

WHAT POSTFORMAL THOUGHT IS, AND WHY IT MATTERS

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The four stages of postformal thought are Systematic, Metasystematic, Paradigmatic, and Cross-Paradigmatic. Each successive stage is more hierarchically complex than the one that precedes it. Each stage uses the elements formed at the previous stage to construct more hierarchically complex elements (e.g., metasegments, paradigms). An actual instrument constructed using the Model of Hierarchical Complexity illustrates the progression in hierarchical complexity. Another example illustrates the nonlinear nature of hierarchical complexity. The distinct tasks of the four stages are described. Postformal thought benefits interpersonal, societal, and academic endeavors by virtue of the kinds of tasks performed at each stage.

KEYWORDS: Cross-paradigmatic, metasystematic, nonlinear, paradigmatic, postformal, systematic.

If the most complex tasks humans ever had to perform were confined to such needs as building shelters from the weather, obtaining subsistence food supplies using simple rudimentary tools, and selecting mating partners, postformal thought may not have developed in humans. This is because there would not exist complex-enough task demands that would reinforce postformal thought. The invention of the first permanent settlement in Moravia, about forty thousand years ago, required a reflection on formal thought, in that specialization was one of the major driving forces. As it is, modern life in our global village presents tasks that can be performed successfully, if that is possible, only at certain postformal stages. The global village includes a wide range of populations and communities. In some, shelter, food, and mating are still the chief concerns of daily life. Elsewhere, physical and virtual organizations and communities are concerned with electronically conducted global financial transactions and long-term returns on investments, international trade arrangements, peace-making in hot spots across the planet, and the warming of the planetary biosphere itself. Most science, technology, and

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successful management require postformal thought. Postformal thought matters because the concerns and needs of widely disparate systems and their diverse populations must all be considered *if* there are to be changes made that are healthy for all involved.

This article introduces what postformal thought is by discussing the performances on tasks that can successfully deal with such complexity. The ideas are expanded via examples that demonstrate how each stage of postformal thought builds its more complex structure of reasoning. That process of performing tasks of increasing complexity is done by “standing on the shoulders” of, and coordinating, tasks performed at the immediately preceding stage. The objective of the article is to give readers some meaningful bases of comparison for viewing differences among the four stages of postformal thought. This approach should illustrate why postformal thought matters and why the differences among its four stages matter.

The term “postformal” has been used to characterize stages of behavior that are more advanced in stage than those behaviors found in the most complex stage discussed by Inhelder and Piaget (1958). Our estimates are that that last named stage, formal operations, may be characteristic of about 30 to 40 percent of the adult population in developed countries. In Western developed countries, some public high school students may use formal thought in some of their course work or life in general. In college-preparatory courses in both public and private high schools, some students may employ the first stage of postformal thought. In developed-country settings, formal stage tasks will be the highest performed by a significant proportion of adults in business, service, and educational sectors. Our estimates range up to 70 percent of adults with formal thought as their highest stage of performance in those sectors. The task demands of many other sectors do not require postformal complexity (e.g., manual labor, cleaning, transport, clerical tasks, farm labor). In less developed countries, formal stage task performance appears in much smaller proportions.

The implication is that *postformal* thought is performed by a minority of any population, which we estimate as about 20 percent in the G8 countries (Canada, France, Germany, Italy, Japan, Russia, the United Kingdom, and the United States). Much of 21st-century life in a global village actually demands much greater proportions and distributions of postformal thought because many crucial task demands exceed the capacities of formal thought. This is rarely recognized. More often, people assume that everyone can, or should be able to, think the same way. Some people assume everyone can and should reason with basic logic (e.g., the if-then of “rational choice”) and that it is enough. This article should disrupt such assumptions.

THE CONSTRUCTION OF POSTFORMAL THOUGHT

Examples of Tasks' Orders of Hierarchical Complexity

The general descriptions of orders and their corresponding stages are given in the preceding article's introduction to the Model of Hierarchical Complexity.

Examples of orders that may apply to adults are given here, in the form of an actual instrument of the type used to assess persons' stage on the instrument's tasks. It begins with the three orders that precede the postformal orders. This helps to illustrate how hierarchical complexity builds up in each subsequent stage.

The "Helper-Person" Instrument

Please read the following guidance and assistance discussions and answer the questions that follow.

