THE ROLE OF FRONT-LINE EMPLOYEES IN KNOWLEDGE CREATION: A CASE STUDY OF A FEDERAL GOVERNMENT AGENCY

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Dr. Anna Cenatiempo, annac@gwu.edu, The George Washington University

Dr. Andrea Casey, acasey@gwu.edu, The George Washington University

Social interactions and human actions are key components in understanding the knowledge creation process. Although the importance of the boundary-spanning roles of front-line employees is acknowledged in the knowledge creation process, limited research has explored how these roles contribute to organizational knowledge. Using the action/reflection subsystem of Schwandt's (1997) organizational learning systems model, this study describes the social interactions that take place between front-line roles, including the information that is exchanged and the value attached to it, as represented by actions taken on the information. Conclusions drawn from this study offer practical insights on facilitating the process of knowledge creation in front-line roles and best leveraging the knowledge created by these individuals for the interest of the organization.

[1]*Correspondence:* Dr. Anna Cenatiempo, 2543 Cheyenne Way, Gambrills, MD 21054; 202-255-7260; annac@gwu.edu. Dr. Andrea Casey: 2134 G Street, Washington, DC 20052; 202-994-1152; acasey@gwu.edu.

In a marketplace that is more global than ever before, organizations face fierce competition and need to create and strategically use knowledge to obtain and maintain a competitive advantage to enhance their survivability (Heinrichs and Lim, 2005; Tzokas and Saren, 2004; Schwandt and Marquardt, 2000; Prusak, 1997; Nonaka, 1991). Both society and organizations have seen major shifts from the industrial era to the knowledge era (Bertels and Savage, 1998). During the late 20th century, organizations discovered and embraced concepts such as intellectual capital and knowledge management (Bertels and Savage, 1998) and began to recognize knowledge as the most critical resource (Drucker, 1995; Toffler, 1990; Bresman, Birkenshaw, and Nobel, 1999; Hansen, Nohria, and Tierney, 1999; Kikoski and Kikoski, 2004). Many embarked on becoming a learning organization and conceptualized knowledge as an essential ingredient to remain competitive.

Today, in the 21st century, organizations are faced with a rapidly changing knowledge era. Within this era, the knowledge-based economy emerges as organizations shift from traditional economic models to a more global approach (Bertels and Savage, 1998; Martin de Castro, Saez, Lopez, and Dorado, 2007). During this age of increased information, there is a rise in competitive pressure that has organizations in a constant state of developing new products and services (Ashforth, 2001). Organizations are driven to meet global demands entailing innovative, effective, and efficient ways of conducting business, meeting customers' needs at a rapid pace, and producing goods with fewer resources (Bertels and Savage, 1998). In addition, there is the extra pressure of not only doing more with less but conducting services with the utmost precision. Due to the rapid pace of change, organizations are left grappling with mental models that were designed for either the industrial age or knowledge era. Kikoski and Kikoski (2004) stated that organizations who "thrive in this 21st century may not be those that just learn, but those that inquire to create new knowledge—which, for their competitor, may still be unknown" (p. xi). Consequently, organizations have to adapt so that knowledge is created more efficiently and at a pace that allows them to remain ahead of competitors (Kikoski and Kikoski, 2004).

With societal changes, the population is also more transient, which leads to higher costs for continued recruitment of qualified individuals (Janz and Prasarnphanich, 2003). Ashforth (2001) stated: "Individuals are in the constant state of becoming as they move between and through various roles and their attached identities and relationships" (p. 3). Organizations are finding new ways to innovate all roles and link them to the creation of knowledge (Martin de Castro et al., 2007). Employees, through their formal roles in organizations, are a critical part of the knowledge creation process (Schwandt, 1997; Heinrichs and Lim, 2005). Employees bring information into the organization through their actions in these roles, and they leverage this information into knowledge for the organization. Through this process, employees' roles evolve to respond to changing internal and external environments.

In service delivery organizations, front-line employees play a key role in interacting with customers. They seek information from the customers as well as from internal organizational knowledge repositories such as databases or websites, make sense of the information, and take action to meet customer demands. Creating these databases and continually updating them is a key component of knowledge management. Increasingly, front-line workers are relying on data sources to do their jobs, and it's critical that they can

rapidly access these repositories and make sense of the knowledge they obtain. "The technology to access data, information, and knowledge is growing rapidly over time and may well overwhelm our limited human ability to find, identify, and retrieve the data and information, and develop the knowledge we need in time to interpret and apply it to fast-changing crises and opportunities" (Bennet and Bennet, 2004, p. 13). While knowledge repositories can assist in capturing and disseminating knowledge, the social interactions of employees in their formal roles in organizations facilitate the knowledge creation process in organizations (Nonaka and Takeuchi, 1995).

Often, the literature discusses private-sector organizations as experiencing rapid change and needing to create knowledge at a fast pace. In addition, an abundance of studies links knowledge creation to many private-sector organizations. There is a lack of empirical literature describing knowledge creation in the public sector, such as the federal government. In addition, much of the academic literature portrays the public sector as static and slow to change, not acknowledging the degree to which government organizations change and the rapidity of this change in certain situations. The purpose of this case study was to explore interactions between front-line roles and how these interactions mediate the organizational knowledge creation process. The front-line roles studied were those of staff attorneys employed within a legal department at the headquarters office of a federal agency. The agency is geographically dispersed, with multiple field office sites throughout the country.

