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## ORGANIZATIONAL INNOVATION AND THE SCIENCE/CRAFT OF MANAGEMENT

Robert T. Golembiewski and Eran Vigoda

The themes of this essay concerning innovation have a schizoid quality. Thus, the development of both businesses and public agencies is much influenced by the willingness to adopt valuable changes in the right time and place. Rogers (1983) defines innovation as "an idea, practice, or object that is perceived as new by an individual or another unit of adoption." (p. 11) Not that this is easy to achieve: Rogers cites Benjamin Franklin (1781), who claimed that "to get the bad customs of a country changed and new ones, though better, introduced, it is necessary first to remove the prejudices of the people, enlighten their ignorance, and convince them that their interests will be promoted by the proposed changes; and this is not the work of a day" (p. 11).

We make a start here toward reconciling the required welter of prescription and proscription. The argument can be seen as both critical and constructive, in turn. Critically, the conceptual loosenesses of what will be called Innovation 1 are established and illustrated:

- Innovation 1 is rooted in the bureaucratic model and in its associated features of narrow and coercive concepts of authority and control; and

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- Innovation 1 is rooted in a model of interaction between individuals and groups that has significant shortfalls.

Put constructively, the discussion below contributes to four liberating and empowering generalizations. In introductory summary of the argument that follows:

- Innovation 2 seems both descriptively and prescriptively useful, in both business and government
- a "good fit" structural model for Innovation 2 is sketched: it emphasizes horizontal aspects of work, and substantial theory as well as experience have accumulated concerning what to do and how in fostering innovation;
- Innovation 2 requires normative guidance from a "regenerative" model of interaction to exploit the full potential for good fit with postbureaucratic structures; and
- Innovation 2 has major implications for management research and practice.

### CHALLENGES TO A MORE USEFUL CONCEPT

Most commentary assumes that "innovation" is by definition good, and that more innovation is better for organizations and society (Kimberly, 1981), but this view seems Pollyannaish. We stand with the loyal opposition: that is, any innovation may be desirable for one adopter in one situation but undesirable for another in a different situation (Rogers, 1983), and, moreover, many innovations become ineffectual or even harmful with the passage of time (Abrahamson, 1991; Kimberly & de Pouvourville, 1993). Hence, a useful concept of "innovation" must draw full attention to often-substantial time-lines (e.g., Hobby, 1985; Rogers, Dearing, & Chang, 1991), as well as associated situational features.

In this effort to encompass useful conceptual territory, summary introduction goes to several other features in a concept of authority congenial to comprehensively-defined innovation. Basically, we argue that the evolution of a creative idea into a practical organizational change should be seen as a *process*. Moreover, in turn, an ideal type of a good innovative process is characterized by high motivation of individuals, groups, and organizations to acquire new information and to increase sources of knowledge about a relevant problem, often in turbulent social systems. Moreover, such an ideal process also involves openness and practical methods that can help turn a promising idea into an ongoing productive change (e.g., Kimberly & de Pouvourville, 1993). Bureaucracies often stifle such transformation, or even the recognition of the need for it.

Moreover, this innovative process is quite uneven in fairly-predictable stages. These differ in many ways: kind and scope of effort, good-fit structures, and associated motivational as well as control issues.

In addition, "innovation" is culturally-loaded. For example, Rogers (1983) illustrates how a lack of adaptiveness to clients' needs caused the failure of a two-year water-boiling campaign conducted in a Peruvian village to reduce the number of illnesses and diseases among the population. From the viewpoint of the public health agency, the task was simple. However, the results were very poor due to misinterpretation of crucial local cultural aspects. Specifically, as strange as it may seem, the villagers' local traditions linked hot foods with illness. According to the village norms, water-boiling was used only to help the sick and less capable.

Finally, innovation requires both scientific *ahasi* as well as less-programmable diffusion resulting from a sufficient "take-off" velocity (e.g., Rogers et al., 1991). The AIDS epidemic provides one tragic example of how major scientific advances depended upon the mobilization of supportive attitudes and behaviors among selected publics, and long after less well-situated publics had been ravaged by the disease.

### TWO CONCEPTS OF INNOVATION

To simplify in the service of essential meaning, the historic treatments of innovation do not successfully cope with the full range of challenges like those just illustrated. Here, two major concepts of innovation are usefully distinguished, and each takes adherents—both aware and unreflective adherents—to very different places. Worse still, the dominant variant—Innovation 1, conventionally—takes analysis to places that are increasingly at odds with environmental as well as performance pressures acting on all managements—pretty much in all sectors, and worldwide.

1. **Innovation 1.** Early concepts were restrained and restraining, but only at great cost. "Innovation" was loosely viewed: for example, as in Webster as "a new idea, method, or device," and its conceptual circumscription was only broadly distinguished from such terms as "creativity," even by Rogers (1983, p. 11). The latter term (as by Webster) was viewed as "having the quality of something created rather than initiated." Moreover, the common implication was that Innovation 1 was substantially a good thing-in-itself. "More innovation," consequently, was a goal to be pursued.

