The Art of Reflection

Urban Planning as Practical Activity

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Whether they are led by professional planner, or a powerful interest group, planning actions are seldom performed reflectively. In either case, planning projects are usually not encountered creatively, but within the fixed premises of a particular subcultural meaning system. The quality of such planning is merely a matter of technique, and in such cases one can hardly speak of the *art* of planning (1). Although planning projects have increasingly become recognized as meeting places for several subcultures (where the planner is seen as a representative of but one subculture among many), these situations are not treated as sources of new experiences, but as threats to the existence of one's own meaning system. When the environment was assumed to be made up of objects for empirical observation, it was self-evident that planning processes should be organized according to this image of the "factual" environment. That assumption is now considered as just one socially constructed meaning system amongst other meaning systems. Planning situations have often provided the vehicle for power struggles between conflicting meaning systems. The rule of "the objectively good environment" in environmental decision-making has thus been replaced by the rule of political and economical dominance. Planning practice, whether the technique of the dominant meaning system (2), or the political struggle between competing techniques (3), always exists within the context of the most powerful meaning system. In politics, one meaning system may be replaced by another, or a compromise

My purpose is to outline a hypothesis of town planning activity as reflective practice, where *art* has a special place. However, the concept of 'art' is not offered here in the sense of "designing of cities", as belonging to the realm of visual aesthetics and art-criticism. Thus art does not here refer to objects for aesthetical appreciation, but rather to a special kind of human *activity* that is *essential* to the socio-political decision process of town planning.

may be sought between them (which may require the parties to withdraw conflicting demands). But the rationale of a system's goals in view of the situation at hand is in neither case put to the test; only its relative political and/ or economic power. Then an argument may win, not because it is more reasonable, but because there is more power to back it.

The Problem of the Problem

In the modern division of labor we may distinguish various professional communities, each with its own structures for cooperation. Each forms its own activity-system which produces and reproduces its own conceptual structure of reality. Hence every subculture has its own contexts for setting goals. Cooperation between these subcultures – as in transcultural planning situations – is therefore difficult to achieve. Before the planning problem may be tackled, the definition of the problem itself necessarily must be problematized (4). A description of this point is offered by Donald Schön:

> When ends are conflicting and confused, there is as yet no "problem" to solve [...]. It is rather through the non-technical process of framing the problematic situation that we may organize both the ends to be achieved and the possible means of achieving them.
>
> Similarly, when there are conflicting paradigms of professional practice, such as we find in the pluralism of psychiatry, social work, or town planning, there is no clearly established context for the use of technique. There is contention over multiple ways of framing the practice role, each of which entrains a distinctive approach to problem setting and solving (5).

The problem of multiple problem definitions characterizes the communicative approach to knowledge production. According to Patsy Healey:

> [It] maintains that knowledge is not pre-formulated but is specifically created anew in our communication through exchanging perceptions and understanding and through drawing on the stock of life experience and previously consolidated cultural and moral knowledge available to participants. We cannot, therefore, predefine a set of tasks which planning must address, since these must be specifically discovered, learnt about and understood through inter-communicative processes. [...] This shifts attention from the substantive purposes of environmental planning to the practices by which purposes are established, actions identified and followed through (6).

Here we may refer to John Forester's notion of the design situation as a process of *making sense together* in practical conversation (7). The design situation is simultaneously the *socio-political environment* of mutual planning communication between the interlocutors, and the *socio-physical environment* that is the object of planning communication. While the object itself – the need state of the socio-physical environment and the desires for its future state – is being framed, also the socio-political environment of planning cooperation is being framed. With our planning activity we not only tackle problems in the physical environment, but also seek the limits and possibilities for transcultural communication. All the time the planning communication aims at finding a practical design solution: developer's designs are viewed, arguments for and against heard, technical and economical possibilities examined, and limitations of local zoning and building codes determined. But as this is being done, the roles and concepts of planning cooperation are simultaneously being established. While designs are presented to a larger public and design proposals further discussed, the language of designing is "translated" to everyday language. Theoretical frameworks are constructed to support loose arguments. Depending on what is said and how it is said, the architect or planner may come to adopt a new role, and thus be seen as "thoughtful", "pushy", "aggressive", "astute", "muddle-headed" or "professional", and so on (8). The architect presents "facts" – but besides these he also presents *himself* as more or less potential partner to cooperate with in planning.

