The Diffusion of Innovation among United States Policing Jurisdictions: A Cautionary Tale for Theorists and Researchers

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Abstract

This article is intended to stimulate discussion on how the policing community theoretically and empirically deal with the diffusion of innovation motifs. Through a rather argumentative prose, argued is the issue that the field of criminology may proffer from taking a theoretical and methodological step back, so to speak, in order to discover how we have arrived at our current understanding of diffusion of innovation concepts and how we should proceed given alternate frameworks of discovery. The framework championed here is that of "cultural transmissions theory" which describes the modes of connectivity between communicating entities [persons, groups, organizations, etc.]. This framework is thus applied to explain the processional paths with which innovation and succeeding information are spread throughout United States Policing agencies. Five propositions are preemptively discoursed in accordance with the theoretical underpinnings of the cultural transmission theory then retrospectively analyzed using Social Network Analysis techniques [used mainly for illustrative purposes]. Overall, it is argued that the field of criminology should consider these propositions prior to investigating how information disseminates among policing jurisdictions.

Keywords: Policing, Social Network Analysis, Cultural Transmission Theory.

Introduction

More so than in any other sub-field of criminology, policing literature is rife with the concepts of innovation, diffusion, and adoption. This trend began in the mid–1990's and has spread throughout our literature and research; it is now fully entrenched to the point of no return. While these concepts have intrinsically stimulated research on the diffusion of police technology (Weisburd & Lum, 2005; Skogan & Hartnett, 2005; Moore & Braga, 2003), the diffusion of policing strategies (Oliver, 2000; U.S. Department of Justice, 2003), and the general spread of *innovative* policing technology and strategies (Detlef, 2001; Helms & Guiterez, 2007; King, 2000; Morabito, 2008; Prenzler & Ronken, 2003; Morselli & Roy, 2008) their usage has become so engrained within our theoretical repertoire that we often times forget the complex assumptions which under gird their seemingly simple façade. Throughout this article I argue that information is not simply created through innovation and then accepted by other police jurisdictions; it is first

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transmitted from individual-to-individual or group-to-group, and then diffuses outwards from this central location. This diffusion process can take any shape, simply depending on who is communicating with whom. For this reason, within the following pages I argue that research within the field of criminology and criminal justice is founded on a very limited understanding of the complexities of diffusion of innovation literature and theory. It will also be shown that we must either alter our methodology or cleave this theoretical framework from our explorations altogether. Overall, I will attempt to present a more complete picture of the diffusion process by recommending five propositions for the field of criminology to consider.

Current State of Affairs
Fragmented v. Solidified Communication Networks

The policing community within the field of Criminology has been witness to several debates over the years; one strikingly important deliberation revolves around the level of interconnectivity between policing jurisdictions. The policing environment within the United States has commonly been referred to as a decentralized and fragmented affair, where policing agencies maintain a high degree of isolation from one another, influenced only by downward reaching policies and *formal* information—distributed by government sources and professional organizations (see Weiss, 1998). For years such agencies as the Association of Chiefs of Police, the Police Executive Research Forum, and the Police Foundation have disseminated information down to state and local police forces (1998). However, it has been argued that this downward spread of information is either not being received by individual jurisdictions or is not being accepted by them (Skogan &Hartnett, 2005; Helms & Guiterez, 2007; King, 2000; Morabito, 2008; Weisburd & Lum, 2005). In either case the result is an extremely fragmented system where each jurisdiction is said to be "doing their own thing", so to speak. In contrast to this relatively ubiquitous assumption, another camp has brought to our attention the importance, as well as relative prevalence, of *informal* information sharing between agencies (most notably Weiss, 1998). Weiss (1998) first drew our attention to such a phenomenon when he postulated that jurisdictions quite frequently solicit help from outside agents, usually via the telephone (which comprises 89.7% of inter-agency communication) in a highly informal manner. If Weiss (1998) is correct, that informal information sharing is prevalent, the overall U.S. policing system is not fragmented, as many would speculate, but relatively well organized. However, we may not wish to whole-heartedly gravitate toward an assumption that information is spread informally amongst policing jurisdictions, or toward the inverse assumption that informal information sharing is scarce, we must instead consider that if the system is comprised of both scenarios, fragmented in some areas and solidified in others*, it may be in the interest of criminology to not view the policing communication network as either fragmented or concerted, but rather as a highly complex system where both forms are generated.*