This formal looseness was tethered for most observers by a more or less implicit but nonetheless firm and unhelpful nexus of constraints, however, with the point often being applied differently in business vs. public sectors. Managerially-useful innovation was *the* goal in business, and this implied that anything seen as contributing to better command-and-control or compliance was "good," even though that excluded many useful interventions. Indeed, in extreme forms, innovation was more or less restricted structurally to large "staff" units—often centralized, following prescriptions associated with the bureaucratic model (e.g.,

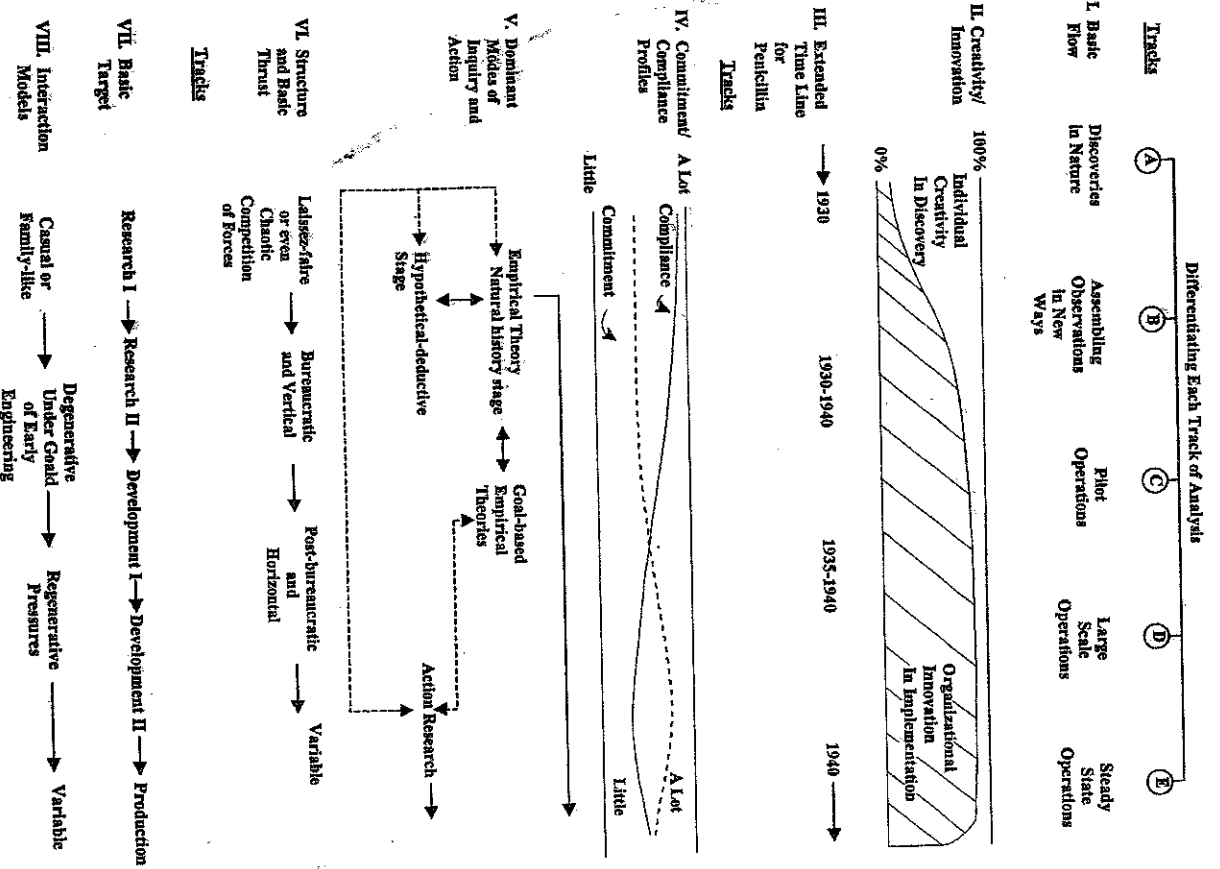


Exhibit 1. Perspectives on Innovation 2. Selective Tracks of the Full Process

Golembiewski, 1967). In this view, "thinking" is sharply separated from "doing," (e.g., Henning, 1997). Many observers of the public sector, in addition, had all-but lost hope where the add-on view could easily be seen as the last straw. That is, almost by definition, observers like Light (1997) propose, government agencies inherently have to be oriented toward regularity and predictability, and innovation there has to take what little is left over. Here, a "should" is employed to legitimate an unattractive "is"—the innovation deficit commonly proposed to be characteristic of public agencies (e.g., NPR, 1993).