What are the aesthetic, moral, or cultural aspects that lie behind an argument? What causes someone to oppose that argument? Why is someone saying "no" (9)? What are the real interests that underlie various positions and opinions in a dispute? (10)? Is a person speaking out his own preferences or just mediating the voices of his superiors in the hierarchy of local administration? What is the difference between official political position and real influence? Is a developer speaking for his project by appealing to its use value for the residents, while his own motives con-

centrate in the increase of its economic exchange value? What is the local policy for interpreting zoning laws?

> When form-giving is understood more as an activity of making sense together, it can be situated in a world where social meaning is a perpetual practical accomplishment. Designing takes place in institutional settings where rationality is precarious at best, conflict abounds, and relations of power shape what is feasible, desirable, and at times even imaginable. By recognizing design practices as conversational processes of making sense together, designers can become alert to the social dimensions of design processes, including organizational, institutional, and political-economic influences that they will face – necessarily, if also unhappily at times – in everyday practice (11).

Reflective Communication

If we are to comprehend the actions of a professional (such as a business manager, an engineer, a planner, an architect, a professional politician, or a researcher) we must understand something of the context of his profession. Professions are activity systems, or epistemic communities, and have their own built-in goals. A professional, as he practices his profession, confirms its structure of values, conceptual tools, and social relationships. "When planners speak the language of a particular group, they do so not just to be clear, but to shape a course of action" (12). As they communicate particular messages in order to solve a design problem they simultaneously reproduce the frame of the problem.

With the concept 'practice' we refer to trained performance in a range of professional situations which bear a family resemblance. The professional practitioner encounters these similar "cases", or "projects" repeatedly, and develops a repertoire of expectations, images, and techniques for them. He learns what to look for and how to respond to what he finds in his practice environment. But as professions divide into subspecialties, and professional activity becomes more repetitive and routinized, the practitioner becomes more rigid, developing a selective disregard for phenomena that do not fit into his categories of thought and action. He "overlearns" his practice and thus misses important opportunities to reflect on his actions. He is drawn into patterns of error for which he is not able to derive general lessons to correct those actions. (13.)

Urban planning, as a socio-political field of action, has increasingly become a battle ground between professions on which competing professions seek dominance for their own planning methods over the others'. Residents, for their part, have recruited their own counter-professionals to gain some foothold upon this battle ground.

There can be no evolution from professional-dominated planning policies to transcultural planning without the actors' willingness and ability to practice *self-criticism* (14). Such self-criticism requires cooperation, but a different kind of cooperation than that which takes place within epistemic communities: it is instead cooperation *between* communities of cooperation. "Within epistemic communities, we must believe in order to understand, between epistemic communities we must understand in order to believe" (15).

Cooperation between epistemic communities has a metacommunicative character. It is commentary of what is communicated within epistemic communities. I shall call it *reflective communication.* Cooperation within an epistemic community is here named *reactive communication* (16). Reflective communication is the process of constructing and reconstructing a higher-order consciousness: consciousness of the contexts of consciousness. Here, to be more clear, it may be necessary to make a distinction between two types of consciousness, as David Bohm and F. David Peat do (17). They present a new concept of '*awareness*' which is normally understood as synonymous with 'consciousness' but which in their definition has different connotations. While 'consciousness' usually refers to 'what is known', 'awareness' has more to do with being 'wary', 'sensitive', and 'attentive'. Bohm & Peat further distinguish between 'aware consciousness' and 'unaware consciousness', the former being sensitive and attentive understanding, the latter insensitive and unattentive understanding. While unaware consciousness focuses on the object of knowing, taking that object as granted, aware consciousness focuses on why and how something is known. If one in unattentively conscious reactive communication asks "What is there to know", in attentively conscious reflective communication one asks instead: "What constitutes my knowing – what is the context of my knowledge?" My self-criticism is my being

critical to what I am *in* my knowing. Since all knowledge is produced socially, my self-criticism is also my being critical to what *we* (epistemic community) are in our producing and reproducing of knowledge. Self-criticism, then, is one's critical observation of his own tacit understandings.

