivakoti GP	0	1	0	4	2	1	0	0	0	0	0	8	808	1992-11
13	Thomas Dietz	0	0	4	0	0	1	0	0	0	0	2	7	858	2002-07
14	Clark Gibson	0	0	4	1	0	0	0	0	0	0	1	6	441	1986-05
15	Amy Poteete	0	4	1	0	0	0	0	0	0	0	0	5	396	2003-10
16	Janssen M. A.	0	4	0	1	0	0	0	0	0	0	0	5	569	2006-08
17	Paul C Stern	0	0	4	0	0	1	0	0	0	0	0	5	707	2002-12
18	Stephen L. Percy	0	0	0	2	1	0	0	0	0	1	0	5	820	1978-81

CAC = Cumulative Authorship Credit.

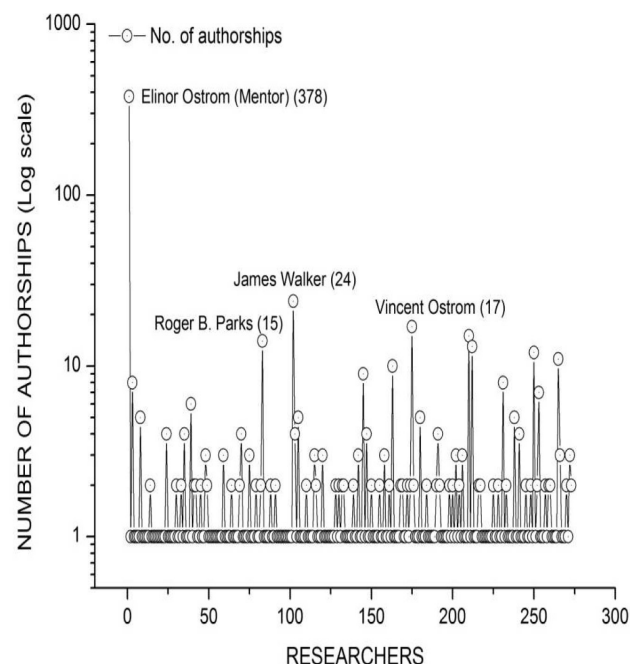


Figure-3. Publication productivity of the research group of Prof. E. Ostrom

#### 4.5 Authorship status in collaborative publications

Communication and collaboration between researchers are of great importance in the development of subject areas. In order to measure the collaborative research pattern, a simple indicator called Modified Collaboration Coefficient (Savanur & Srikant, 2010) is used. Highest collaboration coefficient (0.75) was during 2013. Further 57.14 percent of his papers were collaborative.

During the past 54 years, Prof. Ostrom had collaborated with a maximum number of researchers i.e. 272 as seen in Table 4. The publication productivity of his research group in chronological order is depicted in Figure 3. In Table 4 it has been observed that Prof. James Walker has collaborated the highest, i.e., 24 published research papers from the year 1998–2012. Prof. Ostrom Vincent has 17 papers from the year 1965–2011. Prof. Roger B. Parks has 15 papers from 1973-1989 and Prof. Gordon P. Whitaker has collaborated 14 papers from 1973-1989. Researchers collaborated with Prof. Ostrom single-authored two authored etc, as given in Table 4. The authorship credit for 273 authors counts at 897, each collaborating author being given one authorship credit for each paper. To her credit, Prof. E. Ostrom’s authorship credit was 42.14.

Table 5. Prof. Ostrom’s authorship status

No. of Papers	Position of authors											Total
	1 aut	2 auts	3 auts	4 auts	5 auts	6 auts	7 auts	8 auts	9 auts	10 auts	> 10 auts	
Single -authored	162	0	0	0	0	0	0	0	0	0	0	162
2-Authored	31	72	0	0	0	0	0	0	0	0	0	103

<b>3-Authored</b>	18	13	25	0	0	0	0	0	0	0	0	0	56
<b>4-Authored</b>	10	5	3	12	0	0	0	0	0	0	0	0	30
<b>5-Authored</b>	0	4	3	2	1	0	0	0	0	0	0	0	10
<b>6-Authored</b>	1		1	1	1	1	0	0	0	0	0	0	5
<b>7-Authored</b>	0	0	0	0	0	0	1	0	0	0	0	0	1
<b>8-Authored</b>	0	1	0	0	0	0	0	0	0	0	0	0	1
<b>9-Authored</b>	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>10-Authored</b>	0	0	0	0	1	0	0	0	0	0	1	0	2
<b>10-Authored</b>	0	1	0	0	1	0	0	1	1	1	1	3	8
<b>TOTAL</b>	222	96	32	15	4	1	1	1	1	1	2	3	378