2. **Innovation 2.** Where you stand typically determines what you see and, hence, how you construct your worlds. Thus, Innovation 2 in Exhibit 1 attempts to enlarge the concept of innovation so as to see more and further—to provide a more elaborated view of required managerial insights and applications which, broadly, deal with such challenges as those illustrated above.

## EIGHT TRACKS ADDING CONTEXT TO INNOVATION 2

In effect, Exhibit 1 contrasts Innovation 2 with 1 along eight "tracks." Brief descriptions must suffice here to sketch the synthesis that Exhibit 1 proposes as a more revealing sketch of "innovation." The basic tracks of analysis, as each distinguished by several suggested stages of the processes encompassed by full-scale innovation.

1. **Basic Flow.** Track 1 in Exhibit 1 basically views Innovation 1 → 2 as encompassing both solitary as well as organizational or collective aspects. Hence, Innovation 2 has a transpersonal bias, with the basic implication that ways-and-means of increasing innovation have to include serious attention to supportive structures as well as to associated policies, procedures, and patterns of individual and group interaction. Details can be found at many places in the discussion below, such as that associated with Figures 1 and 2. Essentially, Innovation 1 places attention on discovery, which often result from individual efforts, and often by persons alienated from the go-go of the organization as well as sorely beset for that alienation. One recalls the U.S. Navy's Lt. Sims, a young "line" officer who showed the way to improvements of hundreds or even thousands of percent in gunnery effectiveness by learning from British experience. He was met by formidable stonewalling from the Navy "staff" (Mortison, 1950), and this illustrates the startling limits of innovation as discovery only, even when huge system benefits were there for the taking and at trivial cost.

2. **Creativity/Innovation Blends.** In more detail, Track 2 consistently sketches a significant distinction concerning a crucial shift—from individual activities to organizational innovations required in Innovation 2. For example, consider the medical treatment of high levels of stomach acid. Thus, numerous discoveries—most by individuals or very small teams—revealed, among numerous other particulars, that:

- hydrochloric acid is significant in converting food to energy
- this acid is formed by combinations of hydrogen (H<sub>2</sub>) and chlorine (Cl);
- for complex reasons, with uncomfortable and even fatal consequences, HCl levels can become "too high;"
- critical in this combination are the relatively-specific H<sub>2</sub> sites ("receptors") where Cl atoms bond to form HCl molecules.

Typically, at Stage A in Exhibit 1 the consequences of "too much" HCl were treated, as by antacids; but after centuries of such accumulating discoveries/observations, several research groups upped the ante. In Stage B, the issue became: How to "cap" the H<sub>2</sub> receptors so as to inhibit HCl formation in the first place?

This sketches the essentials of the "H<sub>2</sub> receptor antagonist model," the conceptual foundation for a family of very powerful and socially useful drugs like Tagamet, that are broadly preventative rather than remedially treat the downstream consequences of the bonding of hydrogen and chlorine.

Distinguishing Innovation 2 along tracks I and II also can be useful in highlighting pervasive organizational features. Thus, along Track I, the movement C → D can be hugely consequential; and "real innovation" should be aware of such interactions. For the H<sub>2</sub> receptor antagonist approach to preventing gastrointestinal disturbances, at Stage C, the laboratory and pilot operations could produce with relative ease small quantities of the active materials, almost literally, the person with a little background in chemistry and sufficient will could make Tagamet in a bathtub. However, the large volumes required for Stage D depend upon major advances in processing, a new technology for synthesis, as well as reliance on conditions featuring high pressure and a highly-corrosive catalyst. These challenged "full innovation" to include persons with a broad range of specialties, including perhaps especially those who could amass capital, chemical engineers, and systems designers. To simplify, Innovation 2 required the linking of a long chain of specialties in such a way that what needed doing later was not complicated by what was done earlier.

Note that at E on Track II in Exhibit 1, some major changes may occur, and perhaps especially so when the innovation becomes a "cash cow." At this point, the product is "milked," as by depriving it of research and development dollars. Such "regressions" may be perceived as hugely consequential components of Innovation 2.

Innovation 2 thus helps remind us of such theoretical and practical contingencies—backward as well as forward, as it were. Without anticipating such developments, diffusion of many innovations would have been impossible, and "full innovation" would have been less-targeted.

3. **Time Line.** Relatedly, extensive time frames are encompassed by Innovation 2, which is not surprising, given the discussion above. Exhibit 1 uses the development of penicillin as an example, with the relevant details being underappreciated, even if well-known (e.g., Hobby, 1985).

4. **Shift Toward Commitment from Compliance, and Perhaps Back Again.** The first three tracks in Exhibit 2, relatedly, imply that Innovation 2 can profit from shifts in emphases on commitment vs. coercion, and arguably requires them. Innovation 1 leans more toward coercion or narrow control. Oppositely, Innovation I often defines innovation in terms of its contribution to direct management control or coercion. Many innovations have been stalled, even aborted, by not anticipating such shifts.