Using the theoretical lens of the organizational learning systems model (OLSM) (Schwandt, 1997), this study considered how front-line employees influence knowledge creation through their actions and social interactions with each other as well as internal customers, including the information exchanged and the value attached to this information as represented by actions taken on the information. In addition, this study explored what knowledge is transmitted to the rest of the organization once an interaction occurs between front-line roles.

1. THEORETICAL FRAMEWORK AND LITERATURE

The conceptual framework for this study drew from role theory, social action theory, and knowledge creation theory (see Figure 1). The definition of roles was grounded in Katz and Kahn's (1966) role theory. The social system or organization was defined at the departmental level, using Parsons' (1951) social system theory to depict how social systems work and how roles are involved within the social system. Social interactions were explored through Giddens' (1979) structuration theory. The definition of knowledge creation was grounded in Schwandt's (1997) OLSM and was oriented specifically toward the action/reflection subsystem of this model.

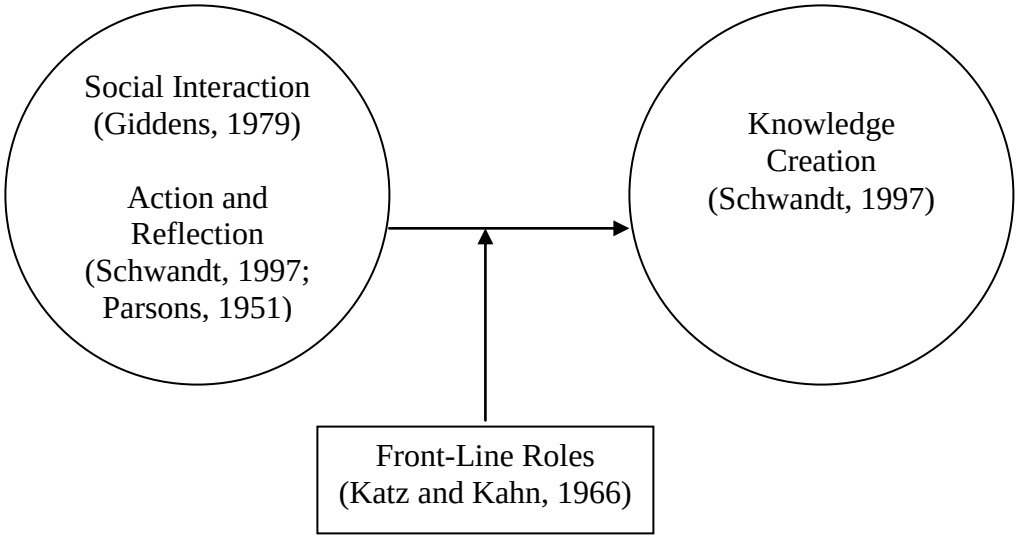

Figure 1. Conceptual framework.

1.1. Social Action Theory

Social action theory (Parsons, 1951; Goffman, 1959; Schutz, 1964; Schwandt, 1997) examines patterns of human actions that take place within organizations (Parsons, 1951). "Social action is all human behavior motivated and directed by the meanings which the actor discerns in the external world, meaning of which he takes account and to which he responds" (Rocher, 1995, p. 28). Social interactions are the primary element of social systems (Giddens, 1979). Parsons' general theory of action (1951) defined organizations as systems of social actions, with a subject-actor, a situation, symbols, and rules, norms, and values. Through social interactions, both actions and meanings are created and recreated throughout the organization (Silverman, 1970).

Social action theory provides a perspective that organizational patterns related to both social environment and to action are necessary components of organizational knowledge (Schwandt and Marquardt, 2000). Parsons' (1951) theory supports knowledge creation theories that conceptualize knowledge as action based. Schwandt's OLSM (1997) is grounded in Parsons' social action theory and theorizes that dynamic social interactions facilitate the creation of knowledge (Schwandt, 1997). Schwandt and Marquardt (2000) gave examples of social interactions: "acts of communication, networking, management, coordination, and the implementation roles supporting the norms associated with the movement of information and knowledge" (p. 155).

1.2. Role Theory

Organizational roles and their relationship to knowledge creation in a social system were the focus of this research. Nonaka and Takeuchi (1995) found that managers assist front-line employees in converting information into organizational knowledge. Nonaka and Takeuchi (1995) also suggested that front-line employees have a role in this conversion of

information into knowledge since they continually interact with the external environment, bringing new information into the organization. “Since most of them work at the front lines of business, which means that they are constantly in direct touch with the outside world, they can obtain access to the latest information on developments in the market, technology, or competition” (Nonaka and Takeuchi, 1995, p. 152). This research focused on the role of the front-line worker in this knowledge creation process.

Katz and Kahn (1966) defined roles as “specific forms of behavior associated with given positions which develop originally from task requirements” (p. 43). Roles provide a function for the employee to participate in the organization’s daily activities or work. “Role behavior refers to the recurring actions of an individual appropriately interrelated with the repetitive activities of others so as to yield a predictable outcome” (Katz and Kahn, 1966, p. 189).

