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Abstract

The dot-com boom in the late 1990s attracted vast numbers of undergraduate students into the field of Information Systems (IS) with the promise of being the next "big thing". As the dot-com bubble deflated amidst the general slowdown in the global economy, the outlook of these batches of students had been changing dramatically over the years due to the long "gestation" period (frequently 4 years) in the tertiary educational arena. Coupled with the perennial shifts in the nature of critical IS knowledge and skills, the current situation presents a unique, valuable and close-up opportunity for studying the evolving identity of the IS professional.

This research employs symbolic interactionism as the informing theoretical perspective for examining newcomer socialization processes in an ethnographic study, in which the researchers were immersed in the education environment of a university. We adopt a longitudinal form of analysis by examining three major role transitions along the road to being an IS professional, starting from his/her formative years as an (initially earnest) undergraduate student. Our findings regarding the evolving outlook of these students indicate that they initially attached certain symbols to being an IS professional. Interestingly, some of these symbols got sedimented over time while others exhibited relatively less permanence. More importantly, the evolving symbolism was enacted into various job-seeking actions towards the end of the long university education process.

Keywords: Information systems profession, information systems education, symbolic interactionism, ethnographic research methods, newcomer socialization.

1 INTRODUCTION

The dot-com boom in the late 1990s attracted vast numbers of undergraduate students into the field of Information Systems (IS) with the promise of being the next "big thing". As the dot-com bubble deflated amidst the general slowdown in the global economy, the outlook of these batches of students had been changing dramatically over the years due to the long "gestation" period (frequently 4 years) in the tertiary educational arena. Coupled with the perennial shifts in the nature of critical IS knowledge and skills, the current situation presents a unique, valuable and close-up opportunity for studying the evolving identity of the IS professional, starting from his/her formative years as an (initially earnest) undergraduate student.

1.1 The Identity of the IS Professional

The professional identity is often constructed from learning the required theory and ethics, and internalizing the values, norms and symbols of the professional culture (Greenwood, 1957). This identity is often formed early through the educational process, and is prone to adaptation and mutation in one's early professional career (Ibarra, 1999).

An important factor in shaping one's professional identity is the concept of the career itself (Greenwood, 1957). The IS profession has seen tumultuous shifts in its environment. Changing IS staffing pattern and portfolio of critical IS activities has cried out for the need to change the required critical knowledge and skills (Lee, Trauth and Farwell, 1995). The resultant effect is the obsolescence of the traditional IS career path of the linear progression from "programmer to system analyst to project manager to IS manager" (Trauth, Farwell and Lee, 1993). Its demise spawned the creation of a continuum of career paths from "technical specialist" to "software development" to "functional IS", with progressively less emphasis on technical orientation to a greater functional/business orientation (Trauth et al., 1993). Such trends have greatly polarized the conceptual knowledge of the IS profession and confounded the professional schools on the correct mix of technical and non-technical skills to be taught, with contrasting views by different authors (Lee, Koh, Yen and Tang, 2002; Todd, McKeen and Gallupe, 1995). As the design of the IS curriculum has often been criticized as inadequate (Todd et al., 1995; Trauth et al., 1993), it suggests that a certain professional identity confusion may commence from the very early stages of the tertiary education.

However, studying the curriculum and analyzing the skill sets to be taught are inadequate for understanding the professionalization process (Schein, 1967). One should also be cognizant of what are the attitudes and values that are internalized by a student, when in the process are they internalized and how are they being internalized (Schein, 1967). In the occupational or practitioner arena, ideologies are conveyed through a myriad of cultural norms such as "argot, myths, stories, rituals, ceremonies, symbols and physical artifacts" (Trice, 1993). Conforming to these norms is achieved through a socialization process that is not dissimilar from a rite of passage (Trice, 1993). In a similar fashion, the IS student enters the tertiary educational arena as a newcomer to take on the identity of the IS professional, with the continual construction of that identity during the subsequent immersion in the industry.

