

Embodied Germ Cell at Work: Building an Expansive Concept of Physical Mobility in Home Care

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This article presents a process of collective formation of a new concept of mobility between home care workers and their elderly clients, who are at risk of losing physical mobility and functional capacity. A new tool called mobility agreement was introduced to facilitate the inclusion of regular mobility exercises in home care visits and in the daily lives of the clients. Our analysis starts with an overview of those visits in 2008 and 2009. We then analyze in detail one visit conducted in 2011, after two years of implementation of the mobility agreement. The analysis brings together the dialectical principle of ascending from the abstract to the concrete with the help of a germ cell, and key ideas from embodied and enactive cognition. During the visits a new concept of mobility began to emerge in the simple movement of standing up from the chair. This new concept transcends and overcomes the contradiction between safety and autonomy. Also it embeds and integrates mobility into necessary everyday actions of the old person. It is accomplished jointly with the nurse and relying on often innovative uses of everyday household artifacts. Finally, the new concept frames physical mobility in terms of sustainability.

Old people living at home and suffering from chronic illnesses are increasingly at the risk of losing their physical mobility and functional capacity. The loss of mobility usually has serious detrimental effects on the mental and social capabilities and on the overall agency of elderly people. Standard home care services seldom include systematic measures aimed at supporting the mobility of the clients, and traditional methods of exercise and physical therapy are not easy to adapt to the circumstances of home care. There is a growing need for new concepts of mobility that could meet the needs of home care of elderly clients.

We examine a process of collective concept formation in the home care of elderly adults in the city of Helsinki, Finland. In Helsinki, home care workers' (hereafter nurses, for simplicity) routine tasks normally do not include measures to facilitate and support their clients' physical mobility, and the nurses commonly resist such tasks as additional workload. Recently a new tool

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called *mobility agreement* was introduced to facilitate the inclusion of regular mobility exercises in home care visits and in the daily lives of the clients. In encounters between nurses and their elderly clients, aimed at implementation of the mobility agreement, a new concept of mobility began to emerge. 30

We analyze this process with the help of the theoretical and methodological principle of ascending from the abstract to the concrete as pathway to and modus operandi of theoretical concepts, especially as explicated and developed by Il'enkov (1982) and Davydov (1990). In particular, we define the key notion of *germ cell* and apply it in the analysis of collective formation of a new concept of mobility. 35

The formation of theoretical concepts is often regarded as primarily a textual and language-bound process. In this case, the formation and expansion of the germ cell took place primarily by means of bodily movements and sensations, supported by simple pictorial artifacts. Our analysis contributes to recent discussions of embodied cognition (e.g., Shapiro, 2011; Stewart, Gapenne, & Di Paolo, 2010) by presenting them with the challenge of collective concept formation in the wild. 40

We begin our analysis with an overview of 13 video-recorded encounters between nurses and their clients, mediated by the new mobility agreement tools in 2008 and 2009. We then analyze in detail one home care visit conducted in 2011, after two years of implementation of the mobility agreement. This was a follow-up visit, conducted in a particularly reflective mode with joint remembering and reconstructing of the experiences gained. 45

We discuss the findings of our analysis by elaborating on the key characteristics of the new concept of mobility that is emerging among nurses and their clients. We also discuss the broader implications of the principle of ascending from the abstract to the concrete to future studies of concept formation in the wild. 50

GERM CELL AND ASCENDING FROM THE ABSTRACT TO THE CONCRETE

Ascending from the abstract to the concrete is a method of grasping the essence of an object by tracing and reproducing theoretically the logic of its development, of its historical formation through the emergence and resolution of its inner contradictions. A theoretical concept is initially produced in the form of an abstract, simple explanatory relationship, a “germ cell.” This initial abstraction is step-by-step enriched and transformed into a concrete system of multiple, constantly developing and expanding manifestations. In other words, the initial simple idea is transformed into a complex new form of practice. 55

In this framework, abstract refers to partial, separated from the concrete whole. In empirical thinking based on comparisons and classifications, abstractions capture arbitrary, only formally interconnected properties. In dialectical-theoretical thinking, based on ascending from the abstract to the concrete, an abstraction captures the smallest and simplest, genetically primary unit of the whole functionally interconnected system (Davydov, 1990; Falmagne, 1995; Il'enkov, 1977). 60

Ascending from the abstract to the concrete is achieved through specific epistemic or learning actions. Together these actions form an expansive cycle or spiral. An ideal-typical sequence of epistemic actions in ascending from the abstract to the concrete may be described as follows: 65

- The first action is that of questioning, criticizing, or rejecting some aspects of the accepted practice and existing wisdom. For the sake of simplicity, we will call this action questioning. 70
- The second action is that of analyzing the situation. Analysis involves mental, discursive or practical transformation of the situation in order to find out origins and explanatory mechanisms. 75
- The third action is that of modeling a new explanatory relationship in some publicly observable and transmittable medium. This means constructing an explicit, simplified model of the new idea, a germ cell, that explains the problematic situation and offers a perspective for resolving and transforming it.
- The fourth action is that of examining the model, running, operating, and experimenting on it in order to fully grasp its dynamics, potentials, and limitations. 80
- The fifth action is that of implementing the model, concretizing it by means of practical applications, enrichments, and conceptual extensions.
- The sixth and seventh actions are those of reflecting on and evaluating the process and consolidating its outcomes into a new stable form of practice. (Engeström & Sannino, 2010, p. 7) 85

These actions bear a close resemblance to the six learning actions put forward by Davydov (1988) that follows the logic of ascending from the abstract to the concrete. Davydov's theory is, however, oriented at learning processes in school where the curricular contents are determined ahead of time by more knowledgeable adults. This probably explains why it does not contain the first action of critical questioning and rejection and why the fifth and seventh actions, implementing and consolidating, are replaced by "constructing a system of particular tasks" and "evaluating"—actions that do not imply the construction of actual culturally novel practices. Q3 90

A theoretical concept may be understood as continuous dialectical movement from the abstract to the concrete. In other words, the concept is a way of moving within a domain, not a static definition (although movement certainly requires relatively stable signposts; see Cussins, 1992). In ascending from the abstract to the concrete, the germ cell plays a crucial role (Davydov, 1990; Haug, 1974; Il'enkov, 1982). The following four characteristics are essential qualities of a germ cell that may lead to an expansive theoretical concept: (a) the germ cell is the smallest and simplest initial unit of a complex totality; (b) it carries in itself the foundational contradiction of the complex whole; (c) the germ cell is ubiquitous, so commonplace that it is often taken for granted and goes unnoticed; (d) the germ cell opens up a perspective for multiple applications, extensions, and future developments. Q4 95 Q5 100

Davydov (1990) stated that "every concept conceals a particular action with objects (or a system of such actions)" (p. 299). This is echoed by Prinz and Clark (2004) when they declared that "concepts are action-oriented" (p. 58). Davydov (1990) pointed out that "a theoretical concept can exist as a method of deriving the individual from the general, but still not have terminological formulation" (p. 301). This means that concepts are much more than verbal definitions. Proponents of embodied cognition argue that concepts are foundationally bound to our bodies, movements, and physical actions. What might be the nature of this embodiment and enaction? 105 110

Hutchins (2010) argued that "bodily action does not simply express previously formed mental concepts; bodily practices including gesture are part of the activity in which concepts are formed"

(pp. 428–429). This means that concepts are created in practices of moving and experiencing the body.

