CONSIDERING WSR IN THE CONTEXT OF NOMOLOGY,
A GENERIC META MODEL FOR SYSTEMS STUDIES

Cathal M. Brugha
Michael Smurfit Graduate School of Business,
University College Dublin, Blackrock, Dublin, Ireland
e-mail: cathal.brugha@ucd.ie

ABSTRACT
This paper compares an Oriental systems approach, WSR, with Nomology, a generic meta model which is based in decision science. The parallels between them are offered as further proof of the existence of a common structure to the decision processes of the mind which crosses boundaries of culture and academic field. Comparisons between Nomology and WSR indicate a commonality of structure. They also suggest possibilities for mutual enrichment of both systems.

Keywords: systems, multi-methodology, Nomology, decision science, philosophy, management

1. INTRODUCTION TO NOMOLOGY

The theory on which this paper is based is contained in three foundational articles on the structure of qualitative decision-making, adjustment decision-making, and development decision-making which provide the basis for Nomology, the study of the decision making processes of the mind [1] [2] [3]. This science was named Nomology by Sir William Hamilton after the Greek word for law [4]. It is based on the fundamental premise that the choices of intelligent beings tend to follow simple decision rules. His work has been influential in philosophy and sociology, but not in management to any great extent. The above articles apply a decision science approach to Nomology and build a set of principles and axioms that together constitute a system. These principles and axioms were justified using common sense and then verified by reference to numerous qualitative categorisations found in management [1] [2] [3]. The system was constructed using principles and axioms because such statements reflect truisms that hold in general. The broader statements are described as principles, the more specific statements as axioms. While the rules that the mind tends to follow are simple, the mind itself is far from simple. Consequently there are many axioms. The departure from Hamilton’s philosophical approach is the use of a scientific methodology. Usually axioms, proofs and principles are confined to quantitative fields. An aim of this work on Nomology is to provide a basis for combining qualitative and quantitative approaches to management science and, in particular, to assist in the advancement of systems approaches to management. A practical outcome of the first papers was that well-known qualitatively-based categorisations of activities such as Maslow’s hierarchy of needs, Jung’s orienting functions and McKinsey’s 7 Ss were justified using common sense and then verified by reference to numerous qualitative categorisations found in psychology and sociology, but not in management to any great extent.

The initial axioms and principles are the most foundational [1]. The first below is similar to Occam’s razor which would suggest that if two explanations are given for something and the only difference between them is that one of them is more simple, then it is likely to be the correct explanation.

Principle 1: Decision making processes, in general, are invariant and more likely to be simple than complex.

The rest of this article applies this theme to the comparison of Nomology with the Wuli-Shili-Renli Approach (WSR) of Gu and Zhu and, by extension, comparisons between other systems that have been linked to Nomology and to WSR [9]. If so many such systems are so similar, then this is no accident. It implies that there is a generic system. The benefit of having a generic meta model is that it can be used to explore commonalities between systems, first of all, and then to explore differences between them so that the boundaries of our understanding of the systems can be extended.

Principle 2: In any culture, there should be a natural language that incorporates the concepts of a nomological system.

The ultimate cultural test of this is in an East-West context. Much of this article will concern itself with exploring the qualitative commonalities between wuli, shili and renli and corresponding western concepts. An initial examination would suggest that wuli seems to translate as adjusting, shili as convincing, and renli as committing. Axioms are more specific general truths than principles. Principle 1 extends to:

Axiom 1: When people have a complex and not obviously structured decision-making problem that cannot be solved using standard quantitative techniques they try to analyse it by breaking it down into dimensions with which they are familiar.

Axiom 2: The natural way that problem-solvers structure their problems is by means of asking simple questions.

Axiom 3: The first dichotomy to be considered relates to the question what should be done then we will focus on a planning aspect. If we are relatively unclear about what should be done then we will focus on a putting aspect. The Eastern correspondence to the combination of Axioms 2 and 4 is expressed in the I-Ching as follows, ‘The yang having reached its climax retreats in favour of the yin: the yin having reached its climax retreats in favour of the yang’ (Appendix III) (quoted in [10]).
Axiom 5: The second dichotomy relates to the question where it should be done. Should we be doing something in a particular place, for instance in some part of the company or organisation, such as spending some money on a project or restructuring an institution? Or should we be focusing more on the people involved, agreeing what should be done or motivating the participants?

Axiom 6: Because the key questions asked are independent of each other so the answers should find their own balance independently of the others.

Axiom 7: The activities based on combinations of dichotomies of different dimensions have meaning and importance in the practice of decision-making. A planning activity within place is described as a proposition. Planning amongst people corresponds to developing a perception. Putting a solution into effect amongst people is a pull activity. And push describes the activity of putting the remaining aspects of the solution into place.

