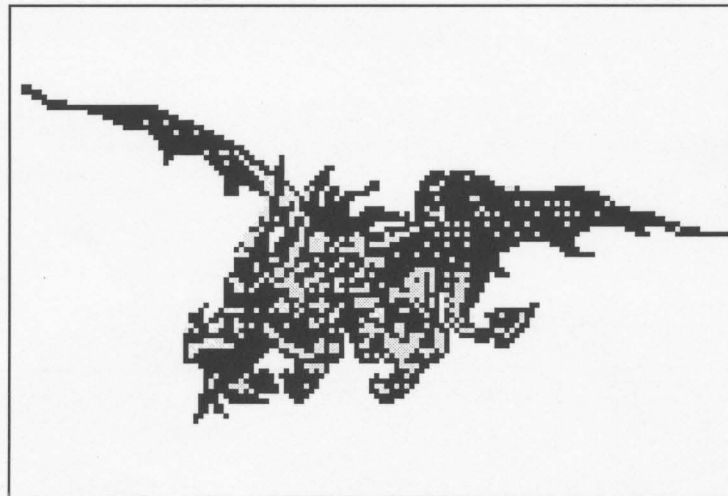


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# **MENTOMOLOGY**

## **THE IDENTIFICATION AND CLASSIFICATION OF MINDBUGS**



**A Microscopic Photograph of a Mindbug of Habit**

## THE BEGINNINGS OF MENTOMOLOGY

A few years ago, during a cruise on the Ship of State in the Sea of Knowledge, certain behaviorally-related symptoms appeared that seemed to be responsible for various unfortunate occurrences. Once these symptoms became overwhelmingly evident, a modest effort was undertaken to try to identify the origins of the symptoms.

As a result of the early years of study, a new discipline was initiated called "mentomology". The purposes to which this discipline was directed were as follows:

- To create a distinctive name that would designate the class of origins of the symptoms, if such origins could be identified
- To try to identify and name each distinctive origin of one or more symptoms
- If more than one origin seemed to be present, to identify and name the categories into which those origins could be placed, so as to start a system of classification that could provide some framework for continuing.
- Beyond the naming and categorization of the origins of the symptoms, to try to describe each origin well enough to enable it to be recognizable for purposes of further study, or for purposes of testing possible antidotes or remedial activities
- To study past discoveries or writings, to see whether any assistance could be found in the Sea of Knowledge and, if successful, to make the results known to the owners, the crew, and passengers on the Ship. If it turned out that cruises on the Ship of State continued to experience the same or similar symptoms, in spite of modest amelioratory measures, it was thought that perhaps ultimately mentomology might become a recognized academic discipline, possibly in a graduate school of business, or some other professional school, where Mentomology Science could be the basis for a masters' degree, such as M. M. A. (Master of Mentomology Administration), or perhaps M. S. in M. S. or MS<sup>2</sup>.

The time has come to report on the early findings. The first purpose stated above has been satisfied. The apparent origins of the symptoms have been designated as "**mindbugs**" to bring the language in line with contemporary computer languages (in view of the fact that computers and people are becoming relatively indistinguishable in terms of functions and dysfunctions).

So far, twenty-five mindbugs have been identified. These are envisaged as falling within four categories, although so far it has not always been possible to consign a mindbug to just one category. Later refinements may allow this flaw to be corrected.

The categories identified so far are:

- **Mindbugs of Minsinterpretation:** those where concepts are misconstrued or misattributed, because of faulty interpretation, **Type M.**
- **Mindbugs of Clanthink:** those where concepts are very widely perceived to be correct, but which are demonstrably incorrect, **Type C.**
- **Mindbugs of Habit:** those which involve ingrained behavior, evinced with essentially no conscious thought, **Type H.**
- **Mindbugs of Error:** just plain mistakes, **Type E.**

A fifth category that is under consideration has been designated as "Mindbugs of Specific Human Shortcomings". This category is based on a hypothesis that there may be something inherent in people as people that causes mindbugs which can never be corrected. However it remains to be seen, as the field of mentomology develops, whether there really are uncorrectable Mindbugs. In studying this possibility, it is intended to allow all forms of technology to be applied as aids to the human being, and if this category is allowed to persist, it will only be because the postulated "specific human shortcomings" continue no matter what assistance is provided by any known form of technology (hard, soft, a combination, or otherwise). Whatever else may be true about this potential category, it does seem to suggest a challenge to discover new ways to help overcome the impact of

Mindbugs which might, otherwise, be thought to be fundamental to being a human.