In some circumstances, the body itself becomes a cognitive artifact, upon which meaningful environmentally coupled gestures can be performed In such settings, motion in space acquires conceptual meaning and reasoning can be performed by moving the body. . . . Courses of action then become trains of thought. (Hutchins, 2010, p. 444) 115

Hutchins further pointed out that multimodal concepts are likely to become more stable than single-mode representations. Multimodal integration may be accomplished by embedding the representations in durable material media, or “material anchors” (Hutchins, 2005). Another way to accomplish multimodal integration is to enact representations in bodily movements, turning such bodily movements into “somatic anchors” for concepts (Hutchins, 2010, p. 445). Hutchins also remarked that embodied thinking and acting benefit from “the variability inherent in social interaction”—yet “we know least about this aspect” (Hutchins, 2010, p. 445). 120 Q6
125 Q7

Analysis of the stepwise formation of a new concept of mobility in practical negotiations and joint physical exercises between a nurse and the elderly client offers an opportunity to bring together the dialectical idea of ascending from the abstract to the concrete with the help of a germ cell, on one hand, and key ideas from embodied and enactive cognition, on the other hand. Accordingly, the key questions of this article are as follows: Can we identify a germ cell of a new concept of mobility in nurses’ and clients’ practical efforts to integrate physical mobility exercises into the routines of home care services and the client’s daily chores? How and by what actions do the actors use and develop the germ cell to ascend toward the concrete? What is the role of embodiment and physical enactment, and in particular the role of embodied social interaction, in ascending from the abstract to the concrete? 130
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HOME CARE AND THE CHALLENGE OF MOBILITY: STANDING UP FROM THE CHAIR AS CANDIDATE GERM CELL

In popular imagery, there are two dominant broad notions of mobility: the one of an athlete or adventurer and the one of a busy, interconnected business person. The first notion emphasizes physical prowess and exceeding one’s bodily limitations; the second notion emphasizes swift networking and global transitions aided by mobile technologies. Both of these imageries are strongly achievement oriented and competitive, they emphasize the individual as the locus and generator of mobility, and they see movement (e.g., exercise, travel) primarily as a somewhat heroic feat in its own right, largely separate from other activities it may serve. 140

Neither one of the dominant cultural images of mobility is appropriate for home care. In the home care of elderly people in poor health, a qualitatively different concept of mobility is needed. Instead of achievement oriented it must be sustainability oriented, instead of individually focused it must be collaborative, and instead of separate from other activities it must be embedded and integrated into the daily life activity of the elderly individual. 145

Elderly people living in their homes become brittle, and their environment narrows over the years. They are vulnerable in many ways. An increasingly recognized syndrome in older adults is frailty. Frailty as a syndrome manifests the following core clinical features: loss of strength and sense of postural balance, weight loss, low levels of activity, poor endurance or fatigue, 150

and slowed-down performance. The presence of three or more of these features is associated with adverse outcomes including falls, new or worsened function impairment, hospitalization, and death. Frailty is often associated with symptomatic long-term disease, decline in function, and reduced survival. The biological basis of frailty is postulated to involve a cycle of age- or disease-related physiological decline that includes loss of skeletal muscle mass. The rates of loss of muscle mass and strength accelerate after the age of 50 and again after the age of 75, with observed changes in muscle fibers and muscle atrophy (Boockvar & Meier, 2006).

When elderly home care clients' physical mobility fades away it causes a chain of events that will have significant social costs. Predictive signs of the decline of an older person's functional capability are reduction of movement in the outdoors, difficulty getting up from a chair, gait slowing, and difficulties in coping with stairs. Fear of falling because of frailty can be a real reason for loss of mobility in the elderly. After falling, some people become so frightened and anxious that they will not attempt to stand without external support. The environment begins to appear dangerous: steps, rugs, and poor lighting combined with problems like poor vision from cataracts or macular degeneration and physical fragility can lead to increased falling. Physical fragility has many causes in the elderly: osteoarthritis, muscle wasting, and slowed reflexes are very common, and postural hypotension also contributes to unsteadiness.

In Helsinki as well as in most of the industrialized world, basic home care means ensuring medication, nursing, nutrition, and hygiene. As the need for and volume of home care services has grown, services that support the client's independence and promote quality of life and participation in social life have been largely cut away from home care (National Audit Office's Report, 2010, pp. 8, 115). A paradox of home care practice is that nurses perform daily chores *for* the clients although they know that getting up from the chair and doing these daily chores *with* the nurse would support the elderly clients' mobility and functional capacity (Jones, 2007). Making and serving sandwiches to the client instead of making them together by letting the older person get up from the chair and set the table and make his or her own snack is often neglected because the client's medication, nutrition, blood pressure, and pulse measurements are seen as standard routines that do not leave room for anything else.

Knowledge and good intentions alone seldom lead to significant change in routine behavior, especially when the change requires increased work and effort. As Leont'ev (1978) emphasized, the formation of effective intentions and goals is "not an instantaneous act but a relatively long process of approbation of the goals by action and by their objective filling" (p. 65). Citing Hegel, Leont'ev pointed out that a person "cannot determine the goal of his acting as long as he has not acted" (p. 65). He concluded that "the realized activity is richer and truer than the consciousness that precedes it" (p. 78).

Thus, the transformation attempt in Helsinki home care is built on practical introduction of the mobility agreement and mobility exercises in regular home care visits. In these encounters, both the nurse and the client face the challenge of conducting new actions. The nurse presents to the client the idea of doing regularly certain physical exercises, embedded in normal household chores, with the support of the nurse and a visual booklet. Often both the nurse and the client realize that they are actually rewarding and not very laborious. The embedding and anchoring of these exercise actions into the daily routines takes time and needs to be persistently pursued.

However, implementing new tools and corresponding practical actions is not enough. Eventually a new insight and new commitment need to emerge and take conscious shape. This is the essence of collective concept formation. Such a stepwise articulation needs to be built on and

around a core idea, a germ cell. We tentatively identified such a germ cell for a new concept of mobility in an earlier analysis of this implementation process (Nummijoki & Engeström, 2010). 200

We suggest that getting up from the chair, or sit-to-stand, may be such a germ cell for the emerging conceptualization of mobility and functional capacity within home care for the elderly. This means that the transformation effort in home care may be analyzed as a process of expansive concept formation at work. (Nummijoki & Engeström, 2010, p. 68)

Getting up from the chair, or sit-to-stand, is extensively used as a rehabilitation and intervention technique and central item in tests of physical mobility and functional capacity (e.g., Bohannon et al., 2008; Carvalho, Marques, & Mota, 2009; Fahlman, Topp, McNevin, Morgan, & Boardley, 2008; Krebs, Scarborough, & McGibbon, 2007). However, its importance and expansive potential as the initial step and gateway to other forms of physical mobility have not been recognized and discussed theoretically. 205 210

In home care encounters, standing up from the chair (or sit-to-stand) emerges as a germ cell because in practice one has to get up to reach the upright position in order to move. It is foundational for any other kind of physical movement. In other words, it can be seen as the smallest and simplest initial unit of a complex totality; as something ubiquitous, so commonplace that it is often taken for granted; and as opening up a perspective for multiple applications, extensions, and future developments. These are three of the four criteria of a germ cell named earlier. Figure 1 shows a standard instructional diagram used to demonstrate the correct procedure of the exercise of standing up from the chair. 215

