



## Encouraging the Inclusion of Evolutionary Psychology into Information Systems' Theoretical Repertoire as an Emerging Trend

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### ABSTRACT

Social and cognitive psychology frames have dominated IS researchers' attention in developing and applying theory to explain human behavior in the context of IS. However with a few exceptions, the information systems literature has largely ignored the possible explanatory power of evolutionary psychology. This is a major omission, particularly as Darwin argued that perception and cognition, areas of IS interest, are the product of evolution of the human brain adapting to motivate behavior that supports productive decision-making. It seems appropriate for IS research to recognize that humans are an evolved, social, cognitive species. In this paper, we encourage IS scholars to appreciate the potential contribution of evolutionary psychology as an emerging trend to enrich the theoretical repertoire for information systems.

**Keywords:** *evolutionary psychology, technology acceptance, evolved psychological mechanisms, human decision-making.*

### 1. INTRODUCTION

*"It is the theory which decides what can be observed."*

*(Einstein in a conversation with Heisenberg [1])*

Social and cognitive psychology frames have dominated IS researchers' attention in developing and applying theory to explain human behavior in the context of IS. However with some exceptions [2],[3],[4],[5],[6],[7],[8], the information systems literature has largely ignored the possible explanatory power of evolutionary psychology. A most recent paper urges the IS research community to rectify this major omission by asserting that "evolutionary information systems theories will have to be integrated with non-evolutionary theories to fully explain certain information systems phenomena" [8].

In this paper, our perspective is that IS scholars have largely ignored the potential contribution of evolutionary psychology, we opine that this is a serious oversight, provide evidence to support this assertion, and encourage its inclusion to enrich our theoretical repertoire as an emerging trend. As much of our seminal theories in IS are based on social and cognitive psychological frames, it is prudent to continue exploring the underlying evolutionary perspective to give a more comprehensive understanding of human decision making regarding technology. With the acceptance of Kock's (2009) paper, the door to discovering the potential of evolutionary psychology has been opened,

but getting scholars to walk through that door will still be problematic much in the same vein that it has taken over 150 years for our academic cousins in psychology to come to appreciate the influence of evolutionary based tents in shaping their discipline, as evident in the special issue dedicated to the Darwinian influence in both mainstream social and cognitive psychology in *American Psychology* [9]. Since many of the IS theoretical frames are rooted in mainstream social and cognitive psychology and as scholars we seek to constantly expand out theoretical repertoires to enrich our discipline, it is prudent to unveil the applicability of evolutionary tenets in IS research by recognizing much in the same vein as our academic cohorts in psychology, that humans are indeed social, cognitive as well as evolved species for which behavior, specifically decision making, is a manifestation of our adaption over time to promote survival of our species. Our perspective in this paper is that it is now time to unearth the influence of evolutionary theories in human decision making regarding technology, and we do so by introducing the IS research community to a particular categorization of the evolved psychological mechanisms (EPMs) (i.e., the innate motivators of behavior based on ancient encounters and problems that promoted ancestral survival and impact human motivation and behavior [10],[11],[12]. EPMs can be categorized as the four human drives (i.e., the drive to acquire, bond, comprehend, and defend [10],[13]. We also think it necessary to demonstrate how these human drives

have already manifested in technology innovations unbeknownst to the vast majority of IS research community thus far. In doing so, we strengthen our theoretical IS repertoire with the knowledge of these drives that help explain more comprehensively the human decision making process with regards to technology. Thus, the trifecta of social, cognitive, *and* evolutionary tenets should be considered when continuing to study human behavior in technology acceptance.

This paper is structured as follows. We first provide fundamental tenets of evolutionary psychology to further demonstrate its importance to understanding human behavior. Second, we then move to consider the Four-Drive model, which provides a high level abstraction of our many evolved psychological mechanisms. This Four-Drive model, by focusing on the fundamental evolutionary goals of each drive, provides scholars with a succinct means of understanding behavior in many contexts. Third, we illustrate how the four drives manifest themselves in IS settings to show their potential applicability to the IS domain. Finally, we discuss the implications of adding evolutionary psychology to the theoretical underpinnings of IS and suggest two research directions: a new path based on the neuroscience paradigm to explore evolved psychological mechanisms, and an augmentation of the dominant social science logic to include the four drives.

