

*Consequences of Concept Formation in the Wild***9.1 Collective Concept Formation: Evolution or Design?**

I ended the preceding chapter with the words of G. H. Mead, and I will begin the present, final chapter with a quote from the same paper published by Mead more than 120 years ago.

every attempt to direct conduct by a fixed idea of the world of the future must be, not only a failure, but also pernicious. A conception of a different world comes to us always as the result of some specific problem which involves readjustment of the world as it is, not to meet a detailed ideal of a perfect universe, but to obviate the present difficulty; and the test of the effort lies in the possibility of this readjustment fitting into the world as it is. Reflective consciousness does not then carry us on to the world that is to be, but puts our own thought and endeavor into the very process of evolution, and evolution within consciousness that has become reflective has the advantage over other evolution in that the form does not tend to perpetuate himself as he is, but identifies himself with the process of development. (Mead, 1899, p. 371)

Mead describes social reforms as evolution and readjustment, something that cannot be fully predetermined and designed by human actors. Nearly a century later, Ed Hutchins tackled this foundational issue under the heading “evolution and design” (Hutchins, 1995, pp. 349–351).

human institutions can be quite complex because they are composed of subsystems (persons) that are “aware” in the sense of having representations of themselves and their relationships with their surroundings. Whether we consider a particular change at the upper system level to be a result of evolution or the result of design depends on what we believe about the scope of the awareness of the subsystems. If we think that some of the subsystems have global awareness, and that they can represent and anticipate the consequences of possible changes, then we may view an

organizational change as a result of design. If we believe that the subsystems do not form and manipulate representations of system operation, then we must view organizational change as evolutionary. (Hutchins, 1995, p. 350)

Hutchins (1995, p. 349) points out that whereas evolution is conducted by the system in terms of itself, design “is conducted by an ‘outsider’ on representations of the system.” The seemingly neat distinction between evolution and design is blurred by the fact that participants of an activity are always potentially reflective and capable of various degrees of global awareness. In other words, insiders can look at their activity system as if from the outside, conducting *intraventions* on their own activity (Sannino, Engeström, & Lemos, 2016). This opens up a middle ground of hybrid interplay between evolution and design.

What do we say when the individual subsystems only engage in local design activity . . .? In that case, design is clearly involved, and the change in the local environment of the individual that adapts this way is a *designed* change. Now, that local designed change may have undesigned and unanticipated consequences for other parts of the system. It may thus provoke local adaptations by other parts of the system as all the parts seek (either by design or not) to satisfy the new environment of constraints produced by the changes in the behavior of other parts. Ultimately, this process may produce a change in the behavior of the system as a whole. Even when many local design decisions are involved, such an adaptation at the system level appears to be evolutionary in the sense that the system-level change that resulted was never represented. I believe that most of the phenomena labeled as social or organizational “evolution” are instances of this kind of change. (Hutchins, 1995, p. 350)

This resonates with the findings of Cole’s (1999) studies of the quality movement in American corporations. Cole showed that learning may look like a failure in almost every particular case but in the long run it may lead to a deep and irreversible “sea change” in the whole field. Woven together, small and partial change efforts may be potentially expansive. Conversely, big centralized change efforts often get disrupted, change direction, or die.

Keeping in mind the fluid interplay and hybridization between evolution and design, we may still identify differences in the relative weight of these two factors in the formation of germ cell concepts. Figure 9.1 presents such a mapping for the four cases of germ cell concepts discussed in this book.

In Figure 9.1, the case of expansive degrowth in a food cooperative (Figure 3.3) is placed in the field of strong evolution and weak design.

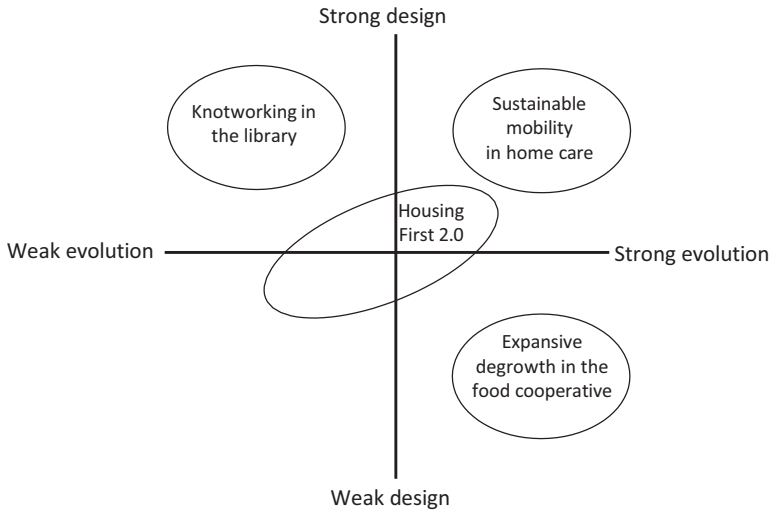


Figure 9.1 Evolution and design in four cases of formation of germ cell concepts.