For any given researcher, the authorship status changes from paper to paper. It has been noticed that in some papers the first-author would be seen either as a second and third author. This has been very much the case as shown in Table 5. Out of 378 papers, Prof. Ostrom was first author in 222 (58.73%) papers, which indicates the authority in topics she had researched with her collaborators. Followed by second author in 96 (23.4%) papers and third author position in 15 (3.97%) papers and so on. The maximum position of the author was 22nd author.

**Authorship Status**

Collaborators who are the first authors in these 216 collaborated papers listed in Table-6. Prof. Gordon P. Whitaker was the first author in 11 papers collaborated with Prof. Ostrom, followed by Roger B. Parks had a first author in 10 papers, Prof. James Walker and Prof. Vincent Ostrom both have appeared as first authors in 7 papers collaborated with Prof. Ostrom.

**Table 6. Authorship status of the core collaborators**

Core authors	No. of collaborative papers & status of core authors																	
	2-auts		3-auts			4-auts				5-auts				6-auts				
	I	II	I	II	III	I	II	III	IV	II	III	IV	V	I	III	IV	V	VI
<b>Elinor Ostrom</b>	31	70	18	13	22	10	5	3	11	4	3	2	1	1	1	1	1	1
<b>James Walker</b>	2	1	5	4	2	0	3	1	2	1	0	0	0	0	1	0	0	0
<b>Vincent Ostrom</b>	5	5	0	0	2	2	0	0	0	1	0	0	0	0	0	0	0	0
<b>Roger B. Parks</b>	1	2	6	0	0	3	0	0	0	0	2	0	0	0	0	0	0	0
<b>Gordon P. Whitaker</b>	2	0	6	0	0	3	0	0	0	0	2	0	0	0	0	0	0	0
<b>Roy Gardner</b>	1	1	5	2	2	0	0	1	1	0	0	0	0	0	0	0	0	0
<b>T. K. Ahn</b>	3	1	0	3	2	1	0	0	0	1	0	0	0	0	1	0	0	0
<b>Wai Fung Lam</b>	0	2	2	0	1	3	1	0	0	1	0	0	0	0	0	1	0	0
<b>Nagendra Harini</b>	6	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

7	8	10		13-aunts			15	16		19	22	Total
VII	II	V	X	II	VIII	X	XIII	IX	XI	XIV	XVI	
1	1	1	1	1	1	1	1	1	1	1	1	210
0	1	0	0	0	1	0	0	0	0	0	0	24
0	0	1	0	0	1	0	0	0	0	0	0	17
0	0	1	0	0	0	0	0	0	0	0	0	15
0	0	1	0	0	0	0	0	0	0	0	0	14
0	0	0	0	0	0	0	0	0	0	0	0	13
0	0	0	0	0	0	0	0	0	0	0	0	12
0	0	0	0	0	0	0	0	0	0	0	0	11
0	0	0	0	0	0	0	0	0	0	0	0	10