## 2. EVOLUTIONARY PSYCHOLOGY

In 1975, Edward O. Wilson introduced his controversial thesis on sociobiology [14]. He proposed that human behavior was influenced by evolutionary development. Initially, his work was vigorously attacked, but ultimately his contention won the day [15]. Sociobiology, rebranded as evolutionary psychology [11], has entered mainstream thinking in some academic disciplines, yet it is very much on the periphery, essentially out of sight, of IS academic thought.

Evolutionary psychology has asserted itself as a unifying theory that enfolds aspects of social and cognitive psychology with the tenets of evolutionary biology, cognitive science, anthropology, and neuroscience [11]. Human nature, or the “evolved, reliably developing, species-typical computational and neural architecture of the human mind and brain” [16], has gained recognition as a valuable lens for understanding how EPMS ultimately impact behavior.

The central principle of evolutionary psychology is that humans, then and today, possess mechanisms that developed over time as instructions for behavior, and when we encounter a problem similar to that frequently

encountered by humankind’s forebears, we still act on that same set of mechanisms [17]. These mechanisms were encoded because of successful responses by our ancestors to recurring survival and reproduction challenges. Such behaviors included gaining status, forming social coalitions, protecting oneself, selecting a mate, appeasing curiosity, and recognizing danger, and the need for communication (i.e., language) [17],[18],[19],[20]. These evolved psychological mechanisms guided formulation of perceptions, problem resolution, and adaption to local environments [13],[17],[18],[19],[20].

For tens of thousands of years, humankind was exposed to relatively unvarying or slowly varying environmental conditions. New mechanisms developed when new and relatively stable situations were sustained in the environment for generations of humankind [17], [21]. Evolved psychological mechanisms have had sufficient buffering time to adapt to the environmental demands—until recently. These evolved mechanisms formed in our long evolution did not necessarily develop in coherence with each another. Instead, each developed in response to a particular adaptive problem and is thus functionally specialized [17],[22],[23]. Consequently, evolved psychological mechanisms coexist, but may compete on some dimensions. For example, the tendency to exhibit jealousy in mating situations counters the mechanism to form coalitions that ensure survival and reproduction. The behavioral manifestation of any given mechanism is not fixed, but depends heavily on the environment and the cues that motivate the behavior based on the influence of the dominant drive [24]. Nonetheless, humans are highly prone to exhibit certain patterns of behavior when faced with situations that closely resemble the ones that shaped our evolved psychological mechanisms [18]. The startle reaction when we see a snake unexpectedly is a good example of an innate mechanism at work [25].

From an evolutionary perspective, human nature and the environment are viewed as two inseparable forces [26]. Not only does the ecological environment influence a human’s behavior (as demonstrated in the snake example), but our actions are also determined by the presence of others in that environment [27]. “Human beings acquire their typical human psychological characteristics, powers and tendencies in ‘symbiotic’ interactions with other human beings” [28]. Thus, social exchange played a vital role in the formation of evolved mechanisms. Perhaps one of the most salient developments of sociality has been the creation of language [27].

Besides ecological and social influences, cognition was (and still is) a necessary ingredient in the calibration of evolved psychological mechanisms [16].