Brown offers to provide the Person guidance and assistance preferred by colleagues. Brown says that others who are friends use this guidance and assistance. A colleague is called in to tell the Person again about the guidance and assistance. With great concern, Brown asks if the Person would like to hear a third Person explain the guidance and assistance. Brown's Person is told that these people had good results with that guidance and assistance. Brown instructs the Person to support the guidance and assistance. The Person thinks seriously about what Brown has said. Feeling that Brown knows best, the Person accepts the guidance and assistance. (Concrete 8)

Kents recently completed training on providing guidance and assistance that was designed for the Person's problem. Kents says that the best counselors regularly recommend this guidance and assistance. Kents explains the method and tells the Person that it will probably work for the Person as well. Kents also tells the Person about other methods that may work. The Person is asked if the Person has any questions. The Person does not have questions, and Kents asks if the Person wants to accept the recommended guidance and assistance. Feeling that Kents knows best, the Person accepts the guidance and assistance. (Abstract 9)

Bower offers to provide guidance and assistance that has been studied and is shown to work well. Bower shares the fact that not everyone has had a positive outcome from the guidance and assistance. Bower then reads a description of the guidance and assistance and its risks from a colleague's book. Bower points out that any guidance and assistance will have risks. Bower asks if the Person understands the proposed guidance and assistance and its outcome possibilities. After thinking carefully, the Person feels comfortable that Bower is capable. Feeling that Bower knows best, Person accepts the guidance and assistance. (Formal 10)

Flynn offers effective guidance and assistance that compares well to other forms of guidance and assistance for this problem. Flynn explains the helping effects of every guidance and assistance. Flynn describes all the risks of each guidance and assistance. Flynn asks the Person to relate back that explanation. Flynn says it is up to the Person to decide on a guidance and assistance. Flynn asks if the Person supports the suggested guidance and assistance. The Person thinks about what Flynn has said. Feeling that Flynn knows best, the Person accepts Flynn's guidance and assistance. (Systematic 11)

Allen speaks with the Person to assess the problem. During the conversation, Allen offers to provide guidance and assistance seen as most effective in treating this problem. Allen presents other forms of guidance and assistance as well, and discusses the benefits and risks of each as well, including doing nothing.

Allen, seeking to understand the Person's needs and concerns, asks and answers many questions. Allen also sees if the Person's body language matches their statements. Allen asks if the Person is ready to make a choice based on their previous discussion. Feeling Allen knows best, the Person accepts the guidance and assistance. (Metasystematic 12)

Instruction: Rate each of the methods above by selecting a number on a scale from 1 to 6. A rating of 1 means you think the Helper has the worst method. A rating of 6 means you think the Helper has the best method. Not all the ratings need to be used. A particular rating may be given to more than one Helper.

Example of the Nonlinear Development of Postformal Action

The concept of *task* applies to individual actions including thoughts, and accordingly, the hierarchical complexity of individual actions is measurable. Each action refers to a task performance. At every stage, an action begins at some baseline task. That task is usually familiar or available to the person. A Systematic stage 11 action must start from and coordinate two or more Formal stage 10 relations between abstract stage variables in order to create a systematic conceptual *system*. Likewise, a Metasystematic stage 12 thought must start from and coordinate two or more Systematic stage 11 systems in order to create a *metasystem*.

When a person is beginning to act for the first time on a task, one may *begin* one's actions at a stage that is two or more stages lower than the one-stage difference described earlier. For example, if a new combination of ideas is presented, or if new terms must be learned first, one may begin thinking at the concrete, abstract or formal stage before one continues to think further and produce a Metasystematic stage statement. Examples are presented in what follows to illustrate this organic type of development of complex thought. They resulted from presenting the Formal stage 10 statements to a postformal thinker. From those four statements, two Systematic stage 11 thoughts were spontaneously developed. While reflecting on the two systematic thoughts, a Metasystematic stage 12 thought resulted. It coordinated and transformed the just-previously developed systems with a memory of a relevant recent comment by another party. The examples indicate the unpredictability and nonlinearity of increasing hierarchical complexity.

Example 1. *Formal 10:* (a) "Although my family never hugs, Joe's family does, and they look happy to do it. I would be more comfortable if my family hugged." (b) "Research shows that hugs in loving families are good for your health. Therefore, everyone should hug." *Systematic 11:* "Social norms of lots of hugging could lead to more overt abusive contact in families with incest issues. It would be irresponsible to indiscriminately encourage all families to hug."

Example 2. *Formal 10:* (a) "Our region ranks high in estimated unreported crimes of incest. We have to reduce incest by requiring annual social worker visits with all children." (b) "Our region ranks high in the number children over the age of 6 who get no nurturing physical or emotional contact. A longitudinal study showed these children were at the greatest risk for delinquent behavior in pre-teen years. We must educate all caregivers about children's needs for nurturing." *Systematic 11:* "It's the pendulum-swing of doing social work, that half of our

time is spent trying to keep certain parents away from their children and the other half of the time we are trying to get parents to be closer to their children.”