Current use of Diffusion of Innovation Theory
Theory

Seemingly, our understanding of the diffusion of innovation and its theoretical crux has come from a series of hypotheses put forward by Everett M. Rogers (Rogers, 1962; for examples of use see Skogan and Hartnett, 2005; Weisburd and Lum, 2005; Oliver, 2000; King, 2000) in the tradition of J.L. Walker (in reference to Walker see Oliver, 2000). While this framework is laudable, our progressively routine use of Roger's work may take

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for granted the inherent complexities of innovation and diffusion concepts, as we have generally become only concerned with why individuals or groups adopt innovations, an assumption that completely overlooks how the transmission of information and the diffusion processes actually operate. When discussing the diffusion process, we basically formulate our theoretical ideas around the premise that an innovation occurs and is then adopted by a number of other jurisdictions, calling this the diffusion of innovation. This can be seen throughout our research, most notably in Oliver's (2000) "Generations", or stages, of Community Policing. Oliver essentially argues that Community Policing was created between 1979 and 1986, diffused between 1987 and 1994, and then "institutionalized", or adopted, between 1995 and the present. This typology of the diffusion of innovation, I believe, has misguided our research attempts as many researchers [refer back to those using Roger's theoretical framework] have adopted Oliver's framework as a starting point for their own research. Arguably, the theoretical and actual use of these concepts is not on par with the theoretical foundations of innovation and diffusion. In the following pages I illustrate a well-known theory of both processes, one which shows the inherent complexities for which we deal; with this new information, *it may be in criminology's best interest to revisit the foundations of diffusion of innovation literature.*

Another theoretical issue is our use of the term "innovation." Innovation is, by definition the introduction of something new. Oliver astutely notes that the actual point of innovation may be arbitrary (2000, p. 374), an argument which is often overlooked. It is arbitrary because an actual point of innovation is extremely difficult, if not impossible, to pinpoint (Cavalli-Sforza, 1997). Innovation is also very rare and almost impossible to trace given that through each instance where it is transmitted from one individual/group to another, it may be slightly altered, becoming mixed with numerous old ideas. The implications here may be significant; if we are to test the actual "new idea" in order to insure, at the least, a relatively modest level of validity, we must trace the new idea through all communication channels and parse out all of those "old ideas" which have fused to the original model. To my knowledge this process has not been attempted in criminology. Therefore*, it may be in the interest of criminology to focus less attention on finding, or arguing for, an arbitrary point of innovation.*

As Oliver (2000) notes, the point of innovation may be arbitrary, so too may be the spread, or diffusion of the new idea. The diffusion of innovation is merely a method of tracing a new idea (Cavalli-Sforza, 1997). The problem in criminology is that we rarely are interested in the spread of the innovative idea, instead being highly more motivated to understand why certain ideas [usually policies or practices] are *adopted*. However, why should we only be concerned with why new ideas are adopted? First, we probably do not know if they are, in fact, new. Second, this focus on new ideas neglects the issue that information of all types (new *and* old) is constantly being transmitted and adopted by jurisdictions in a complex network of information exchange. According to Weiss (1998) informal communication between police jurisdictions is a constant phenomenon. *Hence, it should be in the interest of criminology to view diffusion as a process by which any idea or concept spreads throughout a system, not just an innovative idea.*

Practice

Our overly diluted understanding of innovation and diffusion is unfortunately coupled with incorrect methods of analysis. Most analytical strategies, such as regression analyses, draw upon the correlation between variables but fail to capture how information flows

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from one source to the next; this flow of information *should* be considered the primary reason for tracing diffusion patterns. The diffusion of innovation is, of course, a process of diffusion. Diffusion refers to the spread of something within a social system, where spread equates to the flow or movement from a "source", or start point, to an "adopter" via communication—the key ingredient to cultural behavior (Cavalli-Sforza and Feldman, 1983). Diffusion always begins within either the individual or group and works its way geographically outwards (Cavalli-Sforza, 1975; 1971). The vast majority of analytical tools we employ are not designed to test for the geographically outward spread of something (e.g. information) within a social system.

Arguably, the only accurate quantitative way to test the spread of something is through the use of various tools of Social Network Analysis (SNA), a method specifically designed to look at the relationships between social units. [In the following pages I employ the use of SNA tools both as a descriptive devise and to illustrate the complexities of information sharing within the U.S. policing network.] However, if we merely are concerned with understanding why agencies adopt information (regardless of if the information is new or old) then we need not utilize SNA tools; in such instances it is not necessary to tap into the diffusion of innovation literature or the diffusion literature in general. Other methods of gathering information (e.g. surveys) are far easier and may very well be more appropriate given the scenario. Therefore, *it may be in the interest of criminology to use SNA techniques to study diffusion while using more traditional tools when studying the adoption of ideas,* dependent upon ones area of focus.