### Collaborating Authors

**Table 7. Quinquennial distribution of collaborating authors**

Year	Authors	Total
<b>1965-69</b>	Elinor Ostrom, Vincent Ostrom	2
<b>1970-74</b>	Elinor Ostrom, Ira L. Whitman, Vincent Ostrom, Gordon P. Whitaker, Roger B. Parks, Smith D.C.	6
<b>1975-79</b>	Elinor Ostrom, J. P. McIver, R. D. Sloan Jr, Robert W. Gage, Aaron Wildavsky, Judith V. May, Daniel J. Elazar, Vincent Ostrom, Gordon P. Whitaker, Roger B. Parks, Smith D.C., Stephen L. Percy	12
<b>1980-84</b>	Elinor Ostrom, S Mastrofski, Clark Terry N., John D. Kasarda, Lorna Crowley Ferguson, Martha Vandivort, Paula Baker, Robert L. Lineberry, Ronald S. Burt, Dina A. Zinnes, Judith A. Gillespie, S Percy M, Vincent Ostrom, Gordon P. Whitaker, Roger B. Parks, Stephen L. Percy, Oakerson R, Larry Kiser, Rick Wilson, Robert L. Bish	20
<b>1985-89</b>	Elinor Ostrom, Antoni Kuklinski, Kingsley E. Haynes, Olli Kultalahti, Kaufmann F. X., Majone G., Roberta Herzberg, Stuart A. Marks, Sue E. S. Crawford, Feeny David, Picht Hartmut, Stephen Mastrofski, Vincent Ostrom, Gordon P. Whitaker, Roger B. Parks, Larry Kiser, Rick Wilson, Robert L. Bish, William Blomquist, Clark Gibson, John T. Williams, Agrawal Arun, Michael McGinnis, Franz J. Weissing	24
<b>1990-94</b>	Elinor Ostrom, James Alt, Margaret Levi, Edella Schlager, Neeraj N. Joshi, Charles M. Schweik, Larry Schroeder, Paul Benjamin, Schlager E., Sharon K. Huckfeldt, Shui Yan Tang, Susan Wynne, Tina West, Weissing F., Ashutosh Shukla, Myungsuk Lee, Sowerwine Jennifer, Vincent Ostrom, Franz J. Weissing, Roy Gardner, Gina Davis, McGinnis M., Shivakoti GP, Wai Fung Lam, Ujjwal Pradhan	25
<b>1995-99</b>	Elinor Ostrom, Brouwer R., Bruce J. W., C. Dustin Becker, Coulibaly C., J.T.Thomson, Jodha N. S., Li Z. M., Merlo M., Robert Keohane, Rudrappa S., Runge C. F., Sarin M., White T. A., della Schlager, Lee M, Alt J, Beach W, Fenno R, Levi M, Burger Joanna, Field Christopher B., Hayashi N, Nahoko Hayashi, Norgaard Richard B., Toh-Kyeong, Toshio Yamagishi, Vincent Ostrom, Clark Gibson, John T. Williams, Agrawal Arun, Michael McGinnis, Roy Gardner, McGinnis M., Shivakoti GP, Wai Fung Lam, Ujjwal Pradhan, Margaret McKean, James Walker, Policansky David, Robert Costanza, Bobbi Low, Carl Simon, David Schmidt, James Wilson, Robert Shupp, T. K. Ahn	47