Perhaps the most demanding criterion of a germ cell is that it must carry in itself the foundational contradiction of the complex whole. The inner contradiction of standing up from the chair is implicitly visible in Figure 1. The person gets up without grabbing a piece of furniture for support, just using his or her own muscles. The natural temptation, especially for a frail person, is to use the edge of a table or the armrests of the chair as support when getting up. This way, standing up from the chair is easier and safer—but it also reinforces dependency and does not 220

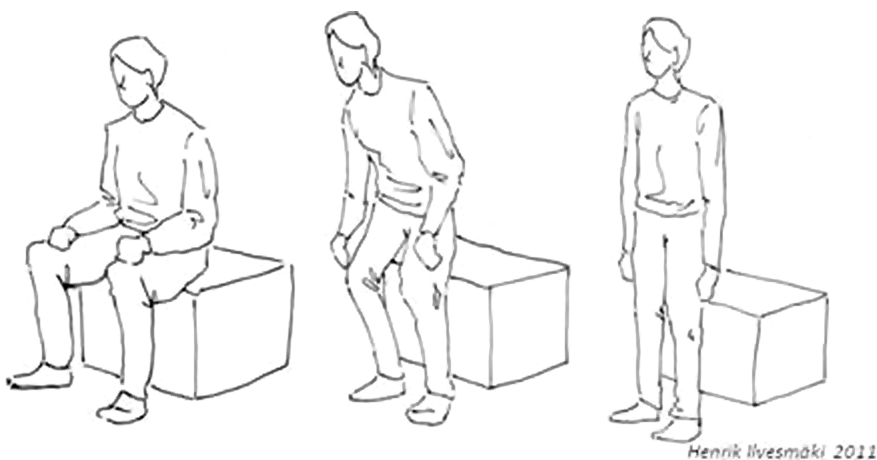


FIGURE 1 The procedure of standing up from the chair.

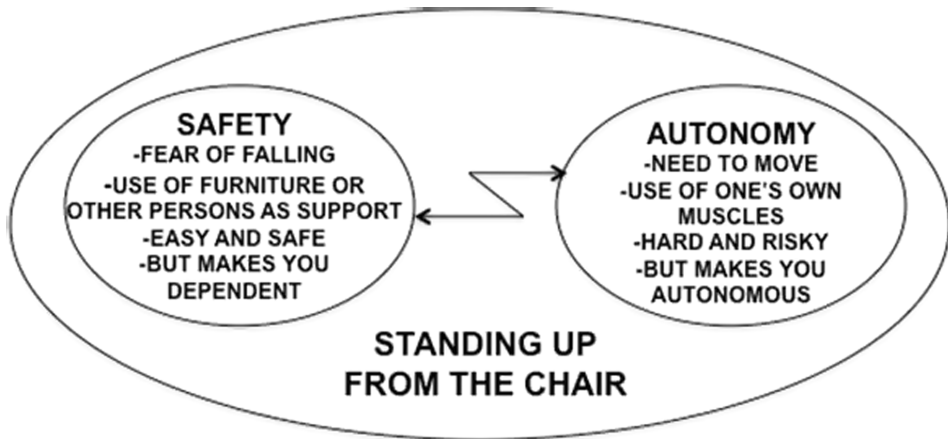


FIGURE 2 Standing up from the chair as an internally contradictory germ cell.

optimally develop one's own muscular strength and coordination. The contradiction is explicated 225
in Figure 2.

This is a contradiction between the motives of safety and autonomy. For the subject, the con- 230
tradiction typically manifests itself as a critical conflict (Sannino, 2008; Vasilyuk, 1988) between
fear of falling and the need to move. The safety motive leads one to use furniture as support to
make standing up from the chair easier and safer—which also means that one becomes increas-
ingly dependent on external support. The autonomy motive leads one to rely on one's own
muscles when standing up from the chair, which is harder and riskier but also fosters one's inde-
pendence. It is important to note that neither component of the contradiction can be eliminated.
Safety and autonomy both repel and require one another. Such a contradiction can be transcended
by working on it, by actively moving between the two poles and thus expanding one's mobility 235
beyond standing up from the chair.

DATA AND METHOD

Standing up from the chair as a candidate germ cell is a working hypothesis that needs to be
grounded, expanded, and enriched to test its viability. As a first step of grounding, we scrutinized
in detail a sample of 13 videotaped home care visits conducted in 2008 and 2009. These visits 240
were recorded shortly after the mobility agreement was introduced, and they represent the nurses'
and clients' early efforts to include mobility exercises in their daily routines. At the time of the
collection of these data, standing up from the chair was not identified as a potential germ cell; it
was one exercise among many others recommended. As the condition and care of the clients of
these initial visits were subsequently followed by means of patient records and nurses' notes, we 245
noticed that standing up from the chair played a varied but important role in practically all these
cases. An overview of the functioning of standing up from the chair, or sit-to-stand, in these visits
and the subsequent developments in the condition and care of the clients is given in Table 1.

TABLE 1
Evidence of Sit-to-Stand in 13 Home Care Visits

<i>Case</i>	<i>Year</i>	<i>Functioning and Meaning of Sit-to-Stand</i>	<i>Subsequent Developments in the Client Condition and Care</i>	
1	Female	2009	Gets up from the chair well, is surprised why to repeat this self-evident movement. She moves well indoors but talks about the fear of falling.	Maintains the daily actions and chores. Regards rollator-walking as training. Target is to get out independently again.
2	Female	2009	Has a desire to exercise. If not encouraged will just sit on the chair and wait for the services. Sit-to-stand is difficult.	Has reported on her ability to get up from a chair. Mobility is improved.
3	Female	2009	Just sits in her couch. She has a lot of pain and is moaning. Wants to be independent, yet has given up and does not want to move.	Sit-to-stand helps maintaining the daily actions and chores – no exercising.
4	Female	2008	Starts to do sit-to-stand exercise which cheers her up remembering former gym exercises.	Sit-to-stand gave an opportunity for training under a safeguard, “without being watched.”
5	Female	2008	Performs sit-to-stand but not as exercise.	Sit-to-stand works as continuous support for maintenance of daily actions.
6	Male	2009	Performs sit-to-stand as exercise when asked. Has the desire to exercise, but needs encouragement to avoid just sitting in the wheelchair. Reports that mobility is getting worse.	Implementing the sit-to-stand exercise has not been agreed-upon. Continuity of care and client activation are not coordinated between the nurses. Too much responsibility is left to the client.
7	Male	2008	Does sit-to-stand training and has a desire to exercise but is dependent on encouragement.	Led to a regular exercise. Outings in the summer agreed between the nurses and the client.
8	Female	2009	Sit-to-stand training is easy for her, getting up from a chair and walking indoors is self-evident.	Maintenance of mobility makes the role of Bridge instructor possible for her in the elderly nursing home’s club house.
9	Female	2009	Sit-to-stand training is easy, getting up from a chair and walking indoors is self-evident. Reports that her ability to move is getting worse and has fear of falling.	Led to taking the trash out regularly together with the nurse
10	Male	2009	Performs sit-to-stand eagerly when encouraged. Has a somatic illness and memory disorder, and is afraid of falling.	Got out from the house on his own with a rollator as a result of the practice agreed-upon with the nurses.
11	Female	2009	Sit-to-stand training serves maintaining the daily chores. Is afraid of falling, although walks regularly outdoors.	Helped to maintain outdoor walking and assisted shopping in spite of the illness episodes.
12	Female	2009	Wants to exercise sit-to-stand training, follows changes in her ability to move.	Got out to do grocery shopping, stopped ordering shopping-on-wheels service.
13	Female	2009	Is not willing to exercise, stays in the bed if not encouraged to start sit-to stand training. Talks about her ability to move in former life, withdrawing.	Mobility agreement implemented with the target to keep on moving.