1.2 Newcomer Socialization: "Sequential Stages" and "Mental Processes"

Socialization processes from a newcomer perspective are often discussed in the organizational research literature (e.g.: King and Sethi, 1998; Reichers, 1987). These studies are important in understanding how individuals adjust and internalize the culture and values of the new environment. In the academic arena such as the fast moving IS discipline; socialization is also an important process, which can significantly impact the outlook of would-be and fledgling professionals in the field. Though there is extensive study of socialization in other professional arenas such as nursing (Psathas,

1968), medicine (Hall, 1948) and management (Schein, 1967), there is a dearth of such longitudinal studies in extant IS literature. Therefore, examining the socialization of IS professionals may be able to help shed more light on how their identity evolves.

The socialization process is often the longest and most difficult phase in a newcomer's organizational entry (Wanous, 1992). In this regard, the focus on newcomer socialization in extant literature is either on 1) the "sequential stages" that a newcomer goes through from becoming a newcomer to an insider or 2) the newcomers' "mental processes" as they undergo the changes when being immersed in a new environment (Reichers, 1987).

The stage models' (e.g.: Feldman, 1976) commonality lies in at least three stages (Reichers, 1987). They discuss the entry of a newcomer in a progressive pattern of a newcomer's 1) entry to the environment, 2) the adjustment of the newcomer to the environment and 3) the final outcome of that adjustment. The alternative perspective provided by the mental processes (e.g.: Louis, 1980) seeks to explain the psychological processes that are brewing inside an individual when he/she is confronted with the major changes in the environment and roles (Reichers, 1987).

1.3 Focus and Roadmap of Paper

In this study, the construction of the identity of the IS professionals will therefore be studied based on three role transitions: 1) From high school to university education; 2) From university education to seeking recruitment in the industry; 3) From seeking recruitment to being employed as an IS professional in the industry. During these role transitions, we will study the "mental processes" of these students as they progress through the various "sequential stages".

The rest of this paper will proceed as follows. We first outline the research questions and explain how the ethnographic approach (appropriately informed by the symbolic interactionism theoretical perspective) is an appropriate strategy of inquiry for this study. The research setting and the resulting findings are then described. We conclude with implications for research and practice.

2 RESEARCH STUDY

2.1 Research Questions

In order to explore the evolving identity of the IS professional as per the foregoing discussion, this study addresses the following research questions:

1) How does the socialization process in the IS educational arena over time shape the outlook of the students towards IS tertiary education and the IS profession?

2) How does this outlook change when the student enters the industry?

2.2 Theoretical Perspective

In this study, we use symbolic interactionism as the theoretical perspective. The theoretical foundations of symbolic interactionism in the study of the human lived experience and group life, is guided largely by the works of Mead (1934), and developed by Blumer (1969). Three basic assumptions underpin Blumer's formulation of symbolic interactionism: 'that human beings act toward things on the basis of the meanings that these things have for them'; 'that the meaning of such things is derived from, and arises out of, the social interaction that one has with one's fellows'; 'that these meanings are handled in, and modified through, an interpretive process used by the person in dealing with the things he encounters'. A key premise of this theoretical perspective is that an actor's establishment of identity and sense making is largely through his/her ongoing social interactions with

other objects and the internalization of collective values, standards and meanings (Burke, 1991; Ashforth, 2001).

Thus, the phenomenon of identity, which springs from such interactions, can be seen as an ongoing process of social construction of reality (Berger and Luckmann, 1966), which is an integral part of organizational life (Reichers, 1987). This perspective is further extended by identity theory (McCall and Simmons, 1978), which argues that the social construction of self is grounded by the many distinct roles that people play in day-to-day social interactions (Ashforth, 2001). As newcomers to organizations often change aspects of their social selves by attaching meanings to their ongoing social interactions within the new environment (Reichers, 1987), symbolic interactionism is therefore an appropriate theoretical perspective to examine these newcomer socialization processes.