Roles serve as the foundation of social systems (Katz and Kahn, 1966). Parsons (1967) stated that within any social system, roles are connected to one another. To further illustrate this point, Goffman (1959) stated that roles are related to socialization. “It is through roles that tasks in society are allocated and arrangements made to enforce their performance” (p. 41). Katz and Kahn (1966) stated that roles function as “patterns of behaviors” in a social system. Norms govern these patterns of behaviors and how the person acts within his or her role. “Norms are the general expectations of the demand character for all role incumbents of a system or subsystem” (Katz and Kahn, 1966, p. 43). Norms, roles, and values make up a social system (Katz and Kahn, 1966). “The focus of Parsons’ theory of action is the establishment of a systematic relationship between the ‘actions’ of the actors and their ability to adapt to both their inside and outside environments” (Schwandt and Marquardt, 2000, p. 46). Parsons’ theory ties roles and actions by bounding them to the rules of social systems.

Along with Parsons’ theory, Giddens’ (1979) structuration theory demonstrates an interchange between norms and roles and the individual actions associated with them. “The duality of structure relates to the recursive character of social life and expresses the mutual dependence of social structure on the individual and the individual’s impact on the situation” (Schwandt and Marquardt, 2000, p. 171). The term *structuration* was coined for a constant change of structures within a system and reflects the relationship between norms and roles.

1.3. Action and Reflection Subsystem: Social Interaction in Creating Knowledge

Knowledge is created through social interactions in roles within organizations (Berger and Luckmann, 1966). Berger and Luckmann (1966) outlined how knowledge is related to roles, commenting: “A society’s stock of knowledge is structured in terms of what is generally relevant and what is relevant only to specific roles” (p. 77). According to Berger and Luckmann (1966, p. 77), individuals look for the knowledge most relevant to their specific role within the organization, and it is through a “social distribution of knowledge” that people gain knowledge specific to their roles. Giddens (1979) explained that roles are involved in actions, and the norms of the organization govern these actions. Thus, for an understanding of how knowledge is created in organizations, roles also need to be analyzed (Berger and Luckmann, 1966). An analysis of the interactions in these roles may facilitate our understanding regarding attributes of these roles and how they are

defined and created, as "each role carries with it a socially defined appendage of knowledge" (Berger and Luckmann, 1966, p. 78). The chief focus of this study was to understand knowledge as it is created by front-line roles through their social interactions.

As previously stated, knowledge is related to action (Nonaka and Takeuchi, 1995). It is action that distinguishes knowledge from information. Schwandt's (1997) OLSM depicts how organizations transform information into knowledge. It outlines four components of creating knowledge: environmental interface, action/reflection, dissemination and diffusion, and meaning and memory. The OLSM, which is grounded in Parsons' general theory of action (1951), examines the social context in which organizations learn, focusing on both the means and ends of the creation of knowledge. "The goal of the organizational learning system is defined as transforming of information into valued knowledge" (Schwandt and Marquardt, 2000, p. 119).

For this dynamic transformation of information into knowledge to occur, the OLSM proposes that there are "interchange media" or related outputs that demonstrate a relationship between each subsystem. These four interchange media are new information, goal-referenced knowledge, structuring, and sensemaking (Schwandt, 1997). The interchange media allow the researcher to examine the patterns of action that exist within the organization. These outputs are important since the focal point of this study was the relationship of action and knowledge. In particular, this study focused on how front-line roles mediate the knowledge creation process by specifically examining the subsystem of action and reflection.

The action and reflection subsystem is essential to the understanding of how knowledge is created within an organization. Within the action and reflection subsystem, new information (an interchange medium) is acted and reflected on by the members of the organization as it relates to their organizational structure and culture. Once this occurs, goal-referenced knowledge is created. "The Action/Reflection subsystem describes the organization's actions and examines those actions that enable it to assign meaning to new information and in doing so creates Goal Reference Knowledge" (Schwandt and Marquardt, 2000, p. 118). Schwandt (1997) stated that goal-referenced knowledge is knowledge related to both performance and learning (see Figure 2).

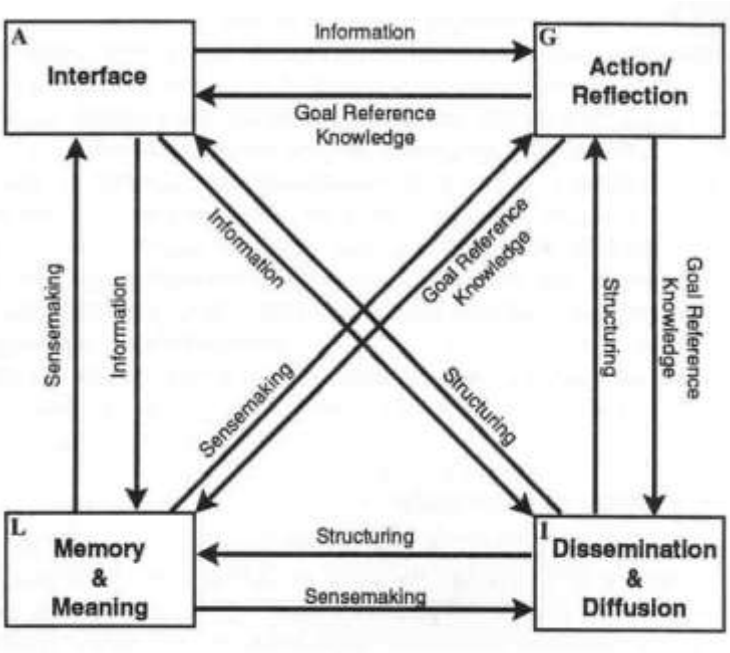

Figure 2. Schwandt's (1997) organizational learning systems model.