Table 1 demonstrates a wide variety of meanings and uses of standing up from the chair, as the cases range from practically immobile wheelchair-bound persons to clients who feel that sit-to-stand is self-evident and easy. For us the most important lesson from this overview was the realization that sit-to-stand is more pervasive and ubiquitous than other elements of the mobility agreement and associated exercises in our data.

Another lesson is that the consequences of sit-to-stand are not quick fixes or sudden changes in behavior. They take time and seldom manifest themselves as radical breakthroughs. Often we see short-term ups and downs but significant improvement over the long term. This poses the difficult challenge of longitudinal follow-up and analysis. Systematic longitudinal follow-up of selected cases requires a lot of resources. It is made particularly difficult by the fact that there is high turnover among the nurses, which leads to frequent ruptures and restarts in the care. The age and precarious state of health of the clients also create ruptures in the form of hospitalizations, and eventual death.

To get access to the longitudinal process of concept formation in the wild, we recorded in 2011 a follow-up home care visit to an 87-year-old client we call Anne. During this visit, besides the regular services and mobility exercises, the emphasis was on joint reconstruction of the client's and the nurses' experiences of implementing the mobility agreement over the past two years. The visit was largely devoted to collaborative retrospective reconstruction of events and experiences related to the client's mobility, including standing up from the chair. In our analysis, these reconstructions are backed up and enriched with the help of the patient records and nurses' notes of this client. The visit lasted 116 min and 48 s and consisted of 2,084 speaking turns. A comprehensive table detailing the topics of all speaking turns as well as their codings in terms of expansive learning actions is available from the authors upon request.

The participants of the visit are, besides Anne, her home care nurse we call Tina and the researcher Jaana (the second author of this article). Together with another nurse, Tina has worked with Anne consistently over the past two years, a continuity often missing in home care. This continuity of care and long-term trustful relationship made it possible for the client to engage in the reconstruction of her experiences. The researcher Jaana is also a qualified physical therapist and an experienced worker and manager in Helsinki home care. This allowed Jaana to be a discussion partner in the visit. Jaana is not a direct superior of Tina in the home care organization. In the transcript, the physical therapist and the health center doctor are also mentioned. The former is an expert often called to help at the start of the implementation of the mobility agreement. The latter is responsible for diagnoses and other important medical decisions concerning the client. During the visit, Anne took 917 speaking turns, Tina took 897 turns, and Jaana took 273 turns.

In the transcript, there are many occasions in which Anne uses rather minimal or partial verbal expressions. Although this probably reflects the unavoidable asymmetry in professional–client interactions in health care, Anne's views are so consistent and distributed throughout the transcript that they can hardly be interpreted as merely results of pressure or manipulation from the professionals. A careful look into Anne's gestures, body movements, and uses of the material environment also enriches the picture of her communicative contribution.

We used the actions in ascending from the abstract to the concrete as an analytical grid with which we identified talk and physical interaction during the visit relevant to this type of concept formation. In the video and transcript of the visit, we identified passages that represent the actions of questioning, modeling, examining the model, implementing, and reflecting on the process. For the purposes of this analysis, we named these five types of actions as (a) articulating a conflict of motives, (b) forming a germ cell, (c) examining the germ cell model, (d) implementing the model by ascending to the concrete, and (f) reflecting on the process and its outcomes. Action Type 1, articulating a conflict of motives, is a combination of the first two actions of ascending from the abstract to the concrete, namely, questioning and analyzing. Because of the retrospective nature of conversation in this visit, the transcript does not contain here-and-now questioning and

analysis of the existing practice. Instead, it contains important segments in which the original experiencing of the conflict of motives is recollected, both emotionally and analytically. 300

Because the discourse in the home care visit was primarily retrospective, these actions are reconstructed and reported on rather than enacted online. However, there is also a significant element of enactment of actions here and now, including jointly accomplished physical actions. To capture this interplay between retrospective-verbal and online-enacted aspects of the interaction in the visit, we represent the focal segments of our data with the help of tables in which facts from the medical records, talk in the transcript, and relevant physical actions on video are displayed side by side. In the column representing actions on video, we have included only the most salient examples that have direct connections to the actions performed by means of talk. This selectivity is also necessary for the readability of the tables. 305

Concept Formation in the Case of Anne 310

Articulating a conflict of motives. The conflict of motives that launched the concept formation process in Anne's case was manifested in multiple successive forms and events. Three of these were made explicit in the discourse during the visit analyzed here (Table 2).

Anne's nurse Tina recollects that in 2008, after Anne returned home from the hospital, the nurses who participated in Anne's home care were afraid that she would permanently remain in bed. In the second segment, Anne points out that all she wanted was indeed to stay in bed, to not even have to go to toilet. 315

Little by little Anne got better, but in September 2010 she got worse again. She spent two weeks in the hospital. In the third segment, Anne recollects an incident in which a physician suggested that Anne might start applying for a permanent place in a hospice or a similar institution due to her severe health problems. This suggestion made Anne angry, and she declares, "And I will live at home as long as I can." 320

In other words, Anne was practically bedridden and unwilling to get up, that is, increasingly dependent on help from professional caregivers, again in September 2010. A person who is unable to get up from the bed does not anymore belong to home care. Yet very shortly after that, in October 2010, Anne was appalled by the suggestion that she should live in a hospice; she wanted to continue living autonomously at home. This conflict of motives was emotionally quite strongly experienced by both Anne and the nurses. Anne talks about anger (1463: "I got angry"), and the nurse talks about fear (972: ". . . we had small fear, all of us, that you will remain there . . ."). 325 330

Forming a germ cell. Standing up from the chair as a germ cell came up in four segments of the visit (Table 3). In the first segment, the ubiquitous and self-evident character of standing up from the chair was discussed. In the second segment, Tina and Anne reconstruct in some detail the beginning of the rebuilding of Anne's mobility by means of "Just get up from there" (1027). In the third segment, Anne points out, "It is a very small thing which restarts all this" (1283), and in the fourth segment she again emphasizes, "This is where it started" (1753). It seems clear that in Anne's case standing up from the chair, or from the bed, was indeed the beginning and foundation upon which later achievements were built. 335