2.3 Research Site

In this six-month study (May-Oct 2003), the authors were immersed in the School of Computing of a major university in Singapore. This is a reputable university with a strong IS department, which makes it suitable for the research. In this university, students are first admitted into a common Computer Science (CS) and Information Systems (IS) curriculum. After the first year, the student then chooses between a variety of streams offered by the CS and IS departments, leading either to a general degree or an honors degree.

To elaborate on the background of this study, the School of Computing in this university experienced rapid growth in undergraduate student enrollments in the late 1990s to the early 2000s. However, student enrollments have fallen over the past one to two years. Particularly worrying was the recent trend of better students choosing other faculties as their first choice. On the other hand, recent graduating batches of students have had more difficulty finding jobs than in the past (Tan, 2003), amidst the recent slowdown in the IT sector of the local economy. Taking up to one year to find a job is not uncommon while many have to accept contract positions. In fact, a government authority in Singapore recently took the unusual step of paying for a special IT feature in a major newspaper, and then invited companies which had IT vacancies to place advertisements in it for free. (Ho, 2003) This reflected the government's anxiety and concern about the continuing dynamism of the IT sector in the economy.

During the study, participant-observations of the interactions of normal student life were done by attending some of the lectures, tutorials and engaging in academic project work with the students. Observations included not just the daily social conversations but included the examination of artifacts such as the school's literature, educational materials and other publications. In order to remain unobtrusive or nondisruptive, field notes were often taken off site. Close contact was maintained with some of the students who had left the university and entered the industry. Apart from all these interactions, a group of 15 individuals serves as key informants for this study. In general, it was observed that interactions between the students and other agents of socialization are carried out largely through mechanisms such as lectures, tutorials, course materials and the curriculum; whereas in the occupational role, such mechanisms take the form of performance feedback, rites of initiation, group socialization and on the job training (Reichers, 1987).

2.4 Research Methods

Ethnographic research comes from the disciplines of cultural and social anthropology. It requires the immersion of the researcher into the life-worlds of the people being studied. This study will borrow ethnographic methods such as observation, participant-observation, and interviews as the three sources of data to be relied on to achieve intimate familiarity within the settings (Prus, 1996).

In order to gather the perceptions of the IS students in the first two role transitions: from high school to university, and from university to seeking recruitment, all three sources of data will be leveraged

upon during the data collection. As there is a need for the researcher to be immersed in the naturalistic setting of a university for a significant amount of time so that he/she can observe the phenomenon in its social/cultural context, this approach will therefore be able to deeply immerse and focus the researcher on the complex social interactions (between the academics, students and practitioners) that are taking place in the naturalistic setting of the university environment, revealing the symbolism behind the socialization processes that evolves in the early identity of the IS professional. As for gathering the perceptions of the novice IS professionals, only interviews are relied on for the data collection.

Following Daly (1994) who studied the social construction of fatherhood using the symbolic interactionist framework, the fieldwork in this study is specifically concerned with acquiring the perspectives of the IS student from four vantage points: individual, interactive, structural and processual. On an individual level, a key question would revolve around how does the IS student make sense of the world and develop conceptions of the IS professional role? On an interactive level, to whom and how does he talk and work with? On a structural level, how does his internal convictions/beliefs regarding the role of the IS professional relate to the structural norms and features? On a processual level, how does his outlook regarding the IS professional role change over time and what factors contribute to such changes? These four levels of inquiry will guide the data collection as well as data analysis phases of this study.

3 RESEARCH FINDINGS AND ANALYSIS

3.1 Multiple Symbolic Meanings towards IS Education & the IS Professional

Altogether, eight highly metaphorical and different symbolic constructions towards IS education and the IS professional were uncovered. Not all the symbolic representations exhibited the same level of permanence, with some symbols fading away after a period of time while others became sedimented (See Table 1). It is from such evolving symbolism during each of the three role transitions that an understanding of the construction of IS professional identity is gathered.