Axiom 8: Planning starts first in place and then moves to people; putting starts amongst the people and then moves back into place. Thus a normal problem solving approach would be to propose something, then develop a perception about it, then pull people along to implement the plan, and finally to push it into place. See Figure 1.

[Image: Figure 1: The four phases of activity]

A central characteristic of adjustment is the need for balance between the different categories of activity. This is reflected in Figure 2.

[Image: Figure 2: The cycle of principal activities]

Planning and people correspond to yin, while putting and place correspond to yang. The yin / yang elements should seek a balance. So also should other forms of potential imbalance, e.g. proposition versus perception, and proposition versus pull. The mental dialogue extends to third dichotomy:

Axiom 9: The third dichotomy relates to the question who possesses the problem. If it is not the decision-participant then his or her involvement will be primarily objective in character, in which case he or she can feel at some distance from the problem. If it is the decision-participant then his or her involvement will be more subjective, in which case he or she cannot self-impose a feeling of guilt about not dealing with the problem. In WSR the objective / subjective distinction is also important. Wuli is seen as objective whereas shili and renli are seen as subjective. We would suggest that this distinction is common to both systems, the only difference is that Nomology defines the difference exactly on the basis of ownership of the decision. Subjectivity has a profound effect on decisions because it hides the yin / yang nature as indicated in Axioms 10 and 11 and shown in Figure 2. The pull activity requires the involvement of two minds, the decision owner doing the pulling and the decision maker being “objectively” pulled. Thus, where both are the same person, we get:

Axiom 10: With subjective decision-making the pull activity becomes irrelevant. The consequence of this is that subjective decision making consists of a proposition, perception and push activity. This appears to be referred to in the Tao: “Duality evolved into trinity” (Lao-tzu: IVX, quoted in [11]). How this occurred was the subject of intense investigation in the west, most notably by Hegel [12]. He developed the concept of the dialectic to try explain the “jump” from two to three, and might have been saved a lot of effort if he had seen that, with Axiom 10, the four phases in Figures 2 and 3 collapse to three [1].

Axiom 11: With subjective decision-making the phases correspond to levels of a development process.

Axiom 12: With objective decision-making the activities and phases are parts of an adjustment process.

Development decision making can be introverted or extroverted [3]. The key distinction is that introverted decision-making is about developing commitment to some project, whereas extroverted decision-making is about developing conviction or becoming convinced about some idea or issue to do with a project. The central characteristic of development is that it proceeds by levels (Axiom 11). This applies equally to extroverted as well as to introverted decision-making. In fact there is a direct correspondence between the two, the only difference being the point of view. 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. Hamilton introduced the terms cognition, affect and conation as a triad of mental activities corresponding to the somatic, psychic and pneumatic levels, but indicated that the concept derives from Kant [4] [13]. Thus Nomology takes a broader view than cognition. It incorporates feelings, but also includes the more neglected area of will corresponding to the highest level of introverted commitment.

The extroverted dimension starts with technical or self-orientated issues. Then it relates to other people, and finally it takes account of situations. Such differences can be reflected in one’s personal style. Some people like to get personally involved in the technical aspects of a decision. Some concern themselves more with protecting the interests of others. And some like prefer to observe situations. The introverted and the extroverted combine as two dimensions and lead to the construction of nine levels, stages of activity and types of thinking of which an example, shown in Figure 3, is a reconstruction of Maslow’s hierarchy of needs combined with a reconstruction of Jung’s orienting functions [5] [6].
2. COMPARING WSR WITH NOMOLOGY

This section takes Zhu’s introduction to WSR mainly from a recent paper and relates it to the theory of Nomology contained in three foundational articles. As indicated above we will attempt to explore commonalities between the two systems and then the differences between them. Zhu presents wuli, shili and renli in different ways.

The approach is derived from an Oriental systems methodology ... concerning with three domains of inquiry: i.e., wuli (material and technical), shili (cognitive and psychological) and renli (social and political), which are distinguishable yet intricately mutually-implying and -transforming....

WSR suggests that it is useful to see real world projects as conditioned by a differentiable whole, i.e., the interplay among wuli (relations within the world), shili (relations between the self and the world) and renli (relations between the self and others). In conducting OR and management projects, we are ideally inquiring into three domains, i.e., to investigate and model objective existence, to consider and reflect on subjective ways of seeing and doing, and to manage the working of inter-subjective human relations. We call this knowing wuli, sensing shili, caring renli. Rather than replacing the domination of the technical perspective with another domination, WSR urges practitioners to bring all wu, shi and ren elements and perspectives into a holistic consideration, and accordingly to search for appropriate methods to address various his as well as their dynamic interactions....

