

Contemporary Policing Management Studies: Domain, Theme and Relationships

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Abstract

To map the intellectual structure of policing management studies in this century, this study identified the most important publications and the most influential scholars as well as the correlations among these scholar's publications. In this study, bibliometric and social network analysis techniques are used to investigate the intellectual pillars of the policing management literatures. By analyzing 11,166 citations of 329 articles published in the *Policing: An International Journal of Police Strategies & Management* from 2000 to 2006, this study maps a knowledge network of policing management studies. A factor analysis of the article co-citations suggested that the field is organized five different concentrations of interest: (A) Public Perception of Police, (B) Community Policing, (C) Police Behavior, (D) The Changes of Police Style, and (E) Police Development. The results of the mapping can help identify the research direction of policing management studies and provide a valuable tool for researchers to access the literatures in this area.

Keywords: Police, Policing Management, Bibliometric, Social Network Analysis

I. Introduction

Over the last decade the scholars have produced a great deal of papers in policing management field. While research findings in policing management can be disseminated to scholars and managers in the form of journal articles, books, and other documents, scholars are easily confused with the subjects and their contributions to the development of policing management when faced with abundant publications. Many studies have been made to explore these issues (Ngai and Wat, 2002; Shaw et al., 1997; Wareham et al., 2005), yet all the issues are usually discussed solely based on the subjective assessment of different experts, which often leads to many controversies in the policing management area.

The research methods used for this study are bibliometric and social network analysis. Bibliometric is a theory-based citation and co-citation analysis. Using citation analysis, the interlinked invisible nodes are discovered from which the most influential publications and scholars in the policing management field are identified. Further, co-citation analysis is conducted to utilize the social network analysis exploring the intellectual structure of policing management studies and to explore the invisible knowledge nodes that have contributed most to the studies of policing management and their possible evolution patterns.

The main purpose of what follows is therefore twofold: i) to examine the scholarly potentials of a field's knowledge network as an efficient instrument of epistemological research in that field, especially for self-starters and newcomers to the field in search of steep learning curves, and ii) to develop the concept of knowledge network of policing management studies. Immediately after this introductory note, the theoretical development on the knowledge networks is presented in Section II. The relevance and the relationship of such knowledge networks to the scholarly inquires in a field are examined in Section III. The discussion of results based on bibliometric methodologies are presented next.

II. Review of Academic Literature

The term bibliometrics refers to the mathematical and statistical analysis of patterns that appear in the publication and use of document. Citation analysis is based on the premise that authors cite papers they consider to be important to the development of their research. As a result, heavily cited articles are likely to have exerted a great influence on the subject than those frequently cited. Similarly, co-citation analysis of documents records the number of papers that have cited any particular pair of documents and it is interpreted as a measure for similarity of content of the two documents. The approach is instrumental in identifying groupings of authors, topics, or methods and can help us understand the way in which these clusters interrelate. More specifically, co-citation studies compile co-citation counts in matrix form and statistically scale them to capture a snapshot at a distinct point in time of what is actually a changing and evolving structure of knowledge.

Several studies have used the bibliometric techniques to study other areas of management research. For example, Ponzi (2002) explored the intellectual structure and interdisciplinary breadth of Knowledge Management in its early stage of development, using principle component analysis on an author co-citation frequency matrix; Etemad (2004) identified the most influential authors and studies in electronic commerce field by using citation analysis; Ramos-Rodriguez and Ruiz-Navarro (2004) examined the intellectual structure change of Strategic Management Research by conducting a bibliometric study of the Strategic Management Journal; Acedo and Casillas (2005) explored the research paradigms of International Management research by applying factorial analysis techniques in an author co-citation study. Recently, Pilkington and Teichert (2006) used bibliometric techniques to investigate the intellectual pillars of the Management of Technology literature and explore whether these are distinct from those commonly associated with its rival fields.

To the best of our knowledge, no such study has handled the field of policing management; therefore this study aims to fill a gap in policing management literature by applying bibliometric techniques to a representative collection of research articles relating to this disciplinary area.