The concept emerged in a year-long process of meetings, discussions, and change actions organized by the board of the cooperative itself, something that might be characterized as a long effort of *intra*vention. Although the intervention conducted by the researcher did facilitate the articulation of the kernel of the germ cell, the intervention was brief and limited in scope. The case of knotworking in the library (Figure 4.10) is located in the field of weak evolution and strong design in Figure 9.1. The concept emerged within a full-scale Change Laboratory intervention, strongly supported by researchers. Evidence of grounded evolution of the concept without deliberate intervention is not very strong (Sannino, Engeström, & Lahikainen, 2016).

The case of sustainable mobility in home care (Figure 5.2) is placed in the field of strong design and strong evolution in Figure 9.1. The concept emerged from practical transformative actions of home care workers and their clients, and it was articulated through joint work between researchers and a key practitioner, Jaana Nummijoki (Engeström, Nummijoki, & Sannino, 2012; Nummijoki, 2020). Finally, the case of Housing First 2.0 (Figure 8.7) is depicted in Figure 9.1. as moving within the same field, toward both stronger design and stronger evolution. This assessment is based on the evidence discussed in Chapter 8 and partly summarized in the steps of Figure 8.5.

## 9.2 Formative Interventions in Concept Formation

Formative interventions such as the Change Laboratory operate in zones where evolution and design meet. In the quote presented above, Mead states that “reflective consciousness does not then carry us on to the world that is to be, but puts our own thought and endeavor into the very process of evolution.” This may be read as advice for interventionist-researchers working on concept formation in the wild: *Do not try to dictate the shape of change; get involved in it and allow your own preconceived ideas be transformed in the process.*

How can an interventionist-researcher avoid imposing one’s own idea or vision on a change process? I see two critical conditions that make this possible.

The first condition is historicity. The Change Laboratory interventions described in this book were built on the foundation of fairly extensive participatory analysis of the historical development of the contradictions at hand. It is the contradictions experienced and identified by the participants, not the vision of the interventionist, that give direction to the change effort.

The second condition is object orientation. In the food cooperative, it was the land and the vegetables it yielded; in the library, it was the information-related needs of research groups; in the home care, it was the frail elderly clients living at home; in Housing First 2.0, it was the homeless people. When objects such as these are kept in focus and given a voice, the interventionist’s preconceived ideas are challenged and often fade into the background.

## 9.3 Interplay of Different Types of Functional Concepts

The five types of functional concepts identified in Chapter 4 may be seen as a pyramid (Figure 9.2). The wide bottom layer of the pyramid indicates that the prototype concepts formed there are grounded in the lived sensory experience and thus necessarily specific. The upper layers of the pyramid require increasingly demanding representational efforts, which can yield increasingly powerful generalizations. Thus, forming a germ cell concept of an activity gives the practitioners a powerful vision for the future, but implementing it in practice probably requires working one’s way down and making use of the lower layers of the conceptual pyramid.

Using a vertical metaphor such as the pyramid is risky. It is very easily understood as an insidious way of imposing an ideologically motivated

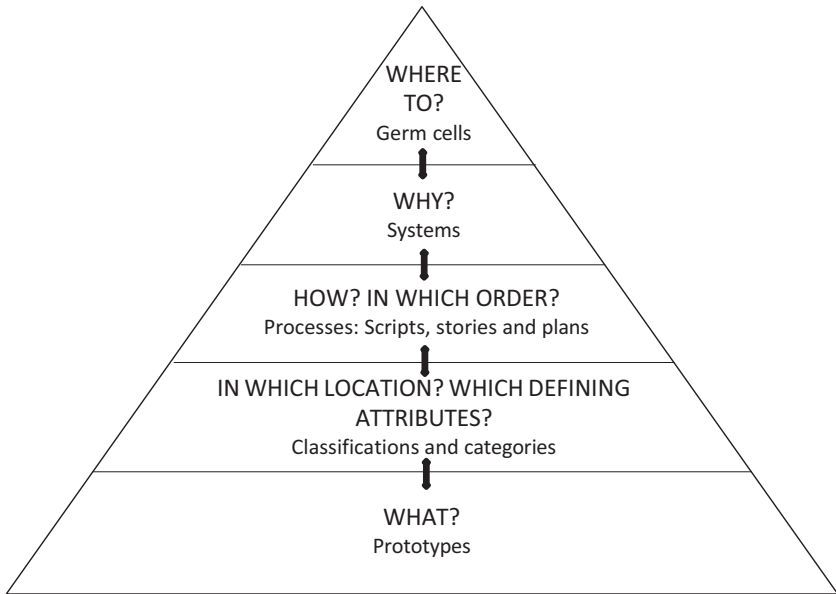


Figure 9.2 Pyramid of five types of functional concepts.