TABLE 2
Data on Articulating the Conflict of Motives

<i>Facts From the Records</i>	<i>Transcript</i>
September 2008, nurse's (HCW) documentation: 87-year old female client, Anne, living alone with the diagnoses: Heart insufficiency, hypertension, hypothyroidism, osteoporosis, asthma, skin disease, lower extremity edema. Client was released from the hospital and felt bad, she was irritated. Lower back pain hampering her mobility, pain radiates to the lower limbs. Client has diapers and moveable toilet bowl beside her bed. Agreed on a daily visit and distribution of drugs once a week, blood pressure, pulse, and monitoring the medication. Family takes care of shopping. Home care will reheat the food.	972 Tina: And we had, when we discussed it together, and with your own nurse, we had small fear, all of us, that you will remain there. . . . 973 Anne: Ah yes! 974 Tina: . . . there in the bed. 975 Anne: Yes. I did stay awake in the night there . . . 976 Tina: And they started bringing your food on a walker . . . on a tray, in front of you. And you were helped to the bucket, and washed by the bed. And a nurse helped you to dress up. 977 Anne: Yes. 978 Tina: So yes! We decided that this threat, that this situation will remain. 979 Anne: Yes.
October 2008, HCW documentation: Sitting at the table in the morning is so difficult that she did not manage to eat breakfast, went back to bed; had eaten breakfast, and took drugs, went back to bed because of pains after eating; painful today, managed by herself morning chores, but when those were done went back to bed; ate breakfast in bed. Told that the medication is not yet working, so does not dare to walk.	1008 Anne: When I stayed awake in the night, I just wished that I could remain there (in bed) and not have to go to toilet. . . . And I did not actually make it to the toilet; just let it come right there.
August 2010, HCW documentation: Pain killers are not helping. Consultation with the doctor by telephone and agreed that the client is sent to hospital.	1459 Anne: I had just been there in the hospital. And it was so unpleasant, that last time there. And then I . . . I just remember that this doctor sat here and started to talk . . . that since you have the heart problem, and so many illnesses. . . . Well, he of course meant that I should start applying for a place in some institution.
September 2010, HCW daily documentation: During two weeks in the beginning of September client was hospitalized because of heart problems and severe back pain. After the hospital, weight dropped several pounds and swelling decreased. Shortness of breath still on a daily basis, but not at rest. Pain has subsided. Home-care doctor made the annual control visit 2010-10-11 and suggested client not to stay at home anymore. However, client believes that she would stay at home as long as possible.	1462 Jaana: Well, what did you say? 1463 Anne: I got angry . . . I am just coming from the M, that hospital. And I will live at home as long as I can.

Examining the germ cell model. We identified two segments in which the germ cell was examined, to illuminate its limits (Table 4). In the first segment Anne explains that she cannot get up without support from a low chair. In other words, the model works with a kitchen chair but not with an armchair or sofa in which the angle of the knees makes getting up difficult. In the second segment, Anne points out that she in fact often uses the table as support even when getting up from a kitchen chair. Tina responds by explaining that it is indeed safer to use support when one is alone, but when the nurse is present, one should do it “without the hands,” as that is more efficient (1228). This makes it clear that the model is not a dogmatic prescription. Deliberate shifts between the poles of safety and autonomy are needed.

TABLE 3
Data on Forming a Germ Cell

<i>Facts From the Records</i>	<i>Transcript</i>
<p>November 2008, HCW documentation: Physical therapist made a home visit and gave exercise instructions, it is important to do sit-to-stand exercises and walk with rollator always when someone is with her. Home care will encourage her during encounters.</p> <p>May 2009, HCW documentation: Mobility agreement has been done with the client and it was agreed that nurses guide her to do the exercises twice a week, and she will be supported with sit-to-stand exercises and walks with the rollator indoors.</p>	<p>676. Anne: One doesn't always take seriously this standing up from the chair. 677. Jaana: It is kind of self-evident. 678. Anne: Yes. 679. Tina: Yes. But in any case, you Anne, you do it, you accomplish it. You do take care of standing up from the chair. 680. Anne: Yes. 1025. Tina: We started out when the training for the mobility agreement had just been launched in 2009. We nurses got very enthusiastic about this standing up from the chair. So that was our first one. 1026. Anne: Yes. 1027. Tina: That was the minimum we wanted to do. So we began by saying "Just get up from there." 1028. Anne: From there. Yes. 1029. Tina: Yes. And sometimes it would succeed once . . . 1030. Anne: Yes. 1031. Tina: . . . sometimes twice. Sometimes with guidance, with support, but we got up in any case. So that was the starting point, one must get her to get up. And then the courage grew. 1032. Anne: That's the way it was. And I also had to get to the toilet. 1283. Anne: Yes. It is a very small thing which restarts all this. 1753. Anne: Definitely! This is where it started. This is where it started.</p>

TABLE 4
Data on Examining the Germ Cell Model



<i>Transcript</i>	<i>Actions on Video</i>
<p>293. Anne: I could not get up from a low chair. From a regular chair with no elevated surface. 294. Jaana: Yes. 295. Anne: I cannot get up from that. 1223. Anne: Of course I get up time and again. But as this [chair] is between the table, I do grab the table and so. 1224. Tina: Well, it is not bad, especially when one is alone one should grab it. 1225. Anne: Yes. 1226. Tina: So that one does not lose the balance. 1227. Anne: Yes. 1228. Tina: But when the nurse is there it is safer to do it without the hands. That way it is more efficient. 1229. Anne: Yes. One doesn't do it like that alone.</p>	<p>(1223–1224) Tina and Anne examine how it is safer to do sit-to-stand exercises without the hands when the nurse is there available to help if needed.</p> 

TABLE 5
Straightening of the Back and Gaining a Better Posture

<i>Facts From the Records</i>	<i>Transcript</i>	<i>Actions on Video</i>
November 2008, HCW documentation: Anne is hunched up when walking with the rollator. I reminded her to keep good posture. Anne noticed immediately that the pain in the back decreases when she stands upright straight.	493. Tina: So your back is straighter than it was in the earlier days. 494. Anne: Yes it is, yes. 495. Tina: She was all hunched up. 496. Jaana: Yes. 497. Anne: Yes. 498. Tina: It has improved.	(500–503) Tina guides Anne’s posture after every standing up before sitting down, to achieve proper upper balance.
September 2010, documentation of physical therapist in M hospital: Improving upper body posture reduced pain when standing or sitting or walking.	499. Anne: Yes, you have made a point of it. 500. Tina: We have made a point of it, yes. And I pretty much attest that standing up from the chair, and the subsequent straightening of the back . . . Do you feel that this has helped with your posture? 501. Anne: And this [straightening her back]. 502. Tina: Yes. 503. Anne: This here [straightening her back].	

Implementing the model. The visit was rich in segments dealing with the implementation of the germ cell and ascending toward the concrete. We identified six trails of implementation and expansion of the germ cell, namely (a) straightening of the back and gaining a better posture; (b) taking regular walks; (c) using sit-to-stand as a diagnostic aid; (d) teaching relatives to do mobility exercises; (e) setting the table; and (f) being in better mood, taking care of oneself. The meaning of these six trails is clarified with the help of the data displayed in Tables 5 to 10.

The first trail toward the expanded concrete is manifested in a discussion on Anne’s straightening of the back and gaining a better posture as a result of sit-to-stand (Table 5). This segment is interesting in that it begins with verbal reconstruction of the past (495: “She was all hunched up”) and simultaneously proceeds to here-and-now enacted physical implementation in which Tina and Anne jointly display and examine Anne’s posture (photo in Table 5). The joint physical enactment is accompanied by minimal verbal attunements (501–503).


