Mary E. Bews

"...of fine thrills
and
quiverings to the toes"*

"You must be kidding. Do something with it?"
"String and feathers? No, it can't be true!"
"What are we supposed to do with them?"

I

These were the initial stunned reactions with which my students greeted their assignment at our first meeting in September. I had divided my class into groups of five or seven members and presented each group with a bag containing not more than three basic items such as string, feathers, styrofoam, exposed film, and broken glass.

My own problem and long-range objective as teacher was to bring relevance to a course described in the McGill Faculty of Education calendar as *English: Language and Other Media* and designed to include one-year diploma students from as disparate a range of disciplinary backgrounds as physics and chemistry to English, or technical-vocational training to the social sciences. What were my immediate objectives? My first was to encourage rapid group integration; second, to introduce the students to the process of problem solving through discovery; third, to make the students aware of the resources within their own group and in the community; fourth, to encourage a maximum of creativity. Another objective, later identified by the students, was expressed this way, "that of being able to identify the problem." In accomplishing this objective, we encountered many kinds of learning; in fact I do not think that Bloom's taxonomy could have been better illustrated. We touched on all three of his major categories:

*Nietzsche, *Thus Spake Zarathustra.*

1. The cognitive, where we were called upon to form concepts and recall knowledge;
2. The affective domain, where our interests, attitudes and values were tapped;
3. The pyschomotor domain, where our manipulative and motor skills were exploited in the conversion of the styrofoam packing device into an aquarium.

We found, to our satisfaction, that my priorities might have been reversed, with creativity coming to the fore. In the third session, when the groups reassembled to present their findings, remarkably sophisticated and innovative solutions had been achieved. The group working with feathers and string made a strikingly imaginative use of those materials by constructing a three-dimensional model of the D.N.A. molecule of Watson and Crick, using the stiffened string to create the ladder and the colored feathers to represent the rungs. The model was then suspended from the ceiling in the center of the class while the members of the group which had worked on it interpreted it using appropriate literature to describe its various aspects — thematic, poetic, scientific and eugenic. In one group, a pane of broken glass and some bleached leader film on a reel became a mobile through which a design, drawn on what remained of the film, was projected on a screen and synchronized with a double sound track of tinkling glass and music — an aesthetically and technologically satisfying use of the materials. Another group which had been presented with stones, feathers and sponge, compromised by inventing a trivial relay game rather than lose the cohesiveness of the group which threatened to break up over any more high-level solution.

The pooling of ideas to achieve creative results seemed to emerge as the most significant factor. To quote from one of the participants, "The learning I experienced in working with this group was observing how students with such varied backgrounds could approach a project of 'string and feathers' and develop a creative presentation ... I felt that I came up with ideas that I never thought I could have .... I think that as a group we developed something much more creative than we could have if we attacked the project on an individual basis." Another member commented, "The solution reached was the result of a fluid continuous process." And again, "The most outstanding aspect ... has been the extent to which

we *have surpassed ourselves,* both in the interest generated during their creation and in the quality of the results." Another wrote "I must say that I thoroughly enjoyed taking part in the project. I never would have undertaken it on my own."

Not all the groups achieved total accord. One student reported that, "The Arts people generally hankered after creating something 'meaningful' and symbolic. The technical side opted for something more concrete. Agreements were reached, but they were agreements mostly of necessity...." And further on, "the threat of time helped create general consent...." Nevertheless, difficulties were overcome; results were achieved in all but the one instance of the hop-scotch game; in short, the tangible solutions were extraordinarily good. The intangibles, which were of greater importance, will be evident in the students' comments later on.

II

From my point of view as an educator, it seems to be clear that what the students were saying is this:

1. Groups of people are able to achieve solutions often more creative than those one individual might find;
2. The pooling of ideas from disparate disciplines tends to promote more original thinking;
3. The novelty of a problem may produce new alignments of learning and result in more creative thinking.

In fact what the students were discovering for themselves is what has been said in the literature on creative thinking for many years. Jerome Bruner puts it thus: "I would propose that all forms of effective surprise grow out of combinatorial activity — a placing of things in new perspectives."[1] One has only to look at the fresh interest in the arts of music, dance, painting and poetry in such reputable scientific strongholds as M.I.T. and the California Institute of Technology to be aware of a readjusted focus in education. Robert Samples has called it "humaneness," that is a recognition that "we find creative people in both the sciences and humanities. In terms of capacities, aspirations and potentials, human creative potential makes it difficult if not impossible to polarize humans into the two cultures."[2] The students, through this encounter, found that group learning such as that described here not only supplies the bridge between the polarities, but extends understanding of other modes of thinking and doing, and

hence leads to greater self-actualization. The conditions and environment which are provided may be factors which stimulate ideas, but as William James once remarked, it is the human being that has always been "the starting point for new effects." Gertrude Stein in a little monograph on Picasso says, "I was very much struck at this period, when cubism was a little more developed, with the way Picasso could put things together and make a photograph of them. . . . To have brought the objects together already changed them to other things." It was this ability to gain new perceptions which prompted one participant in my experiment to write, "I have done a lot of reading, writing and laboratory work but I've never made anything out of something very simple. I learned how difficult and time-consuming the process of creating is, how we can benefit from communication with people of completely different backgrounds. It was amazing how our project evolved from something very simple, very obvious, into something which had great depth and meaning."