Reflective communication naturally demands an atmosphere of mutual tolerance, trust, and compassion (18). Such an atmosphere allows participants to practice reflective communication, comprising two important aspects: *speaking out one's dilemmas* and *critical listening*.

Schön stresses (19) the importance of public testing in bringing into surface those dilemmas which rest as hidden by habitual assumptions of professional practice. When a professional practitioner confronts a surprising phenomenon and is unable to handle it with his profession's ready-made conceptual tools, he may either try to hide his bewilderment or reveal it to his social environment. By hiding his uncertainty he obscures the deep guiding premises of his practice both from himself and from his environment. This obscurity shields the professional, giving his methodology (and his status) a degree of temporary stability. By speaking out his confusion, on the other hand, he opens himself to criticism and alternative viewpoints on the issue. In so doing, he simultaneously builds an awareness of the unconsciously learned context for his actions and allows others to develop such a contextual awareness as well. By publicly exposing his methodological framework he thus defines a larger conceptual framework around it in reflective communication.

It should be stressed that this argument does not intend to oppose the acknowledgement of expert knowledge. But it does oppose professionals' claims to have a mandate for social control, autonomy in practice, and licence to hide the sources of their knowledge. The point is that experts possess valuable, if limited, knowledge which is inherently describable, and which can be understood at least to some extent by others: "[...] in this sense, demystification is not showing up of the falsity of the practitioner's claims to knowledge but a bid to undertake the often arduous task of opening it up to inquiry" (20).

An important part of demystification is *critical listening* (21). Forester distinguishes '*listening*' from '*hearing*':

> Listening involves subjects – speakers and listeners together – rather than objects. In contrast, hearing has an object, a message sent to be received. Only hearing, we subordinate the uniqueness of the speaker to the literal meaning of his or her words. Listening, we understand the meaning of what is said in the context of the speaker's life. [...] Failing to listen, we fail to learn, and we also damage our working relationships with others. [...] Our failure to listen neglects far more than information; it denies a common membership in a common world of action – the city, the organization, or more private relationships (22).

We must have genuine will to perceive one another as whole, unique individuals, rather than abstracted clients, voters, consumers, officers, experts, or laymen. In the context of reactive communication hearing will suffice; reflective communication requires listening.

Interlocutors are driven to reflective communication by *double bind situations* at the level of reactive communication. A double bind situation occurs, when an individual is faced with contradictory messages, and is unable to comment on these contradictions (23). Reflective communication means constructing a mutual awareness of the double bind – thus reaching a metacommunicative level from which to comment on these contradictions.

Planning as Play

The ability to construct an awareness of subcultural contexts is a prerequisite for self-criticism and transcultural understanding, but that ability alone does not solve the dilemmas and contradictions inherent in planning. Awareness of the life situation or the context of practice behind the utterance "no" will not automatically make it a "yes". The incompatible contexts will have to be brought into a *dialogue* with each other.

Bohm and Peat (24) see dialogue as a free flow of meanings between communicating parties. They emphasize the creative nature of dialogue. They see it as a process of revealing and then melting together the rigid constructions of implicit cultural knowledge.

Dialogue introduces an element of *play* into communication. A fundamental characteristic of creative play is that one does not necessarily know in advance what one is looking for (25). The essence of play is that it refers only to itself. It is seeking for the sake of seeking. As soon as play finds an object outside itself it turns into *work*.

Likewise, when solving planning problems without a general knowledge of the nature of the problem itself, planning functions as play. Planning as play does not search for solutions; its goal instead is to find a stable foundation – a frame of reference outside itself – from which it transforms itself from play into work.

Planning as play requires a particularly trusting and supportive atmosphere (26). It requires a general tolerance for brainstorming – for fantasizing and expressing incomplete, even foolish and childish thoughts. The aim is to "dive" uninhibitedly into play together, and to spare the critical comments to later analysis. New ideas and alternatives are generated at random by individuals through encouragement in the hope that some will prove useful upon testing and analysis (27).

