Guiding the Evolutionary Human

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Abstract

In a time when ideology often trumps reason, building the scientific mind is an important endeavor. Likewise, in a time when human actions have become primary evolutionary forces, guiding the evolutionary human—of which building the scientific mind is a part—is especially important. In this essay, I argue that the current context of unreason requires us to define “building the scientific mind” broadly and in association with other forms of inquiry that may assist in guiding the evolution of our species. I propose that Banathy’s (2000) conceptions of design inquiry system, evolutionary system, and evolutionary guidance system have much potential, and I offer a generic model of how various strands of the colloquium could be integrated to examplify the latter.

Guiding the Evolutionary Human

As I prepared for the colloquium in The Netherlands, I found it useful to consider what might be meant by the title, “building the scientific mind.” The event confirmed this as a logical starting point, when participants struggled to agree on definitions. Those definitions below represent only a sample, modified by, but certainly not capturing the full richness of our conversation.

“Building” refers to processes by which one may “build” as in “construct, frame, raise by gradual means” or “fit together separate parts,” as well as “build up” as in “establish or enhance the reputation or prominence of” (Compact OED, 1991, p. 184). “Scientific” means something or someone that is “guided by knowledge of science” or is “occupied in or concerned with science,” with “science” referring to “knowledge acquired by study” perhaps more so than to “a particular branch of knowledge or study” (Compact OED, 1991, p. 1674). Therefore, “scientific mind” refers to being guided by and concerned with science, or more generally with the production of knowledge through study, again perhaps in recognized branches of study. Furthermore, while “mind” can mean either “the seat of a person’s consciousness, thoughts, volitions and feelings” or “inclination, tendency, or way of thinking” (Compact OED, 1991, p. 1084), our conversation emphasized the latter, closer to “mindset.” Therefore, “building the scientific mind” can be defined as constructing by gradual means, and by fitting together separate parts, a way of thinking that is guided by and concerned with the production of knowledge through study.

As suggested by the colloquium’s organizer (Visser, 2000), these definitions lead to questions, which in turn lead in directions that may be useful.

1. What would *characterize* such a process of constructing by gradual means, and by fitting together separate parts, a way of thinking that is guided by and concerned with the production of knowledge through study? For a start, it would seem that such a process would need to be on going, as well as aligned with and supported by conditions in its environment. Our work at the colloquium suggested other characteristics such as the following:

* verifiable knowledge

* judgements of trustworthiness, and provision of evidence for making such judgments

* critical mindset; a conscious attempt to be unbiased (or to become aware of and acknowledge one's biases)

* adaptability and openness of mind

* curiosity

* the ability to recognize, and an attitude to reject dogma

* seeking to understand root causes, not just symptoms

* participation in a scientific community

* an understanding and use of science, for example, the use of scientific tools and language

2. What would environmental *conditions* need to be and/or how would they need to be arranged to sustain this process? Our work at the colloquium suggested conditions such as the following:

* basic needs being met

* relations with others; human interaction

* freedom of speech

* access to information

* authentic experience in the world

* separation of church and state

* valuing of and emphasis on systems thinking

* critical journalism

* specific training in science

* open learning focused on processes of discovery rather than only accumulation of facts

Assuming these sets of characteristics and conditions to be at least somewhat representative and accurate, third and fourth questions arise.

3. To what extent does a scientific mind currently exist, or to what extent is a scientific mind currently being built? In other words, are the tacit assumptions of insufficiency that brought us together reasonable? If so, then why? For example, how do the conditions above compare with current reality?

What appears to be a greater reliance on ideology than on reason, for example in the actions of the current US government, argues strongly that a scientific mind is not being sufficiently built. Colloquium participants seemed to agree that a scientific mindset is not widespread; rather it is evident primarily in the scientific community itself.