As in Track II, again note, a regression in the commitment/compliance profiles may occur after "steady-state operations" are achieved. Perhaps even more so, stabilized (or especially falling) demand may reinforce such reactions. In football terms, Innovation II often will encompass a hand-off from one mode to another, and then a reverse back to the original mode!

5. **Dominant Modes of Inquiry/Action.** Innovation 2 also helps highlight the kinds of inquiry/action likely to be dominant at different stages during the full flow of Innovation 2. This is a useful reminder, since all management literatures have been seriously troubled by a failure to be clear as to what differing modes of inquiry/action needed attention, as well as why and how (e.g., Golembiewski, 1999). The three modes used in Exhibit 1 can be briefly described in these terms:

- *Empirical theory*, which typically will be amalgamated into increasingly-comprehensive "patches" of middle-range theories concerned with relationships between conceptual domains A, B, C... under conditions 1, 2...N. At advanced stages, networks of theoretical relations are sufficiently comprehensive to support hypothetic-deductive inquiries to test the reach-and-grasp of these "patches." This testing can lead to a conflation of two or more "patches" or, more likely will result in a rejection of one or more of them.
- *Goal-based, empirical theories*, which seek to specify the causal relationships associated with separate sets of values or goal-bases; and
- *Action theories*, which seek to define conditions considered desired or desirable at specific work settings, and also to realize those conditions for local populations, given participation and consensus-building, when empirical theories or goal-based theories are incompletely developed (e.g., Golembiewski & Roundtree, 1999).

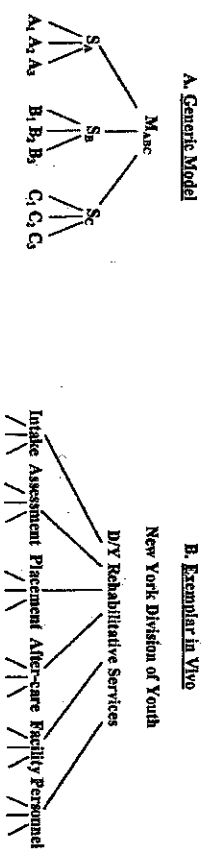
How can the Tagamet story be fitted to these three modes of inquiry/action? To be suggestive only, the empirical theory related to hydrochloric acid and gastric disturbance was clear enough; but the conceptual breakthrough came in response to goal-based, empirical inquiry to prevent the formation of acid rather than to deal with its consequence. This highlighted the strategic role of hydrogen "receptor" sites at which chlorine atoms bounced to generate the acid. And once these sites and their functions were discovered, the challenge became one of how to immobilize the receptors. This required both fundamental advances in empirical

science, as well as what might be called "action theory" by early users of possible inhibitors who often found serious and unexpected side effects of different ways to achieve the attempted inhibition. Here, again, fundamental empirical research had to grapple with providing theoretical explanations of what "worked" poorly and why. At some stage, this accumulating knowledge was sufficient to test the desired goal-based empirical theory: how to inhibit acid formation (the goal-base) via a knowledge of the empirical world. Here, Innovation 2 involved changes in goal-bases (from remediation to prevention) as well as in empirical theory.

In sum, Innovation 1 is tethered very far short of completeness by its gentle rooting in only a weak form of empirical theory. Much historical mischief has been caused by neglect of specific attention to goal-based, empirical inquiry. Directly, every organization theory is of the latter variety and, consequently, the number of organization theories is limited in principle only by our wit-and-will in developing alternate goal-bases reflecting different normative ends, as well as by an ability to specify the conditions or relationships in nature that approach those ends. In contrast, traditional management thought emphasized *an* organization theory, and this feigned universality had the general effect of poorly serving Innovation 2. Later discussion will highlight more specific effects.

In addition, the fixation on *an* organization theory also demotivates action theories. These have major attractions because, in general, they often can be extended both into contributions to goal-based, empirical theories, as well as into fundamental empirical theory, or fragments thereof. (e.g. Golembiewski, Hilles, & Kagno, 1974).

6. **Structural Linkages and Innovation 1 Concepts.** Track VI in Exhibit 1 helps us to become a bit more specific about how structural theory and experience were limited by the common linkage of Innovation 1 with the bureaucratic



- Like or similar things constitute the basic units for departmentation.
- The emphasis in authority/responsibility is vertical.
- Only a few subordinates should report to any superior, which narrows span of control dictates "tall" structures with many levels.

- "...no one person [or immediate work unit] was responsible for a particular youth [and] service flow was often inconsistent and haphazard"
  - "Commandments [were] often strained and hostile."
  - "Relationships between functions tended to be feeble; fragmentation of the flow of client services."
- Quotes from Carey, et al., 1977, pp. 327-329.