order of superiority and inferiority, or perhaps another deterministic theory of developmental stages. Yet, complete avoidance of vertical metaphors can also impoverish our ability to recognize specific dimensions of reality. The layers of the pyramid in Figure 9.2

contain no fixed order of progression, nor a fixed end point. They are continuously present as resources for the formation of specific innovations and transformations in particular organizations. It is characteristic to the levels of artifact-mediation and learning that they appear in various combinations and that there is continuous interplay between the levels. In this sense, consider the levels as a kit of wrenches of successive sizes. The kit is pretty general – it may be used in a tremendous variety of specific tasks. There is definitely a hierarchy in the kit. Yet there is no inherent necessity that the wrenches must be used in a specific order. (Engeström, 1995a, p. 352)<sup>1</sup>

In the Change Laboratory conducted at the university library, the practitioners not only identified knotworking as a germ cell (Figure 4.10), they

<sup>1</sup> This quote is taken from an early article in which I responded to Klaus Holzkamp's (1993) critique of my understanding of levels in learning and cognition.

also constructed an organization chart that would better serve efforts of knotworking (Engeström, Rantavuori, & Kerosuo, 2013). The organization chart itself was an example of a classification concept, not unlike the one created by the hospital practitioners discussed in Chapter 4 (see Figure 4.3). In other words, the germ cell needed to be put into practice by means of complementary types of concepts. Similarly, the representations of homelessness pathways discussed in Chapter 4 as examples of process concepts (Figures 4.5–4.7) may be seen as potential means to put into practice the germ cell concept of Housing First 2.0 (Figure 8.7). Interconnections such as these between different types of functional concepts within one and the same activity domain are an important topic for future research.

The relationship between prototype concepts and germ cell concepts is particularly intriguing. The two represent the lowest and the highest layer of the pyramid depicted in Figure 9.1, so one would expect them to be extremely different. Yet, prototypes and germ cells have important similarities. Both are simple, well-bounded, and tightly connected to the lived experience of repeatedly occurring actions within the given activity. So, could the wooden fishing boat depicted in Figure 4.1 be a germ cell of its own domain? Figure 4.1 is a photo of a boat, with hundreds of details available for closer observation. It is an abstraction only in the sense that it is separated from its wider context. The diagrams depicting germ cell concepts are abstractions in a different sense. They eliminate details and lift up the developmentally critical inner contradiction of the given activity. But once a germ cell is identified and articulated, it is probably easy to see prototypes as more or less powerful exemplars of the germ cell. A home care nurse aware of the germ cell action of *standing up from the chair* (Figure 5.2) is likely to discern prototypical examples of it, and to use them as springboards for expansive learning toward sustainable mobility.

#### 9.4 Educational Implications

Concept formation in the wild is a perspective that challenges and rejects the deep-seated conservative bias in our notions of learning and instruction. A common underlying assumption behind most standard approaches to education is that learning is primarily guided by preconceptions. The assumption is that preconceptions are used to set aside portions of the field of experience for further attention, that is, perception is focused on predetermined stimuli. Consequently, people act within the context of these portions of experience guided by preconceptions in such a way as to

reinforce these preconceptions. Hence, attention to certain stimuli will guide subsequent action so that those stimuli are confirmed as important. In this way, the enacted environment is a direct result of the preconceptions held by the social actor. It generates expectations for future action and focuses perception in such a way that these preconceived relationships will be supported (Weick, 1988).

This book advocates a practically opposite perspective. Human beings constantly face contradictions in their activities. When contradictions are aggravated, they bring about personally experienced conflicts of motives. These demand and trigger actions that break out of the conflict and expand the participants' scope of possibilities.

Expansive learning actions are not *directly* driven by systemic contradictions. The contradictions must be personally experienced as conflicts of motives. The construction of a second stimulus (auxiliary motive) is a key step that sets expansive learning in motion. This involves the appropriation or creation of an artifact that serves as a springboard that allows the learners to break out of the paralyzing conflict. The second stimulus is a starting point for actions of modeling a new, expanded object. (Sannino & Engeström, 2018, p. 68)

This perspective highlights the human capability to take search actions and step into the unknown, to create qualitatively new ways of acting and living. In our age of multiple intertwined global crises, it is of great urgency that education begins to cultivate this potential. This means that schools need to get students involved in collective creation of culturally new concepts, or concept formation in the wild.

Functional concepts are future-making devices. Concept formation in the wild is inherently formation of new motives. As Leont'ev pointed out, motives cannot be taught; "we must speak of the nurturing of motives for learning in connection with the development of life, with the development of actual vital relations of the child" (Leont'ev, 1978, p. 186). Thus, functional concepts can only be appropriated by getting involved in their construction and use in the activities they serve.

Take the case of Housing First 2.0. It is a germ cell concept in the making. In partnership with local public services, NGOs, and housing units, schools could get involved in the eradication of homelessness in their own neighborhoods. This type of involvement is sometimes called service learning (Waterman, 2014; Strait, & Lima, 2023), a category that conveniently separates it from regular school learning and instruction. The perspective of concept formation in the wild would suggest that all educationally organized learning should be service learning.