Unifying Theme and Symbol Representations	From High School to University Education	From University Education to Seeking Recruitment	From Seeking Recruitment to being a Newcomer in the Industry
IS Education			
Technological	√		
Land of Opportunities	√		
Disconnect	√	√	
Generalist	√	√	√
IS Professional			
IT Architect	√	√	√
IT Leader	√	√	√
IT Technician		√	√
IT-Business Bridge			√

Table 1 The Multiple Symbolic Representations for IS Education & the IS Professional

3.2 Role Transitions 1: *From High School to University Education*

Many students tend to begin their professional education with idealistic and public stereotypes of the professional life (Mayer-Sommer and Loeb, 1981; Psathas, 1968). Similarly, many incoming students

perceive the IS education with the stereotype that it is a "*technological*" education, where programming languages and the intricacies of computer hardware take centre stage. Another interesting observation is that a significant number of the students who enrolled in the 2000/2001 academic year (many of them are either in their 4th year now or have graduated), were attracted by the hype and propaganda brought about by the dot-com boom and thus saw the IS profession as a "*land of opportunities*". It is observed that these symbolic representations towards the IS education and profession had faded away, after reality sets in.

The school's websites were an excellent source to mine information from. A speech made by the former dean of the school 3 years ago, espoused that the industry is in pursuit of "*IT architects*". As programmers can easily be sourced at a lower cost elsewhere, he noted that employers are now looking for IT professionals that are trained in a multi-disciplinary approach:

"The architect must understand the current and future state of technology and the client's needs now and in the future. The architect must design a system accordingly, and clearly articulate (both verbally and in writing) the value proposition… Our School aims to develop architects and not programmers. Involving multiple disciplines is a foundation for this aim… This is how we will differentiate our graduates from those of other institutions… Incidentally, Bill Gates has retired as CEO of Microsoft to become "Chief Software Architect"."

As the students begin to take IS modules from the second semester of the first year, the previous symbolic representation of IS education being of a "*technological*" nature disappears as they experience the multi-disciplinary nature of an IS education. No longer would a student perceive the IS education as a "*technological*" education, but rather an education to groom "*IT architects*" in an organizational context. A final year student succinctly describes his perceptions: *"IS (education) is more like a middle ground between the technical and management aspects… I can look at things at a macro level (vis-à-vis the in-depth level in Computer Science (CS)) and appreciate an organizational perspective instead of a pure developer perspective."*

While students appreciate the multi-disciplinary and "*generalist*" approach, some feel a certain "*disconnect*" towards the IS education, as the IS curriculum in the university has been altered with a decreasing emphasis on the technical modules in the last few years. Many question whether the sacrifice of technical skills in favour of soft skills is a sound move. Such a feeling is brought about when they look through the local job advertisements to realize that many of the entry-level positions demand a wide array of technical skill requirements, which are neither taught by the school, or are not required for graduating purposes. The dot-com bust and the slowing global economy further fuel this "*disconnect*" towards IS education, especially when published figures show that the school's fresh graduates have the lowest employment rates amongst all the faculties in the university for 2002. Alas, the symbolic representation of having an IS education as a "*land of opportunities*" suddenly seems very remote – in fact, it has gradually faded away.

However, at the same time, the students also prefer the non-specialist focus of the IS curriculum vis-à-vis the CS curriculum. As the CS curriculum burrows a student deep into the technical know-how of programming and algorithms, many students in the IS curriculum rationalize that in the context of Singapore, such deep "know-how" is impractical. They perceive that the "*generalist*" approach in the IS curriculum would better position them for alternate opportunities, and more importantly, serve as a stepping-stone to climb the corporate ladder.

Thus, besides being an "*IT architect*", many students perceive an IS professional to be an "*IT leader*" as well. Many in the IS curriculum realize that the programmers that are hired in many firms in Singapore today are increasingly sourced from developing nations outside the country, and are perceived to be able to execute the technical tasks more efficiently and more cheaply than them. In fact, one student unabashedly puts it across as follows: "*If you can't beat them, don't join them. Lead them!*"

3.3 Role Transition 2: *From University Education to Seeking Recruitment in the Industry*

As the students graduate and seek employment in the industry, they dynamically enact a series of "malleable selves" (Markus and Kunda, 1986) in order to match the expectations of different employers. The "malleable self" is the adaptation of one's working self-concept from a set of self-concepts (e.g.: good self, bad self, ideal self) according to the context of the environment (Markus and Kunda, 1986). Thus, in the context of their job-seeking actions, "malleable selves" are used as temporary quick-fix "personal portfolios" so as to tailor their own current perceptions, personal values and strengths to what is expected in the new roles being offered by different employers.