Organizations reflect in different ways. They reflect on organizational processes, procedures, and past decisions. "Reflection by the organization means that some, or all, individuals in the organization review, judge, and decide on issues in the name of the organization" (Schwandt and Marquardt, 2000, p. 118). Many social constructionist scholars link reflection to knowledge. Scholars such as Berger and Luckmann (1966), Schon (1983), Burr (1995), Gergen (1994), Potter (1996), and Shotter (1993) agree that all knowledge is constructed through the means of reflection. These scholars have focused on the social construction of knowledge and on reflection as a primary mechanism in the creation of knowledge.

Thus, the interchange between the components more accurately represents the dynamic social process involved in knowledge creation. Knowledge creation is reliant on social interactions, which in turn contribute to the action and reflection subsystem.

2. RESEARCH DESIGN AND METHODS

A case study design was utilized for this study (Eisenhardt, 1989). Creswell (1994) stated that qualitative methods are "an inquiry process of understanding a social or human problem, based on building a complex, holistic picture, formed with words, reporting detailed views of informants, and conducted in a natural setting" (p. 1). An interpretative approach was used, which allows for an understanding of human actions through the meaning derived by both the researcher and the individuals that are being studied (Miles and Huberman, 1994). Case studies are particularly useful when studying processes.

This purpose of the case study was to understand how front-line roles in organizations mediate the knowledge creation process. This study addressed one primary

research question: *How do front-line roles in organizations mediate the knowledge creation process?* This study focused on how front-line roles create knowledge through social interactions with one another. More specifically, this study explored the role of staff attorneys in the headquarters office in a department within a U.S. federal government agency that has multiple field offices. In addition, a secondary question guided this research: *What are features of the action and reflection interactions that take place as staff attorneys obtain information related to questions they encounter from the field as they enact their roles?*

The site was a large legal department within a federal government agency's headquarters office in Washington, DC. This site was chosen because it had staff attorneys who were in front-line roles interacting with each other and with field staff in the agency. This office employed approximately 140 staff attorneys, while the larger federal government agency employed over 200,000 staff members. The study was conducted at the departmental level of analysis, focusing on the interactions of staff attorneys with each other in the headquarters office.

One of the major strengths of the case study method is the use of multiple data collection methods (Yin, 2003), as summarized in Table 1. This allows not only for triangulation of data, but also for incorporation of multiple perspectives (Eisenhardt, 1989). Focus groups were the primary source of data. A purposeful sample was used, in which 60 staff attorneys were invited to participate. The results from the focus groups were triangulated through the use of individual interviews, observation, and document review. The focus groups and individual interviews were transcribed, and participants were asked to review the transcripts, as well as the overall study findings.

Table 1
Data Collection Approaches, Procedures, and Outcomes

Approach	**Procedure**	**Outcome**
Focus groups	Four focus groups, with three to four participants in each, responding to scenarios	Participants interacted with one another to tell stories about their experiences. Participants wrote down their response as well as discussed it with each other.
Individual interviews	Interviews of every volunteer, consisting of in-depth, open-ended questions	Individuals wrote down their answers and communicated their experiences. The researcher was able to obtain deeper responses on an individual level.
Observations	Observations of staff meetings from three different legal staff groups, as well as hallway observations	Researcher observed and confirmed social interactions as they occurred.
Document review	Review of the legal department's strategic plan as well as four standard operating procedures and the website	Researcher confirmed procedures as stated by participants during the individual interviews and focus groups. The strategic plan gave context to the goals, objectives, and role of the staff attorney in the organization's plan.

The researcher implemented Miles and Huberman's (1994) coding continuum. The focus group sessions, individual interviews, and observation notes were analyzed and coded. All transcripts were then entered into the Atlas.ti data software program. Through analysis of data generated by the interviews and observations, themes and patterns emerged and explanations were constructed. As part of this study, data sources were triangulated, which helped to confirm the validity of the study (Maxwell, 1996) and ensure accuracy. In addition to conducting member checks, a peer review was completed.