III. Research Methodology

The research methods used for this study are bibliometric and social network analysis. Bibliometric is a theory-based citation and co-citation analysis. Using citation analysis, the interlinked invisible nodes are discovered from which the most influential publications and scholars in the policing management field are identified. Further, co-citation analysis is conducted to utilize the social network analysis exploring the intellectual structure of the policing management studies and to explore the invisible knowledge nodes that have contributed most to the studies of the policing management and their possible evolution patterns. Based on the knowledge network, the journal articles explored the intellectual

structure of the policing management studies from 2000 to 2006. Citation and co-citation analysis are the main methods for this study. With citation and co-citation analysis, this research assumed three stages, each of which required different approaches to examining the evolution of the policing management studies.

First, the databases were identified as the sources of the policing management publications. Then data collection and analysis techniques were designed to collect the desired information about the topics, authors, and journals on the policing management research. For the data presented here, the *Policing: An International Journal of Police Strategies & Management* were used as parts of the databases. The SSCI and SCI were widely used databases, which included citations published in about 6000 refereed journals. The *Policing: An International Journal of Police Strategies & Management* is the only and unique journal in the database of SSCI. Using this journal provided the most comprehensive and widely accepted databases of the policing management publications. Unlike other prior studies in the policing management field, data used in this study were not drawn from journals chosen by the peer researchers (Ngai and Wat, 2002; Shaw et al, 1997). Instead, the entire databases of the *Policing: An International Journal of Police Strategies & Management* from 2000 to 2006 served as the universe for conducting the analysis. This study included 329 journal articles which cited 11,166 other publications as references. The cited publications in these papers include both published books and other journal articles.

In the second stage, citation analysis was tabulated for each of the 329 source documents using the BibExcel software package (Persson, 2003). After a series of operations, key nodes in the knowledge network in the policing management studies were identified and the structures developed. In the final stage, co-citation analysis is conducted to utilize the social network analysis and factor analysis which exploring the intellectual structure of the policing management studies and to explore the invisible knowledge nodes that have contributed most to the studies of the policing management and their possible evolution patterns.

IV. Results

Citation Analysis. Preliminary analyses of the data produced interesting background statistics, for example the frequency of journal citations, listed in Table 1. Criminal Justice and general policing management journals featured prominently alongside the policing management studies. *Police Studies: International Review of Police Development* has merged into the *Policing: An International Journal of Police Strategies and Management*. These not only support our data selection but also prove the *Policing: An International Journal of Police Strategies and Management* is the most excellent journal in the policing management field.

The most influential documents with the most citation were then identified by their total counts of citation within the selected journal articles. Among all the cited documents, the most cited policing management literatures from 2000 to 2006 was Herman Goldstein's book untitled *Problem-Oriented Policing* published in 1990, followed by James Wilson and George Kelling's paper untitled *Broken windows: The police and neighborhood safety* published on the Atlantic Monthly in 1982, and James Wilson's book untitled *Varieties of Police Behavior: The Management of Law and Order in Eight Communities* published in 1968 (see Table 2). Journal articles and books combined, the most cited scholar from 2000 to 2006 was David Bayley, followed by Samuel Walker and Wesley Skogan (See Table 3). These scholars have the most influence in the development in the policing management studies and thus collectively define this field. Although it does not eliminate the bias against younger authors, it still represents the focus of the main authors in the field and this gives us an indication of

the popularity of certain patenting topic.

Table 1: The Most Frequently Cited Journals

Fq.	Journal Title	Percentage (%)
286	Journal of Criminal Justice	2.56
276	Journal of Police Science and Administration	2.47
268	Policing: An International Journal of Police Strategies & Management	2.4
216	Justice Quarterly	1.93
158	American Journal of Police	1.42
158	Criminology	1.42
151	Crime & Delinquency	1.35
96	Law & Society Review	0.86
85	Police Studies: International Review of Police Development	0.76
70	British Journal of Criminology	0.63
68	Journal of criminal law and criminology	0.61
64	American sociological review	0.57