Figure 1. Bureaucratic Model: Generic Form and an In Vivo Exemplar

model. Figure 1 helps make the point, even as it relies on extensive analysis in other sources (Golembiewski, 1987, 1995a,b). The illustrative focus is elemental, but broadly representative. A, B, and C are the three activities or functions to be structured, with two conditions: that the need for each is approximately equal; and that A+B+C yield some product or service.

Three sections provide structural perspective here. One deals with bureaucratic variants, their association with Innovation 1, and their multiple shortfalls for Innovation 2. Two other sections deal with post-bureaucratic structural variants, and especially their good fit to Innovation 2.

#### Bureaucratic Features

Reference to Exhibit 1 can provide some sense of the approximate timing of major structural adaptations, typically beginning with bureaucratic variants. Thus, the earliest stages of innovation may be characterized by a kind of isolation, or even a fierce competition among researchers. As the innovation begins to mature, pressures toward "normalization" often will be felt, and this can result in overdoing it structurally. From the bird's-eye view, the bureaucratic model is relied on to focus on resources necessary to achieve the (often solitary) discoverer's vision. In addition to this useful refocusing, bureaucratic variants also usually result in a fragmented structure, as Figures 1 and 2 illustrate. At the top, both generic and *in vivo* versions of the bureaucratic model suggest the towering and separate "smoke stacks" so commonly excoriated nowadays. These vertical pathways induce long, upward-and then downward-oriented chains of communication, and foster the induction of self-interests that can complicate Innovation 2, if they do not stifle it. Available evidence comes early (e.g., Golembiewski, 1967) and it is also accumulating at a very great rate in today's literature (e.g., Ashkenas et al., 1995). See also the samples of typical bureaucratic effects in Figure 1.

Toward the bottom of an organization—i.e., from the worm's-eye view of the bird—similar dysfunctions force themselves on the observer. The focus on like or similar activities in organizing make difficult even such mundane contributors to workplace innovation such as job rotation or cross-training, whose value is urged by most observers including (for example) the National Performance Review (e.g., Golembiewski, 1995a, esp. pp. 248-269).

No entirely satisfactory ways exist to demonstrate how and why the bureaucratic structure inadequately serves Innovation 2, but one exercise illustrates what is possible. The focus here is narrow, if hopefully revealing: on the post-bureaucratic structure that can be called the divisional model at higher levels of organization, and the flow-of-work or autonomous team model at lower levels of organization. Figure 2 provides some useful detail about this single but increasingly diffused post-bureaucratic structural alternative. As in the case of Figure 1, substantial evidentiary support exists in convenient sources (Golembiewski, 1987, 1995a,b).

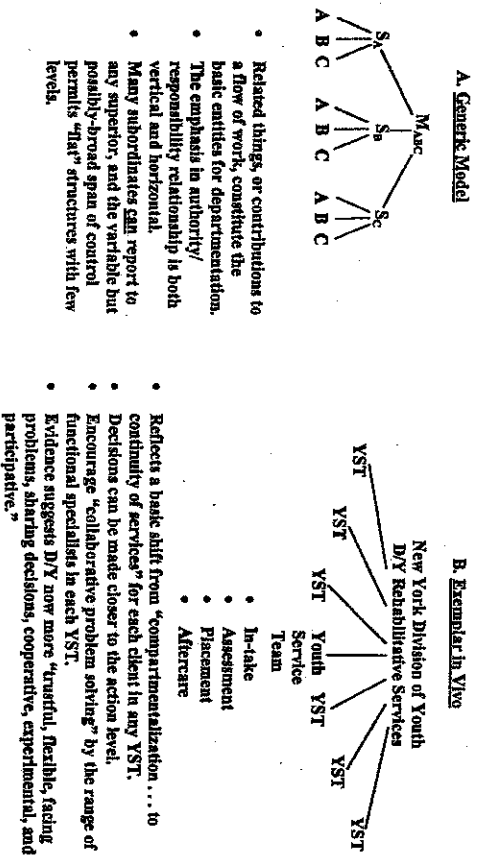


Figure 2. Post-Bureaucratic Divisional Model: Generic Form and an In Vivo Exemplar

#### Post-Bureaucratic Exemplars

At higher levels of management, the divisional model can be organized around product or territory, among other possibilities, but the basic intent is the same. That is, Figure 2 structures bring together under one authority—here, M<sub>ABC</sub> who might be an individual or a group—all or many of the activities necessary to make reasonable decisions about a total flow of work, here A+B+C. Not all activities need be included at the S-level: for example, some activities may be reserved for MABC for reasons such as their usefulness for managerial control, the insufficient maturation of S-level managers, or activities like institutional lobbying that are conveniently centralized. Far more rather than less, however, the full range of activities is the basis for departmentation.