The second trail toward the concrete was the taking of regular walks into the stairs of the apartment (Table 6). Anne emphasizes that this was never skipped (664–665). Jaana points out the direct continuity from standing up from the chair to walking. Anne agrees. Although the transition from standing up to walking may seem self-evident, it is not so for a frail old person. Walking regularly into the stairs and back is literally a trail that expands one’s mobility from the small germ cell toward more open-ended movement in space. The records show that this expansion has led to lengthy walks outside the house.

The third trail consisted in using sit-to-stand as a diagnostic aid for noticing dizziness, shortness of breath, and pain in the client. Anne took up the fact that her blood pressure medication was

Q10

Q11

TABLE 6
Taking Regular Walks

<i>Facts From the Records</i>	<i>Transcript</i>	<i>Actions on Video</i>
September 2009, HCW documentation: Walking on stairs has been added to client’s mobility agreement 1-2 times per week. Getting up from a chair unaided went well several times, walking on stairs went well, Anne used a stick in one hand and the other hand on railing she also felt that walking on stairs is going well, but said that her knees felt weak after such a long time standing still when talking to a neighbor.	662. Anne: Well, it was always important that we went and walked those stairs. 663. Tina: Yes. 664. Jaana: You didn’t skip that? 665. Anne: That was not skipped, no. 666. Tina: Yes.[. . .] 671. Jaana: So you stood up from the chair and went to take a walk? 672. Anne: Yes. 673. Jaana: Yes. It is interesting, to think that standing up from the chair, that is a precondition for walking, which is pretty heavy. But exercise feels sometimes heavier, if I understand you correctly?	(662–674) Anne touching her thighs ponders how effective regular walks on stairs are nowadays.
October 2011, HCW documentation: We went to walk on stairs, the client walked 10 steps two times up and down.		
November 2011, HCW documentation: Anne walked with the rollator on the streets; outdoor walk successful after the sit-to-stand indoor exercise; she managed to walk a nice long trip.	674. Anne: Yes, that’s the way it is! Definitely.	

changed after she and her nurse noticed that she became dizzy when performing the sit-to-stands. Tina expanded on this experience, pointing out the broad uses of sit-to-stand as a diagnostic aid. Sit-to-stand is jointly and collaboratively used as a diagnostic device. 370

The fourth trail was that of teaching the client’s relatives to do mobility exercises. The conversation began with reconstructing the past but then it moved toward the future, envisioning possible new collaborative actions to be conducted with relatives. This demonstrates the dynamic nature of implementation as an open-ended search for new trails toward the concrete. 375

The fifth trail was that of setting the table. Anne reported on having turned the daily chore of setting the table into an extension of the germ cell of standing up from the chair (Table 7). Anne’s account in Table 7 is almost a textbook example of the power of material artifacts in the enhancement of human will and action (Gibson, 1986; Lewin, 1951; Vygotsky, 1987). Anne forgets some utensils when setting the table; the missing utensils then serve as second stimulus, to use Vygotsky’s terminology, that prompt Anne to take the effort and stand up from the chair and fetch what is missing. 380

The last trail we identified was that of being in better mood and taking care of oneself and one’s apartment as a consequence of the increased mobility (Table 8). Anne’s happy face in the photo in Table 8 tells perhaps more than the transcript. It is corroborated by the nurse’s documentation, reporting Anne’s happiness and good feeling after they “walked nearly half an hour in the beautiful autumn weather.” 385

TABLE 7
Setting the Table



<i>Facts From the Records</i>	<i>Transcript</i>	<i>Actions on Video</i>
September 2009, HCW documentation: Pain has been a problem in lifting heavy objects from the cabinet; home care has been assisting and heating the food; she is now, however, able to lift items out of the refrigerator by herself and she is willing to set the table by herself.	1135. Anne: And this way, even though I set everything ready at the table, plates and all, but then when one goes there to eat, some fork or some other thing is missing. It is aggravating, it means: stand up!	(1135) Anne manipulates a cereal box needed to make her breakfast and to set the table.
October 2011, HCW documentation: When she warms up the food and sets the table she does not get exhausted so much, and has been able, after heating the food, to start eating right away, whereas in earlier times she had to rest a bit before eating.	1136. Jaana: And that gives you exercise without even noticing it. 1137. Tina: Yes. 1138. Anne: Yes, one doesn't think about anything but . . . 1139. Tina: Yes, great moves are produced. 1140. Anne: . . . that everything is missing at the table. 1141. Tina: Yes. 1142. Anne: So, get up! 1143. Tina: Yes. 1144. Anne: One has to.	


TABLE 8
Being in Better Mood, Taking Care of Oneself

<i>Facts From the Records</i>	<i>Transcript</i>	<i>Actions on Video</i>
September 2009, HCW daily documentation: I heated food and she was pleased to eat after a good workout.	1273. Tina: When her mobility has improved, her hair is made, she is dressed up . . .	(1274–1276) Anne's happy facial expression while discussing the changes in her situation.
November 2011, HCW daily documentation: We walked nearly half an hour in the beautiful autumn weather. Anne rested at the bus stop sitting. She felt that the walk was quite heavy and stairs after the walk were particularly heavy. However, she was happy and felt good.	1274. Anne: Yes, I didn't care to make them. 1275. Tina: Yes. When the situation was really bad, you didn't even have the strength to change clothes. 1276. Anne: No. And not to make the bed either.	

The six trails taken together may be seen as multidirectional expansion of the germ cell. If not yet a fully concrete mode of sustainable mobility, they are at least strong indications of the possibility of such a new concept and way of life.

Reflecting on the process and its outcomes. In the transcript of the home care visit, we identified several segments with Anne and Tina's reflections on the procedures and outcomes of

TABLE 9
Data on Reflecting on the Process and Its Outcomes

<i>Facts From the Records</i>	<i>Transcript</i>	<i>Actions on Video</i>
December 2010, HCW documentation: A new mobility agreement made; client managed sit-to-stand test (five times) conducted without support at 20.54 sec, much faster than in the spring and autumn of 2009 when relying on the table.	518. Anne: And it sometimes happens . . . there are those mirrors there, so I all of a sudden realize, when I'm going to the toilet, that here goes again one of those.	(518–521) Anne and Tina examine Anne's invention of checking her posture when passing by the mirrors in the entrance. Anne shows the direction of the mirrors, marked with an arrow on the photo below.
November 2011, Anne's official home care plan: The client moves firmly supported by the rollator indoors, does not dare to go out alone. She is motivated to improve her mobility. Mobility agreement includes support with home exercises every Tuesday and Thursday afternoons during home care visits: sit-to-stand, stair walking, and outing. Client has agreed to do exercises such as sit-to-stand by herself, too.	519. Tina: It is indeed useful to do so that when you go by the mirror you straighten out, you check yourself whether you are today as straight as yesterday. 520. Anne: I check, well, yes. 521. Tina: So that is a good idea! 842. Tina: In her case, we have reduced the frequency of home visits. You used to have the home care visit in the mornings and in the daytime, didn't you? 843. Anne: Yes. 844. Tina: And relatives visited in the evenings. But now we have reduced it so that home care does not visit in the afternoons except on Tuesdays and . . . 845. Anne: . . . Thursdays. 846. Tina: . . . Thursdays. Those are the two mobility days. 847. Anne: Yes. 848. Jaana: How have your relatives taken these mobility exercises? Did they expect this kind of mobility program from the home care? 849. Anne: No. 850. Jaana: How have they commented on it? 851. Anne: Well, it is only good. I even went to my grandson's party on Saturday.	

the mobility exercises. In Table 9, we have included two of those, one focused on procedures and one focused on outcomes.

