エンゲストローム氏講演会記録

A Vision of Activity Theory: Possibilities of Expanded Learning in Co-Configuration Work

活動理論の新展開＝「拡張された学び」の可能性

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CO-CONFIGURATION AS A NEW TYPE OF WORK AND PRODUCTION

Steve Barley and Gideon Kunda (2001) argue that prevailing theories of organizing are based primarily on detailed observations of bureaucratic work, but that the nature of work today is sufficiently different to bring the applicability of these theories into question. Barley and Kunda's primary conclusion is that detailed studies of work should be reintegrated into organizational science in order to provide a solid empirical basis for post-bureaucratic theories of organizing. This argument is applicable in the study of organizational and workplace learning. Without a substantive understanding of the historically changing character of the work done in a given organization, theories of organizational and work-based learning are likely to remain too general and abstract to capture the emerging possibilities and new forms of learning.

Bart Victor and Andrew Boynton (1998) provide a useful historical framework for such a reintegration reintegration of organization, work, and learning. They identify five types of work in the history of industrial production: craft, mass production, process enhancement, mass customization, and co-configuration (Figure 1).

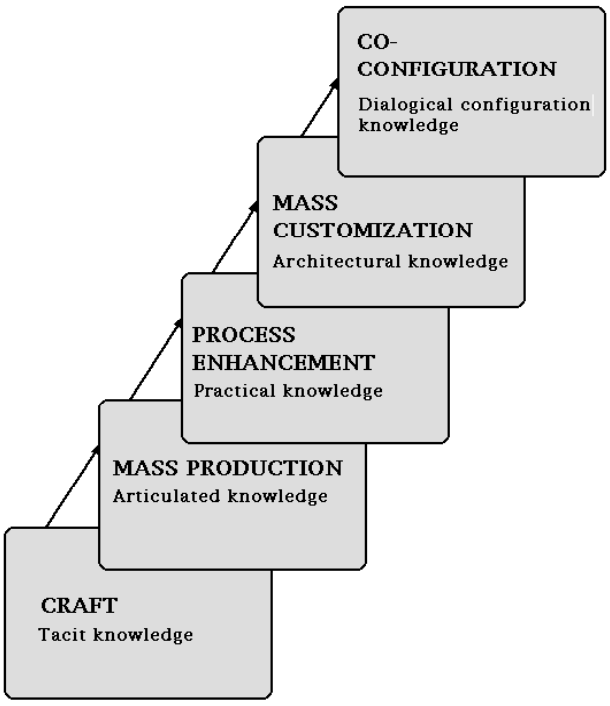

Figure 1. Historical forms of work (adapted from Victor & Boynton, 1998, p.6 and p.233)

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Each type of work generates and requires a certain type of knowledge and learning. At present, the most demanding and promising developments are associated with the emergence of *co-configuration work*. A critical prerequisite of co-configuration is the creation of customer-intelligent products or services which adapt to the changing needs of the user.

"The work of co-configuration involves building and sustaining a fully integrated system that can sense, respond, and adapt to the individual experience of the customer. When a firm does co-configuration work, it creates a product that can learn and adapt, but it also builds an ongoing relationship between each customer-product pair and the company. Doing mass customization requires designing a product at least once for each customer. This design process requires the company to sense and respond to the individual customer's needs. But co-configuration work takes this relationship up one level – it brings the value of an intelligent and 'adapting' product. The company then continues to work with this customer-product pair to make the product more responsive to each user. In this way, the customization work becomes continuous. (…) Unlike previous work, co-configuration work never results in a 'finished' product. Instead, a living, growing network develops between customer, product, and company." (Victor & Boynton, 1998, p.195)

We may provisionally define co-configuration as an emerging historically new type of work that has the following characteristics: (1) adaptive 'customer-intelligent' products or services, or more typically integrated product/service combinations, (2) continuous relationships of mutual exchange between customers, producers, and the product/service combinations, (3) ongoing configuration and customization of the product/service combination over lengthy periods of time, (4) active customer involvement and input into the configuration, (5) multiple collaborating producers that need to operate in networks within or between organizations, (6) mutual learning from interactions between the parties involved in the configuration actions.

In other words, co-configuration is more than just smart, adaptive products. "With the organization of work under co-configuration, the customer becomes, in a sense, a real partner with the producer." (Victor & Boynton, 1998, p.199) Co-configuration typically also includes interdependency between multiple producers forming a strategic alliance, supplier network, or other such pattern of partnership which collaboratively puts together and maintains a complex package which integrates material products and services and has a long life cycle. Co-configuration requires flexible 'knotworking' in which no single actor has the sole, fixed authority – the center does not hold (Engeström, Engeström & Vähäaho, 1999).