Five Propositions

The following five propositions have been presented and will be descriptively explored in the following pages.

Box 1: Five Propositions for the field of criminology to consider

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1. *If the policing networks of communication are comprised of both scenarios, fragmented in some areas and solidified in others, it may be in the interest of criminology to not view the policing communication network as either fragmented or concerted, but rather as a highly complex system where both forms can spawn.*
2. *It may be in criminology's best interest to revisit the foundations of diffusion of innovation literature as we may have a muddled understanding of their foundations.*
3. *It may be in the interest of criminology to focus less attention on finding, or arguing for, an arbitrary point of innovation, as actual innovation is extremely rare.*
4. *It should be in the interest of criminology to view diffusion as a process by which any idea or concept spreads throughout a system, not just an innovative idea.*
5. *Methodologically, it may be in the interest of criminology to use SNA to study the process of diffusion while using more traditional tools to study the adoption of ideas.*

It should be noted that these propositions are not intended to be testable hypotheses (although, they of course can be held to the rigors of science); rather, they are intended to act as counterfactuals to the deeply imbedded axioms engrained into our thinking of how the innovation process operates in regards to policing agencies. While these axioms are not

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universally spread throughout our branch of academia—such as the axiomatic belief that we should identify a specific point of innovation (e.g. the genesis of Community Policing) — I believe they do indeed permeate much of the literature in our field. In the following section I introduce a theoretical base that posits certain testable elements; if support is found for these elements, then we may want to take note of the propositions discoursed [see Box 1].

In Proposition of a New Theoretical Base
"Cultural Transmissions Theory"
According to noted geneticist and cultural anthropologist Luigi Luca Cavalli-Sforza, along with numerous other evolutionary anthropologists, both animals and humans acquire behavior via (1) *genetic transmission*, which is almost completely inflexible after birth, (2) *individual learning* (innovation brought about by environmental change or other stimulus) where individuals are able to discover novel solutions to problems without external influence, and (3) *social learning*, or cultural transmission, where individuals learn skills and information from others (Cavalli-Sforza & Hewlitt, 1986; Boesh & Tomasello, 1998; Ayala, 1971; Castro, Toro, & Ayala, 2004; McGrew, 1998; Reader & Laland, 2002). Within this literature, a substantial amount of data suggests humans rely on social learning/cultural transmission to acquire the *majority* of their behaviors (Cavalli-Sforza & Feldman, 1981), with innovation and genetic transmission providing little explanatory power in regards to behavioral acquisition. Social learning is said to arise in situations in which one individual comes to behave similarly to others. This copying can occur when individuals are attracted to other locations or stimuli [local enhancement], where individuals see others maintain some form of result and form their own strategies to get the same results [emulative learning], or where the individual reproduces both the behavior and intended result almost exactly [imitative learning] (Boesh & Tomasello, 1998). In regards to emulative and imitative learning, innovations are either adopted completely (e.g. adopting a near text-book version of community policing) or partially (e.g. the adoption of the community policing idea with ones own input applied), an issue further discussed in this papers discussion section.

Cavalli-Sforza's social learning theory is not an inimitable artifact of cultural anthropology, but may be applied to areas within criminology, in general, and policing research, in particular. Police agencies throughout the United States represent isolated entities that are a part of a larger structure, or the network. While each jurisdiction operates under its own relative autonomy, it randomly transmits and receives variable forms of information from other jurisdictions, making it one parcel of a larger network. Police agencies, therefore, may be connected by their levels of communication with other policing agencies. Measuring these levels and types of connections agencies have with one another may provide researchers with a broader understanding of how police agencies operate within the complexities of contemporary society. Specifically, we must consider how information is disseminated between agencies.