In the following, Mindbugs are described. For each Mindbug, one or more identifying indexes is provided. Each index uses the type letter given above (M for Misinterpretation, C for Clanthink, etc.) and a number to identify the particular Mindbug within the Type. Where a Mindbug is at least temporarily assigned to more than one type, the several types are separately acknowledged.<sup>1</sup>

## MINDBUGS

### **Affinity to All-Encompassing Dichotomies (H3).**

*The necessity of the academic propensity among philosophers to create dichotomies, and to choose one member of the dichotomy as superior to another, not recognizing the possibility that there is a continuum of which the two members may be at best end points.*

**Aversity to Budgeting for Interface Expenses (C7, E4, H2).** *What large organizations have budget line items that pay **only** for interactions among different divisions or components of the organization, whose staff is committed solely to the promotion and conduct of such interactions? What organizations reward particular managers solely for carrying out the function of interface management, allocating funds to those different organizational components solely to pay for the necessary interactions with other components? If there are such organizations, surely they are small in number, because the governing organization charts typically show functional responsibilities of the most well-defined type, such that managers who have responsibilities for their own particular functions (even those whose products ultimately produce interactions with products developed through other functions for which others are responsible), nevertheless do not find it appropriate to fund interactions, because to do so might threaten their capability to carry out their internal functions.*

**Aversity to Deep Thought (H8).** *One of the most frequently noted aspects of high-level management behavior is that whatever is to be adjudicated must be presented (at least initially) on one page. No distinction can be made according to "depth" of thinking.*

*Sometimes such a one-pager can be followed up with a one-hour presentation, in which transparencies are the standard medium.*

*In either instance, the size of a normal sheet of paper is normally the defining concept of what kind of information can be offered. In some instances, a computer screen determines the size that is available to present a concept.*

### **Confusing Prestige with Authoritativeness (M3).**

*Huge financial rewards are available today to consulting organizations that assist clients in working with complexity. Some of these organizations have **very** high profiles. It is not unusual to see the expression the "**prestigious X**" in referring to these organizations. One must keep in mind that, if an organization is prestigious, it is often because of what went on there several decades into the past. The prestige may have come from pioneers who have long since died, and whose ideas were not even recognized at the time as being significant.*

**Failure to Distinguish Among Context, Content, and Process (H9).** *The **context** for human interaction, if left undefined, admits content-oriented dialog to be random, incoherent, rambling, unfocused; and may well cause dissension concerning the process being applied in the interaction. The **process** for human interaction, if left undefined, admits the content interaction to fly back and forth between discussions about what process ought to be used in respect to a particular topic; and may well allow context shifts to be made arbitrarily, as various misassociations are triggered, or as unarticulated interests emerge spontaneously. The **content** that can be produced may well be incoherent as participants shift from one context to another, and propose different process components.*

### **Indistinguished Affinity to Unstructured**

**Discussion (C6, E3, H1).** *Unstructured discussion is widely practiced as a way of sharing thought, and as a means of providing instruction. Such discussion, when it involves the potential discussion of complex situations, with due attention to the Work Program of Complexity (Description, Diagnosis, Design, and Implementation) invariably rests solely upon the narrow shoulders of prose expression, which can be trusted only to the extent that linear presentation is capable both of capturing and communicating a complex set of relationships.*



Since prose alone lacks such a capability, the failure to **distinguish**, consciously, unstructured discussion that deals with complex situations from unstructured discussion that deals with ordinary situations is a clear indication of the presence of this Mindbug.

**Insensitivity to Conceptual Scale (C4).** Situations are not distinguished in terms of the relevance of their conceptual scale to human cognitive limitations, nor to the likely irrelevance of methods learned or experienced that apply to ordinary situations, when faced with complex situations.

**Insensitivity to the Presence and Origins of Human Fallibility (C5).** Insensitivity to the presence and origins of human fallibility is recognized by behavior that proceeds indiscriminately to base large-scale activity on fallible belief, and makes false assumptions about the capacity of the individual human being to reach an adequate perception of patterns involved in complex situations through ordinary thought processes.

**Insensitivity to Role Distinctions (H5).** Lack of understanding of how the various roles in a collaborative activity interact, in working toward common aspirations and fulfilling expectations, is a clear measure of insensitivity and, even more problematic, leaves open the possibility that in usurping the role of others, the miscreant's own responsibilities will not be carried out.

**Insensitivity to the Significance of Information Flow Rates (H7).** The ability of the human being to learn, absorb, follow, and interpret, incoming information cannot be imagined to be without limits. Otherwise, everything to be conveyed could be sent at the speed of light in one overpowering burst of communication. Thus it must be true that there is some limit (even if it differs from one person to another), and this limit needs to be taken into account when genuine communication is intended. Very likely, effectiveness can be totally eliminated if the information flow rate is too fast.

**Irresponsible Propagation of Underconceptualized Themes (E9).** Reliance on authority opens the door to propagation of themes that are flawed by underconceptualization. It is one thing to blindly accept the voice of authority. At least such blind acceptance could be ultimately subjected to tests. But it is another thing to go

further and propagate a theme, in the absence of any significant logical consideration.