In play new metaphoric relations between contexts are created. Conceptual frameworks sort of melt down and become "bisociated" as concepts from different categories are combined (28). The special nature of a metaphor is that it forms a complex relationship between concepts which are seen simultaneously unified and distinct (29). The metaphor forms a new concept from the push/pull relationship between the two. For example, let us examine the statement: "The economy of Russia is collapsing". Here the Russian economy is metaphorically represented as a building or other structure susceptible to collapse – though the Russian economy is obviously not literally controlled by the physical laws that govern buildings. The value of the metaphor is that the condition of Russia's economy can be easily understood, when we *see it as* a collapsing building.

According to Schön new perceptions, explanations and inventions may be generated, when one finds a way to model the unfamiliar phenomena with familiar phenomena taken from other contexts. "Depending on the initial conceptual proximity or distance of the two things perceived as similar, the familiar may serve as exemplar or as generative metaphor for the unfamiliar. [...] In this way *seeing-as* may play a critical role in invention and design" (30).

Generative metaphors work like springboards (31) which allow us to leap from incapacitating dilemmas to whole new spheres of unanticipated possibilities for action. A generative metaphor is a metaphor which *generates* new perceptions, explanations, and inventions (32). However, a generative metaphor is not itself a solution (33). Its product is *new solution-seeking activity*: a way out of the action-blocking dilemma. The metaphor does not solve itself but enables cooperative solv*ing*. The resulting new activity has creative potential of its own.

Dialogue is reflective communication in its fullest sense. It begins with constructing through transcultural communication a common awareness of the contexts of different meaning systems. The first phase involves the creation of a mutual awareness of the deep systemic structures concealed behind incompatible actions and motives. The essence of the contradictions in transcultural urban planning is not at the level of actions, but rather at the level of entire systems of activities; techniques, professions, and life situations. The second phase of reflective communication is a dialogue between these systems. It introduces an element of creative play, where different kinds of metaphoric combinations between contexts are generated and publicly tested. Planning as play often produces useless nonsense – "ideas" that upon critical consideration are immediately discarded. When we get stuck, or are seriously dissatisfied with our performance, "our question then is not so much whether to reflect as what kind of reflection is most likely to help us get unstuck" (34). Sometimes play produces generative metaphors which will transform play into work.

Ideally, the process of play ends when a new common interest is created. Play thus transforms the planning situation, reframing the planning problem. The initial framing of the problem, based on conflict between more private interests, is no longer valid in this qualitatively new situation. How we perceive the task determines, to a great extent, how we choose to act upon it. If we can modify our individual ways of seeing, to form a new common view, we may also create a new common interest. Starting with an essentially socio-political problem, we arrive at a more instrumental problem. From here the technical work of planning may proceed. But only gradually. Play generates more play upon which work builds.

According to José L. Ramírez, we may distinguish two phases of design activity: *social design* and *technical design*. The instruments of technical design are physical artifacts (such as

buildings, trees, streets, etc.), whereas the instrument of social design is *language* (35). The essence of language lies in its capacity to create meaning: "language is the designer of designing" (36). Social design establishes the goals for technical design. The dialogue of reflective communication is the transition phase from social design to technical design; it is design, and at the same time the designing of design. Through dialogue we design new concepts with which we see new objects of design.

The new concept helps to generate a new generally accepted definition of the problem. The emphasis then shifts from problem framing to actual problem solving and eventually, to implementation of the plan. The phase of self-criticism and creative dialogue addresses the definition and justification of the comprehensive goal; the activity that follows more or less accepts that goal as thus defined, though allowing it to develop and divide into separate tasks, each with its own subgoals, as work progresses. Work therefore becomes progressively less intense and more decentralized. In terms of the immediate demands of thinking about and acting on the project, less and less reflective communication is required, and the demands for reactive communication increase.

We may consider the problematic planning project to be a cycle from reactive communication to reflective communication and again to reactive communication. The cycle begins with our initial view of the planning task from a given conceptual viewpoint (reactive communication). But then we find ourselves being puzzled by the task; with the given conceptual tools we are not able to handle it. Next we look critically at our conceptual framework itself. As we reflect upon it, we begin to see it metaphorically through another conceptual framework. Planning work then proceeds on the basis of this new framework. Now reactive communication begins gradually to creep in again, thus completing our cycle.