How Ideas are transmitted
Social learning theory research resides in two disparate but mutually inclusive areas of analysis: the *transmission of cultural behavior* from person to person (Cavalli-Sforza & Feldman, 1983; 1983; Guglielmino et al., 1995; Cavalli-Sforza et al, 1982; Cavalli-Sforza, 1975; Hewlett & Cavalli Sforza, 1986) and the *diffusion of behaviors* to all members of a

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social group (Cavalli-Sforza, 1997; 1966; Uyenoyama et al., 1979; Piazza et al. 1995; Guglielmino et al., 1995; Edmonds et al, 2004; Cavalli-Sforza & Wang, 1986; Ammerman and Cavall-Sforza, 1971; Cavalli-Sforza, 1989; Cavalli-Sforza et al., 1988; Rendine et al, 1986; Cavalli-Sforza & Wang, 1986).   Essentially, under Cavalli-Sforza's framework, culture starts at a given point of innovation and spreads to another person through social contact (see Cavalli-Sforza, 1997 for most recent description); this is the transmission of information, or culture.   The interaction results in two individuals possessing a given knowledge, resulting in an exponential spread of the behavior outwards as more interactions occur, via the individuals coming in and out of contact with other individuals and/or social groups (Hewlett et al., 1982).

Transmission of information from one individual/group to another

While we often times try to understand how and why information is *adopted* by certain jurisdictions, we often fail to explicate how information is *spread*. Cultural transmissions theory articulates four modes by which information is transmitted.   Accordingly, information is transmitted via the following modes: (1) vertical; (2) horizontal, (3) one-to-many, and/or (4) concerted or many-to-one [see Model I, taken from Cavalli–Sforza and Hewlett, 1986; Cavalli–Sforza, 1986]

Model I: Modes of Cultural Transmission

Vertical [downward]	Horizontal	One-to-many	Many-to-one
0		0	0 0 0
↓	0 ← 0	↙↓↘	↘↓↙
0		0 0 0	0
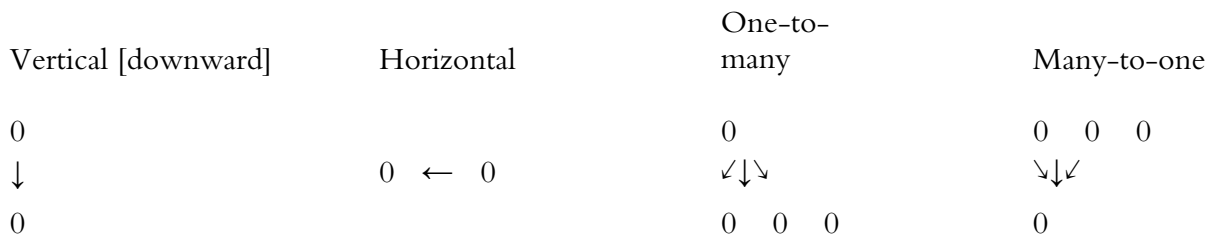
The first piece is the *vertical transmission,* transmitted from high status individuals [e.g. state police] to lower status individuals [e.g. local police] (Cavalli-Sforza and Hewlett, 1986). If there is significant vertical transmission occurring, policing agencies should look like independent networks where state patrol and large police departments transmit information to local police departments. The second piece is the *horizontal transmission* which occurs between two individuals who are previously unrelated (1986), like the spreading of information between two unfamiliar police administrators. If this mode of transmission is in effect, we should see little interaction between state police/large police jurisdictions and local police.   Third is the o*ne-to-many transmission* which is generated from one source and generated to a number of other individuals [e.g. state and local police] (1986). Formal information sharing is a type of this transmission. There is already a substantial amount of data supporting this form of transmission (see Weiss, 1998); according to this literature, information permeates a significant portion of state and local police jurisdictions as it is passed down through federally established agencies such as the Association of Chiefs of Police, the Police Executive Research Forum, and the Police Foundation (1998). The final piece is the concerted or *many-to-one transmission,* which is

transmitted from social groups [e.g. U.S. culture of policing] to less experienced members of the social group/network [e.g. individual agencies]. This mode of transmission is difficult to articulate from a one-to-many mode when we consider that communication is a back and forth affair; for instance, if numerous small jurisdictions solicit a larger jurisdiction via telephone, we probably will be unsure who solicited whom [a point further highlighted in this article's discussion section].

Each of these modes are most easily seen through studies of small communes, where transmission changes conservatively, as convolution can surface quickly when we consider complex networks of individuals where transmission occurs too rapidly to measure (see Cavalli-Sforza, 1997 for a more thorough discussion). The alternative to this is a quantitative approach known as Social Network Analysis, the quantitative tool applied in this article.