**Leaping to Misassociation (H4).** Reflection and experience suggest that, in striving to comprehend a situation, the mind is often prone to leap to associations, in which an attribute often regarded as very beneficial in promoting creativity is applied to expand the domain of consideration, thereby suggesting either an extended form of relationship or a new approach to description or diagnosis, or a creative component of a sought design.

The same mental property, when undisciplined, leads to grave misunderstandings and interpretation. Leaping to misassociation can be one of the most common ways of misjudging the utterances of another person, and it is often very difficult to avoid this possibly-ingrained behavior.

**Misassignment of Relative Saliency (E8).** In a wonderful book<sup>2</sup>, Kenneth Boulding identified "spurious saliency" as one of the three primary reasons for poor intellectual productivity. Spurious saliency generally refers to a practice of misperceiving the relative importance which well-designed criteria would suggest should be attached to different situations from a particular set. Yntema and Mueser described results from psychology showing that individuals could do a lot better at dealing with several attributes of a single entity than they could in dealing with one attribute of several entities<sup>3</sup>. Misassignment of saliency apparently reflects a frequently-made error. This can be described as the result of behavior that allows a superficial assessment to be made when several distinct entities are involved.

**Misattribution of Consensus (M6).** Misattribution of consensus refers to a well-known aspect of what is called "groupthink" in the technical sense given by Janis<sup>4</sup>, and what is sometimes called "the Abilene Paradox" in business consulting. The unwillingness of members of a group to identify their own opposition to what is mistakenly perceived as a general agreement may result in a widespread belief that the members of the group all agree on something which, in truth, none of the members may believe.

**Misconstruing Persistence as Validity (M7).** If a certain concept has appeared to be widely accepted for a long time, it may be perceived and acted on as though it were a valid belief **just because of its**

*persistence, and without any corroborative, collateral evidence to support the belief; even when abundant evidence could be marshaled to show invalidity.*

**Misconstruing Philosophy as Ideology (and vice versa) (E7).** *Some people, in history, span the field of philosophy and other fields, such as sociology, psychology, political science, and management. In presenting their views, they are prone to mix philosophical considerations with political or management beliefs. As a result, it becomes difficult if not impossible to sort out the components. As a consequence, ideology is often described as philosophy, and philosophy may sometimes be called ideology, depending on how the critic views the material.*

**Misconstruing Structural Incompetence as Innate Incompetence (M5).** *"Structural incompetence"<sup>5</sup> was defined by a group of federal program managers as something to be strongly distinguished from innate incompetence. The latter refers to the inability of people to accomplish particular tasks because they lack the requisite knowledge and ability. The former refers to their inability to accomplish particular tasks, for which they possess the requisite knowledge and ability, but still cannot accomplish these tasks because the situation in which they perform imposes upon them a constraining institutional structure that disenfranchises their capabilities.*

**Misconstruing Technology as Science (and vice versa) (C3, M4).** *Science progresses slowly. Technology progresses rapidly. They are mistakenly thought to march apace.*

**Misinterpretation of Linguistic Adequacy of Natural Language (C1,M1).** *The belief that natural language is adequate to describe, diagnose, and provide corrective designs to practices involving complexity.*

**Misinterpretation of Linguistic Adequacy of Object Languages (C2,M2).** *Object languages, following David Hilbert, are languages that are especially constructed to communicate about specialized knowledge. The most prominent of these languages, at present, are those that have been developed for use in constructing software for computers. Now that organizations which work with complexity are finding it necessary to turn to computers to manage the massive amounts of*

*information required (often by law), they are learning how ineffective these object languages are for communicating about the substantive work that goes on in fields such as medicine, law, and economics. Thousands of consultants are now striving to sell contracts to large organizations to "help them" make the necessary changes. In the process, they strive to force the client to adopt significant linguistic components introduced by the contractor. They misinterpret the linguistic adequacy both internally and externally.*

**Mistaken Sense of Similarity (E6).** *Organizations, individuals, or concepts are placed in the same category in a mistaken belief that, because they are similar in some respects, decisions that are believed to be applicable to the category are applied to every member of the category.*

**Mistaken Sense of Uniqueness (E5).** *There seems to be a tendency for organizations and/or individuals to construe themselves to be unique. As a consequence of this, there is an unwillingness to apply systems of thought or practice, even though they may have been highly productive when applied elsewhere. The generality of concepts that underpins virtually all of physical science, and which is responsible for virtually all of its relevance in modern life, is thereby denied in areas that involve behavior.*