A question which I proposed at the first meeting, (i.e. "How would you analyse the quality of group interaction?") may have set the stage for the high degree of cooperation and group interaction which emerged as a priority in each section. Interestingly, there was a direct correlation between a satisfying and creative solution to the problem and the degree of group compatibility and sense of participation; where the group was forced to compromise in order to preserve autonomy, the level of accomplishment was notably lower. The group which converted the pane of broken glass into a mobile and projected film through it seemed to experience a high degree of satisfaction, "I enjoyed working in the group and was quite surprised how quickly we agreed what to do with our problem. I believe that we all appreciated the work we had put into it when we saw the results. . . ."And from another member of that section, "Cooperation within the group was excellent. Certain people took natural initiative in spear-heading the efforts; yet they listened to the suggestions of others . . . ," and from another, ". . . it proved to be an exciting undertaking, a valuable learning experience and an opportunity to get to know and express our ideas in an abstract way." One member of a group working with four corks and fifty feet of clear film identified the problem of group interaction this way: "One learns that the failure of the leader results in the failure of the group and will reflect on all. Interaction is of low quality because most members have taken a disinterest in the project

and the leader is left to work things out himself. Solution may suffer because of group indifference and the project itself will end as a mediocre presentation."

In some groups there would appear to have been no observable partiality towards any one individual as leader, although several participants acknowledged that in the initial stages at least, one or two seemed to take the initiative in "breaking the ice." One fairly predictable dissatisfaction was that, once a consensus had been reached regarding the solution, the bulk of the work was left to a few conscientious individuals. This was successfully overcome in one group by the allocation of certain aspects of the solution to smaller groups who later tied their results together.

By far the greater number of the respondents were enthusiastic about the group experience. For example, " . . . this type of problem set up a fantastic atmosphere for learning and opened new channelways of communication and thought so important in this person-to-person profession of teaching. The quality of interaction of the group evolved from a fundamental stage, through a character development period and, finally, into the fruitful common ego stage." And from another, "Without question, group work offers a valid learning opportunity. The members pool their individual talents and ideas and thus learn from each other. Ideas stimulate ideas. Division of labor we find, results in a more efficient use of time."

Another facet of the experiment which several found to be of value was the diversity of scholastic and cultural backgrounds which contributed a large measure of interesting variety, both of viewpoint and expertise. "I have participated in many groups in the past few years," said one, "but it has been with students of similar background . . . dealing with presentations requiring a common knowledge . . . . It was really interesting to see how each person thought along different tangents and threw in so many ideas I didn't think of." Another respondent commented, "The interaction clearly emphasized that the late arrival of two individuals into the group temporarily destroyed the unanimity and its original decision," and that, "two groups which are at different stages have trouble in working together. Different backgrounds however, are an asset rather than a liability in group work."

The arrival at a solution was sometimes painful and unsatisfactory. One man remarked on the quality of interaction as ". . . pretty terrible. Two of the group, I and another fellow, seemed to dominate the group and play with the others'

minds . . . . For this I feel guilty." Another rather frustrated respondent commented, "This group is artificial, not like a choir or an orchestra which can join disparate personalities because all are involved in a common goal." It is worth noting that in that particular group one member seemed to assume a strong leadership role and his ideas dominated the group rather than the group's achieving a solution by consensus as in the sections where the sense of accomplishment was higher.

III

What were the learning outcomes of this experience? The least measurable but most significant was, of course, the quality of human interaction and, as I have said, this was noted by all the participants. The reactions ranged over a broad scale from an extreme low in which one respondent cast serious doubt upon the quality of interaction, to more positive comments such as, "The learning that took place in our group was definitely practical and could obviously not be called academic. It was about people and how they interact with one another. We were able to see people *being* shy, *being* aggressive or whatever, rather than knowing them as people who belong to facts: I am shy, I am aggressive, etc. We were also able to observe how intricate the communication process is on a group level; that one must of necessity be tolerant and open minded — without this, the framework that unites people of extremely varying backgrounds dissolves."

The process of learning about other members of the group was sharpened by the participants' awareness that this was essentially an exercise in communication and by the unexpectedness of the introduction to the course. One respondent says, "This exercise taught me three things. Firstly, I learned to communicate with my peer group at a much faster level by being thrust into a group situation than had I been left to myself. Secondly, I got to know their personalities quite quickly, those who are even-tempered, those not so, those who are shy, those who are out-going and head-strong and so on. Lastly, I came to realize that the object of the lesson was not the actual task, but how one reacts to others . . . ." Two further comments on the skill of communicating as an integral element in our social structure were these: "I think we learnt that communication isn't as easy as it might seem to be — one must be sure of what one is trying to say. It must be carefully thought out so that you yourself will know what you

are trying to say." And, "What I learned most of all from this project was how the process of communication works.... Looking at the world in which we live and the various struggles going on, I realized that peace and stability cannot be achieved as long as the process of communication is broken down."