2000-04	Elinor Ostrom, Alexander L. George, Anderies, Arend. Lijphart, Bates TS, Collins D, Durkee PA, Flagan RC, Gasso S, Hegg DA, Holben BN, Jonsson HH, Juan Linz, Lief Iewin, Livingston JM, Nielsen KE, Noone KJ, Putaud JP, Quinn PK, Rew Herr, Robert .A Dahl, Russell LM, Russell PB, Schmid B, Seinfeld JH, Smith PJ, Tomasi C, Vitale V, Bernard D. Goldstein, Cox James C., George Varughese, J. neeral, Joanna Burger, Richard B Norgaard, Alessandro Pizzorno, Celia Fudemma, Elke Weber, Fabio de Castro, J. C. Randolph, Maria Clara Silva-Forsberg, Mark E. Warren, Susan Stonich, JC Cardenas, Vincent Ostrom, Clark Gibson, John T. Williams, Agrawal Arun, Michael McGinnis , Roy Gardner, Ujjwal Pradhan, Margaret McKean, James Walker, Policansky David, Robert Costanza, Bobbi Low, Carl Simon, David Schmidt, James Wilson , Robert Shupp, T. K. Ahn, Nives Dolšak, Emilio F. Moran, Thomas Dietz, Paul C Stern, Tom Evans, Amy Poteete, Charlotte Hess, M.A. Janssen, Juan-Camilo Cardenas, John Meries, Marco A. Janssen, KristerEersson, York A.M., Janssen M. A., Oran Young	75
2005-09	Elinor Ostrom, Douglas Vermillion, Krister Andersson, Robert Yoder , Sujai Shivakumar, Tanya Hayes, Aurelian Craiutu, Frans Berkhout, Gilberto Gallopin, Nick Zagorski, Sander van der Leeuw, Sheldon Gellar, Basudeb Guha-Khasnobis, Charles L. Redman, Deadman Peter, E. wollenberg, Frank van Laerhoven, Jane Lubchenco, Jianguo Liu , Kratz Timothy, L. Medero, Lubchenco Jane , Marina Alberti, Ouyang Zhiyun , Pell Alice N., Provencher William, Ravi Kanbur, Stephen H. Schneider, Stephen Schneidero, Taylor William W., Birendra Karna, F. Menczer, Mukunda Karmacharya, Norberg J., R. L. Goldstone, Schwab D., Wilson J., Castillo Antonio Jamie, Eduardo Brondizio, Mwangi Esther , Schoon Michael, Steed Brian, Vincent Ostrom, Clark Gibson, John T. Williams, Agrawal Arun, Michael McGinnis , McGinnis M., Shivakoti GP, Wai Fung Lam, Ujjwal Pradhan, James Walker, T. K. Ahn, Emilio F. Moran, Thomas Dietz, Paul C Stern, Tom Evans, Amy Poteete, Charlotte Hess, M.A. Janssen, Juan-Camilo Cardenas, John Meries, Marco A. Janssen, KristerEersson, York A.M., Janssen M. A., Oran Young, Nagendra Harini, Stephen R. Carpenter, Folke Carl, Walker Brian, Holahan Robert, Coleman Eric, Xavier Basurto, F. Stuart Chapin III	75
2010-13	Elinor Ostrom, Allen Lee, Björn Vollan, Burney Fischer, Forrest Fleischman, Gustavo Garcia-Lopez, Katrin Daedlow, Kinga Boenning, Maria Claudia Lopez, Michael Cox, Mikaela Schmitt-Harsh, Sarah Mincey, Anne-Sophie Cre'pin, Asa Jansson, Frances Westley, Fran?is Bousquet, Fredrik Moberg, Garry Peterson, Gretchen Daily, Henrik O?sterblom, Janssen Marco, Johan Rockstro?m, Jonas Ebbesson, Kjell Danell, Ma?ns Nilsson, Per Olsson, Prachanda Pradhan, Stephen Polasky, Thomas Elmqvist, Victor Galaz, Will Steffen, B. L. Turner II, Chhatre Ashwini, Chris Field, Christina Chang, Daniel Cole, Diana Liverman, Emily Chamlee-Wright, Eric Lambin, Erle Ellis, Hartmut Kliemt, Herbert Dawid, Ida Kubiszewski, James Cox, James Syvitski, Jennifer Allen, Jenny DuVander, Lidia Brito, Mark Pennington, Mark Stafford-Smith, Owen Gaffney, Pamela Matson, Paul Crutzen, Pedro Sanchez, Persha Lauren, Peter Gleick, Peter Kareiva, Rucha Ghate, Ruth DeFries, Suresh Ghate, Sybil Seitzinger, Vjollca Sadiraj, Vlad Tarko, Anderies John M., Vincent Ostrom, Michael McGinnis, Shivakoti GP, Wai Fung Lam, James Walker, T. K. Ahn, Paul C Stern, Amy Poteete, Charlotte Hess, Nagendra Harini, Stephen R. Carpenter, Folke Carl, Walker Brian, Holahan Robert, Coleman Eric, Xavier Basurto, F. Stuart Chapin III	81

Table 7 shows the quinquennial year-wise association of collaborators with Prof. Elinor Ostrom. It is clear from the above table that in every quinquennial year gradually the number of collaborators were increased and the maximum of 81 collaborators were associated with Prof. Ostrom during 2010-13, followed by 75 collaborators each in during 2005-09 and 2000-04 respectively and 47 collaborators were associated with Prof. Ostrom during 1995-99.

#### 4.6 Channels of communication

Among 338 scientific papers, a total of 202 were

research papers published in 120 different channels of communication. Channel-wise scattering of publications by her is provided in Table 8 and Figure 3. The journals preferred by Prof. Ostrom are: *Political Science & Politics* (8) published from UK, followed by *American Political Science Review* (7) published from UK, and 5 articles each in six journals i.e. *Ecological Economics* (USA), *Ecology and Society* (Canada), *Public Choice* (Germany), *Rationality and Society* (UK), *Science* (USA), *Social Science Quarterly* (USA) respectively. Her published paper in the journal *Science* had a very high impact factor (27.955), with a total of five articles.