**Susceptibility to the Fad of the Month (E1,H6).** *The history of recent events in organizational development and management clearly shows a shower of fads. A fad is distinguishable because it comes into play like a meteor, and flashes across the sky at the same time that it is engaged in burning itself out, then it disappears, sometimes as abruptly as it appeared.*

**Unawareness of the Cumulative Impact of Many Colocated Mindbugs (E10).** *Mindbugs are located in the human nervous system; the conscious or the subconscious, perhaps mostly the latter. While they may individually create havoc, it is devastating to observe what they produce when acting in concert.*

**Unawareness of Imputed Structure (E2,H10).** *It is frequently true that model structure is smuggled into a model by constructing models based on formats that have a preassigned type of structure, such that a person using that particular format has already implicitly imputed that structure to the model, without ever considering the model structure*

*independently of the kind of model chosen. For example, if a person builds a systems dynamic model to study the dynamics of a situation, the structure of that model necessarily conforms to the presuppositions associated with systems dynamics. Many modelers do not consider the development of model structure to be a step in the process of model development. Instead they bypass that step altogether, intuitively imputing a structure to the model without specific awareness that they are doing so.*

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1. The following two books, available directly from the publisher, are dedicated to means of overcoming the impact of Mindbugs:

■ John N. Warfield (1994), *A Science of Generic Design: Managing Complexity Through Systems Design*, Second Edition, Ames, IA: The Iowa State University Press, approx. 600 pages.

■ John N. Warfield and A. Roxana Cárdenas (1994), *A Handbook of Interactive Management*, Ames, IA: The Iowa State University Press, approx. 350 pages.

(In Europe, both are distributed by Eurospan, Covent Gardens, London, U. K.)

2. Kenneth Boulding (1966), *The Impact of the Social Sciences*, New Brunswick, NJ: Rutgers University Press.

3. D. B. Yntema and G. E. Mueser (1960), "*Remembering the Present States of a Number of Variables*", *J. Exper. Psychol.*, 60(1), 18-22.

4. I. L. Janis, *Stress, Attitudes, and Decisions*, New York: Praeger, 1982.

5. This is essentially the same idea articulated in different terms by W. E. Deming, who discussed the matter in terms of where the fault lay for certain undesired outcomes in organizations; but the language of "structural incompetence" calls to mind the effect on the individual of organizations that are not designed to enable the accomplishment of the functions for which they are brought into existence.



## ABOUT THE AUTHOR

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**John N. Warfield** is University Professor and Director of the Institute for Advanced Study in the Integrative Sciences (IASIS) at George Mason University (GMU), a state university, in Fairfax, Virginia. IASIS is a component of the Institute of Public Policy (TIPP) at GMU.

He received the A.B. degree, the B. S. in Electrical Engineering, and the M. S. in Electrical Engineering from the University of Missouri (Columbia) in 1948, 1948, and 1949, respectively. He received the Ph. D. degree from Purdue University (West Lafayette) in 1952, majoring in electronic communications.

He has 38 years of university faculty service, of which the past 12 years have been at GMU. He has spent a total of 20 years as a faculty member in Virginia, and during that time has had the designation "eminent scholar" in the Virginia system. He has about 10 years of industrial experience: Director of Research, Wilcox Electric Company (1965-66); Senior Research Leader, Battelle Memorial Institute (1968-74); Senior Manager, Burroughs Corporation, (1983-84). This experience included research of both theoretical and experimental nature, electronic development and reliability testing of navigational equipment for jet aircraft, and management experience in overseeing research projects and industry-university contracts.

He has served as elected President of the Systems, Man, and Cybernetics Society of the Institute of Electrical and Electronics Engineers, and is a Life Fellow of that organization. He has served as elected President of the Society for General Systems Research (later renamed the International Society of Systems Sciences). He served 9 years as founding editor of Systems Research and four years as editor of the IEEE Transactions on Systems, Man, and Cybernetics.

He is the author of two U. S. patents on electronic equipment, and is the inventor of Interpretive Structural Modeling, Interactive Management, and Generic Design Science.

He is sole author of four books, co-author of another book, and co-translator of a classic German work on communication networks. He is author or co-author of over 100 papers. He is in demand as a speaker and collaborator outside the United States where his research contributions are well-known. He has presented his work on complexity in ten nations, and has taught one-week short courses in five of them.

His primary activities in the past few years have involved preparing two books for publication in 1994, authoring papers, presenting papers at conferences, teaching short courses, and serving as an information resource or an active participant in working with individuals who are seriously dedicated to improving quality, effectiveness, efficiency, communication, and organizational cultures in their various organizations. He is presently preparing a new book manuscript titled: The Work Program of Complexity: From Origins to Outcomes. Biographical sketches of Warfield can be found in American Men and Women of Science, Who's Who in Engineering, Who's Who in Frontier Science and Technology, and Who's Who in America.