The Practical Activity of Urban Planning

I see cultural diversity as a resource for the expansion of human possibilities: diversity begets diversity (37). It is essential that we maintain that diversity. An open dialogical planning process, as it synthesizes various meaning systems, not only produces new knowledge for better planning solutions, but also to some degree generates a *planning community*. Planning activity not only produces instrumental results but also reproduces social and political relations (38). The mutual understanding achieved in one design situation brings with itself, as a side product, a certain amount of social integration and organizational coordination. Thus it is also a potential step back toward the fixation of a planning practice, toward socio-political domination and exclusion of new interested participants and their ideas from forthcoming planning tasks. Therefore learning at one point in time may become a hindrance to learning at the next (39).

An essential feature of practical activity is to maintain a self-critical, though constructive, attitude towards its own techniques. Accordingly, collectively practical town planning activity focuses on the continuous development of collective town planning techniques. We need to concentrate not only on various problematic urban planning issues, but also on the *problems of reflecting* on planning methodology. These latter difficulties emerge in double bind situations. From every new technique, an inner cooperative network of concepts and roles is eventually produced. Neighbouring activities, which enter the technique's field of action (or context) as disturbances, may eventually lead to a new double bind (40). The practical activity of urban planning is motivated by the continuity of instances of reflective communication. The goal of practical planning activity is, in other words, the *maintenance of urban planning as a morphogenic system.* It involves the maintenance of reflective planning communication – that is, the maintenance of:

- questioning problem definitions;
- cooperating between knowledge subcultures;
- encouraging planning as play;
- preserving enough organizational informality to enable the above mentioned.

We should constantly be asking ourselves such questions as these: Are there other concerned people that should be involved?; Are goals and intentions openly stated?; Are arguments backed by reason or by power?; How deep is the involvement before and after the definition of the planning problem?; Are there other ways of communicating and understanding about these issues that should be included?; How

could we prevent the activity we have chosen from exceeding the limits of its actual relevance and thus prevent it from dominating us later?; Did the past meetings create precedents which hinder our present design discussion (41)?

Scientific, Artistic and Technical

Schön's theory of professional action places technical problem solving within a broader context of reflective inquiry, which "links the art of practice in uncertainty and uniqueness to the scientist's art of research" (42). Bohm and Peat, on the other hand, emphasize the necessity of scientific attitude in all aspects of life. This scientific attitude: honesty in interpreting tests and perceptions and acknowledging facts, is prerequisite to the evolution of knowledge. This principle of preventing "foul play", defined as ignoring or concealing disturbing and unpleasant facts and perceptions, is also a key aspect of dialogue (43). The practitioner's independence from categories of established theory and technique, and his ability to construct new theories to new situations is essential in unstable practice situations (44). This ability is indeed the core of the urban planning practice, which largely consists of managing political-economic conflict situations.

In search for a more reflective planning practice we arrive at a new conception of urban planning as both *reacting* to problems in the socio-physical environment and *self-reflecting* upon its own structures of socio-political cooperation and coordination. Planning as mere reaction falls into the domain of *technical* problem solving, whereas town planning as self-reflection is acting both *scientifically* and *artistically*, scientific in that it critically frames the value-laden goals implicit in planning techniques; artistic in that it intuitively generates new metaphoric relations between these frames. The "artistic aspect" of professional practice is responsible for creating the contextual conditions necessary for the "technical aspect"; the exercise of technical expertise. The "scientific aspect", for its part, makes incontrovertible inquiries into this "technical aspect". A scientific approach reveals the flaws and inherent contradictions in our methods, and sheds light on the reasoning behind them. It therefore reveals again the need for the "artistic aspect". Hence practical planning activity forms a cycle, where scientific, artistic, and technical aspects of the activity follow each other in a continuous chain.

Through research into the context of professional practice we may engender a general awareness of the conflict between alternative problem definitions; through artistic creativity we may search and find a common resolution to the problem – the problem which we at the same time reconceive in a metaphoric bisociation between problem definitions. This creative process therefore exhibits both problem-constitutive and solution-conclusive aspects simultaneously. Basically, the practical activity of urban planning is constantly reinforcing the awareness of planning as such a collaborative process which addresses problems not only of technical but also of scientific nature – problems which exceed the limits of technical reaction and demand, instead, artistic reflection.