**Table 1: Drives and brain location**

Drive	Definition	Brain location
Acquire	Drive to seek status, take control, gain objects and personal experiences that we value	Nucleus accumbens (limbic area) (Becerra 2001)
Bond	Drive to form social relationships and develop mutual caring commitments with other humans	Hypothalamus and anterior thalamus (limbic area) (LeDoux 1996)
Comprehend	Drive to collect information, assess the needs of a situation, examine the environment, and make propose explanatory ideas and theories to appease curiosity, understand the world, and make better decisions and predictions	The ventral visual pathway, and maybe other sensory systems, react to novelty (Bierderman 2006)
Defend	Drive to defend ourselves and our valued accomplishments whenever we perceive them to be endangered	Amygdala (limbic region) (Carter 1998, p. 20)

Cognition may be viewed as a short-term, phenomenon-driven activity that is necessary to analyze, prepare, and adjust evolved psychological mechanisms for long-term reproductive benefits [29]. Even though evolutionary psychology proposes that, depending on the situation, some underlying evolved psychological mechanisms may be activated [29], these mechanisms may be supported or overwritten by cognition.

In summary, the combination of social, cognitive, and evolutionary psychology has the potential to explain more fully human behavior in a wide variety of situations, including many in which humans fund, analyze, design, implement, and use information systems. Evolutionary psychology has the potential to increase our understanding of IS phenomenon, so let us now examine how might incorporate it into the discipline.

## THE FOUR-DRIVE MODEL

As one of its fundamental tenets, evolutionary psychology asserts that our human architecture is an assembly of hundreds, and possibly thousands, of functionally specialized and dedicated modules, each designed to solve a particular adaptive problem [17],[30],[31]. This level of granularity does not work well for all situations, and as a starting point for research and practice, it is useful to have a higher-level abstraction. The Four-Drive model [10],[13] provides such a higher-level perspective by considering what these many modules seek to appease. It maintains that we have a set of four generic drives (i.e., the drive to acquire, bond, comprehend, and defend) that evolved in response to solving ancient adaptive problems and that still influence modern human behavior. The four drives might not be the only high-level human drives, but they are “central to a unified understanding of human behavior” [32]. These drives have been reported, implicitly or explicitly, by scholars for centuries [32]. Environmental inputs are evaluated in terms of their potential to satisfy or threaten each of the four drives. Thus, we would expect the drives to influence information systems use, just as they influence our everyday life. The drives are contended to be independent of one another, which is empirically supported by the observation that they are located in different parts of the brain (Table 1). Satisfying one drive does not satisfy another, and it is doubtful that any drive can be satiated.

The *drive to acquire* is a collection of some evolved psychological mechanisms to seek status, take control, retain objects and personal experiences that human’s value [13]. Humankind has been (and still is) driven to acquire goods that are either material, such as food, clothing, and shelter, or positional, such as social acknowledgement and recognition [17],[20]. The likelihood of survival was greater for those who were more apt at acquiring material goods, since doing so elevated their social status, made them (appear) more capable of caring and providing for others, and thus increased their chances of reproductive success. As a consequence, these individuals had to continue acquiring objects [20] because their social status and power were based on the continued well-being of their acquired dependents and goods [33].

The *drive to bond* is a categorization of evolved psychological mechanism to form social relationships and develop mutual caring commitments with other humans [13]. Our ancestors engaged in bonding activities to strengthen group cohesion on the inside and form coalitions