Wu in Chinese means material elements and their dynamic interrelations in the world as distinguished from oneself; accordingly, wuli denotes those regularities and principles which form and shape those elements and interrelations, as well as our knowledge about those elements, relations and regularities.

Shi means event, service, involvement and engagement; accordingly shili can be used to denote the patterns of involvement and engagement, as well as the ways individuals choose to see, to think and to act in this world, which can be related to personal cognitive styles and psychological factors.

The closest correspondence when comparing WSR with Nomology is between extroverted development and shili “relations between the self and the world” and the way individuals choose “to see, to think and to act in this world”. According to theory about the Enneagram each individual has one of three introverted personality types based on their self-view, and one of three extroverted types based on their world view.

Comparing the extract from Zhu with Figure 3, shili’s link with convincing emphasises the self / subjective / personal / involvement / sensing aspects.

The two dimensional aspect of Figure 3 shows how each level of convincing can have sub-levels of commitment and vice versa. This appears in shili as an extension to a deeper level into the cognitive and psychological aspects of the individual. Shili does not give as much importance to the others’ and situational aspects as does Nomology.

Renli and shili should be seen very much as intertwined because both are subjective or developmental. While Nomology sees the introverted dimension very much as general levels of commitment, renli does so too but with the emphasis on commitment to others, i.e. caring and interpersonal relations. It also extends to a deeper level into the social and political aspect, and, one suspects, the cultural aspect, although it is not specifically mentioned.

This emphasis in shili on the self and in renli on others is worth considering further. WSR is only about twenty years old, although it is based in the Chinese cultural tradition. Zhu and his associates have gained much experience with it, which should be helpful in determining is there a real bias here and, if so, to what can it be tracked. Is it a matter of reporting, or is it cultural? If it is cultural, is it traditional or is it a question of modern business habits? Or could it be an outcome of the project in north China. In this case the renli issues were very much political ones to do with conflict between interest

---

**Figure 3:** Levels of developmental activities and types of thinking

<table>
<thead>
<tr>
<th>Introverted Development</th>
<th>Levels of Committing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Somatic</td>
<td>Physiological</td>
</tr>
<tr>
<td>Levels of Committing</td>
<td>Psychological</td>
</tr>
<tr>
<td>Psychic</td>
<td>Social</td>
</tr>
<tr>
<td></td>
<td>Sensing</td>
</tr>
<tr>
<td>Pneumatic</td>
<td>Artistic</td>
</tr>
<tr>
<td></td>
<td>Experiencing</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Technical</th>
<th>Others</th>
<th>Situational</th>
</tr>
</thead>
<tbody>
<tr>
<td>Involve /</td>
<td>Protect /</td>
<td>Observe / Business</td>
</tr>
<tr>
<td>Self</td>
<td>End-users</td>
<td></td>
</tr>
<tr>
<td>Physical /</td>
<td>Political /</td>
<td>Economic / Believing</td>
</tr>
<tr>
<td>Intuiting</td>
<td>Recognising</td>
<td></td>
</tr>
<tr>
<td>Social /</td>
<td>Cultural /</td>
<td>Emotional / Trusting</td>
</tr>
<tr>
<td>Do / Prefer</td>
<td>Learning</td>
<td></td>
</tr>
<tr>
<td>Sensing</td>
<td>Religious /</td>
<td>Mystical / Realising</td>
</tr>
<tr>
<td></td>
<td>Understanding</td>
<td></td>
</tr>
</tbody>
</table>

---

"relations between the two systems and then the differences between them. Zhu presents wuli, shili and renli in different..."
WSR in the Context of Nomology

groups, thus giving justification for the bias. By contrast the *shili* issues cover all three levels of convincing:

In terms of *shili*, operators and technicians stressed retaining normal water storage, local managers favoured controlling and allocating water resources by economic criteria, water-consumer communities emphasised water supply, while high level authorities were more concerned with the balance between economic and non-economic criteria as well as the flexibility for dealing with differences between flooding and non-flooding periods. [10]

At this point one would tentatively suggest that Nomology might offer a framework within which WSR could see its experience more broadly.

Having seen the qualitative similarities between *shili* and convincing, and *renli* and committing outweigh their differences, it is easy to associate the third element in both sets of three dimensions. Adjustment and *wuli* both emphasise objectivity rather than subjectivity. Adjustment uses the concept of an “outside” owner. *Wuli* emphasises the world as distinguished from oneself, and those “regularities and principles which form and shape .. interrelations”. These provide a basis for “knowing” which, with adjustment, comes through interacting. Adjustment is also a dynamic interrelationship with the world as seen in Figure 2. The proposition, perception, etc. activities operate in a cycle.