As the industry is currently in a state of slump with low hiring rates, the resultant frustration in the job search leads to the IS professional acquiring a contrasting symbolic meaning of being an "*IT technician*" as opposed to being an "*IT leader*". This is indeed quite a psychological comedown for many students. As noted in the literature (Todd et al., 1995), very often the entry-level positions in job advertisements spelt out a myriad of technical skill requirements, with only passing references to soft skills. In order to adapt to this new social situation, many enact a "malleable self" that is more in keeping with the new symbolic representation of the IS professional as being an "*IT technician*".

At this point, many respondents question the "*generalist*" nature of the IS education. The question that ring incessantly in their minds is: "*Was my education too impractical and theoretical such that I am not employable?*". This internal conflict within their minds further reinforces the symbolic representation of "*disconnect*" towards the IS education, further showing the interdependence of these two symbols. One recent graduate puts it despondently across: "*It takes a long time to get (hired)… Getting ANY job should not be a problem. However, to get a job that you want, with good career development and salary is extremely difficult.*"

Therefore, it comes as no surprise that many graduates do not follow their original professional callings and enter the IS profession, choosing instead to enter alternate professions that present a "better" opportunity. However, during some job interviews, the symbolic meaning of "*IT architect*" may come calling, especially if the interviewers are from the upper management of the organization. As one graduate observes: "*They do not want just another programmer; they wanted somebody with a business perspective towards the systems so as to add value to the firm.*" During such interviews, a "malleable self" that is more in keeping with the symbolic representation of an "*IT architect*" is immediately enacted to match the fluid dynamics of the situation. Another implication from such employers' requirements of a multi-disciplinary skill set is the (late) vindication of the "*generalist*" nature of the IS education.

Clearly, as they enact the various "malleable selves", the job-seekers constantly feel the tension between the contrasting symbolisms during the job search process. The negative symbolism surfaces and clings to them during the long periods of frustration while the positive symbolism suddenly gushes forward whenever there is hopeful optimism. However, these moments may be brief as the positive symbolism immediately recedes when the students realize that their optimism has been misplaced (i.e., when they are not offered the job).

3.4 Role Transition 3: *From Seeking Recruitment to being employed as an IS Professional in the Industry*

After being employed, the transformation of the neophytes into being insiders in the industry occurs through various newcomer socialization processes. Through the ongoing social interactions in the workplace, certain meanings towards the IS profession and IS education become firmly sedimented to crystallize a more lasting professional identity.

As compared with the earlier transition during which the graduates are confronted with contrasting symbols of "*IT leader*" and "*IT technician*" vis-a-vis the IS profession, this current role transition is the time when the two symbolic representations are reconciled and sedimented in a state of co-

existence. Though employed in a variety of entry-level roles from being systems analysts to IS consultants, many respondents recognize that while their entry-level roles require them to have a certain level of technical aptitude, leadership positions will naturally take time to materialize. As one systems analyst curtly retorts: "*Who will let fresh graduates enter and take up management positions? They still have to start off at some junior level like me*."

As IS professionals are employed in a variety of roles in the industry, many of them raise the point that there is a need to be able to communicate effectively with the clients (or users) on the functional requirements in order to deliver a system that the former dean succinctly described as having a "value proposition". This corresponds closely with findings in the literature that IS professionals require excellent "contextual orientation", where understanding and interacting with the various business units are keys to success (Trauth et al., 1993).

Thus, the fledgling IS professionals increasingly see themselves as designing and guiding the organizations on the role of IS, sedimenting ever more deeply that being in the IS profession is symbolically akin to being an "*IT architect*". Many IS professionals gradually realize they are the "*IT-Business bridge*" between the technical (IT) and business sides of the organizations as well. One SAP analyst patiently describes his role with quiet confidence: "*My boss decided it was in the best interests of all parties that I sat in the board meetings, making sure the (management) consultants do not promise (specifications) what we can't achieve realistically*."