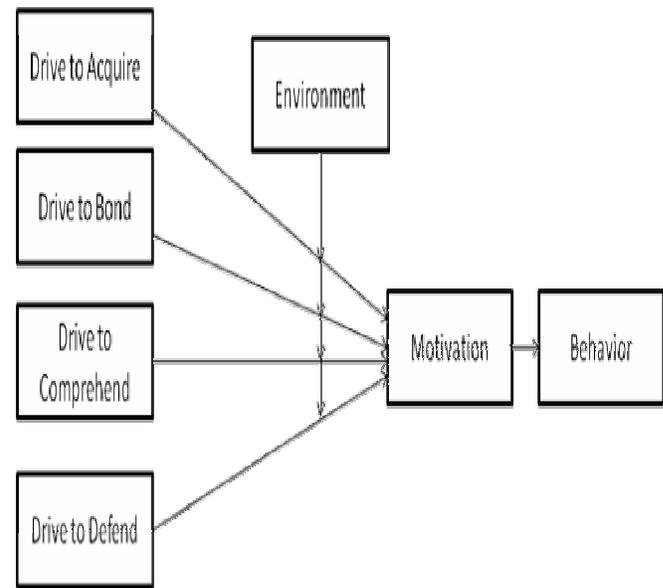
against the outside. The premise is that those who bonded well had a relative advantage over those who did not. After all, establishing and maintaining groups of individuals bonded by mutual caring relationships improved the odds of surviving environmental threats [20]. Bonding and its associated aspects, such as trust, empathy, compassion, loyalty, respect, partnership, and alliance, also manifests itself in behavioral outcomes that include altruism and establishment of moral codes regarding social relationships [34],[35],[36],[37]. Interestingly, many of the strongest reactions, both positive and negative, are linked to belongingness and engagement in a mutually caring relationship [38].

The *drive to comprehend* is a clustering of evolved psychological mechanisms that push humans to collect information, assess the needs of a situation, examine their environment, and make observations about explanatory ideas and theories to appease curiosity and make sound judgments [13]. This mechanism encourages individuals to seek out information to resolve problems associated with fulfilling fundamental needs [24]. Individuals seek to learn in order to decrease their uncertainty, bring about closure to a problem that challenges well-being, appease curiosity that enhances well-being, or make situations more consistent with what is perceived as a “normal” behavior [24],[39],[40].

The *drive to defend* is a deep-rooted collection of evolved psychological mechanisms that make us defend ourselves and our valued accomplishments whenever we perceive them to be endangered. At the individual level, the drive to defend is activated by perceived threats to one’s person, valued objects, status, or beliefs [41]. At the collective or organizational level, the drive to defend triggers when individuals perceive a threat either to the bonds with others in their group or the collectively shared resources, or as a deviation from socially accepted norms deemed disloyal [41]. The human mind is preconditioned to enact to a variety of threats, and the reaction escalates as the severity of the threat heightens [42].

Lawrence and Nohria (2002) apply the Four-Drive model across individuals and groups to explain what motivates behavior in and by people in business organizations, the organization at large, and industries (the latter two as collective entities of humans possessing these innate drives that manifest in collectively to motivate behaviors). The drives are innate and ever-present, which remain dormant until spurred by environmental cues (e.g., the situation or circumstances presented) that has a moderating effect impacting motivation for display of a particular behavior such as decision-making or technology acceptance in this case. We propose that the environmental

cues conceptualized as the situation or circumstance presented to the person could be the task and the technology used for the task. The drives only manifest as motivating behavior when presented with the need to perform a task with a technology. A depiction of the model appears in Figure 1.



**Figure 1: Four-Drive Model**

The model has been applied in two empirical studies to explain how the four drives influence motivation of behavior, more specifically in terms of employee engagement, satisfaction, commitment, and intention to quit. The studies provide insights on what actions managers can take to satisfy the four drives to promote intended behaviors of their employees [10]. One study surveyed 385 employees from two global businesses, a financial services firm and a leading IS services business [10]. The other surveyed employees from 300 Fortune 500 companies [10]. Both studies indicated that “the ability of an organization to meet the four fundamental drives explains, on average, explained about 60 percent of employees’ variance on motivational indicators” [10] where previous models have only explained about 30 percent [10]. The study argues that “individuals and social institutions will enjoy adaptive advantage (i.e., advantages in meeting changing business environmental demands) to the extent that they are able to fulfill all four basic human drives” [13]. Providing appropriate tools, technologies, or opportunities appeases these drives and promotes desired behaviors of organizational workers [13]. Thus, the four-drive model and the underlying theory of

evolutionary psychology provide a lens for enhanced understanding of human behaviors.

### 3. MANIFESTATION OF FOUR DRIVES IN TECHNOLOGICAL INNOVATIONS

We now provide examples of how each drive has manifested itself in relationship with a specific technological innovation, that is, how the drive has either amplified or dampened the adoption of an information system or technology in respect of what theories might have predicted (Table 2).