Co-citation Analysis. In this stage, data mapping was conducted and an intellectual structure of the policing management studies was revealed by using co-citation analysis. Article co-citations were tabulated for each 329 source documents using the Bibexcel software package. Many of the journal articles had very few co-citations and were either unlikely to have had a significant impact on the development of the field and/or were too recent to have had time to impact on the literature. To facilitate the running of our analyses and improve the probability of its success, all journal articles in the final set had at least eight citations. Based on the total number of citations in the selected journals, the top 36 articles were identified, and then an article co-citation matrix (36 x 36) was built before a pictorial map was drawn to describe the correlations among different articles. In doing so, we were following the procedures recommended by White and Griffith (1981).

Social network analysis tools can be used to graph the relations in the article co-citation matrix and identify the strongest links and so the core areas of interest (Pilkington and Teichert, 2006) in the policing management field. Figure 1 shows the core of the article co-citation in this study sample articles with links shown in the network. This was produced using the UCINET software (Borgatti et al., 2002) and shows graphically the core areas of interest. The different shapes of the nodes result from performing a faction study of these articles. This method seeks to group elements in a network based on the sharing of common links to each other. These factions can be interpreted as concentrating on the interaction between public perception of police, community policing, police behavior, the changes of police style, and police development.

Whilst the diagram in Figure 1 is very telling and provides a clear picture, its focus is only on the very core area and a limited amount of the data available. By taking the co-citation matrix and grouping the articles using factor analysis of the correlation between the entries determines which articles are grouped together and there for share a common element. According to this, the closeness of article points on such maps is algorithmically related to their similarity as perceived by citers. We use r-Pearson as a measure of similarity between article pairs, because it registers the likeness in shape of their co-citation count profiles over all other authors in the set (White and McCain, 1998). The co-citation

correlation matrix was factor analyzed using varimax rotation, a commonly used procedure, which attempts to fit (or load) the maximum number of articles on the minimum number of factors. The diagonals were considered it missing data and apply the criterion of omitting the two cases (*pairwise delete*) (McCain, 1990).

Table 2: Article Citation Frequency (Frequency 8)

Fq.	Articles	Percentage (%)
28	GOLDSTEIN H, 1990, PROBLEM ORIENTED POL	0.25
19	WILSON JQ, 1982, ATLANTIC MONTHLY, V249, P29	0.17
17	WILSON JQ, 1968, VARIETIES POLICE BEH	0.15
13	GOLDSTEIN H, 1977, POLICING FREE SOC	0.12
12	SKOGAN WG, 1997, COMMUNITY POLICING C	0.11
11	BAYLEY DH, 1994, POLICE FUTURE	0.10
11	BITTNER E, 1970, FUNCTIONS POLICE MOD	0.10
11	BRANDL SG, 1994, JUSTICE Q, V11, P119	0.10
11	CAO L, 1996, AM J POLICE, V15, P3	0.10
11	TROJANOWICZ R, 1990, COMMUNITY POLICING C	0.10
11	WORDEN RE, 1989, LAW SOC REV, V23, P667	0.10
10	BAYLEY DH, 1989, CRIMINOLOGY, V27, P1	0.09
10	DECKER SH, 1981, J POLICE SCI ADMIN, V9, P80	0.09
10	LURIGIO AJ, 1994, CRIME DELINQUENCY, V40, P315	0.09
10	SKOLNICK JH, 1986, NEW BLUE LINE POLICE	0.09
10	SPARROW MK, 1990, 911 NEW ERA POLICING	0.09
10	WALKER S, 1999, POLICE AM INTRO	0.09
9	CARTER DL, 1985, J CRIM JUST, V13, P487	0.08
9	DEAN D, 1980, LAW POLICY Q, V2, P445	0.08
9	GOLDSTEIN H, 1987, CRIME DELINQUENCY, V33, P6	0.08
9	JACOB H, 1971, LAW SOC REV, V6, P69	0.08
9	MAGUIRE ER, 1997, JUSTICE Q, V14, P547	0.08
9	REINER R, 1992, POLITICS POLICE	0.08
8	BITTNER E, 1990, ASPECTS POLICE WORK	0.07
8	BROWN JM, 1990, WORK STRESS, V4, P305	0.07
8	CRANK JP, 1998, UNDERSTANDING POLICE	0.07
8	FRANK J, 1996, JUSTICE Q, V13, P321	0.07
8	MCLAREN G, 1997, INDIANAPOLIS ST 1008, B1	0.07
8	MURTY KS, 1990, J POLICE SCI ADMIN, V17, P250	0.07
8	REISIG MD, 2000, JUSTICE Q, V17, P607	0.07
8	RIKSHEIM EC, 1993, J CRIM JUST, V21, P353	0.07
8	SCAGLION R, 1980, CRIMINOLOGY, V17, P485	0.07
8	SKOGAN WG, 1990, DISORDER DECLINE CRI	0.07
8	THOMAS CW, 1977, J POLICE SCI ADMIN, V5, P305	0.07
8	TROJANOWICZ R, 1998, COMMUNITY POLICING C	0.07
8	ZHAO J, 1996, WHY POLICE ORG CHANG	0.07