What would it take to turn this around, that is, for a scientific mindset to be more widely adopted? The strategy implicit in most suggestions at the colloquium seemed to be for scientists to promote a scientific mindset. On the surface this makes sense, and gains could be anticipated. However, I agree with Visser (2000) that this strategy will be insufficient. Rather it seems somewhat simplistic and addresses part of a complex whole, in a sense responding to “not enough X” with “do more X,” and failing to appreciate that "not enough X" exists in a context of forces that promote Y and of XYZ interdependencies. Perhaps the potential to build the scientific mind lies more in promoting its contributions to something larger, for example, a holistic mindfulness, than in contrasting it with other mindsets that are portrayed, at least implicitly, as inferior. Such an alternative strategy, essentially of developing a scientific mind in context (Visser, 2000), may prove to be more in sync with larger goals, for example, human betterment, as well.

What would a more encompassing strategy entail? It could begin with expanding definitions and considering the basic concepts as parts of a more holistic approach. For example, building is constructing by gradual means, and by fitting together separate parts. It is thus an on-going process of relating and of fashioning a whole, in other words, a process of discovery on the one hand and of composing, creating, and innovating, on the other. Consequently, it is an intentional act of creating something new that has utility—by definition, designing—and what is designed is knowledge. Building is, therefore, a process of learning, of continuous adaptation, even more broadly, of conscious evolution (or better, co-evolution).

Similarly, one can think of the mind as both mindset and as a built or constructed whole that is the seat of consciousness, thought, volition and feelings. It is thus a whole existing in relation to, and perhaps inseparable from body (e.g., Pert, 1997), and in socio-cultural context (e.g., in pair, group, organization, society, and species). Considering mind in relation and context leads to concern for the whole human being and the whole human species.

Likewise, the scientific mind is a mind that is guided by and concerned with the production of knowledge through study, in other words, a mind guided by disciplined inquiry. Conscious intention and action may constitute such guidance, and an inquiry may be disciplined in the sense that one "submit[s] for public inspection and verification 'both the raw materials entering into the argument and the logical processes by which they were compressed and rearranged to make the conclusions credible'" (Cronbach & Suppes, 1969, in Guba & Lincoln, 1989, p. 44). The scientific form of disciplined inquiry may be complemented by other forms and traditions (e.g., art and design; see Nelson & Stolterman, 2003), and may become more powerful through interrelations with them. A mind, or whole mind-body so conceived is emergent, and perhaps attracted to complexity.

Just as one can speak of sets of intelligences (Gardner, 1983), these expanded definitions and larger goals could lead to the identification of a wide range of *competencies* in dimensions such as:

* scientific (e.g., use of scientific methods and tools, judgment of evidence)
* artistic (e.g., creativity, technical skill)
* designerly (e.g., synthesis, use of pattern languages, composition, conceptualization, innovation)
* systemic/holistic (as in holistic inquiry; integration of different forms of knowing, e.g., theoria, praxis, techne, and poiesis)
* political (e.g., debate, formulation of arguments)
* technological (e.g., creation of tools and systematic processes)
* economic (e.g., management of resources)

* communication (e.g., conversation, collaboration)

* cultural (e.g., recognizing and appreciating difference)

They could lead to a variety of *commitments* such as:

* meeting basic needs of all humans

* social justice

* individual freedom

* ecological harmony

* sustainability

* authentic involvement of stakeholders; democracy

* peace

And they imply different forms of *consciousness* (e.g., evolutionary consciousness and/or appreciation of complexity/complex systems) and expanded *context* (e.g., as my colleague Matthew Shapiro suggests, painting the largest possible picture on the largest possible canvas).

Through this larger lens, the effort to build the scientific mind can be reconceived as one of designing on behalf of humanity, and in this arena, Banathy's (2000) notions of evolutionary guidance system (EGS), evolutionary system (ES), and design inquiry system (DIS) may have much potential. An evolutionary guidance system is "an ideal representation of the evolutionary future toward which we intend to move" (Banathy, 2000, p. 325). It is essentially a designed system of constructs that serve to break us free in our thinking from current realities. Constructing an EGS involves imagining ideals, selecting those that are most promising, and representing them along salient dimensions. The evolutionary system is then a second representation of the EGS within the context of what is presently attainable. Notice the implication that the ES is constructed by working back from ideals, not forward from current realities. As Banathy often said, you cannot get what you truly want just by modifying or getting rid of what you don’t. The design inquiry system is the overall process in which a community engages in continuously creating the EGS and ES, planning and acting to manifest the ES, redefining the EGS, and so on (see Figure 1).