Diffusion of information from a central source to a larger network

Guglielmino, Viganotti, Hewlett and Cavalli-Sforza (1995) note that the geographical distribution of cultural traits is found far from random in space. This observation leads to the question of how information spreads, or diffuses, within the environment. As stated, diffusion refers to the spread of something within a social system, where spread equates to the flow or movement from a source to an adopter via communication (Cavalli-Sforza and Feldman, 1983). Diffusion always begins within either the individual or group and works its way geographically outwards (Cavalli-Sforza, 1975; 1971). One way is through constant radial diffusion, especially when there are no serious complications from geographic barriers or from cultural heterogeneity which prevents free diffusion (Cavalli-Sforza, 1997; Ammerman and Cavalli-Sforza, 1971). According to this model, diffusion should equal a constant radial trajectory when not blocked from expansion.

In the following sections data will be presented to show the complexity of the U.S. policing information sharing network. It is important to note that the data and its analyses are primarily used as an illustrative instrument to highlight the problems with our current understanding of information networks. Moreover, the data are presented to illustrate the need for a more dynamic theoretical approach [namely Cultural Transmissions Theory] and to lend credence to the five propositions stated above. Due to the intended exploratory scope and argumentative aim of this article, an explicit discussion on research limitations and policy recommendations will be precluded. The findings section of this paper will then be followed by a recapitulation of each of the five propositions and a discussion as to their validity.

Data Source and Method

The data for the study come from the *Communication of Innovation in Policing in the United States Study* collected in 1996. In March of 1996, the Police Communication Network Survey (self-enumerated mailed questionnaires) was mailed to the chief executives of 517 full-service local police organizations with 100 or more sworn officers and all 49 state police and highway patrol organizations in the United States (Weiss, 1996). The chief executive was then asked to forward the questionnaire to the commander of the jurisdiction's planning and research unit. In total, 360 local organizations, 43 state organizations, and 13 sheriff jurisdictions responded (1996). While the questionnaire was extensive, this study attempts to illustrate the presence of communication transpiring between various U.S. policing agencies by focusing on two

areas of Weiss's (1996) original study. First, the presence (or absence) of communication sharing between agencies is explored in order to illustrate a number of points (e.g. the complexity of information sharing between U.S. agencies). Second, I explore how communication is spread in regards to agency type; this allows us to examine the vertical and horizontal spread of information. I thus illustrate how information dissemination is influenced by police agency hierarchy; the hierarchical chain is comprised of local police departments, county sheriffs, and state police/highway patrol.

Numerous methods of communication were noted in Weiss's (1996) findings; however, 89.7% of agency-to-agency communication occurred via telephone. While telephone conversations between commanders comprised an overwhelming majority of communication types, other types of communication were also noted: via letter (3.8%), email (1%), personal visit, (1.5%), fax (2.8%), and other (1.3%), respectively. It of course should be noted that these percentages may not be accurate fifteen years after Weiss's (1996) study, given the apparent explosion of email usage. However, with the scope of the current research effort—to illustrate the presence of communication between agencies, in general— the data should be considered adequate and appropriate.

It is thus hypothesized that the following modes of transmission are at play within police communication channels: vertical, horizontal, one-to-many, and many-to-one. The vertical and horizontal modes of cultural transmission are measured using the following survey item: "What law enforcement agency, if any, do you contact most frequently when you are seeking information to use in planning and research?". Also, type of police agency and size of agency are each considered to be important in regards to how information is transmitted. According to Cultural Transmission Theory, information should spread horizontally and vertically between agencies of different sizes and types.

Analysis
Social Network Analysis

Social Network Analysis (SNA) is employed to illustrate the complexity of the U.S. information sharing network in order to highlight the need for altering our current view on the diffusion of innovation within policing literature. SNA is a scientific area focused on the study of relations, often defined as social networks. Police agencies within the U.S. are a social network and every parcel of information spread from one agency to others may have an effect on the entire system. As opposed to other more traditional statistical methods, SNA allows researchers to look at the relationship between social individuals rather than on the individuals themselves (Freeman, 2004). This can also be extrapolated to look and the association between groups, organizations, or even nation-states and international alliances (2004). SNA understands that knowledge is constantly flowing between entities and is usually employed to understand how the knowledge is flowing and to find out what patterns exist. SNA relationships are usually represented with visual aids, particularly when depicting highly complex or large networks.