In Table 9, Anne takes up her use of the mirrors as tools for checking and correcting her posture. This is another innovative way to use the material artifacts of the environment to support reflective concept formation. In the second segment, Tina reports that the mobility exercises have made it possible to reduce the frequency of home care visits to Anne. Anne also mentions that she has attended her grandson's party recently. These are outcomes that have significance and consequences for Anne, for the home care services, and for Anne's family.

INTERACTIVE PHYSICAL ENACTMENT

In Tables 4 to 6 and in Tables 7 to 9, in the Actions on Video column, we have presented six examples of interactive physical enactment that accomplish the work of ascending to the concrete

in the formation of an expansive concept of mobility. We may identify three types of enactment in these examples. 405

The first type of enactment is that of physically performing and/or examining movements aimed at the new concept of mobility. Examples of this type of enactment are presented in Tables 4 and 5. In the former example, Tina and Anne examine how it is safer to do sit-to-stand exercises without the hands when the nurse is present. In the latter example, Tina guides Anne's posture after every standing up before sitting down, to achieve proper upper balance, too. 410 These enactments are more than rote repetitions of prescribed movements. They are saturated with interactive investigation and experimentation aimed at pushing forward in the development of mobility.

The second type of enactment is that of using material artifacts of the environment to enhance the concept formation. Examples of this type of enactment are presented in Tables 7 and 9. In the former example, Anne manipulates kitchen artifacts needed to make her breakfast and to set the table. This physical demonstration is intertwined with Anne's verbal reconstruction of how she forgets some utensils when setting the table; the missing utensils then serve to prompt Anne to take the effort and stand up from the chair and fetch what is missing. In the latter example, Anne and Tina examine Anne's invention of checking her posture when passing by the mirrors in the entrance. These two are perhaps the most powerful examples of Anne's inventive mediational engagement with the emergent concept of mobility. 415 420

The third type of enactment is that of using bodily gestures and facial expressions to enhance the interactive construction of an observation, idea, or feeling. Examples of this type of enactment are presented in Tables 6 and 8. In the former example, Anne explains how effective regular walks on stairs are by touching her thighs. This gesture effectively connects the notion of regular walks to the important aim and effect of strengthening the thigh muscles. In the latter example, Anne displays a happy facial expression indicating her satisfaction with the changes in her situation. Here the facial expression makes visible Anne's present condition and thus effectively complements and enriches Anne's verbal utterances, which focus on the negative features of her past condition. 425 430

DISCUSSION

At the beginning of our analysis, we asked, Can we identify a germ cell of a new concept of mobility in nurses' and clients' practical efforts to integrate physical mobility exercises into the routines of home care services and the client's daily chores? Standing up from the chair is our candidate for such a germ cell. An analysis based on a single case is necessarily limited, but we maintain that Anne's case enriches our understanding of this germ cell. An aggravated conflict of motives made standing up a vital focus of joint efforts at the beginning of Anne's case. However, standing up from the chair has remained a solid core and object of reflection in Anne's expanding mobility. 435 440

The germ cell was formed through repeated collaborative physical enactment. Interestingly enough, we found little evidence of continuing use of the visual exercise booklet. It seems that the bodily action schemas and associated physical artifacts (chairs, tables, stairs, utensils, mirrors) served as a rich reservoir for mediation and material anchoring that made the booklet relatively unimportant after its initial introduction. This calls for further analyses of the roles and 445

potentials of meditational artifacts in actions and activities in which the body itself is the crucial, but definitely not the only, instrument.

This does not mean that the concept formation process was nonverbal or unarticulated. Physical enactments were regularly accompanied by verbal exchanges between Anne and the nurse, and the reflective verbal reconstruction of events and experiences of the past two years was performed with ease and personal engagement. 450

Our second question was, How and by what actions do the actors use and develop the germ cell to ascend toward the concrete? In our analysis of the home care visit, we identified segments that represent six trails of expanding from the abstract toward the concrete. The outcomes of our analysis are summarized in Figure 3. 455

Figure 3 depicts ascending from the abstract to the concrete not simply as a vertical progression. Movement from the abstract germ cell toward the concrete is depicted as multidirectional, starlike expansion by means of trails in space. This view connects the dialectical theory of concept formation with the ideas of cognitive trails (Cussins, 1992) and lines of wayfaring (Ingold, 2007). Such a merger of ideas is, of course, also problematic and in need of further critical elaboration (Engeström, 2009, p. 13). 460

We did not identify segments containing specific actions of analysis that would lead to the discovery and modeling of the germ cell. This seems to be largely a consequence of the retrospective nature of our data. Such actions of analysis and modeling have probably initially been performed in a predominantly enactive mode and are thus very difficult to reconstruct afterward. What remains 465

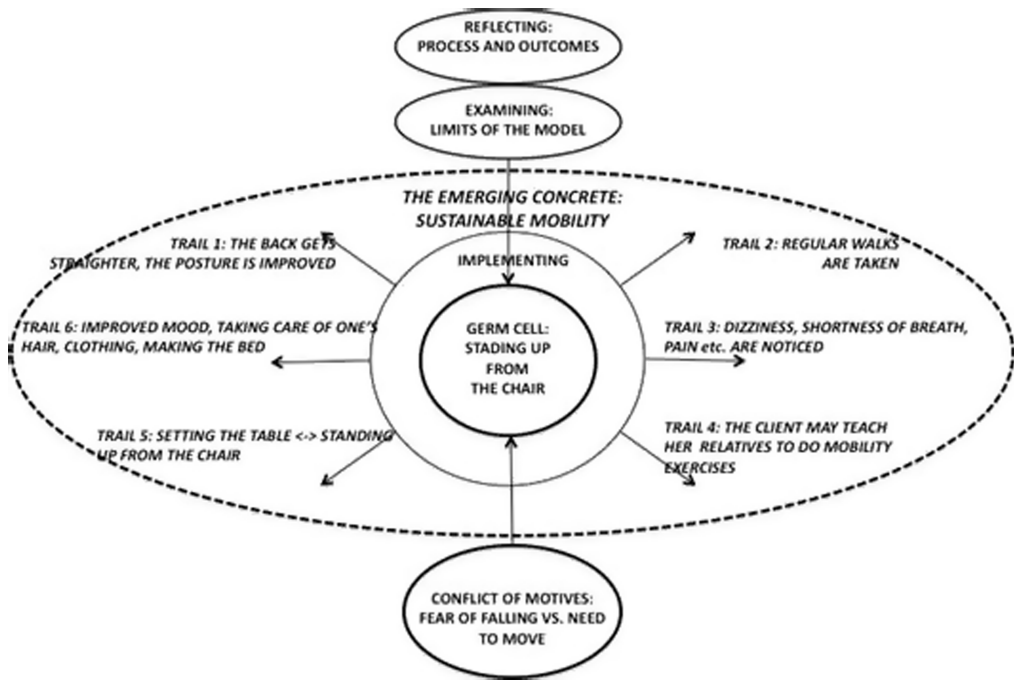


FIGURE 3 Ascending from the abstract to the concrete in Anne's case.

accessible is the client's and the nurse's firm understanding of and commitment to standing up from the chair as a cornerstone of mobility. This does not seem to be merely a dogma or a belief inculcated by authorities. But how exactly, in the minute detail of situated actions, did they reach this understanding and commitment seems to be beyond our reach in the present analysis.