**Table 2: Examples of the manifestation of the four drives in IS and IT**

Drive	Amplify	Dampen
Acquire	Open source	Anonymous brain storming
Bond	SMS	Telecommuting
Comprehend	Web	Hypercard
Defend	Digital computing	Health care

#### Amplification of the Drive to Acquire

Most open source software projects initially relied on programmers providing their services without receiving any of the economic rewards associated with market-based or firm models [43]. One explanation for the emergence of this phenomenon is that programmers participated in order to build a positive image within a peer group. Open source communities have reputation-based cultures [44],[45] and internal reputation markets [46]. The successful emergence of open source, despite the lack of economic gains, can be potentially explained by the opportunity it created to channel the drive to acquire, status and reputation of some software developers.

#### Dampening the Drive to Acquire

Electronic brainstorming would seem to offer much to improve group decision-making [47], but the evidence is that it is not as effective as verbal brainstorming [48]. One explanation is that anonymity and the electronic recording of ideas divorce contributors from their ideas. There is no opportunity for participants to acquire or enhance status within the group [48]. Hence, for many, the drive to acquire

dampens the willingness to participate and thus lessens the likelihood of the adoption of electronic brainstorming.

#### Amplification of the Drive to Bond

Short text messaging (SMS) was never designed for consumer use. It was a simple add-on with little forethought about design and potential use [49]. Typing messages on a small keyboard is cumbersome and limited to 160 characters. Nevertheless, SMS has been a great success. In 2005, five years after its introduction in Finland, nearly 1 billion text messages were sent by Finns [50]. A possible explanation for the success of SMS is that it supports the desire to bond through building, maintaining, and invigorating social relations [51]. SMS can be a form of gift-giving that mediates social relations [53].

#### Dampening the Drive to Bond

Telecommuting [52], for over a quarter of a century, has offered the prospect of reduced energy and real estate costs and improved job satisfaction. There is, however, little evidence of increased job satisfaction [53]. Many companies have policies to support telecommuting, but there are only a few telecommuters, which resulted in the verbiage of the so-called “telecommuting paradox” [54],[55]. One explanation is that telecommuting isolates workers both socially and professionally [56]. The inability to satisfy the drive to bond with fellow workers is a possible reason of this dissatisfaction. Thus, telecommuting research, which has had limited success in explaining what happens when people telecommute [53], could benefit from including the drive to bond as an explanatory variable.

#### Amplification of the Drive to Comprehend

The HTML and HTTP, the foundations of the Web, emerged from CERN, the world’s largest particle physics laboratory. The Web was designed for sharing information among scientists. It was never intended to be a global information system to support a wide range of human activities (e.g., communication, commerce, entertainment, mass collaboration). HTML, created in 1990, has some serious shortcomings. It is a non-extensible language for describing the presentation of data that does not work well for large documents. XML, developed in 1996, in contrast, is an extensible language, focuses on the recording of data, and separates presentation and data. It was introduced to address the weaknesses of HTML [57]. Similarly, HTTP has some significant weaknesses: it is stateless and lacks security. Cookies, Java, and S-HTTP are among the technologies introduced to overcome HTTP’s deficiencies [58]. So, why did the Web have such a transformative impact on many

fields beyond the physicists at CERN? It serves our drive to comprehend. We want to learn, our curiosity drives us to “google” in order to learn more about people we have met, to learn more about the news stories we have heard or the medical problems we might encounter, and so on. It does not matter to most people that the Web has a poor foundation. We put up with spam and fraud, because the drive to comprehend is so well served by the Web.