3. RESULTS

This section reports the analysis of the findings, centered on the patterns of social interactions, actions, and reflections of the headquarters staff attorneys when presented with questions by field attorneys. Staff attorneys in this study stated that they were faced with responding to many kinds of legal or policy-related questions from field attorneys that affected the field offices. Many of these complex questions that staff attorneys had to answer were related to applying the law and ensuring that the agency operated within legal boundaries. The staff attorneys were mindful of providing quick customer service to the field attorneys, yet they also went through a problem-solving process to ensure that the answers provided were accurate and effective. To find solutions to the questions raised, staff attorneys engaged in informal social interactions with each other. The answers were then archived in the legal department's electronic database. Each focus group was asked to map their problem-solving steps in such a situation. While the staff attorneys could not discuss the specific topics raised by the field attorneys because of confidentiality issues, they were very specific in describing the steps they took to resolve complex situations. Consistent patterns of action and reflection emerged.

Specifically, features of reflection emerged as the staff attorneys focused on the facts presented by the field attorney. Reflection features included ensuring that all of the facts were gathered, making sense of the facts and of the problem presented, determining whether the question was related to policy or law, understanding why the field attorneys might not know the answer, determining which legal area the question related to, and ascertaining whether the question had been addressed previously in the organization's history.

Staff attorneys took several actions to resolve the problem, including research and social interactions. During some of the focus groups and interviews, staff attorneys discussed a time factor with research. If they believed that the answer would be easy to look up or they felt they had the time to research the information, they would go ahead and tap into many of the available resources. However, if collecting information through research was labor intensive, the question was difficult, or the attorneys did not have enough time to fully research the topic, they might either conduct limited research or discuss the issue with another staff attorney first.

As attorneys outlined how they solved problems, many linked their actions to how they reflected on the questions posed to them. Table 2 shows features of reflection and action and how attorneys linked the two concepts.

Table 2
Features of Action and Reflection as Depicted by Attorneys

Features of reflection	Features of action
Ensure all of the facts are gathered from field attorney. "Get facts."	Through interactions with the field attorney, "ask specific questions regarding factual situation."
Make sense of the facts and the overall problem.	If needed, interact further with the field attorney to discuss facts. "Clarify problem."
Determine if the question is related to policy or law.	Use research or determine if the question is a policy or not through reflective mechanisms.
Determine sources of information: • Identify research sources • Identify staff attorney to interact with	"Research law"; "discuss with staff attorneys"; "discuss with supervisor."
Determine the appropriate legal area for the question.	Interact with staff attorneys or supervisor (particularly for newer attorneys). Once the legal area is determined, interact with other front-line staff to obtain an answer. "Interact with those known to work in the area." Some attorneys referred the question to another staff attorney and were not responsible for getting back to the field attorney.
Ascertain if the question had been asked previously in the organization's history. "I try to recall if I've reviewed the question before."	Engage in social interactions with staff attorneys and/or research.

Social interactions have been defined as actions within organizations (Parsons, 1951). In this study, these interactions were actions that attorneys took based on their interpretation of or their reflection on the problem. Patterns of social interaction described the types of individuals attorneys sought when obtaining information, the focus of these social interactions, and the results or outcomes of these social interactions. Factors that appeared to influence these patterns of interactions with other individuals in the organization included staff attorney expertise and tenure and supervisory roles.

Staff attorneys described the characteristics of the social interactions in their problem-solving process. They stated that social interactions—which they defined as face-to-face discussions that they had with another staff attorney or a supervisor—occurred informally and that the frequency depended on the area of law. Informal social interactions—defined by the participants as a meeting or gathering that was not scheduled—occurred in the hallway, individual offices, staff meetings, and social settings. This was typically an impromptu and spontaneous interaction. A formal interaction was a scheduled meeting with an outlined purpose. Attorneys cited several reasons for social interactions: clarifying information, asking if others had handled the problem that they were currently handling, asking for resources, and "talking out" the problem.

When looking for another staff attorney, attorneys indicated that they sought other attorneys who had expertise as well as tenure in the organization. Participants stated that expertise meant an area of law that the attorneys had extensive experience with; expertise did not necessarily link to one's current legal area of responsibility. Participants stated that the expert attorneys did not always know the answers. The experts were sought for interaction not only in the search for answers to difficult questions but also to obtain helpful resources.

Tenure was another important aspect when attorneys decided whom to interact with when trying to solve a problem. Tenure differed from expertise. Tenure equated to years with the organization and not necessarily years practicing law. Attorneys showed high respect for those with long tenure. Hierarchically, these individuals were considered senior attorneys; they were still considered front-line roles since they did not have a supervisory function. The less-tenured attorneys reflected that they were a "junior" attorney and sought advice from the more "senior" attorney. Attorneys with over 14 years of tenure in the department felt that most of their informal social interactions involved other staff attorneys approaching them for information.

Attorneys indicated that the primary result of their interaction with other staff attorneys was taking action on the answer they received. Attorneys leveraged the new information and applied it to the problem. Prior to acting on the information, attorneys reflected on it. Reflection occurred again after social interaction took place.

Attorneys reflected on the solution created during social interaction. Attorneys reflected on the applicability of the information they obtained. Most of all, attorneys thought about their next step. For example, many attorneys stated that after interaction, they recognized the need for additional research on the subject or for additional action, such as interacting with another attorney. Attorneys were always faced with judgment calls on information due to the subjective nature of the law. Attorneys stated that it was important to be accurate when responding to a question. This was taken into consideration when reviewing the gathered information. Attorneys stated that judgment on the information and facts of the solution to the problem led them toward their next actions.