Our third question was, What is the role of embodiment and physical enactment, and in particular the role of embodied social interaction, in this process of ascending from the abstract to the concrete? The answer is twofold. On one hand, the whole process of implementing the mobility agreement has been built on jointly performing physical exercises right from the start. On the other hand, in the specific case of Anne, the home care visit we analyzed was largely retrospective and verbal.

In spite of this peculiarity, we did observe three types of important bodily enactments in the visit, namely, (a) physically performing and/or examining movements aimed at implementing the new concept; (b) using material artifacts of the environment to enhance the concept formation; and (c) using bodily gestures and facial expressions to enhance the interactive construction of an observation, idea, or feeling. These interactive physical enactments were at the core of the concept formation process, not just peripheral additional features in it.

CONCLUSION

In what sense is this really concept formation? Couldn't it be explained simply as a case of teaching Anne some exercise routines and thus changing her behavior through repetition and habituation?

We see concept formation in the wild as foundationally societal and collective process that takes shape in a distributed fashion not reducible to individual learning, cognition, and behavior. Greeno and van de Sande (2007) see a concept "as a family of interrelated constraints and affordances that functions in organizing some aspect of the community's activities" (p. 12). Consequently, "conceptual growth by a community or group is change in the concepts and conceptions it uses in communicating, understanding, reasoning, solving problems, and making decisions, or in the distribution of participation in these activities across members of the community or group" (p. 12).

In concept formation in the wild, it is increasingly common that a new concept must be formed even though nobody knows exactly what it is (Engeström, Pasanen, Toiviainen, & Haavisto, 2005). The shape and contents of the new concept remain open and loose for an extended period (Löwy, 1992). Furthermore, as Greeno and van de Sande stated, "Practices also include concepts . . . that are implicit, that is, they are not specified by labels or discussed in specific terms in discourse, but still function, often normatively, in organizing the community's activities" (p. 12). In our case, the new concept of mobility still does not have a fixed verbal label or an authorized description. However, several facts indicate that we are actually dealing with a genuinely expansive new concept, taking shape and having an impact in the multiorganizational field of home care in the city of Helsinki and beyond.

The Helsinki Health Centre's mobility agreement effort was awarded with the Mayor's Prize for Achievement in 2010. The Helsinki Health Centre Strategy and Balanced Score Card document for 2011 to 2013 states,

Home care clients have a care-plan which includes the mobility agreement. Measure for monitoring this is sit-to stand test as part of the mobility agreement: first measurement in first quarter and the final measuring in fourth quarter of the year, and the results will be recorded in electronic health database.

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The Finnish National Audit Office's Report (2010, p. 97) mentions the Helsinki home care model and the regular sit-to-stand exercises as recommended advances. All this means that the efforts of Anne and Tina analyzed in this article are spearheads of a much broader conceptual change effort.

What is new in the concept being developed in the daily encounters between old people and their nurses? First, the emerging new concept is a way to transcend and overcome the contradiction between safety and autonomy, or between fear of falling and need to move. Mobility, as exemplified by standing up from the chair, is not just any movement or exercise. It is movement aimed at strengthening the muscles and improving the balance that make further movement possible and safe and reduce or eliminate the fear of falling. Smart movement overcomes the fear for movement. Second, the new concept embeds and integrates mobility into necessary everyday chores and actions, into the flow of the life activity of the old person. It is not movement and exercise as separate actions aimed at improvement of physical condition. It is movement necessarily needed to get by. Third, the new concept sees mobility as accomplished and largely performed together, jointly between the client and the nurse (or some significant other). It is not mobility of an isolated individual. As we saw in Anne's case, this social distribution is also material distribution, relying on often innovative uses of everyday household artifacts such as chairs, tables, stairs, mirrors, and utensils. Finally and perhaps most importantly, the new concept frames physical mobility in terms of sustainability rather than in terms of achievement and competition. We might actually call the new concept *sustainable mobility*.

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But perhaps sustainable mobility is old news culturally and only new to the particular client and the particular nurses in this case? From our multiyear collaboration we know that the idea of sustainable mobility for the elderly clients of home care is a new concept for the city of Helsinki and its home care service. A literature search shows that sustainability is occasionally discussed in studies of elderly people's mobility (e.g., Jancey et al., 2008). However, as a name of a concept, sustainable mobility is not to be found in this field (in fact, this name is commonly used in an entirely different field, namely in the field of planning urban transport systems; see Banister, 2008).

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Our analysis is based on a dialectical understanding of concepts as theoretical generalizations. It builds on the principle of ascending from the abstract to the concrete. In this framework, mastery of a theoretical concept consists in reflective movement from an initial abstraction—a germ cell—to multiple interconnected concrete manifestations and expansive implementations. Such a concept is essentially a future-making device that cannot be reduced to a static definition.

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The formation of complex, contested concepts in the wild is typically widely distributed in time as well as social and physical space. Thus, ascending from the abstract to the concrete in the formation of a new concept of sustainable mobility for home care in Helsinki has already been going on for several years, and it may well take a few more years before we can judge its success and stabilization with any certainty.

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Prolonged processes of concept formation have been analyzed in detail retrospectively by historians, philosophers, and psychologists of scientific cognition (e.g., Arsen'ev, Bibler & Kedrov, 1967). To capture and record key steps of such a temporally and spatially distributed process in

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vivo is a daunting challenge. In this article, we focused our analysis on a home care visit in which the delivery of services such as physical mobility exercises was intertwined with retrospective recollection and discussion of experiences and events from the past two years. This allowed us to reconstruct main steps in the ascending from the abstract to the concrete in the case of Anne. 555
 Although certainly less reliable than an analysis of a comprehensive longitudinal set of observations and recordings, our procedure yields richer data than a simple interview in which a subject is asked to recollect past events. In our case, the recollection took place within the context of a real care visit, inserted in the flow of online actions and embodied interactions of care and service delivery. Such a mix gives weight to the recollections produced. For instance, when Anne 560
 tells her nurse and the researcher that “I even went to my grandson’s party on Saturday” (turn 851, Table 11), this recollection has weight. It can be easily verified, and its consequential importance is immediately visible: This older person went to a party on her own feet and on her own initiative, yet less than one year earlier she was fearfully confined to the bed. Q13

Concept formation in the wild means that we look beyond the acquisition of fixed, authorized concepts in contexts where institutionalized power relations are taken for granted. It does not mean that concepts are formed in a social vacuum or without various kinds of coaching and instruction. As Kruger and Tomasello (1998) pointed out, human learning is pervasively instructed learning—but not necessarily in the sense of formal schooling. To go beyond recollections and reconstructions in the analysis of ascending from the abstract to the concrete, 570
 the process may be deliberately condensed and intensified by means of formative interventions (Engeström, 2011; Sannino, 2011). This opens up the methodological dilemmas and challenges of intervention research. If an intervention imposes on the subjects a procedure, such as ascending from the abstract to the concrete, how can it lead to new knowledge beyond the tautological result that the subjects do what they are asked to do? In future studies of concept formation in the 575
 wild, these dilemmas must be faced and resolved (Engeström & Sannino, forthcoming). Q14

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