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ABSTRACT

Synectics is a method of creative problem solving through the use of metaphor and apparent irrelevancy developed by William J. J. Gordon. The process involves rational knowledge of the problem to be solved, irrational improvisations that lead to fertile associations creating new approaches to the problem, and euphoric state that is essential in the process of creative genius. Applying synectics to social problems leads to model construction but not actual problem solving. Synectics has significant applications on all secondary school grade levels in that it provides a well structured methodology for developing both creative and critical thought processes to students who must operate effectively in a society oriented to problem stating and problem solving. In Gordon's book, Synectics, the trend of his illustrations is almost totally industrial-pragmatic. A final chapter however, "Social Applications," suggests non-technological utilization of synectic processes: 1) establishment of a school think group made up of faculty, administration, and custodial staff; and, 2) use of synectic techniques in an experimental senior level course. (Author)

SYNECTICS: AN EXPLANATION OF THE PROCESS AND SOME COMMENTS ON ITS APPLICATION IN THE SECONDARY SCHOOL

JAMES F. MARRAN & DONALD V. ROGAN

Synectics, a method of creative problem solving through the use of metaphor and apparent irrelevancy, was developed in a gradual way by William J. J. Gordon of Cambridge, Massachusetts. The process was employed in the late 40's and early 50's by Gordon when he worked in the area of marine engineering, especially in submarine design. In those years, the technique was refined and polished so that by 1962, Gordon and his associates were astute enough in their tactic to formalize this activity of analogy and market it through Synectics, Incorporated. The Department of Defense, The Rockefeller Foundation, M.I.T. and Harvard all contributed financial support, consultive services and personnel in the developmental years and eventually American industry became the synetic laboratory, a condition which is generally true even today. Now scores of industries have synectic groups at work producing basic novelty and experimental insight models as well as attacking invention problems. The Cambridge group, which was the original one, continues to function and provides basic data to newer groups and receives hypotheses from the industrial and technological firelds for review and possible implementation.

Gordon feels that the answer to many a technological riddle can be found by bringing people together from their various branches of learning and encouraging them to let the sparks fly. His basic principle is that every human being has a latent gift for invention which generally goes undeveloped. When faced with a difficult problem, the tendency is to dissect its various components and seek a solution by being logically inductive. The result is that such an approach often leads to frustration and mediocre or ineffective solutions. Going beyond the problem by stepping outside it, by using the imagination is a more productive approach Gordon contends. Archimedes' "Eurekaa!" aand Newton's falling apple are

celebrated examples of the mental process that can be classified as synectic.

Once the synectic group has been formed and its members instructed in the devices, structure and types of analogy (direct, personal, symbolic), it is then relatively easy to plunge participants into a problem that interests them. The direction of the group is in the hands of a "juggler" who evokes metaphors by questioning. When the group becomes skilled enough in the process, the juggler's job can be put on a rotating basis so that each session will have a new one. In addition to productive questioning and generally keeping track of things, the juggler must be able to spot that moment when the group has more or less consciously reached a state of euphoria. Gordon suggests that along with a rational knowledge of the problem to be solved and the irrational improvisations that lead to fertile associations creating new approaches to the problem, the euphoric state is a final essential element in the process of creative genius.

What all this leads to is what the synecticians call a view point - an original but practical approach to the problem as understood. It does not mean that the solution is worked out in every detail. The view point, then, is really skeletal and can be fleshed out in the construction of a model or in a laboratory experiment. It is, of course, impossible in the social applications of synectics to create anything more than a general model outlining the nature of the solution. The result of a synectic inquiry on how to coordinate the proliferation of research being done in American universities in the physical and social sciences and in the humanities might, for example, result in a solution which suggests the establishment of a national university, and such a solution could practically go no further than a descriptive model.

At present, the people at Synectics, Incorporated are spending about 40% of their time in the field of general educational research. Results to date have been promising but a great deal more needs to be done. Certainly synectics has

significant applications on all secondary school grade levels in that it provides a well structured methodology for developing both creative and critical thought processes to students who must operate effectively in a society oriented to problem stating and problem solving.

Included here are five examples which could be used to involve secondary school students in the social applications of the synectic process.

PROBLEM NUMBER ONE

QUESTION: What is a feasible economic alternative to industrialism for emerging nations caught up in the Revolution of Rising Expectations?

PROBLEM AS UNDERSTOOD: Because so many new nations in the Afro-Asian block lack the prerequisites for developing a viable industrialized society - low literacy rate, limited technological skills, scarcity of raw materials, little capital, restricted markets, undeveloped urban techniques, unstable political structures and a paucity of managerial direction - progress is often slow and generally ineffectual.

PROBLEM NUMBER TWO

QUESTION: What might be the most promising approach to the coordination of science research and its application in the United States in the next twenty-five years?

PROBLEM AS UNDERSTOOD: At present the federal government spends upwards of $17 million annually on scientific research and development, and the figure is going up all the time. About 80% of all graduate education in the sciences in the nation's universities is being supported by various government agencies. The White House has at its bidding a Science Adviser to the President, the President's Science Advisory Committee, the Office of Science and Technology and the Federal Council for Science and Technology and in addition, there is the Atomic Energy Commission, the National Aeronautic and Space Administration, the United States Public Health Service, the United States Weather Bureau and scores of minor agencies involved either in science research or its applications or both. As a result, science obviously could occupy a conspicuous place in national policy making but there is no evidence of a comprehensive framework of science policy, just an abundance of isolated policies that are used to give meaning to separate scientific endeavors.