In the first few formative months, the IS professionals begin to seek out career development paths, and plot the climb up the corporate ladder. Many begin to realize the importance of the business and interpersonal skills that are so heavily emphasized in the IS curriculum. One system analyst states quite matter-of-factly: "*You can only go so far in the technical track… business knowledge and management skills are the tools for my climb up the corporate ladder, either within or in other firms*."

In a study done within the Singapore context, many IT professionals took up management training such as M.B.A.s as they perceived management positions as higher paying with better advancement opportunities (Loh, Sankar and Yeong, 1995). An IS professional (currently working in the realms of the university and concurrently doing a Masters program) explains the correlation between the profession and the IS curriculum: "*It is the business objectives that drives the IT (initiatives)… and IS professionals must be aware of these issues and apply IT to solve them…(Thus) many people take M.B.A.s to support their new roles in the management. Though you might find it hard to appreciate the practicality of such knowledge now, you will be able to see the application of it when you enter the industry*."

Hence, the practicality and strength of the multidisciplinary approach in the IS curriculum lies in one's latter stages of the career. The "*generalist*" nature of the IS education in a way contributes to the symbolic meaning of the IS professional as being an "*IT leader*" as well, with the symbolism of "*disconnect*" towards IS education fading away.

4 IMPLICATIONS FOR RESEARCH AND PRACTICE

The discussion on gaps in skill sets has been a well-trodden topic in extant IS literature. However, this study's findings appear to indicate that the nature of such gaps may also be understood in terms of the evolving symbolism during each role transition. Such a different perspective may help to shed greater light on this long-standing research issue, with important implications for practice.

4.1 Education Gap and Apprenticeship Gap

The education gap is well reported in the extant literature (e.g.: Lee et al., 2002; Todd et al., 1995), where arguments persist over the mix of soft skills and technical skills that should be in the curriculum. The many different career tracks of an IS professional lead to the omnipresence of the

education and apprenticeship (when the student starts work in the industry) gaps, as the required skill set varies from role to role.

These two gaps may account for the "*disconnect*" symbol associated with IS education that arises during the first two role transitions. A newly recruited junior IS manager explains with a tinge of embarrassment: "*When my programmers encountered certain problems they could not solve in (programming) languages I do not know, I felt bad being not able to help them.*" However, when one advances in the career, the "*disconnect*" symbol fades away, as the respondents now perceive that however comprehensive, the IS curriculum can only deliver so much. The soft skills that were probably deemed to be impractical in the first place are now brought into sharper focus during the IS professional's movement upwards in the organization. Instead of harping on "*disconnect*", the respondents now cite continual learning, correct attitudes and adaptation as traits that IS professionals should have in order to succeed.

4.2 Recruitment Gap

There is a fine line between the education and recruitment gaps, with both revolving around the same issue on whether the sacrifice of technical prowess is warranted. However, unlike the other two gaps, the recruitment gap, as evident from the enactment of the "malleable selves", is a transient one, as it automatically closes itself when the students are hired into a job. One junior IS manager explains how he was hired even when he did not meet all the criteria: "*Though I did not have many of the technical skills that were required for my job. My boss however assured me, that training could be conducted to rectify that… Thus, I probably believe my personality and what I said (in the job interview), on how I can contribute to the organization from a business perspective counts a lot.*"

It appears that recruiters state detailed technical requirements so as to impress upon all potential applicants that first and foremost, the vacancy is for an IS person – it may be their intention to differentiate the applications later through job interviews (based on criteria other than just the stated technical skills that should be possessed by the ideal candidate). Therefore, while the job-seeker may associate the IS professional role with the "*IT technician*" symbol as he/she painstakingly puts in job applications and dutifully goes for interviews, that symbolism may not take centre stage during the course of the interviews and especially when he/she gets hired for the job (in spite of his/her supposed technical 'deficiencies'). When he/she later moves up the career ladder, the other symbolism like "*IT architect*", "*IT leader*" and "*IT-Business bridge*" become much more important.