Interestingly, an attorney metaphorically stated, "The actual movement of the information out causes the wagon wheel to turn because there's action that results off that." When a unique problem was presented, the attorney gathered information through social interactions with a front-line colleague and acted on the information by communicating it to the field attorney. Beyond that, attorneys would "write up the answer"—a phrase with a variety of meanings. An example of this is an attorney taking the information that he received from his interactions with a staff attorney through a peer review prior to sending a response to the field attorney. Most attorneys acknowledged that once they obtained the information from staff attorneys, they might conduct more research to add to the information that they received or just answer the question posed by the field.

Attorneys explained that laws were used in a certain manner in the past and the only thing that changed in the new situation was the fact patterns. Typically, attorneys would interact with other staff attorneys and obtain the information to solve the problem. They commented on the time factor: in order to respond to their internal customers in a

timely fashion, they discussed the problem with staff attorneys and then took action on the information they obtained.

Once a decision was given to the field attorney, the created knowledge was also recorded in a knowledge repository, such as a weekly report or one of the internal electronic databases. All attorneys in every legal staff group participated in writing what they were working on in the weekly report. The weekly report was disseminated among all attorneys in the legal department. Some participants admitted that they did not read other groups' weekly reports because some of the legal areas did not intersect with their legal area. Some participants stated that they read only their group's weekly report and what was pertinent to their legal area. Interestingly, some participants stated that they received all weekly reports from all legal staff groups, while others stated that they received weekly reports from only their own group. For groups that did not have regular staff meetings, attorneys tended to read and rely on the weekly report to see what other attorneys were working on.

The legal department had two internal, homegrown electronic databases referred to in this study as "LBASE" and "LOPINION." LOPINION was an archive of formal written legal opinions, and LBASE was a central repository; both could be accessed by every attorney. Once the attorney communicated an answer to a field attorney or client, a summation answer was recorded in LBASE, and supporting documents could be attached. Other attorneys could access the information and use it for their legal cases, questions, and projects. While the legal department had this electronic database, attorneys admitted they often did not refer to it when they had a question. Most of the attorneys cited different issues that they had with the database, including that it was complicated, hard to navigate, and too burdensome. They said that not only was it difficult to research in LBASE but it was difficult to record items. Many attorneys indicated that it was easier to discuss a problem with a staff attorney than research the issue in LBASE.

4. DISCUSSION AND IMPLICATION FOR FUTURE RESEARCH

Four major findings emerged from this study. First, there was a dynamic pattern of reflection and action throughout the problem-solving process of front-line employees (the staff attorneys) as they addressed complex problems brought to them by field attorneys. The action and reflection patterns were very recursive in nature. Second, based on reflection, front-line attorneys took several actions such as research, social interactions, and dissemination of information in order to create new knowledge in the organization.

Structuration theory (Giddens, 1994) describes the recursive process between culture and social structures such as hierarchy, management practices, and norms (Poole, Gioia, and Gray, 1989). Figure 3 depicts how new information becomes created knowledge, mediated through reflection and action, with the influence of organizational culture, structure, and role. Action and reflection rely on one another in order to produce meaning of the new information presented. This process is recursive, dynamic, and consistent when new information is introduced. Organization, culture, structure, and roles impact action and reflection and affect the meaning that is generated. Knowledge is created through the features of action and reflection.