A much more negative response came from this frustrated member of the class:

"I learned
1. about group interaction in a way I hadn't before
2. about filming difficulties
3. that I am not quick in finding solutions to problems that are unimportant.

I object strongly to this method of work because
1. I have not learned to be more articulate in learning our language which should be of primary importance and was thought by many members of the entire class to be their reason for being in such a class
2. we wasted a great deal of time — eleven hours for myself — longer for some others, with the result that no work was done for any other classes."

It is evident that for this student, at any rate, the deviation from the expectation of what a traditional English course should be was extremely disconcerting.

For some, the learning which occurred was predominantly technical. One participant comments: "Actual learning was primarily technical — the coordination of film and tape, for example: the actual working-out of the problem involved thinking rather than learning. That is, no new ideas were learned or developed. Instead, several ideas were exchanged and eventually combined into the final format. Thus, the project became a reformulation of past learned experiences." But for others the technical learnings were new. "...I learned how to use an expensive camera which I had never before handled." And again, "My personal learning experiences were limited to the area of the media (films, slides, photography, taping, mixing, etc.). It was very interesting and I gained much in this aspect of the project." Another comments that, "The enormity of such a technical effort and my lack of mechanical expertise in handling tape recorders, mixers, and other equipment surely would have prevented me from trying. But because of the project I learned quite a bit about

how to use this equipment. More important I learned what a great impact media can have on communications." A McLuhan axiom perhaps, but one which this student needed to find out for herself.

A somewhat more subtle kind of learning with important implications for their roles as teachers and which some identified came out as "the need to occasionally give pupils the chance to create freely," and "... the group members exercised their creative faculties while attempting to solve the problem. This in itself requires learning."

IV

Limited as this experiment was, it seems to me to have far-reaching outcomes. Perhaps the most important of these is the understanding of the nature of communication. George Gerbner states, "Of all the changes in what has come to be called the quality of life, none has had a larger direct impact on human consciousness and social behavior than the rise of communication technology."[3] To devise and use this technology is one of the most pressing responsibilities which teachers have today. Without an awareness of how communication determines behavioral and cultural patterns, without an understanding of the responses and symbolic messages of his environment, modern man lacks the skill to guide either his own or his society's destiny. Sensitive teachers have always been alert to the individuals who go to make up that amorphous conglomerate which we call a class, but it is no longer enough simply to feel moods and changes; today's teacher must understand and interpret the meanings of the multitude of messages which bombard the individual child.

A second important outcome of this experiment was a growth in self-actualization through the accomplishment of the group. John Dixon has suggested that the beginning courses in engineering at the University of Massachusetts be consistent with certain premises, the first of which "should be to promote high personal self-esteem in the students. ... The second premise is that the way to build self-esteem is by acceptance, trust, success, and responsibility. Finally ... to devise experiences that allow for acceptance, trust and success over wide ranges of interest, technical sophistication, energy and personal maturity."[4] It seems to me that these premises delineate the ground rules for a new educational

approach and that the experiment I am reporting did, in fact, attempt an innovative kind of educational process.

For me, as facilitator and interested observer, the material results of the experiment were as surprising as the growth in human relations. The extraordinarily high quality of thought and execution which produced the mobile-film-sound-track creation and the D.N.A. molecule was achieved as a result of a highly creative group activity which utilized the innovative ideas and expertise of each of its members and interfaced the disciplines within the aggregate. The failure of the hop-scotch group to achieve a higher level of results seemed to reflect the group's inability to meld successfully. In this group, too, the dominance of one member seemed to interfere with a satisfying resolution. The group with the styrofoam packing material, on the other hand, seemed to retain a high level of group morale in spite of the failure of their fabrication. This may have been because the concept that they had of a fish maze satisfied their intellectual and innovative expectations; and the failure itself was purely mechanical.

What were the long-range results? At this point I am un-prepared to say. One hopes that such an experience will have a modifying effect on the way in which the participants go about their teaching in the future, but the shackles of accultur-ation are strong and change is slow. There is no doubt that many of them will bring more creative approaches to teaching than teachers have done in the past. Perhaps, even, one of them may turn over the traditional apple-cart.

references

1. Jerome Bruner, *On Knowing: Essays for the Left Hand*, New York: Atheneum, 1967, p. 20.
2. Robert Samples, "Science: A Human Enterprise," *The Science Teacher*, September, 1972, p. 26.
3. George Gerbner, "Communication and Social Environment," *Scientific American*, Vol. 227, No. 3 (Sept. 1972), p. 153.
4. Samples, *op. cit.*