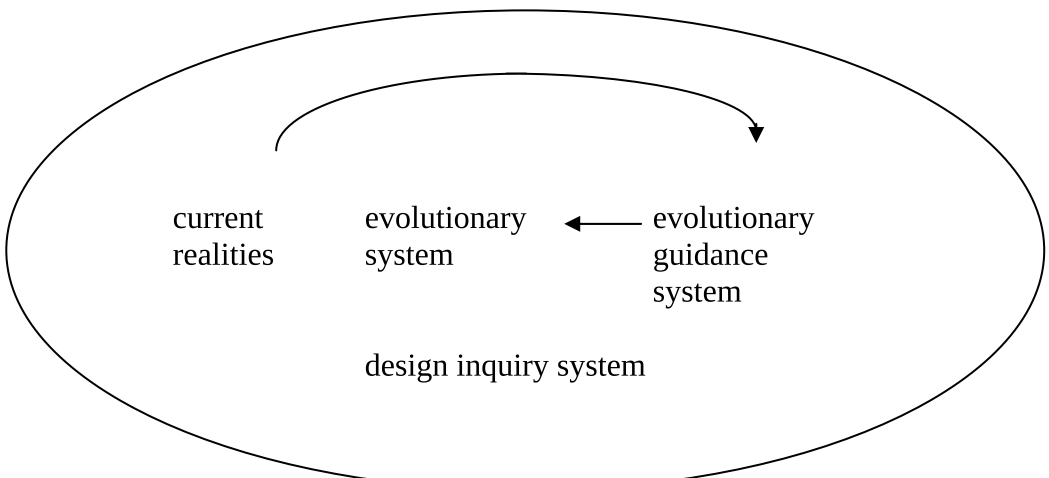

Figure 1. Model of design inquiry (modified from Banathy, 2000)

Using outcomes from the colloquium for an example, a model of an EGS (or ES, since it is so generic) could be constructed of characteristics, conditions, competencies, commitments, consciousness, and context (see Figure 2). To be useful in specific situations this model would be filled in, for example, with specific characteristics, conditions, and competencies in the dimensions listed above under competencies.

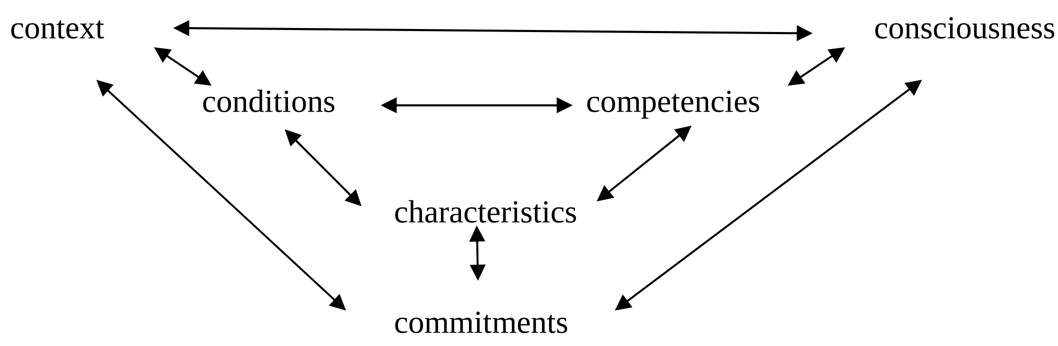

Figure 2. The 6C model, a generic example of an evolutionary guidance system

There are three essential features to note about this model and Banathy's notions of EGS, ES, and DIS. First, they involve creation and transcendence, not just planning—a focus on imagining an ideal future rather than extrapolating from the past and forecasting. Second, the six C's are interdependent, as are the dimensions along which they might be defined. The EGS and ES are systems, not just sets. And third, the DIS represents a continuous process. The engaged community would design the EGS, then the ES, then plan and take actions to realize the ES, redefine the EGS based on new insights and aspirations, and so on. The three features thus represent contributions from knowledge bases of design, systems, and evolution. I will speculate on further links to each below.