Table 3: Author Citation Frequency (Frequency 30)

Fq.	Author	Percentage (%)
97	BAYLEY DH	0.87
78	WALKER S	0.70
75	SKOGAN WG	0.67
70	SKOLNICK JH	0.63
69	GOLDSTEIN H	0.62
69	SHERMAN LW	0.62
66	WILSON JQ	0.59
65	KELLING GL	0.58
64	MASTROFSKI SD	0.57
60	CRANK JP	0.54
56	ALPERT GP	0.50
54	TROJANOWICZ R	0.48
49	CARTER DL	0.44
49	MARTIN SE	0.44
46	MANNING PK	0.41
45	BROWN JM	0.40
44	FYFE JJ	0.39
44	MAGUIRE ER	0.39
44	ZHAO JH	0.39
39	KAPPELER VE	0.35
36	BITTNER E	0.32
36	LANGWORTHY RH	0.32
34	GREENE JR	0.30
33	WORDEN RE	0.30
32	CORDNER GW	0.29
31	REISS AJ	0.28
30	REISIG MD	0.27
30	ROSENBAUM DP	0.27
30	VIOLANTI JM	0.27
30	WEITZER R	0.27

Five factors were extracted from the data and together they explain close to 80% of the variance in the correlation matrix. Table 4 lists the five most important factors along with the articles that had a factor loading at least 0.4. As is usual in this type of analysis, article with less than a 0.4 loading were dropped from the final results (White and Griffith, 1981). We tentatively assigned names to the factors on the basis of our own interpretation of the articles with high associated loading. Implicitly, our interpretation of the analysis results is that the policing management field is composed of at least five different sub-fields: (A) Public Perception of Police, (B) Community Policing, (C) Police Behavior, (D) The Changes of Police Style, and (E) Police Development. We made no attempts to interpret the remaining factor on account of their relative small eigenvalues ($\lambda > 1.0$). They have similarly been excluded from Table 4.