Example 3. *Metasystematic 12.* “Recently, an elder in the community observed that ‘our children’s needs are farther from being met than ever.’ She mentioned that she has been struggling with the question, ‘What is the *function* of children in our society today?’ In agrarian societies, they are field workers. In early industrial societies, they are labor in home-based businesses or factories. In such societies, their function is to help support their families. A political scientist told her that in this westernized society, children’s function is to support the economy by being the country’s largest group of consumers. The flow of resources into the family economy from child labor has been reversed by children’s new social function. Indeed, society seems far, far away from regarding children as *not* for serving utilitarian functions.”

DESCRIPTIONS OF THE STAGES OF POSTFORMAL THOUGHT

Systematic Stage

At the Systematic¹ stage, people solve multivariate problems. Sometimes this involves discriminating the frameworks in which relationships between variables are embedded. The systems of relationships are formed out of relations among variables. Thus, the elements that are coordinated by systematic task actions are *multiple relations among* abstract order variables. The tasks include: (a) determining possible multivariate causes—outcomes that may be determined by many causes; (b) the building of multivariate representations of information in the form of tables, matrices, diagrams, or narrative; and (c) the multidimensional ordering of possibilities, including the acts of preference and prioritization. Such actions generate systems of tendencies and relationships. Perceptions of such systems generated give the appearance of a single “true” unifying structure. Other systems of explanation or even other sets of data collected by adherents of other explanatory systems tend to be rejected. New findings that do not fit within the present system are often rejected out of hand. Most standard science operates at this order. At this order, science is seen as an interlocking set of relationships, with the truth of each relationship in interaction with embedded, testable relationships. Researchers carry out variations of previous experiments. Behavior of events is seen as governed by multivariate causality. Our estimates are that only 20 percent of the U.S. population now function at the Systematic stage without support.

Metasystematic Stage

At the Metasystematic stage, people can act on systems. The systems are as described earlier. Such systems of relations are the objects of metasystematic tasks or actions. Metasystematic actions compare, contrast, transform, and synthesize systems. One can compare and contrast systems in terms of their properties, with a focus on the similarities and differences in each system’s form, as well as constituent causal relations and actors within them. The products or results are meta-systems sometimes referred to as supersystems. These complex understandings

underlie the formulation of universal principles applicable to all, many, or even only specific contexts. Such principles are metasystems by definition. For instance, philosophers, some scientists, and others examine the logical consistency of sets of rules in their respective disciplines. Doctrinal lines are replaced by a more formal understanding of assumptions and methods used by investigators. As an example, we would suggest that almost all professors at top research universities function at this stage in their line of work. We estimate that 1 to 2 percent of people in the U.S. population now function at Metasystematic stage without support.

Paradigmatic Stage

At the Paradigmatic stage, two things are done. People create new paradigms out of multiple metasystems. Or they show the impossibility of doing so. Thus, the objects of paradigmatic task actions are metasystems. A paradigm is a systematized set of relations among metasystems that reflects a coherent set of assumptions. In a domain, sometimes the highest stage development is to show that metasystems that are incomplete and that adding to them would create inconsistencies. No further stages in that domain on that sequence are then possible (Sonnert and Commons, 1994). Usually, a paradigm develops out of recognizing a poorly understood phenomenon or collection of phenomena.

Paradigmatic actions integrate metasystematic understandings and principles that may appear unrelated to the original field of the thinkers. Individuals who reason at the Paradigmatic order have to see the relationship between very large and often disparate bodies of knowledge in order to reflect on, compare, contrast, transform, and synthesize multiple principles and metasystems. Paradigmatic action requires a tremendous degree of decentration. One has to transcend tradition and recognize one's actions as distinct and possibly troubling to those in one's environment. At the same time, one has to understand that the laws of nature operate both on oneself and one's environment. This unity enables one to generalize learning and pattern-recognition in one realm to others.

Examples of Paradigmatic order thinkers drawn from the history of science are discussed in "The Connection Between Postformal Thought and Major Scientific Innovations," this issue. We estimate that fewer than .05 percent of people in the U.S. population now function at Paradigmatic stage without support.

Cross-Paradigmatic Stage

The fourth postformal stage is the cross-paradigmatic. The objects of cross-paradigmatic actions are paradigms. The task at this stage is to integrate paradigms into a new field or profoundly transform an old one. A field contains more than one paradigm and cannot be reduced to a single paradigm. The cross-paradigmatic thinker reflects on, compares, contrasts, transforms, and synthesizes existing paradigms. One might ask whether all interdisciplinary studies are therefore cross-paradigmatic, for example, whether psychobiology is cross-paradigmatic. That is not the case. Such interdisciplinary studies might create new paradigms with their own systematized set of relations among metasystems, reflecting a coherent set of assumptions such as psychophysics, but not new fields.

