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CRITIQUE AND COMMENT

OLD WINE IN NEW BOTTLES

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Although the application of general systems theory to the study of organizations may be promising, there are dangers of compromising the integrity of each. Several deficiencies in the attempt by Toronto (1975) are reviewed. In addition certain generalizations regarding GST and organizations are discussed briefly.

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IN THEIR handbook of research design, Campbell and Stanley (1966) summarized the potentials and pitfalls of approximating experimental designs in field studies. They stressed the imperative of control groups if field data are to be defended against rival hypotheses of causality. As a point of contrast, the work of Toronto (1975) illustrates many of the methodological errors they aimed to prevent. The latter is characterized by (a) descriptions of peculiar data, (b) methodological errors, and (c) questionable generalizations.

PECULIAR DATA

Toronto (1975, p. 150) stated that his data were gathered from two parts of a sample organization that "were not homogeneous in size or organizational structure and had widely differing functions." Indeed, the only trait they shared was that both had second-line supervisors. These noncomparable data bases prevented Toronto from reaching clear conclusions in his analysis.

Among Toronto's (1975, p. 152) conclusions was a statement that "the downward trend at the end of the program [system] indicates that a gradual improvement cannot sustain itself without supporting changes in the suprasystem." Intuitively, this made sense. However, nothing in the results supported it. There were no assurances that changes in the suprasystem did

not, in fact, take place. It was not shown that a change in the suprasystem led to permanent change in the focal system. An alternative explanation, and one at least as credible as that advanced by Toronto, is that the subjects made "Hawthorne" responses to the change agent interventions. When those attentions were withdrawn, the subjects' performance dropped. Without a control group in Toronto's design, this rival hypothesis cannot be rejected.

Displaying standardized scores on charts (Toronto, 1975, p. 153), necessarily involves means set to zero and time line data points expressed in standard deviations. Each standardized data point on the presented time line, therefore, must itself have been a mean with a variance of raw data points around it. When Toronto compared two time lines on a single chart, their relative divergence could not be judged without knowing their respective variances at each time point. No such information was provided. Indeed, no findings were presented in tabular form. Toronto denied the relevancy of significance testing (p. 148), the technique required to make a sensible analysis of his findings.

One of Toronto's central conclusions was that team-building interventions were related to reductions in minor maintenance costs. Yet, the data showed (p. 155), and he stated (p. 154), that the observed cost improvements were in a downward trend well before the interventions. In the face of this, he asserted (p. 154) that "it is clear that the improved team orientation evident between the two 1970 surveys caused

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or at least sustained the continuing improvement in the cost index." On the contrary, it is just as appropriate to say that the interventions did not detract from cost reducing behaviors that were fostered by causes not captured in Toronto's data.

METHODOLOGICAL ERRORS

"Managers cannot tolerate meddlesome research controls" (Toronto, 1975, p. 149). Not necessarily so. Quasi-experimental designs in field studies avoid a great deal of interference in the work of research subjects (Campbell & Stanley, 1966). The irony of this position is that Toronto professed to be, foremost, an organization change agent. Organization change agents are sorely dependent upon managerial tolerance of interference (Morse & Reimer, 1956; Bowers & Seashore, 1966).

Toronto's (1975, p. 149) design consisted of "different interventions or treatments applied to different systems and a common parameter is used as the independent variable. The major limitation of this method . . . is that trends and variations must be inspected visually in order to draw conclusions, thereby introducing judgmental error . . ." No, the major limitation was actually the application of different treatments to different groups, thereby removing the possibility of attributing changes in post-test scores to any treatment or any group. Toronto dismissed the statistical significance tests which would have overcome the difficulties of "eyeballing" for meaningful differences in columns of numbers or among lines on a chart.

GENERALIZATIONS

Toronto (1975, p. 148) offered the insight that "Permanent change in system activity data requires a change in and the subsequent equilibration of both the system and its suprasystem." Depending on how Toronto defined permanent change, this assertion is either a tautology or it is not necessarily true. In the latter event, general systems theory suggests that equilibrium and homeostasis are not the only system states or processes that obtain (Buckley, 1968).

Toronto (1975, p. 146) further asserted,

without empirical support, that the major authority figure in a system is the "critical locus of any organizational change program." However, there are numerous examples in the literature which illustrate organizational change at a variety of levels (Morse & Reimer, 1956; Tsouderos, 1955; Bennis, Benne, & Chin, 1969; Dalton, Lawrence, & Greiner, 1970; Leavitt, 1965). For example, evidence gathered by Chapple and Sayles (1961) showed that genuine change in structural forms originates in the technology of the workflow at the lowest operational level, the opposite locus of that embraced by Toronto.

He also implied that an authority figure's succession changes a structure, i.e., substituting personalities within a chief executive slot would lead to structural change. Indeed, some change may occur. However, formal bureaucratic organizations were devised precisely to minimize the impact of changes in personalities upon an organization's structure (Weber, 1947).

Finally, Toronto (1975, p. 146) stated that ". . . crucial aspects of social systems cannot be discovered by taking them apart. Organizational change, therefore, cannot be studied in isolation by extracting a small portion from the whole but it must be studied *in toto*" This is an epistemological limb upon which few students of rigorous organization research would be found. It ignores the insights into organization functions that are only possible by breaking the whole down into manageable elements (Simon, 1957; Haberstroh, 1965). Rather, one can question whether organizations can ever be studied *in toto*. The universe of system variables in working organizations is unmanageably large. Any effective study necessarily selects but a subset of variables (Mechanic, 1963). The wonder of these prefatory remarks on social science methodology is that the study Toronto reported was, itself, limited to a typically few variables.

CONCLUSION

A recurring theme was that organizational change is so complex that only a general systems perspective could unravel

it. While such a view may have merit, Toronto's application has demonstrated neither the utility of general systems theory nor the complexity of organizational change. In reality, neither the variables nor their relationships were notably complex. On the contrary, they were conventional and straightforward in everything but their presentation. Complexity was an element of which much was said but little was shown. The organization literature abounds with work by many researchers that is far more complex in design (Dansereau, Graen, & Haga, 1975).

If general systems theory implies adherence to the logical-deductive traditions of science, Toronto's report obscured the logic and the deductive process by which his hypotheses were generated. If this work is indicative of the benefits of marrying general systems theory with organization theory, we submit that the union will scarcely survive the honeymoon. In this instance the integrity of each has been compromised.

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