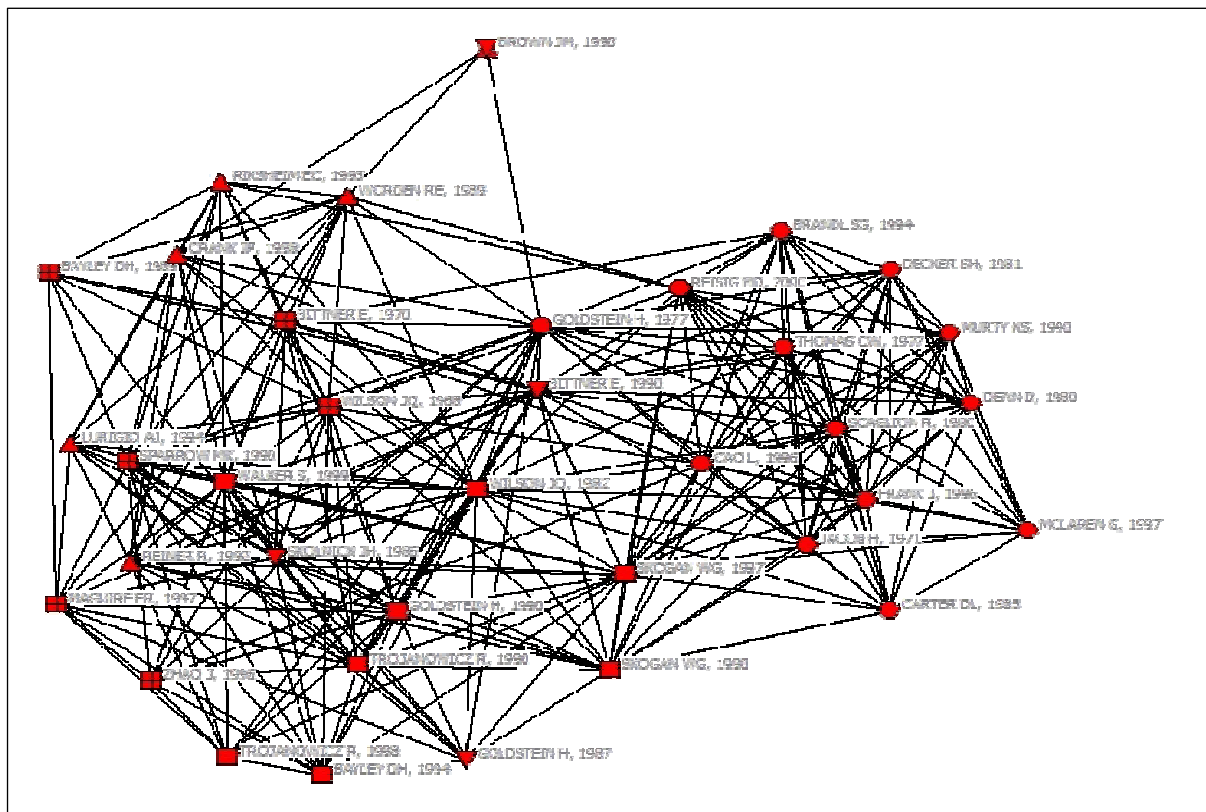


Figure1: Core Article Co-citation Network

Figure 1 and Table 4 clearly indicated that the most influential articles in the policing study from 2000 to 2006 clustered together. The main research focused on the public perception of police. Since the 1960s, a substantial body of research has focused on citizens' attitudes toward the police. Justice is generally considered an important value and its distribution is often used to assess the desirability of a political system (Jacob, 1971). Justice depends on the expectation of people, their perceptions of what treatment others receive, and the interpretation of their own experiences in term of their personal values. Researchers measured the relationship between race, citizen, neighborhood context and attitudes toward the police for directional accuracy and ability to explain satisfaction with the police. Scaglion (1980) suggested that positive styles of policing will significantly affect police-community relations, and that police-community relations programs stressing officer-citizen interaction in a law enforcement context will have the highest probability of success.

Based on Figure 1 and Table 4, the community policing permeate the articles in the second factor. A new style known as "community policing" has adopted by the police departments. It was a revolutionary movement, a philosophy and an organizational strategy that expands the traditional police mandate. Community policing is the latest reform in law enforcement and is quite popular among politicians, citizens, and police managers. This approach to policing involves organizational decentralization, new channels of communication with the public, a commitment to responding to what the community thinks their priorities ought to be, and the adoption of a broad problem-solving approach to neighborhood issues (Skogan, 1997). The community policing urged police to form a partnership with the people in the community so average citizens can contribute to the police process in exchange for their support and participation.