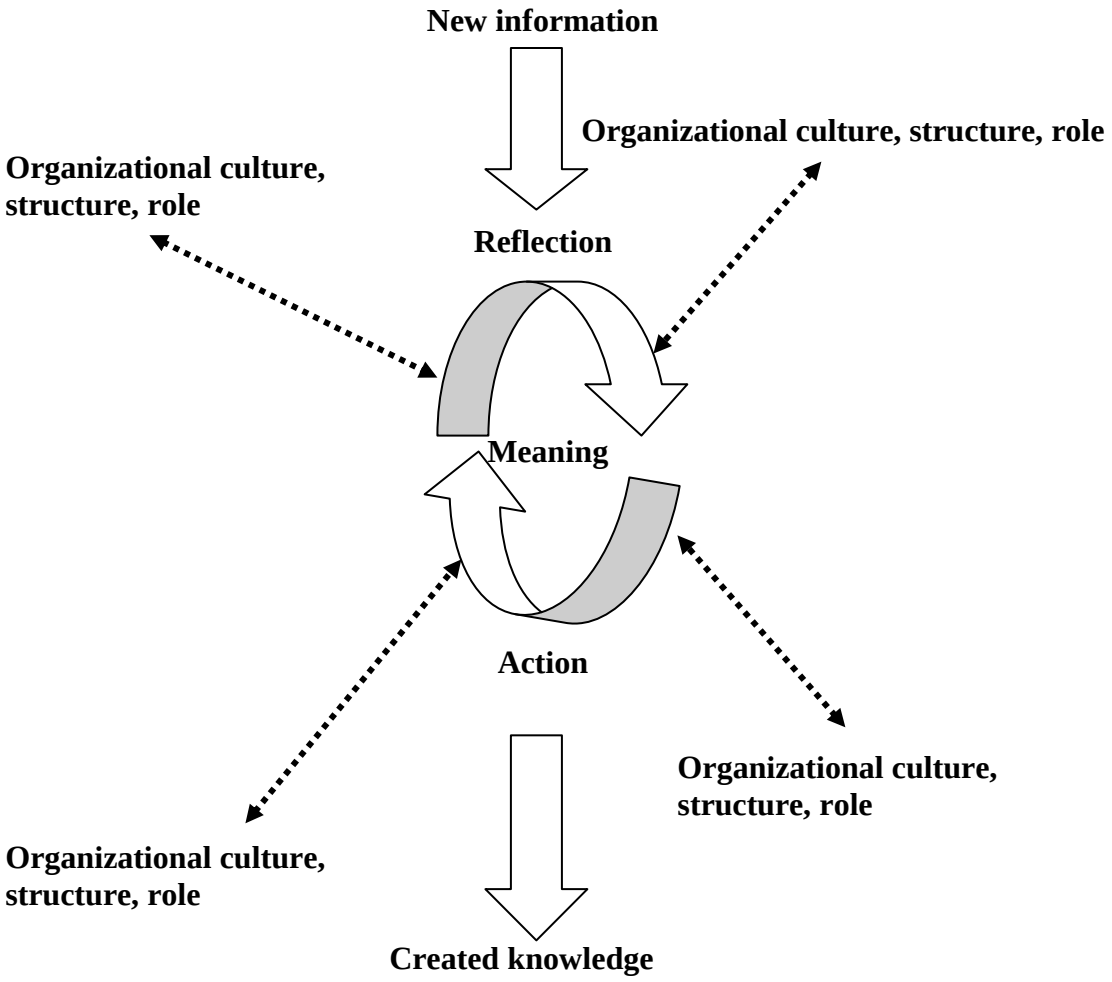

Figure 3. Action and reflection patterns are recursive, which yields created knowledge.

The third finding was that attorneys engaged in informal social interactions—particularly with expert and tenured attorneys. These expert and tenured attorneys' roles are evolving in nature. Social interaction attributes are connected to Nahapiet and Ghoshal's (1998) work on dimensions of social interactions. As depicted by Nahapiet and Ghoshal (1998), the dimensions are structural, relational, and cognitive. Finally, the fourth finding was that knowledge creation is connected to the social interaction patterns between attorneys.

Future research should be conducted to further examine knowledge creation in organizations, including more decentralized organizations across professions and industries. The use of multiple case studies across professions and industries can be beneficial towards demonstrating diverse social processes that front-line employees engage in to create knowledge. Additionally, a longitudinal study should be considered so that researchers can track over time the information shared in social interactions transforming into created knowledge. In a longitudinal study, researchers could trace specific information coming into the organization, reflection on the information by front-line roles, action on the specific information, the transformation of the information into created knowledge, and the dissemination of the knowledge to the organization. In addition, the

study of social interaction patterns and norms of front-line employees could be expanded to different types of organizations, such as call centers.

5. CONCLUSION

The purpose of this study was to examine front-line roles creating knowledge through their social interactions with other front-line roles. The study concluded that front-line roles are involved in creating knowledge through the organization's social processes. The study described the social interactions between front-line roles, including the information exchanged, the value attached to the information, and the action taken on the information. The findings revealed that both action and reflection are needed for both value and meaning to be placed on information and in turn for knowledge creation to occur. In addition, features of action and reflection are recursive and not linear.

Using a case study design, the findings demonstrated that social interactions are complex, dynamic, and often informal. Front-line employees seek out and interact with other front-line employees who are identified as experts and tenured in their profession. Through social interactions, front-line employees make decisions on whether to act on the information that is discussed. The knowledge that is created is archived using technology and can be disseminated through staff meetings and organizational documents, yet this type of knowledge is not always accessed on a regular basis. Finally, it was determined that the creation of knowledge depends on the culture of the organization.

Finally, this research demonstrated that knowledge is created through front-line roles. Social interactions are a valuable source of information, and front-line staff members act and reflect on this information. While technology exists to harvest and collect knowledge, it cannot replace people. People give the information context, meaning, and life. It is through experience that people discuss their solutions to everyday problems. One of the most interesting insights from this research is that the application of knowledge is what is created and invented. The law remained the same; it was how the attorneys applied the law that changed. The value placed on the application of the law is meaningful to the organization and is transmitted from one attorney to the next through social interactions.

REFERENCES

Ashforth, B. (2001), *Role Transitions in Organizational Life: An Identity-Based Perspective,* Lawrence Erlbaum Associates, Mahwah, NJ.

Bennet, A. and Bennet, D. (2004), *Organizational Survival in the New World: The Intelligent Complex Adaptive System,* Elsevier Butterworth Heinemann, Amsterdam.

Berger, P. and Luckmann, T. (1966), *The Social Construction of Reality: A Treatise in the Sociology of Knowledge,* Doubleday, New York.

Bertels, T. and Savage, C. (1998), 'Tough questions on knowledge management', in von Krogh, G., Ross, J. and Kleine, D. (eds.), *Knowing in Firms: Understanding, Managing and Measuring Knowledge,* Sage, London, pp. 7-25.