Whatever such details, three points usefully circumscribe major features of Figure 2 structural models. First, such models commonly assign clear responsibility for performance at the S-level, which serves to encourage all required activities to develop loyalties in a specific integrative S-unit. Among many other features, this can reduce jurisdictional conflicts and encourages problem-solving to improve performance within each S-unit.

Second, the model permits, even requires, substantial decentralization to S-units while also providing convenient comparisons of their relative performance. This suggests the loose-tight style of senior management that has attracted so much attention, even in popular sources (e.g., Peters & Waterman, 1982). In

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the case of the Division of Youth, for example, each Youth Service Team had such features, among many others:

- each YST is responsible for a specific cohort of clients;
- within policy limits, each YST is allowed—better still, tasked with a responsibility—to tailor the full range of activities to a specific cohort of clients and the workforce;
- each YST can have its performance evaluated in terms of a meaningful bottom-line: for example, the rate of redivision of each YST's clients; and
- each YST's personnel consequently has a clear incentive to resolve issues and to perform in ways that would improve performance, as contrasted with blame-avoidance or jurisdictional conflicts.

Third, in various ways Figure 2 structures can build into work continuous incentives for Innovation 2. For example, the full range of activities represented in each S-unit provide the information and motivation to innovate, perhaps whetted by the elemental that other S-units might get there first. Although they do not "fix" all managerial concerns, such structures usually have a clear balance of attractive consequences.

At low levels of organization, in addition, Figure 2 structures also have predominantly-attractive features. For openers, see the sampler of effects in Figure 2B. For example, moreover, practices like cross-training and job rotation—often useful stimulants of employer satisfaction and motivation—are facilitated by Figure 2 structures. As contrasted with a Figure 1 structure, post-bureaucratic variants also have such advantages, among others detailed elsewhere (Golembiewski, 1995a):

- each S-unit can have its own rotation or cross-training effort, which reduces the costs of start-up to such workaday interventions;
- employees can participate in such a program without changing their S-locus; each S-unit head will have responsibility for such efforts, and will also reap any rewards/punishments; in contrast, bureaucratic structures can encourage heads of S-units to nominate their "losers" for such programs, on the ground that they might not get their "winners" back after training; and
- each S-unit can directly put any cross-training to work, so as to meet work fluctuations or to provide other flexibilities; this is not the case under the bureaucratic model, where activities A, B, and C are in different units.

Details could be added in large number, but to the same general point. In a revealing sense, Figure 2 structures are intended to reduce the "barriers" or "blockages" to cooperative activity (e.g., Ashkenas et al., 1995; Henning, 1997). Here, we can only illustrate aspects of this pervasive thrust toward "boundaryless organizations" whose values have been widely discussed (e.g., Peters & Waterman, 1982).

poses of variously facilitating Innovation 2. Broadly, also, Figure 1 structures deliberately restrict the information possessed by any S-unit, which has patent implications for continuous and long-term processes like those envisioned by Innovation 2. In contrast, Figure 2 structures seem better adapted to Innovation 2 than bureaucratic variants, as a few particulars will suggest. For example, post-bureaucratic variants provide for more scope for the "Basic Flow of Innovation" depicted in Exhibit 1. To suggest the point, bureaucratic models typically generate separate "line" and "staff" sub-structures, and these often fragment those who should be collaborative participants in full-fledged innovation (e.g., Hen-

#### A. Behaviors and Attitudes

- cultures and values shift from a protection of narrow self interests focused on skills/functions → to enhanced performance on a total flow of work
- from workers implementing detailed directives → to employees making decisions within a context of missions/policies
- from "one size fits all" → to similar units developing in multiple ways in response to specific histories, mixes of personnel, and so on
- from communication that is variably intense and even conflictual → to communication that is continuous and focused on problem-solving
- from complicated and often-political reconciliations between basic units of organization → to straightforward reconciliations within a basic unit
- from competition to gain a great share of total resources → to competition to reduce the costs of performance, as estimated by direct comparisons, market share, or return on investment

#### B. Policies and Procedures

- from vertical bias of narrow jobs → to an integrative bias, as via job enrichment, job rotation, cross-training, and so on
- from multiple points of access/contact for both internal and external customers → to a single point of access/contact, to "one-stop shopping"
- from loyalty and lifetime employment by an employer → to learning how to learn and lifetime employability, probably by many employers
- from comfort and compliance as criteria for reward → to a growing emphasis on achievement of holistic results

ning, 1997). Relatedly, then, Figure 2 structures also better serve Innovation 2's need for commitment vs. compliance. Similarly, the integrative S-units provide useful laboratories for what Exhibit 1 calls "action research," while Figure 1 structures are more likely to encourage centralization of innovation activities, which implies direct limits on various aspects of Innovation 2. Put another way, Figure 2 structures will reinforce Innovation 2 in the development and comparison of local "good practices," while Figure 1 structure properties discourage innovation and induce major problems in the measurement of performance (e.g., Golembiewski, 1995b, pp. 197-218).