1. Design. As Einstein said, a problem cannot be solved from the same consciousness that created it. We cannot depend on politics to respond to the extremist ideologies dominating our political structures and processes, nor can we depend solely on the scientific method to build a scientific mind. Design offers the potential to leap free from *what is* to imagine and create *what might be*. It enables us to transcend barriers of current and narrow thinking, essentially giving us the opportunity to not just find better strategies, but to change the rules of the game. For example, at the societal level of

concern at the colloquium, design could provide a vehicle for thinking more broadly and more long-term than we are normally accustomed (e.g., see Brahms, Dyer, Horiuchi, Jenks, & Rowland, 2000).

2. Systems. The system is what we call the system. There are certainly interdependencies among entities in the world, but when we call something a system, *we* define parts, *we* identify relationships, and *we* establish the boundary with an environment. Particularly when dealing with complexity (i.e., complex interdependence), it is risky, in some cases even dangerous, to assume that we have done so with enough accuracy that simple and systematic methods may be productively employed. Rather we need to maintain a critical posture toward our systems' definitions, to be essentially systemic in our thinking not just systematic (Checkland, 1981). This means, for example in the case of the 6C model, seeking to identify key relations among and between characteristics, conditions, and competencies, and to address these as well as properties of the whole in planning and assessment. Given the equally artificial nature of "scientific mind," this also supports the argument for more holistic inquiry combining scientific, artistic, and designerly forms of knowing (e.g., see Cross, 1982).

3. Evolution. Living systems survive by making relatively minor adaptations to changes in their environment in the short-term and, particularly when such adaptations are insufficient for system-environment synchronization, by emergence of greater complexity in the long-term. They evolve (grow more complex) or die (literally disintegrate). A range of signs point to human society being out of sync with its environment and our world entering what complexity scientists might call a far-from-equilibrium state, in which small causes can have large effects. Simultaneously, cultural evolution has taken

precedence over geological and biological evolution. Both falling out of synchronization and cultural precedence have human origins, and possibilities for human influence. What appears required is an emphasis on the design dimension—gaining of design competence, and the creation of a design culture, that is, a culture capable of sustainably managing its own evolution. Banathy (2000) suggests that a modern version of the Greek Agora is a reasonable response, embracing dialogic processes similar to those that others describe under the concept of evolutionary learning communities (Laszlo, 2001).

Combining the three—design, systems, and evolution—implies a process of evolution via systems design, or more simply put, a holistic approach to intentional change. Models such as Banathy's (Figure 1) and 6C (Figure 2) may be helpful. Considering design, systems, evolution, and their integration also leads to questions that may prove useful, and which may not otherwise arise. A few sample questions include:

* Is spirituality emergent from other dimensions of human experience, an expression of oneness consistent with the basic principles of many world religions, as opposed to a dimension itself? Is this where fundamentalist ideology takes root, that is, is a fundamentalist view a manifestation of seeing spirituality as a dominant dimension as opposed to a consequence of appreciating all dimensions and the beauty and wonder that all dimensions together create?

* Would it be useful to see the emergence of greater complexity as autopoietic (self-creating), while the relationship building necessary for such an autopoietic process to be attracted to or to shift in desirable directions homeopoietic (creating *with* an other) (see Rowland, 2003). Given the difficulty of directly effecting the paths of complex living

systems (i.e.,, of knowing what actions will cause benefit), is this a more feasible form of evolutionary guidance, one which we can more reasonably hope to develop and exercise?

* Assuming the media of evolutionary guidance to be human communication and learning, is it useful to think in terms of both languages of words (spoken, written, public, private, etc.) and languages of actions?

* Would it be helpful to see engagement in the processes of evolutionary guidance as an instance of flow (Csikszentmihalyi, 1993), deep play (Ackerman, 1999), sync (Strogatz, 2003), or liminal states (Rowland & Wilson, 1994)?

In sum, while building the scientific mind is a worthwhile endeavor, it is important to see this endeavor in the broader context of guiding the evolution of society and the human species. Current circumstances demand no less than holistic mindfulness in the creation of human futures, and tools such as evolutionary guidance systems may help. Insights and ideas from colloquium participants can be placed in a model of such a system.

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