Table 1: Systems Development Life Cycle activities linked to WSR Process Stages

<table>
<thead>
<tr>
<th>Introverted Orientation</th>
<th>Extroverted Orientation</th>
<th>Situational</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Technical</strong></td>
<td><strong>Others</strong></td>
<td><strong>Somatic</strong></td>
</tr>
<tr>
<td>Survey project scope and feasibility</td>
<td>Understanding desires</td>
<td>Define the end-user’s requirements</td>
</tr>
<tr>
<td><strong>Psychic</strong></td>
<td><strong>Creating Models</strong></td>
<td><strong>Investigating conditions</strong></td>
</tr>
<tr>
<td>Select a feasible solution from candidate solutions</td>
<td>Creating Models</td>
<td>Acquire computer hardware and software</td>
</tr>
<tr>
<td><strong>Pneumatic</strong></td>
<td><strong>Implementing proposals</strong></td>
<td><strong>Implementing proposals</strong></td>
</tr>
<tr>
<td>Construct the new system</td>
<td>Deliver the new system</td>
<td>Maintain and improve the system</td>
</tr>
<tr>
<td>Implementing proposals</td>
<td></td>
<td>Evaluating performance</td>
</tr>
</tbody>
</table>

If, as it appears to be, this is the case, then WSR is acting broadly as an embedded structure. The senior *li* is *renli*, i.e. committing the various groups to the phases of a solution. Within each phase *shili* operates, convincing the decision makers, thus forming the main stages. And finally, junior to both but acting as ‘co-ordinating relations’ is *wuli*, bringing about the necessary adjustments required within each stage. In the hydro-engineering case these adjustments were of a highly technical nature:

In terms of *wuli*, it became clear that the project would have to deal with incomplete 30-year historical data, to integrate various types of telemetric, telecommunication, telecontrol and teleregulating protocols and equipment, to sort out interfaces among different mathematical and control models, etc., and that the handling of all these issues would be supported by a RMB 6,000,000 project fund and the full commitment of the authorities. [10]

This would tend to confirm the suspicion that the description of *wuli* being material and technical arose because of the context of this case, and maybe other similar cases.

An element of difference between adjustment and *wuli* may arise from the latter’s emphasis on the material and technical. The difficulty does not arise because the technical aspect is associated with extroverted development; in this case technical reflects an approach that one takes when dealing with an issue. Adjustments can arise because of a multitude of reasons much broader than the material and technical. They are “objective” in the sense that they can be caused by dichotomies such as planning or putting plans into effect. But they also involve a place or people dichotomy (above) and a person or position dichotomy [2]. The latter two involve much broader issues and suggest a possible link with other Taoist and Confucian teachings such as the Two Forms, the Four Emblems and the Eight Trigrams (I-Ching: Appendix III, quoted in [11]).

Another example of the same sort of embedded structure exists in information systems management [15]. The difference with that case is that it applies as a process of change management in an organisation over a long period. The situation being discussed in this paper would extend this concept to project management in general. It would suggest that a formalisation of an embedded version of WSR was justifiable, e.g. R[*S(W)*], i.e. much adjusting within moderate amounts of convincing within an essentially committing process.

3. DISCUSSION

This paper considered the relationship between WSR and Nomology. So far we have avoided proposing a translation for the important word *li* which has been described as follows by Zhu:

*lì* is a Chinese word which has diverse meanings. As a noun it can be used to denote marking, texture, essence, order, organism, mechanism, tendency,
WSR in the Context of Nomology

pattern, principle, reason, etc., while as a verb it means to manage, to engage, to investigate, to put in order, to organise, to respond, and so on; li also denotes knowledge and perspectives about existence and patterns in the universe. [10]

The term we would use with committing, convincing and adjusting is process, which we would now suggest as a translation for li on the basis of the notable parallels between the two systems. Obviously the correspondence will not be exact, but having it offers a basis for cultural exchange so that East and West can learn from one another’s understanding of such a wide ranging concept. It would appear that WSR is an example of a full nomological model containing the main dimensions of committing, convincing and adjusting.

The evidence WSR offers is significant. It comes from pragmatic problem solving in the context of a culture and philosophy that is as distinct as is possible from the origins of Nomology. It adds a new dimension of understanding to problems which follow the Systems Development Life Cycle in its general form, which is that within each of the nine stages an adjustment cycle may take place. It also adds to the understanding of the SDLC as being based on two dimensions of committing and convincing.

It is hoped that Nomology offers an enrichment to WSR by suggesting possible sources of bias apparently arising because of case experience. If WSR is seen in a broader light, combining the insights of Nomology with the wisdom of Chinese culture and philosophy, e.g. yin and yang, it might extend the breadth and scope of its contribution. By describing and analysing wuli, shili and renli as independent entities WSR has enriched the understanding of Nomology. It suggests the possibility of combinations of the three dimensions other than project orientated ones whose senior partner must be the committing of the parties to the project.

4. REFERENCES