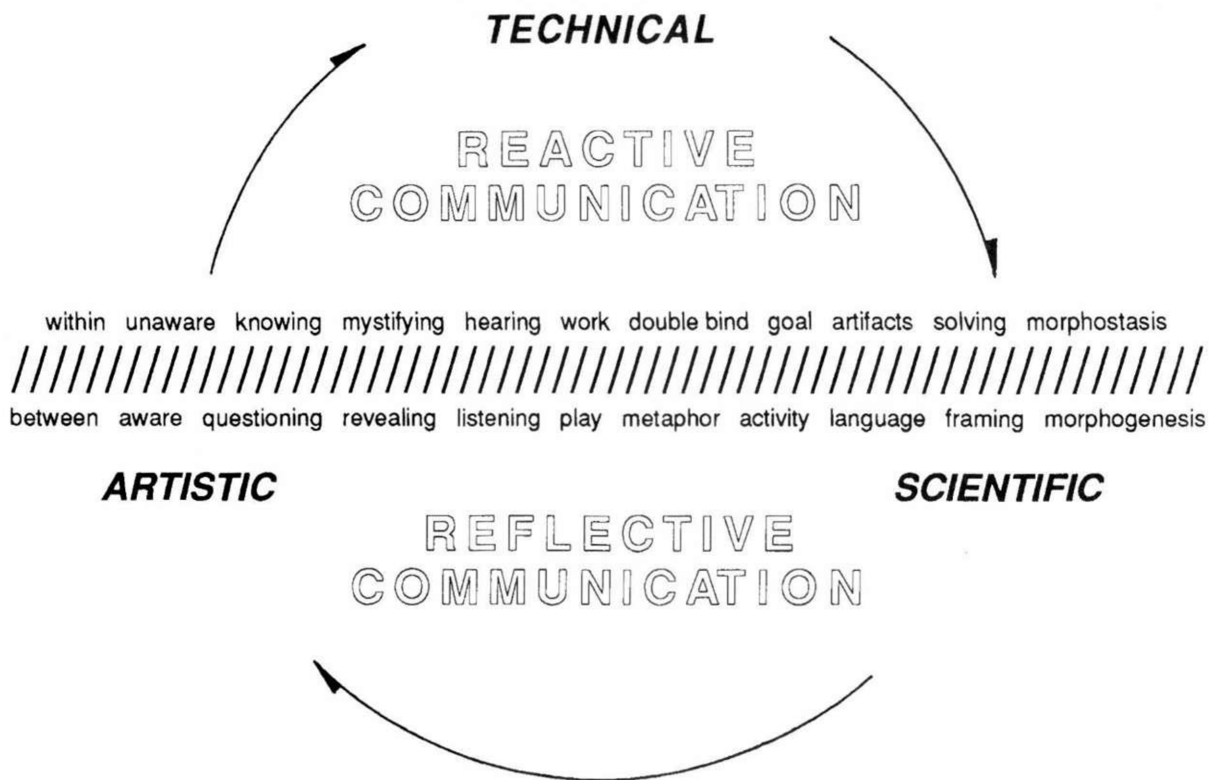

Figure: The practical activity of town planning.

References

1. "Technical solutions depend on a stable context and on a problem that can be isolated from that context. Practical solutions depend on the peculiarities of a specific context that define a given problem. [...] Being technical typically means using a generalizable technique; being practical means using ordinary skills on a unique context-dependent problem" (Forester 1989: 63–64).

   Kaj Nyman (1995: 76) holds that 'ontological' art – as opposed to 'aestheticist' art – is a way of comprehending contextuality and, as such, indispensable for planning as a learning process. Donald Schön (1983: 18–20) argues that practitioners sometimes reveal an "artful" competence of dealing with practice situations (such as urban planning) having features of complexity, uncertainty, instability, uniqueness, and value conflict. These artistic ways of coping with such phenomena fall outside the positivist epistemology of professional practice. The "artistic side" of professional practice is responsible for creating those contextual conditions necessary for the "technical side"; the exercise of technical expertise (*ibid.*: 40–42).
2. Referring to public sector "blueprint" planning as the instrumental rationalistic search for the best possible combination of means to given ends.
3. Referring to disjointed incrementalism as the "politics of muddling through".
4. See Forester 1989: 124.
5. Schön 1983: 41.
6. Healey 1992: 153–54.
7. Forester 1989: 125.
8. *Ibid.*: 130.
9. See Healey 1992: 154.
10. Sager 1994: 165–66.
11. Forester 1989: 120–21.
12. *Ibid.*: 118.
13. Schön 1983: 49–54, 60–61.
14. See *ibid.*: 62–63, 290.
15. Thayer 1975: 242.
16. This classification of types of communication as 'reactive' and 'reflective' is somewhat comparable to Järvilehto's two categories of cooperation invol-