Track VI adds usefully to the specificity about Innovation 2. Either as a complement to structure or as stand-alones, organizations may develop various devices to create "horizontal" or integrative forces at work, often in response to the strong fragmenting tendencies of bureaucratic structures. See Exhibit 2, which lists some typical horizontal behaviors/attitudes as well as policies/procedures.

At times, of course, it will be neither possible nor political to fundamentally change the bureaucratic structure at specific worksites, but it also will be convenient or even necessary to impose what may be called "normative templates" that provide horizontal crosswalks over the vertical fragmentation encouraged by the bureaucratic model. Such cases are prominent in the literature, in fact (e.g., Golembiewski & Kiepper, 1988). Here, consider only one such template in Exhibit 2, which details ways and means to generate horizontal forces in organizations to counteract the fragmentation usually associated with the bureaucratic model. Exhibit 2 provides one convenient approach to summarizing the point, and extends this argument a reasonable next step by urging that the template in Exhibit 2 will serve Innovation 2.

The horizontal or integrative thrust in Exhibit 2 is transparent in most or all of the components of Exhibit 2's template, so this discussion resists any gilding of the lily. Note only here that the exhibit illustrates major themes in the growing if hardly complete normative consensus about the how and why of organizing work so as to minimize what was long ago called "vertical fragmentation" (Golembiewski, 1967) or today often gets labeled as "smokestack effects."

The case for the horizontal components in Exhibit 2 contributing to Innovation 2 will here be allowed to remain assertions—hopefully, reasonable assertions. That case has not been established by extensive research, but the rationale for such an interpretation of Innovation 2 seems quite direct.

7. **The Shifting Basic Target in Innovation 2.** Practical affairs have generated many views how the basic targets vary in Innovation 2, but Exhibit 1 utilizes a simple variant for illustrative purposes: two sub-types of Research, and two of Development, which can overlap in manifold but always-significant ways. These four stages typically will precede going into production, which gets no further attention here but clearly constitutes a significant milestone in the full processes of innovation

To illustrate, consider one common point at which overhead demands for narrow control may result in a bureaucratic fragmenting of contributions to the total effort—when late research blends into early development (see Track VII in Exhibit 1). For convenience, the four stages of Track VII may be illustrated by a convenient distribution between the relative magnitude of the weights of target objective in medicinal or chemical contexts:

- Research I: grams or less
- Research II: a kilo or so
- Development I: 1-5 kilos
- Development II: hundreds of kilos, or thousands

Successful innovations will tend to develop various "horizontal linkages," both via structures (see Figures 1 and 2) or via policies and procedures (see Exhibit 2).

8. **Template for Post-Bureaucratic Interaction.** Again, and perhaps especially when basic structural change is not possible, another powerful normative overlay may be useful, or even necessary—regenerative interaction at work. See Track VIII in Exhibit 1, as well as Exhibit 3. The ideal case occurs when regenerative interaction reinforces post-bureaucratic forms (e.g., Golembiewski & Roundtree, 1999), but it often will be useful to approach the regenerative model of interaction even when structural change is not possible or convenient. In such cases, periodic booster shots will be necessary because bureaucratic structures have powerful built-in effects that tend to be contrary to regenerative interaction over time (e.g., Golembiewski & Kieppert, 1988).

The distinctions between regenerative and degenerative interactive have been developed in detail (e.g., Golembiewski, 1993), and it is well-known that high success rates characterize applications of learning designs to move degenerative—regenerative interaction (e.g., Golembiewski, 1998). So summary treatment is possible here.

Basically, for present purposes, degenerative interaction is poorly-suited to Innovation 2, at least if minimizing costs has any priority. Broadly, *openness* relates to "telling it like it is," and *owning* relates to the psychological acceptance of ideas, reactions, or emotions. To illustrate, a Valentine signed "Guess who" might be open about the sender's sentiments, but the sender clearly refuses to own those sentiments. *Risk* is the degree of objective threat in the environment, and *trust* estimates the sense of confidence in colleagues that things will work out. The degenerative profile is Low, Low, Low, and High, respectively. From multiple perspectives, degenerative interaction poorly serves Innovation 2; and this profile inspires little optimism that the challenges inhibiting innovation will be raised, let alone resolved.