Organizational Risk Analyzer (ORA)

The Organizational Risk Analyzer (ORA) is a statistical social network analysis package for analyzing complex systems as social networks (CASOS, 2009). It is particularly useful when working with large networks of over 100 agents, or so-called "nodes". ORA allows individuals or groups to be represented as an ecology of interlinked networks, in turn, allowing an analysis of the dissemination of information from one agency to another

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within a set frame of reference, or network (in this research, the United States). ORA was built in August of 2009 by Carnegie Mellon University's Center for Computational Analysis of Social and Organizational Systems (CASOS). It is founded on network theory, social psychology, operations research, and management theory and is designed with algorithms that can find those people, types of skills or knowledge and tasks that are critical from a performance and information security perspective (2009).

Findings and Discussion
Modes of Information Transmission

The network of police information sharing is complex; *figure I* identifies the communication lines of the 416 agencies which responded to the given survey. The large central mass is a network of chains of communication that run throughout many of the agencies. The data identify that the chains of communication range from simple to complex; within the current data, the minimum number of chains range from 1 to 10, with an overall network average of 3.6506, SD=2.0026 [see *Table I*]. Therefore the average police jurisdiction solicits information from between three and four other jurisdictions on a yearly basis. The connections are not necessarily direct, but may run through other agencies. For instance, the Baltimore PD and Los Angeles PD may not contact each other directly, but through an indirect chain of communication as each may contact the same department(s), which acts as a mediator. One can also notice the relatively low number of small clusters, it appears that agencies are either "in-the-know" or "out-of-the know"; the vast majority are either part of the large network of actors, or outliers from this group.
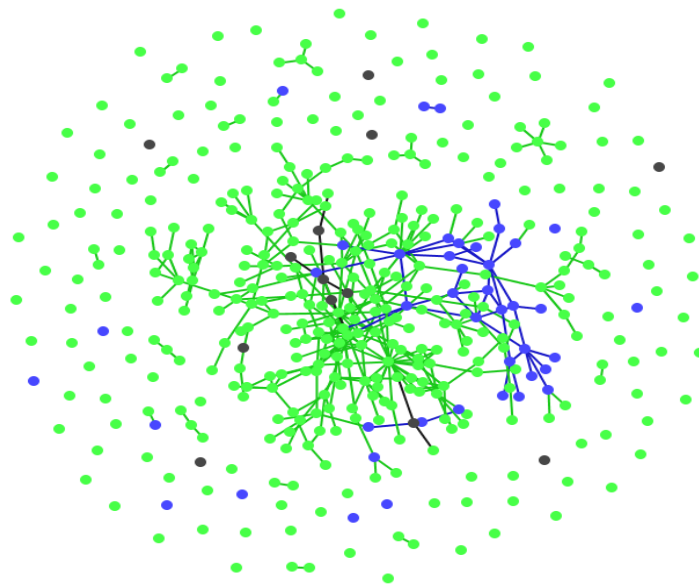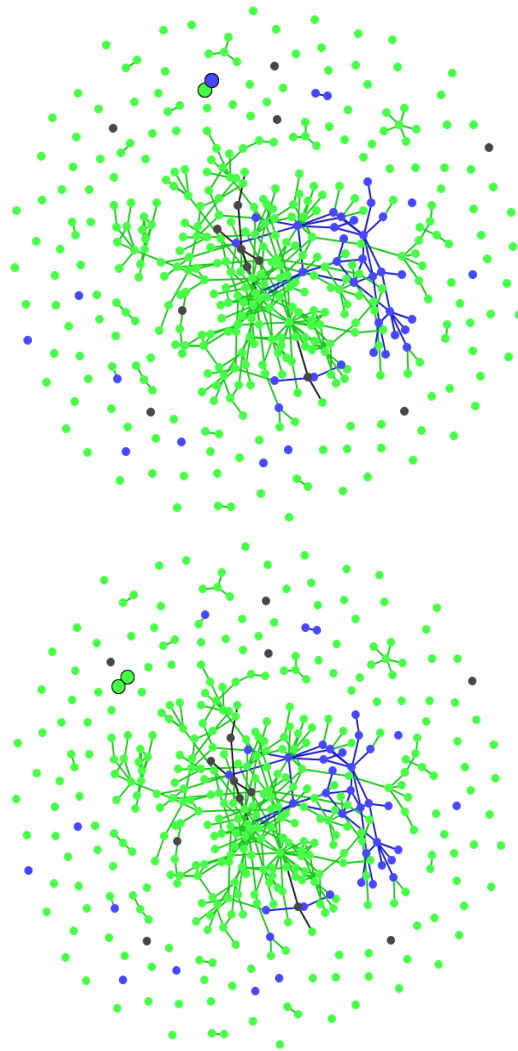

Figure I:
Illustrated is the entire social network of 416 policing agencies throughout the U.S. The green dots depict that the agency is a local police jurisdiction, the blue depicts state police/highway patrol agencies and the black depicts local sheriff's agencies. The center structure shows a large informal network of information sharing.