PROBLEM NUMBER THREE

QUESTION: How does a student body go about developing and putting into operation the "ideal" secondary school?

PROBLEM AS UNDERSTOOD: The first issue to be resolved here is the nature of the ideal high school. Students tend to be generally critical of the institutions in which they are being educated. Complaints run the gamut from the school being too easy to its being too difficult, from grades being poor motivators for success to grades being the only reason for students to work, from too much faculty-administrative manipulation of school life to a disinterested faculty and an indifferent administration. Once agreement can be achieved on a plan for what the "best" kind of school would be, then the problem of how to achieve it can be solved.

PROBLEM NUMBER FOUR

QUESTION: What kind of inexpensive art form could be developed that would be really "living," changing but always visually interesting and intellectually aesthetic?

PROBLEM AS UNDERSTOOD: The magic of art is the variety which promotes its emotional impact. An object of art is frequently assessed as being interesting but of such content that the viewer comments that he "wouldn't want to live with it." What he is saying in effect is that the object has only temporary interest value, that prolonged exposure to it becomes tiresome and wearing. In a world that is becoming increasingly more visually aware, there is certainly a need for an expression of art that would be organic enough to be ever changing but never exceeding a defined spatial area and never losing either color or interest.

PROBLEM NUMBER FIVE

QUESTION: How can all students in any given American secondary school be made to become more aware of and involved in community problems?

PROBLEM AS UNDERSTOOD: Among a large number os students, there is a general apathy about the whole range of critical conditions that afflict the local, national and international communities. Many times students tend to ignore the existence of such problems or express such a feeling of detachment about them that there seems to be little hope that these students will ever come to terms with understanding them and dealing with them in a meaningful way. Classroom treatment of problem areas is frequently viewed as merely an academic exercise and participants in various social service projects, politically oriented clubs and problem solving activities invites the attention of less than a quarter of the student body.

If synectics is properly taught and the process of student selection carefully controlled, it possesses inherently a strategy for developing another dimension of the creative process and could have significant implications in all the departments of the secondary school for staff and student body alike.

SYNECTICS

Notes on the Theory and Book by William J. J. Gordon

Synectics (the joining together of different and apparently irrelevant elements) takes as its goal the analysis of creative thought processes in an attempt to define structure. Once the essentials are pinpointed and isolated, synectics then introduces them into group problem solving situtations in an effort to stimulate and produce creative thinking by the individuals involved.

Gordon first defines the recurrent patterns of mental activity which accompany the creative process. These he draws from autobiographical sources (Einstein for instance, and from participant description of ongoing creative thinking. The structure which he sees as emerging is a multiphase one involving empathy, involvement-detachment, deferment, speculation, and autonomy of object. Throughout this process, various forms of analogy, subsequently superceded by the more inclusive concept of metaphor, becomes the synectics operational mechanism.

In essence, synectics attempts to make explicitly conscious subconscious mechanisms of creative processes so that they can be evoked when the need arises. The synectics mechanism of metaphor use and its auxiliary devices (ability to tolerate and use the irrelevant, ability to "play" or give in to flights of fancy) are intended to induce appropriate psychological states and thus promote creative activity.

Gordon goes into considerable detail to illustrate the operational aspect of his creative thinking analysis. Its use is problem centered, as he defines creative process as mental activity in problem-stating, problem-solving situations where artistic or technical inventions are the result.

The trend of his illustrations is almost totally industrial-pragmatic, i.e. a better paint product, a road which will not deteriorate. Even in his description of qualifications for synectics group membership, he is concerned with intracorporate criteria for the most part.

It is not until the last and briefest chapter that Gordon introduces a possible non-technological utilization of synectic processes. The chapter, entitled "Social Applications," presents an extended dialogue concerning military defense and the economy. It indicates that other than industry oriented situations lend themselves to synectic technique.

It is this chapter which points up the relevance of synectics to the present educational structure. Two possible areas of utilization of these ideas suggest themselves;

1. The formation of a synectics group from administration, faculty, and custodial personnel of a school district, to concern themselves with creative approaches to educational problems in the schools.

   This carefully selected group (see Gordon criteria, pp. 57-74) would become something of a structured "think" group, utilizing synectics techniques on matters of concern to the entire school structure.

2. The second utilization would involve use of synectic techniques with a group of senior students. A course, offered twice a week as a one semester minor, would be open to approximately eight students on the recommendation of the Department Chairmen.

   After a period of familiarization with synectic processes, the class would concern itself with application of those techniques to social problem situations. The widest possible range of interests and subject strengths should characterize the group, as well as certain applicable criteria drawn from Gordon.

The encouragement and reinforcement of creative thought processes which could result from the implementation of these suggestions, as well as possible greater insights into school problems derived from the first group, and the introduction into the second group of technique of creative thought for further utilization, would be anticipated outgrowths of this experiment.

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