Appendix:
An Integrative Model

INTRODUCTION

In light of the fact that several different psychological factors have been presented here for consideration by IT professionals as well as interdisciplinary researchers, it may be interesting and also useful to get an appreciation of a highly developed, conceptual “meta-model” approach to human decision making that has incorporated some of the above topics. It is all the more interesting as this model has been developed by a researcher in the MIS field, Dr. Cathal Brugha of Ireland, who has also been prominent in the European Management Science community.

The following is an excerpt from Dr. Brugha’s extensive research on “nomological maps” and their wide applications, particularly in IS and decision sciences. Although this excerpt is itself quite brief, it does provide the reader with a “flavor” of the depth and sophistication of existing research on psychological issues that can be applied to IT.
Nomology, the science of the laws of the mind (Hamilton, 1877, pp. 122-128), is a meta-model whereby issues such as management, personality, and spirituality can be considered. The basis of Nomology is that decision-makers tend to analyse problems which involve qualitative distinctions by breaking them into activities, or categories of behaviour, which are each important in themselves and follow natural sequences. This is a natural approach that the mind uses when addressing a problem where there is no clear external frame of reference. The first categorisation is about the degree of uncertainty involved. What sort of problem is it? High uncertainty will require some sort of planning activity, low uncertainty some form of putting plans into effect. The second dichotomy relates to where the main focus of the problem is. Is it more to do with people, or more to do with structures, organisations, i.e., the “place” where some system is based? These categorisations and the language associated with them are very general, and are applicable to many different

Figure 1: The Four General Kinds of Activity
situations. The fundamental generic set of adjustment activities is shown in Figure 1. There are numerous examples of adjustment in management based on these general activities (Brugha, 1998a) and on eight particular activities (Brugha, 1998b).

A most important case is where the decision-maker “owns” the process in the sense that he or she decides “subjectively” when to proceed between stages, rather than when it is in some sense “objectively” “right.” The key difference is that, consequently, the decision-maker cannot “pull” himself or herself to make the decision. The tone of the decision then changes from adjustment to “development,” in the sense that the decision-maker develops a subjective view or decision. The emphasis then becomes more one of building on levels rather than finding a balance between different activities. Development decision-making can be introverted or extroverted (Brugha, 1998c). The first introverted level is the somatic, and refers to tangible things such as needs. Then there are psychic (psychological) aspects such as preferences. Finally the pneumatic level refers to values or higher goals corresponding to the highest introverted level of commitment of one’s will. Soma, psyche, and pneuma come from the Greek words for body, soul, and spirit (literally wind).

The extroverted dimension corresponds to stages of convincing and starts with technical or self-orientated issues. Then it relates to the context of the problem and how other people see it. Finally it takes account of situations and how to achieve goals or business-purposes. The introverted and the extroverted combine as two dimensions and lead to the construction of nine levels, stages of activity, and types of thinking, and the reconstruction of Maslow’s (1987) hierarchy of needs and Jung’s (1971) orienting functions (Figure 2).

Figure 2: Levels of Developmental Activities and Types of Thinking

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<td>Technical Self</td>
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<td>Committing Phases</td>
<td>Situational Have/Need</td>
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<td>Psychic Do/Prefer</td>
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<td>Pneumatic Are/Value</td>
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Jung’s insight was to identify intuiting and sensing as not only different personality types, but also as related to introverted and extroverted dimensions. He named two others as thinking and feeling. These are expanded to seven in Figure 1. The Myers-Briggs test also extends Jung’s types, but retains its either-or dichotomies. The Enneagram (Table 1) arrives at the same set of nine types but in a complementary manner. A complication is that Enneagram Type Four needs to be repositioned in order to show a parallel with the other systems (Brugha, 1998c). The differences between Myers-Briggs and the Enneagram are so great that people could learn from doing both tests.

The Systems Development Life Cycle fits this nine-phase structure of convincing within committing (Table 2). Nomology implies that these nine-stage models show different facets of the same structure. Consequently they can inform each other. For instance, the acquisition stage is likely to involve emotions, to require trust, and often be a painful choice. The information
A central claim of Nomology is that adjusting, convincing, and committing comprehensively describe the three dimensions of how the mind structures decisions. For instance, each stage of the Systems Development Life Cycle is carried out as an adjustment process (Brugha, 2001). Consequently, the decision to move from one phase to the next and, within each phase from one stage to the next, is subjective. However, each stage, itself, must be done correctly. So, there are objective ways to decide if one has a good study or design.

Nomology uses a systematic approach to explore constructs that we think we understand. For instance, it suggests that to explore a term such as spirit, one should start by asking, “Spirit as distinct from what?” The answers might be body and soul. Doing it again with the word body might suggest the word mind. Part of the nomological exploration of “body, mind, soul, and spirit” is to relate them to the generic terms proposition, perception, pull, and push (Figure 1). If they relate properly, there should be a consistent, qualitative difference between each corresponding pair. This should reflect itself in meaningful phrases linking each pair such as “we propose in the body,” “we develop perceptions in the mind,” “we are pulled in our soul,” and “we push with our spirit.”

A simpler version of this structure, which is used for personal development, has two levels: committing and adjusting, making a 12-step programme (Peace Pilgrim, 1981). The committing phases are (somatic) preparations, (psychic) purifications, and (pneumatic) relinquishments. Each phase has four steps corresponding to body, mind, soul, and spirit.

A decision structure, where the dominating issue is the wish to adjust, is the Twelve-Step Programme of Alcoholics Anonymous (Anonymous Authors, 1955). Each adjustment phase has three commitment stages. This version can also be used to change people to a higher level of spiritual activity, viz. the Spiritual Exercises of St. Ignatius of Loyola, which has been presented (Tyrrell, 1982; Fessard, 1956) as to “reform the deformed,” “conform the reformed,” “confirm the conformed,” and “transform the confirmed.” Clearly these also take place within the areas of body, mind, soul, and spirit. Such a representation could be applied to any adjustment process, depending on how broadly one interpreted the idea of being “deformed.”
REFERENCES