Figure I also depicts the interconnectivity of the three primary types of policing agencies: local police jurisdictions (green), local sheriffs jurisdictions (black) and state police/highway patrol (blue). Spatial autocorrelation between these agent types reveals

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that agencies significantly interact with agencies dissimilar to themselves, Moran's I = .574. In all, it does not appear that information sharing is hindered by different agency type.

| Table I: Descriptive Statistics	
Total Number of Agencies/Nodes	416
	100%
Local Police Jurisdictions	360
	87%
Local Sheriffs Jurisdictions	13
	3%
State Police/Highway Patrol	43
	10%
Logic Chain Analysis	
Minimum Number of Chains	1
Maximum Number of Chains	10
Average	3.6506
Standard Deviation	2.0026

As following the modes set forth by cultural transmission theory, information appears to travel vertically, as can be seen when we view the association between two unequal agencies in *figure III* [nodes in bold] (Wilmington PD and the Delaware State Police). Information also appears to travel horizontally as *figure II* illustrates [nodes in bold]. Two similar size agencies (Ceder Rapids PD and Des Moines PD) exchange information on a regular basis.

Figures II and III

Illustrated are occurrences of both vertical and horizontal transmissions of information. Figure II highlights [in the top-left] the interaction between a state police agency and a local police jurisdiction (vertical transmission). Figure two highlights [in the top-left] the relationship between two equally sized local police jurisdictions (horizontal transmission)

The transmission of information spreads not only from one agency to another, but also from one agency to a number of other agencies in a one-to-many mode of transmission. Simultaneously, information from the "many" can be transmitted to one agency in a reverse fashion. For instance, figure IV depicts the communication channels between a large local police jurisdiction [Dallas PD, interestingly the most "influential" department revealed by the data] to a number of other agencies. Theoretically, these "other" agencies can transmit information back to the Dallas PD in a many-to-one mode of transmission. When we see these complex modes of transmission we should expect to see a complex network emerge, as depicted in *figure V*.
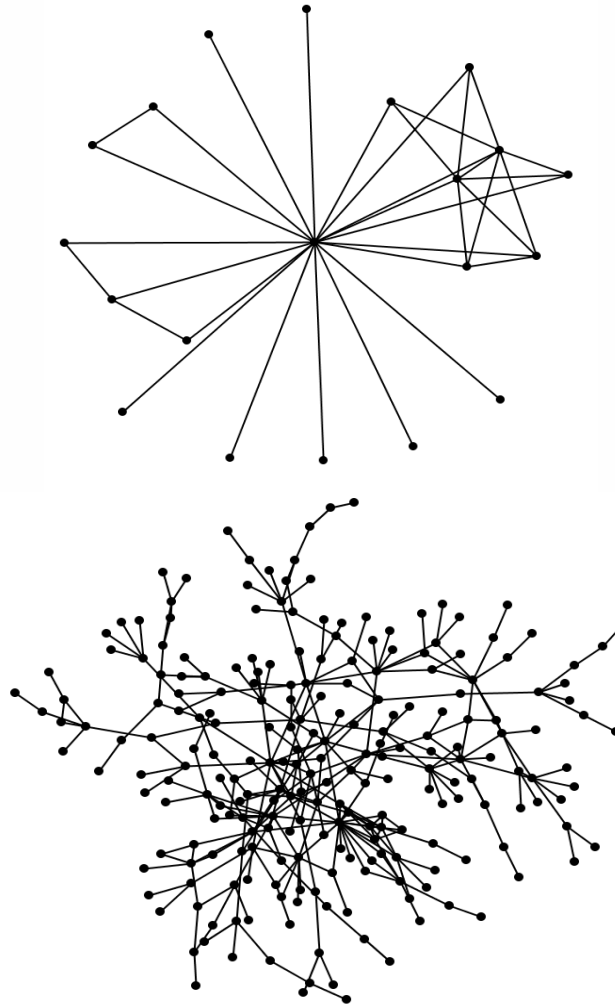
Figures IV and V
Illustrated is the sphere of influence of one large police agency (Dallas PD). Figure IV depicts the jurisdictions direct lines of communication with other jurisdictions. Figure V depicts the entire sphere of influence that the jurisdiction indirectly has. If information is disseminated by Dallas PD, it may diffuse to a number of other jurisdictions.