Table 4: Articles in Five Factors

Factors	Journal Articles				Eig. (%)	CUM. (%)
	Article	loading	Article	loading		
(A) Public Perception of Police	REISIG MD, 2000	0.95	CARTER DL, 1985	0.94	43.6	43.6
	SCAGLION R, 1980	0.95	DECKER SH, 1981	0.94		
	JACOB H, 1971	0.94	CAO L, 1996	0.93		
	THOMAS CW, 1977	0.94	BRANDL SG, 1994	0.92		
	MURTY KS, 1990	0.94	MCLAREN G, 1997	0.85		
	FRANK J, 1996	0.94	GOLDSTEIN H, 1977	0.55		
	DEAN D, 1980	0.94				
(B) Community Policing	TROJANOWICZ R, 1998	0.87	WILSON JQ, 1982	0.75	13.7	57.2
	BAYLEY DH, 1994	0.85	SKOGAN WG, 1990	0.74		
	SKOGAN WG, 1997	0.82	TROJANOWICZ R, 1990	0.63		
	GOLDSTEIN H, 1990	0.75	WALKER S, 1999	0.52		
(C) Police Behavior	RIKSHEIM EC, 1993	0.92	REINER R, 1992	0.72	10.3	67.5
	CRANK JP, 1998	0.85	LURIGIO AJ, 1994	0.61		
	WORDEN RE, 1989	0.84				
(D) The Changes of Police Style	BAYLEY DH, 1989	0.77	BITTNER E, 1970	0.75	7	74.4
	ZHAO J, 1996	0.77	WILSON JQ, 1968	0.63		
	MAGUIRE ER, 1997	0.75	SPARROW MK, 1990	0.56		
(E) Police Development	BITTNER E, 1990	0.65	GOLDSTEIN H, 1987	0.5	4	78.5
	SKOLNICK JH, 1986	0.63				

Implications of the police behavior permeate the articles in the third factor. Police culture has been widely criticized as a source of resistance to change and reform, and is often misunderstood. Researchers examined the causes of police behavior and provided a synopsis of the factors known to influence service, detection, arrest, and force behavior. Worden (1989) stated situational factors have modest effects on officers' choices among informal actions. Furthermore, attitudinal variables fail to account for more than a very small part of the variation in behavior. Although the understanding of the causes of police behavior has become more refined, a number of questions remain unanswered.

The fourth factor focus on the changes of police style. Many of the organizational structures changes could be attributed to new technologies, increasing demands from communities to broaden the scope of their services, and efforts to prevent corruption. The community policing reformers argue that police should thin out their administrative components to cut red tape and to focus more resources on the goals of the organization than on the organization itself. Wilson (1968) described the patrolman and the problems he faced that arise out of constraints imposed by law, politics, public opinion, and the expectations of superiors. He observed that the ability of the patrolman to do his job well may determine the success in managing social conflict and the prospects for maintaining a proper balance between liberty and order.

The police development permeates the articles in the fifth factor. Researchers questioned the value of traditional policing methods has led to experiments with new forms of policing.

These experiments place greater dependence upon redefining the relationship that the police develop with the community (Goldstein, 1987). The police departments experimented with a variety of method to become more community oriented. The police were to be more proactive rather than reactive in their relationships with the community they served. Skolnick (1986) described the innovation community policing strategies and provided background political and socio-economic information as well.

V. Conclusions

This paper has investigated the policing management using citation and co-citation data published in the *Policing: An International Journal of Police Strategies and Management* from 2000 to 2006. A factor analysis of the article co-citations suggested that the field is organized five different concentrations of interest: (A) Public Perception of Police, (B) Community Policing, (C) Police Behavior, (D) The Changes of Police Style, and (E) Police Development.

The authors and articles have profiled the major themes, concepts and relationships which discussed within each domain. We found that the scope of the policing management studies has been broad and there are many research opportunities emerging in the coming evolution of the policing management. The police administrations continue to innovate and adopt the policies and suggestions rapidly and extensively. The contribution of this paper is to provide a valuable research direction in the policing management area and propose an objective and systematic mean of determining the relative importance of different knowledge nodes in the development of the policing management field.

Even though this body of research has the undeniable merit of offering valuable insights into the intellectual structure of the policing management studies, it has some limitations. First, our search criteria may be incomplete, and many good papers may not have been included. Second, the sample articles choose from 2000 to 2006, which might affect the generalization of this study.

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