### Dampening the Drive to Comprehend

HyperCard, released in the 1987, preceded the Web and was highly popular in the Apple community. Applications, including an inventory management system for a global automotive manufacturer, were built by linking “cards into stacks.” The designer, Mark Atkinson, later recognized that he missed the mark. “I grew up in a box-centric culture at Apple. If I’d grown up in a network-centric culture, like Sun, HyperCard might have been the first Web browser. My blind spot at Apple prevented me from making HyperCard the first Web browser” [59]. His blind spot meant that HyperCard applications, and there were many in the education area [59], were shared physically in an ad hoc way. In addition, they ran only on Macintosh computers. Thus HyperCard stacks served inadequately the drive to comprehend. As he noted, “I thought everyone connected was a pipe dream,” he said. “Boy, was I wrong. I missed that one” [59]. Connection is the key to serving the drive to comprehend, whether it is through the printing press, radio, television, or the Internet. A failure to connect, no matter how good the software, inhibits satiating the drive to comprehend.

### Amplification of the Drive to Defend

The history of digital computing is wedded to the drive to defend. From the early 1940s and until the early 1960s, the US armed forces funded the development of digital computing [60] in the interests of national security [61]. In 1951, General MacArthur told the U.S. Senate, “What I advocate is defend every place” [62], and massive sums were spent by the U.S. Department of Defense to meet this challenge. During the Cold War, integrated weapons and computing systems were deployed, and these could function seamlessly across the globe within the short period of a full-scale nuclear war. In sum, the most important legacy of the Cold War was digital computing [60]. Other key foundations of information systems, such as the Internet, started as ARPANET in 1969 by the Department of Defense to ensure secure communications during a war [63], were also propelled by the drive to defend.

### Dampening the Drive to Defend

The drive to acquire leads people to seek power and autonomy, and when these are threatened, the drive to defend kicks in to prevent loss of these valued attributes. The dampening effect of the drive to defend can partially explain the failure of some health care information systems [64],[65],[66]. Physicians have high status and autonomy, and strongly resist efforts to reduce either of these. The same resistance to the redistribution of power as the result of implementing an IS has been observed in other contexts (e.g., [67]).

### A Caveat

We are not claiming that the four drives are the only determinants of behavior in the situations we described in the preceding section, but we believe that they can contribute to our understanding of human behavior in an IS setting. The four drives provide additional key explanatory factors, and they help us to understand more precisely human behavior in a variety of situations, including multiple aspects of information systems (e.g., funding, adoption, use, and spread).

## 4. THE SCHOLARLY DILEMMA AND RESEARCH OPPORTUNITIES

We have presented the case for the inclusion of evolutionary psychology as a reference theory for IS from two perspectives. We first gave the general case for evolutionary psychology on the basis of manifold evolved psychological mechanisms that emerged to solve the problems of survival and reproduction faced by our distant ancestors. We then presented the Four-Drive model as a high level clustering of many of these modules, in much the same way that factor analysis reduces the complexity of interpreting a large number of variables.

The dilemma is that we have two ways of thinking about the role of evolutionary psychology in IS research: we either think along evolved psychological mechanisms or along the four drives. Our solution is to have two modes in which scholars can deploy these models and associated research opportunities. We propose a new direction centered on understanding fundamental evolved psychological mechanisms and their impact on IS as well as an augmented current avenue that incorporates the four drives.

### A New Path of Inquiry for IS

Our field has borrowed extensively; we have built upon and extended the theories of other fields. This might be our eternal fate because behavior and information are a

successful evolutionary mix and as such no field can separate behavior from information. Those species with better information processing skills were more able to solve survival and reproduction problems and behaved accordingly. Nevertheless, we think we should not relinquish the pursuit of indigenous IS theory. The current dominant logic of the social science model of IS research is unlikely to lead to such theory because the borrowing paradigm is solidified within the editorial process. We need, in our opinion, to consider new research directions.

First, we can work with neuroscientists and imaging technology to understand how a particular currently known module might influence human information processing. We could study how humans react to specific issues within the IS research domain. We might, for example, gain a better understanding of interface design and ease of use by developing an in-depth understanding of which modules handle the various elements of an interface and how they are handled.