Co-configuration is a very demanding mode of work and production. It offers radical strategic advantages when the objects of work demand it. Medical care is a case in point. An increasing percentage of patients have multiple chronic illnesses for which standardized, single-diagnosis care packages are inadequate. In Helsinki, 3.3% of the patients use 49.3% of all health care expenses, and 15.5% of patients use 78.2% of all resources. A significant portion of these patients are so expensive because they drift from one caregiver to another without anyone having an overview and overall responsibility for their care. Co-configuration work is a strategic priority because the different caregivers and the patients need to learn to produce together well coordinated and highly adaptable long-term care trajectories.

It is not unusual to see co-configuration attempts falter. An observer of one such attempt described her findings with the help of a game metaphor as follows.

"The actors are like blind players who come eagerly to the field in the middle of the game, attracted by shouting voices, not knowing who else are there and what the game is all about. There is no referee, so rules are made up in different parts of the field among those who happen to bump into one another. Some get tired and go home." (Kangasoja, 2002)

A precondition of successful co-configuration work is dialogue in which the parties rely on real-time feedback information on their activity. The interpretation, negotiation and synthesizing of such information between the parties requires new, dialogical and reflective knowledge tools as well as new, collaboratively constructed functional rules and infrastructures (Engeström & Ahonen, 2001).

THEORY OF EXPANSIVE LEARNING AS FRAMEWORK AND CHALLENGE

Processes of learning may be effectively differentiated along two key dimensions, one representing the given vs. newly emerging nature of the object and activity to be mastered, the other one representing the famous distinction between exploitation of existing knowledge vs. exploration for new knowledge put forward by James March (1996). Treated as dichotomies, these two dimensions yield a matrix of four basic types of learning at work (Figure 2).

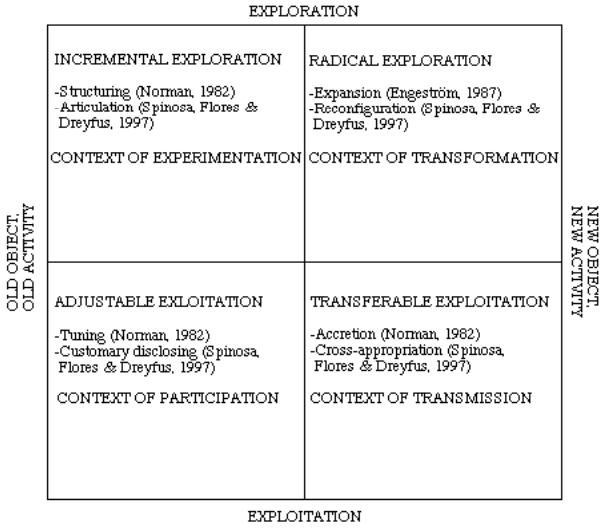

Figure 2. Four types of learning[1]

Transferable exploitation (the lower right-hand field of the matrix) is transmission of existing knowledge in order to cope with a new object and a new activity. The stepwise appropriation of well-established Japanese quality management techniques by American companies facing new competitive pressures and market conditions is a good example (Cole, 1999). Don Norman's (1982) concept of accretion and the more recent concept of cross-appropriation (Spinosa, Flores & Dreyfus, 1997) illuminate different aspects of this type of learning.

Adjustable exploitation is gradual acquisition and internalization of the existing knowledge and skills embedded in the given activity. This type of learning is manifest in apprenticeship-type settings. Norman (1982) describes it as tuning, and Spinosa, Flores and Dreyfus (1997) as customary disclosing,

Incremental exploration is construction of new knowledge by experimentation within the given activity. Norman (1982) talks about this type of learning as structuring, while Spinosa, Flores and Dreyfus characterize it as articulation. This type of learning is often associated with the implementation of complex configurational technologies, such as the computer-aided production management systems analyzed by Fleck (1994).

"Each configuration is built up from a range of components to meet the very specific requirements of the particular user organization. Configurations therefore demand substantial user input and effort if they are to be at all successful, and such inputs can provide the raw material for significant innovation. (…) the specific implementation/innovation process with configurations is a matter of learning through the struggle to get the overall system to work, i.e., a process of 'learning by trying': improvements and modifications have to be made to the constituent components before the configuration can work as an integrated entity." (Fleck, 1994, p.637-638)

"This is a more fundamental process of learning, much more like the trial and error nature of genuine experimentation than the secular accumulation of improvements in carrying out essentially the same activity." (Fleck, 1994, p.648)

Fleck's case brings us into the transitional zone between incremental exploration and radical, expansive exploration. *Radical exploration*, or expansive learning (the upper right-hand field of the matrix), begins when experimentation is not anymore aimed only at making a well-bounded new technology work in the framework of a given, pre-existing activity. Radical exploration is learning what is not yet there. It is creation of new knowledge and new practices for a newly emerging activity, that is, learning embedded in and constitutive of qualitative transformation of the entire activity system. Such a transformation may be triggered by the introduction of a new technology, but it is not reducible to it. Radical exploration is the most poorly understood and historically most interesting type of learning. It is what the

[1] I am grateful to Professor Risto Tainio for ideas that led to the formulation of the matrix.

theory of expansive learning (Engeström, 1987) is focused on, and what Spinosa, Flores and Dreyfus (1997) call reconfiguration.