This stage has not been examined in much detail because there are very few people who can solve tasks of this complexity. It may also take a certain amount of time and perspective to realize that behavior or findings were cross-paradigmatic. All that can be done at this time is to identify and analyze historical examples. Such examples are included in “The Connection Between Postformal Thought and Major Scientific Innovations,” this issue.

IMPLICATIONS OF POSTFORMAL THOUGHT

There are a number of reasons to recognize the importance of postformal thought and its implications for the world we live in. A nonexhaustive selection of reasons is given here, some general, some more specific. A first example is drawn from the social work pendulum system constructed by the person (above) who reflected on two conflicting results of empirical studies at Formal stage 10. Since Formal stage 10 operates on just one input variable, conclusions have a limited scope that are almost always in conflict with another study or studies that used different input variables or were multivariate in design. The Systematic stage 11 of postformal thought contributes multivariate analyses to knowledge-building, which may bridge apparent conflicts generated by Formal stage 10. Multivariate analyses can indicate multiple correlations without providing deeper analyses of the causative systems of relations, which becomes possible at Metasystematic stage 12. The advancement of science depends on at least Metasystematic Stage actions. Analyzing complex dynamics of such things as terrorism, corruption, poverty, and countless other modern challenges requires at least Metasystematic stage 12 reasoning. It may require reasoning at Paradigmatic stage 13 to employ such understanding and conceive how multiple metasystems must change to alleviate conditions that give rise to such challenges.

Postformal thought introduces interpersonal and societal benefits unavailable at formal and earlier stages of performance. One prominent difference observable from the Metasystematic stage forward is the reduction in framing problems in terms of “us versus them.” Because multiple systems of causation are recognized, there is no single set of “bad guys” to blame for problems. The battle-metaphor language prevalent in much of society is largely abandoned at the Metasystematic stage (e.g., “war on terrorism,” “fight climate change,” “overcome poverty”). Awareness of each person as a system with a perspective, and even with multiple perspectives, leads to interpersonal and social preferences for genuine interest and inquiry in others’ points of view. People are treated as subjects or sovereigns of their own experience, rather than the objects of others’ strategic plans. This shows up in organizational and public changes in how leadership is understood and enacted and how constituencies are engaged.² For example, dialogical means are used in order to conduct real discussion in the process of making policy (Sonnert and Commons, 1994). Developmentally structured discourse, analysis, and decision-making process for addressing complex issues and policy development at systemic levels become possible for wide replication (see “Evolving to Address Global Climate Change,” this issue; Ross, 2006).

People who move through the postformal stages find there are interpersonal and personal benefits. Blaming is reduced as relationships are conducted and viewed in more equitable terms. The struggle for independence and dependence is integrated into a more functional interdependence in which contributions to the needs and preferences of others is a normal part of non-strategic interaction. Conflicts are addressed within larger, de-personalized frameworks of dialogs to co-construct workable solutions. Family and other system counseling, consulting, and coaching methods operationalize the interdependence of members of the system.

The importance of postformal thought for science, mathematics, and the humanities is great. By using postformal stages, one can analyze what it takes to advance these fields. One can also find out how various ways of promoting postformal development within these fields is working. Some measure of how difficult are the tasks at hand in higher education and research can be obtained, along with examinations of what organizational arrangements promote postformal approaches and solutions to difficult problems. The work can begin to estimate what resources some problems require to keep a society, organizations, and a person competitive. No less important, better understanding of the history of science, mathematics, and the arts would develop.

Stage of performance might be used to evaluate the effect of a culture on social, political, and educational development (Bowman, 1996; Commons, Krause, et al. 1993; Commons and Rodriguez, 1990, 1993). An important social benefit is that postformal development is associated with increased innovation. Society might be organized to produce and pay off the acquisition of postformal performance. As social perspective-taking skills increase with these stages, the plight of disadvantaged persons, immigrants, and refugees should improve due to gradual implementation of more equally distributed quality education and more just social and economic policies and practices. Social benefits of postformal capacities may transform how urban, rural, organizational, and international issues can be addressed. Finally, postformal thought—and fostering its pervasive development—could matter a great deal if the future of human and other species matters.

NOTES

1. This stage was introduced by Herb Koplowitz (personal communication, 1982). He suggested that metasystems and general systems must operate on systems while we were working on a chapter of his at Dare Institute.
2. For many articles on this subject, see www.integralleadershipreview.com

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