Bresman, H., Birkenshaw, J. and Nobel, R. (1999), 'Knowledge transfer in international acquisitions', *Journal of International Studies,* vol. 30 no. 3, pp. 439-462.

Burr, V. (1995), *An Introduction to Social Constructionism,* Routledge, London.

Creswell, J. W. (1994), *Research Design: Qualitative and Quantitative Approaches,* Sage, Thousand Oaks, CA.

Drucker, P. (1995), *Managing in a Time of Great Change,* Dutton, New York.

Eisenhardt, K. (1989), 'Building theories from case study research', *Academy of Management,* vol. 14 no. 4, pp. 532-550.

Gergen, K. (1994), *Realities and Relationships: Soundings in Social Construction,* Harvard University Press, Boston.

Giddens, A. (1979), *Central Problems in Social Theory: Action, Structure and Contradiction in Social Analysis,* University of California Press, Los Angeles.

Giddens, A. (1994), *Beyond left and right: The future of radical politics.* Stanford, CA: Stanford University Press.

Goffman, E. (1959), *The Presentation of Self in Everyday Life,* Penguin, Harmondsworth, UK.

Hansen, M., Nohria, N. and Tierney, T. (1999), 'What's your strategy for managing knowledge?', *Harvard Business Review,* vol. 77 no. 2, pp. 106-119.

Heinrichs, J. H. and Lim, J.-S. (2005), 'Model for organizational knowledge creation and strategic use of information', *Journal of the American Society for Information Science and Technology,* vol. 56 no. 6, pp. 620-629.

Janz, B. and Prasarnphanich, P. (2003), 'Understanding the antecedents of effective knowledge management: The importance of a knowledge-centered culture', *Decision Sciences,* vol. 34 no. 2, pp. 351-384.

Katz, D. and Kahn, R. L. (1966), *The Social Psychology of Organizing,* John Wiley and Sons, New York.

Kikoski, K. C. and Kikoski, F. J. (2004), *The Inquiring Organization: Tacit Knowledge, Conversation, and Knowledge Creation: Skills for 21st-Century Organizations,* Praeger Publishers, Westport, CT.

Martin de Castro, G., Saez, L. P., Lopez, N. E. J. and Dorado, G. R. (2007), *Knowledge Creation Processes: Theory and Empirical Evidence from Knowledge-Intensive Firms,* Palgrave Macmillan, New York.

Maxwell, J. (1996), *Qualitative Research Design: An Interactive Approach,* Sage, Thousand Oaks, CA.

Miles, M. and Huberman, M. (1994), *Qualitative Data Analysis,* Sage, Thousand Oaks, CA.

Nahapiet, J. and Ghoshal, S. (1998), 'Social capital, intellectual capital, and the organizational advantages', *Academy of Management Review,* vol. 23 no. 2, pp. 242-266.
Nonaka, I. (1991), 'The knowledge creating company', *Harvard Business Review,* vol. 69 no. 6, pp. 96-104.
Nonaka, I. and Takeuchi, H. (1995), *The Knowledge-Creating Company,* Oxford University Press, New York.
Parsons, T. (1951), *The Social System,* Free Press, New York.
Parsons, T. (1967), *Sociological Theory and Modern Society,* Free Press, New York.
Poole, P., Gioia, D. and Gray, B. (1989), 'Influence modes, schema change, and organizational transformation', *Journal of Applied Behavioral Science,* vol. 25, pp. 271-289.
Potter, J. (1996), *Representing Reality: Discourse, Rhetoric, and Social Construction,* Sage, London.
Prusak, L. (1997), *Knowledge in Organizations,* Butterworth-Heinemann, Boston.
Rocher, G. (1995), *Talcott Parsons and American Sociology,* Barnes and Noble, New York.
Schön, D. A. (1983), *The Reflective Practitioner: How Professionals Think in Action* (2nd ed.), Jossey-Bass, San Francisco.
Schutz, A. (1964), *Studies in Social Theory,* M. Nijhoff, The Hague, Netherlands.
Schwandt, D. (1997), 'Integrating strategy and organizational learning: A theory of action perspective', in Walsh, J. and Huff, A. (eds.), *Advances in Strategic Management,* JAI Press, Greenwich, CT, Vol. 14, pp. 337-359.
Schwandt, D. and Marquardt, M. (2000), *Organizational Learning: From World Class Theories to Global Best Practices,* CRC Press, New York.
Shotter, J. (1993), *Conversational Realities: Constructing Life Through Language,* Sage, London.
Silverman, D. (1970), *The Theory of Organizations: A Sociological Framework* (1st ed.), Basic Books, New York.
Toffler, A. (1990), *Powershift: Knowledge, Wealth, and Violence at the Edge of the 21st Century,* Bantam Books, New York.
Tzokas, N. and Saren, M. (2004), 'Competitive advantage, knowledge and relationship marketing: Where, what and how?', *Journal of Business and Industrial Marketing,* vol. 19 no. 2, pp. 124-135.
Yin, R. (2003), *Case Study Research: Design and Methods: Applied Social Research Methods,* Sage, Thousand Oaks, CA.