Exhibit 2 helps make the present point from a positive point-of-view. Directly, what are the advantages of regenerative interaction? In Exhibit 3, regenerative interaction fits the mental advantage to high, variation to high, trust to high, and risk



**Regenerative Interaction**

- \* High Openness
- \* High Owning
- \* Low Risk
- \* High Trust

- Real issues are likely to be isolated and resolved without creating other and perhaps even less tractable issues;
- That is to say, communication and decision-making processes probably will be more effective;
- Diffusion of decisions will be easier and effective;
- And, consequently, "unfinished business" probably will be reduced, which leaves more energies available for the task;
- Relatedly, participants are less likely to be cautious and dependent;
- Organization folkways reinforcing degenerative features probably will not develop and
- The interaction system can be self-heightening: with real issues likely to surface; and so on . . .

### Exhibit 3. Probable Consequences of Regenerative Interaction

is low; and this profile tends to generate the attractive probable consequences illustrated in Exhibit 3.

To conclude, the senses in which this interaction profile supports Innovation 2 can be sketched briefly. Thus, regenerative interaction raises the probability that real issues will be surfaced, as will valid and reliable data for dealing with them. References to Exhibit 3 will help make the point, at a face-valid level that could be supported in substantial detail (e.g., Golembiewski, 1995a,b). In addition, regenerative interaction well suits the longish time lines associated with Innovation 2, as well as the commitment vs. compliance ratio congenial to that model. Finally on this short illustrative list, regenerative interaction seems an all-but-necessary precondition for extensive and telling attention to action theories.

## REPRISE

Let us restate the flow of the argument. Basically, Innovation 1 provides unsteady guidance. If Innovation 2 is to be acted upon with greater frequency, the argument continues, researchers and practitioners will have to distance themselves from the bureaucratic model.

1. **Implications for Practitioners.** Fortunately, for managers interested in elaborating the fuller senses of Innovation 2, much theory and experience suggest a family of post-bureaucratic structures for organizing work, and both generic as well as *in vivo* illustrations provide useful ways-and-means that have substantial success rates. This constitutes one major aspect of the argument above.

If basic structural change is impossible or inconvenient, the argument concludes, two basic "templates" will provide useful guidance for approaching the sense of Innovation 2—one template deals with horizontally-oriented behaviors

and attitudes as well as policies/procedures that can minimize the vertical fragmentation associated with the bureaucratic model. The second template deals with a supportive system of interaction.

These latter two templates, among numerous other possibilities (e.g., Golembiewski, 1995a), can serve as a kind of shock-absorber of bureaucratic effects. Ideally, however, the horizontal thrust and regenerative interaction should complement basic structural change in any aggressive effort to exploit Innovation 2 as well as to elaborate concepts built upon it, or beyond it.

To be realistic, can we envision a definite movement, and especially in the public sector, toward flow-of-work structures and regenerative interaction? Certainly, some observers do not see it that way. Thus, Light (1997) has a dour view about replacing the bureaucratic policies and practices that have withstood numerous tides of reform in the public sector, and he sees little hope for any real "liberation" from that pattern in the future. And Peters (1996) seems only a bit less pessimistic in his review of four models for public-sector reform.

Our view is more hopeful, and we will here merely state our major reasons, while leaving the heavy work to other sources (e.g., Golembiewski, 1995a,b, 1996). We favor one available technology-cum-values for change that is widely applied in business and government, and with substantial and comparable success rates in both sectors—Organizational Development or OD. Whether or not OD is the model for public-sector change does not concern us here. OD designs are widely applicable, and are already on the record; and too many challenges exist to wait on a comprehensive demonstration of any one model's uniqueness—even if such a thing will be found, which we doubt.

As a major caveat, this argument does not pretend to be specific about the timing of the various transitional and transformations reflected above. We hope that the general view of Innovation 2 will be sufficient to engage managerial wit and will in investing in the theory and experience required to specify the "when" and "how" of the "what" detailed above.

**2. Implications for Research.** Any major movement toward Innovation 2 will require a continuation and acceleration of a range of research activities, some of which have progressed only in unsplendid isolation. For example, the work on burnout derived from a planned change intervention, but work at the individual level has not had a high priority in (let us say) Organization Development. There, the orthodoxy often is: "The O in OD stands for organization." So much mind-expansion will be required.

The research with alternative structural forms is more advanced but, with the notable exception of the recent National Survey of Organizations that arena may be said to be stuck, and with substantial justice. Perhaps the possibilities for multiple stimulation implicit in the present essay will serve to motivate the further effort required to give major substance to Innovation 2.

As it is, however, the existing literature does not require pessimism. For example, the views above about structure and its consequences rest on a long-standing

and robust literature, whose future seems to have useful guides (e.g., Miller & Friesen, 1983) for future development of the kind required for a more specific organizational approach to Innovation 2 than was possible here.

## AUTHOR NOTE

This essay has a close progenitor in "Organizational Innovation and Public Management," which is scheduled for publication in Rosalyn Carter and Ali Farazmand, editors, *Sound Governance: Policy Innovation and Public Management*. New York: Praeger, 2000.

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## PART V

### INTERNATIONAL MANAGEMENT

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