4.3 Fostering Professional Socialization

The aforementioned gaps are often a result of evolving skill requirements. The long "gestation" in the educational arena often meant the undergraduates would possess the skills of yesteryear technology. In this regard, our findings based on the evolving symbolism indicate that a possible solution could come in the form of fostering greater professional socialization in the curriculum. Professional socialization in schools is often widely discussed in other professions (e.g.: Mayer-Sommer and Loeb, 1981). It has been argued by those authors that shaping the professional identity in the early stages is critical to closing the gaps in perceptions between the academics and the practitioners. Some have even espoused that this will help the students link their classroom experience with the realities of the industry and thus reconcile their roles better (Mayer-Sommer and Loeb, 1981).

When extrapolated to the context of IS education, both academia and the industry should be cognizant that such socialization may have the desired effect of alleviating possible "cognitive dissonance" (Festinger, 1957) when the students leave the grounds of the university. The psychological tension, which springs forth from the internal conflict of whether they have made the right choices in the university, is apparent from the increasing "*disconnect*" towards the IS education during their job-seeking actions. While many have recommended that changes in the curriculum and internships between schools and the industry are a good way to bridge the various aforementioned gaps (Trauth et

al., 1993), we argue that such moves must be supplemented with the goal of forming the correct professional attitudes of what it takes to be an IS professional. While the specific mix of values and beliefs is difficult to determine empirically (Mayer-Sommer and Loeb, 1981), researchers and practitioners alike must nevertheless try to grapple with "disconnects" such as how the entry-level job requirements often do not match the "generalist" nature of the IS curriculum while it is the subsequent (and much later) career move up the organization ladder that requires such broadening of perspectives.

We argue that when appropriately calibrated, professional socialization may help to reduce the "*disconnect*" that students may feel towards the IS education, and at the same time, help them understand the "*generalist*" versus "*technological*" dimensions of the curriculum. More importantly, it may help the students appreciate the different roles of a truly effective IS professional: "*IT architect*", "*IT leader*", "*IT technician*" and "*IT-Business bridge*".

5 CONCLUSION

5.1 Limitations

An apparent limitation is that the study was conducted in just one university in Singapore. As the economic conditions and the design of the curriculum in other contexts may be different, the generalization of these findings should therefore be treated with caution.

5.2 Summary

In this study, we have employed symbolic interactionism as the informing theoretical perspective for examining (IS professional) newcomer socialization processes in an ethnographic study, in which the researchers were immersed in the education environment of a major university in Singapore.

The central theme behind this study's findings related to symbolic representations is that through the daily socialization processes, we find gaps in perceptions as individuals adjust to their new roles during each transition. As the industry is in a perennial state of evolution due to constant environmental pressures, the long gestation period in the educational environment will inevitably cause gaps in perceptions, as the cutting edge technology of yesteryear becomes the dinosaur of today when business conditions change. Hence, we posit that trying to apply "brute force" (e.g., constantly pushing through curriculum changes) in closing the gaps in skill sets can only achieve so little as far as perceptions are concerned. Instead, academics and practitioners alike should be cognizant of the need to foster better professional socialization in the schools. In fact, this study points to the fact that shaping the professional identity of the students early in the school grounds may be a complementary solution (in addition to making calibrated curriculum changes) in closing the gaps in skill sets.

Finally, our findings point to the importance of using symbolic interactionism as a fresh perspective to examine the evolving identity of would-be and fledgling IS professionals. This has implications for other areas of IS research, as symbolic interactionism has been underutilized in the IS field in spite of its well-known theoretical strengths. Indeed, there have been just a few noteworthy studies in IS literature that explicitly use the symbolic interactionist perspective. As such, the study of the role of symbolism in general and the use of the symbolic interactionist perspective in particular may therefore yield new and interesting insights in many IS research areas.

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