Second, and as part of this first path with the help of neuroscientists, we could seek to discover aspects of modules, or maybe even new modules, that have particular relevance to IS. The challenge is that all modules process information because of the very nature of the brain, so that we would need to focus on issues that might have particular pertinence to IS. For example, how do modules handle the perennial management challenge of differentiating between efficiency and effectiveness [68]? The brain needs efficiency in processing environmental signals so that threats are detected with sufficient time to react. It also requires effectiveness to make the right decision as a result of processing the received information. How are these issues resolved within and maybe across modules? What can they tell us for enhancing information systems?

The potential of this new path is that it might lead us to uncover the deep structure of information systems and human information processing and a fundamental theory of IS. We will only know if some of us are willing to explore this new horizon and if our leading journals are sufficiently flexible to embrace a new paradigm and encourage it as an emerging trend.

### Augmenting the Social Science Path

The four drive model fits easily into the social science paradigm. We can envision one or more drives as antecedents or moderators in behavioral IS models. Some studies thus far have considered the existence of human predispositions, mostly in form of traits, or IS outcomes [6],[7],[69],[70],[71],[72]. In addition, existing constructs that primarily base their definitional roots on social and

cognitive psychology may gain a richer conceptual understanding from integrating the four drives. We can also further develop an instrument to measure the drives, which has been done in other work (e.g., Nohria et al., 2008). The Four-Drive model essentially operationalizes evolved psychological mechanisms and enables us to add evolutionary psychology concepts to existing nomological IS networks (e.g., Junglas et al, 2009).

### Teaching Implications

The introduction of evolutionary psychology continues to be met with heated opposition [73], slowing down the migration of some of the central ideas to other fields. As evidence accumulated, evolutionary psychology has become a more accepted lens to use in explaining human behavior [15]. As a result, it has gained academic ground in the psychology discipline [20]. Due to the original opposition, many scholars in unrelated fields are not sensitized to thinking about evolved psychological mechanisms, which is likely to be the case in the IS discipline. As far as teaching implications, Emerson noted, "people only see what they are prepared to see" [74] and the IS PhD curriculum rarely prepares IS scholars to consider the relevance of evolutionary psychology. Thus, if it is not part of an individual's theoretical repertoire, which is typically formed by IS doctoral curricula, along with other lenses used for understanding human behavior, it is unlikely that one will see its possible explanatory power and miss opportunities to explain behaviors. Consequently, we urge those teaching doctoral seminars to include some readings on evolutionary psychology.

### Practical Implications

Regarding practical implications, Nohria et al. (2008) exposed the value of four drives to aid managers in more precisely designing reward systems and facilitating conditions that appease these drives, which they assert are rooted in evolutionary psychology as innate motivators of behavior, which in turn motivated employees better than any extrinsically-oriented motivational techniques excluding the innate drives. This logic has practical implications for IS developers when designing systems that will enable the appeasement of the drives. Thus, during analysis, developers need to undertake a drives analysis to determine the potential impact of the four drives on implementation success. Will some stakeholders act defensively because of a loss of status? Will other stakeholders embrace the new system because it increases their ability to bond? We recommend that those who teach systems analysis and design make their

students familiar with evolutionary psychology and the four drives model and their applicability to IS issues.

## 5. CONCLUSION

We must remember that the person to whom we give today's latest information system has an operating system founded on a set of evolved psychological mechanisms that have changed little since the beginning of our existence as a distinct species [75]. Since the human mind is the ultimate legacy system, it is prudent to explore the influence of those ancient mechanisms that direct how the brain formulates our behavior. There is considerable evidence that when psychologists took into account how the mind has evolved over time, their understanding of human behavior expanded, and this is also likely to be the case for understanding human reactions to information systems. In our opinion, evolved psychological mechanisms are important for understanding multiple dimensions of information systems and offer several opportunities for a deeper understanding of the information systems discipline on a theoretical and practical plane.

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