In keeping with the diffusion of innovative idea, if an innovative strategy is generated by an agency, such as the Dallas PD, it has the potential to spread through their immediate sphere of influence, then spire outward to a significantly larger number of agencies. This results in a highly complex diffusion pattern as seen in *figure V.*

Recapitulation
[If the policing networks of communication are comprised of both scenarios, fragmented in some areas and solidified in others, it may be in the interest of criminology to not view the policing communication network as either fragmented or concerted, but rather as a highly complex system where both forms can spawn.]

From *figure I* we see a clearly delineated network of communication between policing agencies throughout the U.S. While a significantly large network of communication exists between policing jurisdictions, there are also a significant number of jurisdiction which have little to no contact with this larger network. It appears that part of the system is fragmented and a seemingly equal portion is highly connected. Overall the SNA shows us that the network is highly complex and neither completely fragmented nor connected. With this in mind, we may consider moving away from classifying the U.S. policing network as either-or; it appears that it is a complex combination of these paradigms.

[It may be in criminology's best interest to revisit the foundations of diffusion of innovation literature as we may have a muddled understanding of their foundations.]

As shown in *figures II and III*, information is not simply innovatively created then spread to all other agencies; it is spread in the following modes of transmission: horizontal, vertical, many-to-one, and one-to-many. All jurisdictions are connected by one or more of these modes. In order to trace an idea we must consider these types of transmissions. They additionally can be rather complex, as discussed in regards the reciprocal nature of many–to–one and one–to–many transmissions.

[It may be in the interest of criminology to not focus so much attention on an arbitrary point of innovation, as actual innovation is extremely rare.]
&
[It should be in the interest of criminology to view diffusion as a process by which any idea or concept spreads throughout a system, not just an innovative idea.]

When we are looking at why individuals adopt an innovative idea, we are not really looking at why individuals adopt *the* innovative idea but rather why they adopt *an* idea. The actual point, or place, of innovation is a single occurrence, it is something new and never before seen. Often times when we discuss the acceptance of innovation we are really discussing the imitation of someone else's behavior, as the point of innovation is not truly known or has mutated from its original form. Currently we make a leap from attempting to identify innovative strategies to reasons for their adoption or levels of adoption; this completely disregards both the issue that we most likely have the point of innovation wrong and the issue that the idea was diffused through a number of jurisdictions, resulting in something completely different than the original innovation.

As "cultural transmissions theory" dictates, innovation is extremely rare and difficult to pinpoint, what is far more common and influential is the spread of information through social learning, said to arise in situations in which one individual comes to behave similarly to others. These interactions are more complex than currently assumed, possibly following the four mentioned modes of transmission. If we were to attempt to trace an innovation, we would find it very difficult to parse out the actual innovation from its mutated form as it is diffused throughout numerous jurisdictions, each putting their own unique spin on the idea that was transmitted to them. In the end, potentially no idea [e.g. community policing] would look very similar between the large numbers of jurisdictions for which it has spread.

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[Methodologically, it may be in the interest of criminology to use SNA to study the process of diffusion while using more traditional tools to study the adoption of ideas.]

As illustrated in my descriptive use of SNA, this tool can be used to trace ideas, similarly to the way I traced the communicatory connection between U.S. poling jurisdictions. As noted, SNA is one of the only accurate quantitative tools to test the spread of something, as it is designed to look at the association between social units. Conversely, if we are interested in why agencies adopt an idea, then SNA is not necessary as other methods of gathering information (e.g. surveys) are far easier and potentially more appropriate. In fact, if we are solely interested in the adoption of ideas, we do not even need to tap into the diffusion of innovation literature or diffusion literature in general; diffusion is merely a method the social sciences use for tracing something.

Conclusion

Ever increasing, ever growing in strength, E. M. Roger describes a process through which an innovation begins at a certain point and then percolates, further increasing and growing in strength, until it permeates every denier of our social fabric, including that finest of thread which binds us together as academics. Within the scholarly realm we often times adhere to a single framework above all others, not knowing exactly where it came from and not putting thought into how it concreted to our sub-conscious a sense of its own immortality. We as a field need to take a metaphorical step back and look anew at the concepts of innovation and diffusion and how they relate to the interconnectivity between social groups and organizations. By incorporating disparate frameworks to that of Rogers, such as that of the one proposed by Cavalli-Sforza, we may open up interconnected lines of communication in academia that have in previous years been fragmented or non-existent.

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