ving conscious human beings: 'institutional cooperation' and 'conscious cooperation' (Järvilehto 1995: 129–30). It is also parallel to Engeström's (1987) categorization of forms of learning as 'reactive' and 'reflective'.

17. Bohm & Peat 1992: 219–23.
18. See *ibid.*: 246.
19. Schön 1983: 345–50.
20. *Ibid.*: 289.
21. Forester 1989: 107–18.
22. *Ibid.*: 108–9. See also Friedmann 1973: 238. Both refer to Martin Buber's book *I and Thou.*
23. Bateson 1987: 208–9
24. Bohm & Peat 1992: 245. The etymological explanation is that '*dia*' means 'to cross', 'through'; and '*logos*' means not only 'word' but, more importantly, 'meaning' (*ibid.*). Ramírez, on the other hand, translates 'logos' as 'conversation' (the Swedish 'samtal') (1993: 28). In spite of these differing derivations from the etymological origins of 'dialogue' ('crossing meanings', 'crossing conversation') both sources (Bohm & Peat 1992, Ramírez 1993) conceive dialogue as '*meaning generating communication*'.
25. Bohm & Peat 1992: 64.
26. Dialogue requires person-centered communication which Friedmann (1973: 177–82) calls the "*life of dialogue*". Friedmann holds that dialogue assumes communication which is applicable to any human relationship:

   "We can be open and alert to the other, whoever he may be. We can accept him as a person different from ourselves without being threatening or feeling threatened in turn. We can try to hold our intellectual, moral, affective, and empathetic states of being in mutual tension. We can accept conflict as an inevitable part of dialogue and not its termination. We can look for the patterns of shared interests. And we can concentrate the life of dialogue on the here and now (*ibid.*: 182).

   Bohm & Peat (1992: 244–51) emphasize, in a similar fashion, the importance of the "*spirit of dialogue*" – the atmosphere of good will and kindness. This spirit enables the interlocutors to examine different points of view, and deep presumptions behind them, without taking opposing and competitive, emotionally charged positions.
27. See Chadwick 1978: 183.
28. Arthur Koestler (1964) has coined the term '*bisociation*' "in order to make a distinction between the routine skills of thinking on a single 'plane', as it were, and the creative act, which [...] always operates on more than one plane. The former may be called single-minded, the latter a double-minded, transitory state of unstable equilibrium where the balance of both emotion and thought is disturbed" (*ibid.*: 35–36). In bisociation, one conceives of an idea or event, in which two self-consistent but habitually incompatible frames of reference are brought to intersect in a unique fashion. Thus the event is linked simultaneously to two associative contexts (*ibid.*).
29. Bohm & Peat 1992: 47–53.
30. Schön 1983: 184, 186.
31. "The springboard is a facilitative image, technique or socio-conversational constellation (or a combination of these) misplaced or transplanted from some previous context into a new, expansively transitional activity context during an acute conflict of a double bind character. The springboard has typically only a temporary or situational function in the solution of the double bind" (Engeström 1987: 287).
32. Schön 1983: 185
33. Engeström 1987: 287.
34. Schön 1983: 280.
35. Ramírez 1993: 32–40.
36. *Ibid.*: 19.
37. Kauffman 1995: 28, 292; Thayer 1975: 242.
38. Forester 1989: 71.
39. Healey 1992: 159.
40. Engeström 1987: 191.
41. Sager 1994: 170; Healey 1992: 158; Forester 1989: 131.
42. Schön 1983: 69.
43. Bohm & Peat 1992: 246, 262–63.
44. Schön 1983: 68–69.

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