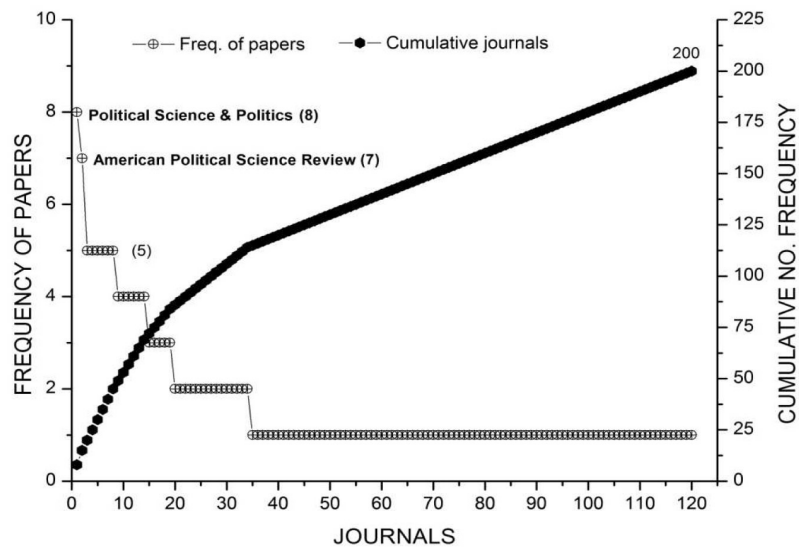


Figure 4. Bradford-Zipf bibliography for Prof. E. Ostrom.

Table 8. Ranking of the channels of communication used by Prof. Elinor Ostrom

Rank	Journal Name	No. of articles	Cum articles	FPY-LPY	Country
1	PS: Political Science & Politics	8	8	1996-07	UK
2	American Political Science Review	7	15	1979-97	Cambridge
3	Ecological Economics	5	20	1999-10	USA
4	Ecology and Society	5	25	2004-13	Canada
5	Public Choice	5	30	1968-03	Germany
6	Rationality and Society	5	35	1989-09	UK and US
7	Science	5	40	1999-10	USA
8	Social Science Quarterly	5	45	1972-84	USA
9	Global Environmental Change	4	49	2006-12	Sweden
10	Journal of Economic Behavior & Organization	4	53	1999-11	Netherlands
11	Journal of Theoretical Politics	4	57	1992-03	UK and US
12	PNAS	4	61	2006-07	USA
13	Public Administration Review	4	65	1971-12	USA
14	World Development	4	69	1996-08	USA
15	IHDP Newsletter	3	72	2000-06	Germany
16	International Journal of the Commons	3	75	2007-12	US
17	Journal of Institutional Economics	3	78	2007-11	UK
18	Policy Studies Journal	3	81	1978-01	USA
19	Urban Affairs Quarterly	3	84	1971-83	UK
20	Agricultural Systems	2	86	2004	France
21	American Economic Review	2	88	2010-11	US
22	Annual Review of Political Science	2	90	1999-10	US
23	CAPRI Working Paper	2	92	2003-04	USA
24	Environment: Science and Policy for Sustainable Development	2	94	2009	Routledge
25	Journal of Economic Perspectives	2	96	1993-99	Ann Arbor
26	Land Economics	2	98	1992-02	USA

27	Overseas Development Institute Irrigation Management Network Paper	2	100	1974-93	Ann Arbor
28	PEGS: The Good Society	2	102	1999-02	
29	Policy Sciences	2	104	2008-10	Germany
30	Policy Studies Review	2	106	1985	UK
31	Scandinavian Political Studies	2	108	2000	Sweden
32	Society and Natural Resources	2	110	2007	USA
33	Southern Economic Journal	2	112	2099-12	US
34	Tellus Series B-Chemical and Physical Meteorology	2	114	2000	Sweden
35-120	Journal pubshed single article each	86	200	2010	USA

## CONCLUSION

We conclude that scientometrics plays an important role in the dissemination of a particular scientist whose interest lays in the number of important papers he or she has published. In the above case study, Prof. Elinor Ostrom has truly advanced our understanding of subjects dealing with Political and Economic Sciences. Citing the number of publications, authorship details give us the enormous interest the author has taken to reach his work to common man's understanding of geosciences.

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