"In cases of reconfiguration, a greater sense of integrity (as experienced in articulation) is generally not experienced. Rather, one has the sense of gaining wider horizons." (Spinosa, Flores and Dreyfus, 1997, p.26)

The four types of learning are not mutually exclusive. To the contrary, as shown already by Bateson (1972), expansive learning processes involve sub-processes or layers of the other types of learning, but these gain a different meaning, motive and perspective as parts of the expansive process.

The escalating cyclic character of expansive learning through a sequence of learning actions ascending from the initial abstract 'germ cell' to the concrete whole of the system to be mastered is reasonably well understood (Davydov, 1990, Engeström, 1987, 1999b, 2001a). In this respect, the theory of expansive learning provides a central framework for the analysis and design of learning processes in co-configuration settings.

What is not so well understood is how such basically forward-oriented expansive learning actions are intertwined with horizontal or sideways movement across competing or complementary domains and activity systems, particularly characteristic to co-configuration. In a series of studies, we have identified patterns of such horizontal movement in expansive learning processes situated in organizational fields moving toward co-configuration work: boundary crossing (Engeström, Engeström & Kärkkäinen, 1995), multi-voiced dialogue (R. Engeström, 1995), negotiated knotworking (Engeström, Engeström & Vähäaho, 1999), and cognitive trail-blazing (Engeström, in press). While still provisional, these findings provide significant starting points for building a conceptually solid and empirically well-grounded *next-generation version of the theory of expansive learning that puts the horizontal and inter-organizational dimension of learning in the center*.

THE LANDSCAPE OF LEARNING IN CO-CONFIGURATION

Learning in co-configuration settings is typically distributed over long, discontinuous periods of time. It is accomplished in and between multiple loosely interconnected activity systems and organizations operating in divided local and global terrains and representing different traditions, domains of expertise, and social languages. Learning is crucially dependent on the contribution of the clients or users. Learning is embedded in major transformations, upheavals, innovations, implementations and movements. It takes place is heterogeneous patchworks and textures of small and large, unnoticeable and spectacular actions, objectifications, trajectories and trails.

Co-configuration presents a twofold learning challenge to work organizations. First, co-configuration work itself needs to be learned (learning *for* co-configuration). In divided multi-activity terrains, expansive learning takes shape as renegotiation and reorganization of collaborative relations and practices, and as creation and implementation of corresponding concepts, tools, rules, and entire infrastructures.

Secondly, within co-configuration work, the organization and its members need to learn constantly from interactions between the user, the product/service, and the producers (learning *in* co-configuration). Even after the infrastructure is in place, the very nature of ongoing co-configuration work is expansive; the product/service is never finished. These two aspects – learning for and learning in - merge *in* practice.

As a *general working hypothesis*, I propose that the expansive learning required and generated by co-configuration work may be characterized with the help of three central features.

1. It is *transformative* learning that radically broadens the shared objects of work by means of explicitly objectified and articulated novel tools, models, and concepts (see Engeström, 2001a, in press, Engeström, Puonti & Seppänen, in press). This transformative

aspect of learning in co-configuration puts a heavy emphasis on *actions of design, modeling, textualization, objectification, conceptualization and visibilization* (Engeström, 1999b). We might say that this is the visible superstructure of new forms of expansive learning at work.

2. It is *horizontal* and dialogical learning that creates knowledge and transforms the activity by crossing boundaries and tying knots between activity systems operating in divided multi-organizational terrains (see Engeström, Engeström & Vähäaho, 1999, Engeström, Engeström & Kerosuo, in press). This horizontal aspect of learning in co-configuration puts a heavy emphasis on *actions of bridging, boundary crossing, 'knotworking', negotiation, exchange and trading*. This is the structure of situationally constructed social spaces, arenas and encounters needed in new forms of expansive learning at work.

3. It is *subterranean* learning that blazes embodied and lived but unnoticeable cognitive trails that serve as anchors and stabilizing networks that secure the viability and sustainability of the new concepts, models and tools, thus making the divided multi-organizational terrains knowable and livable (see Cussins, 1992, Engeström, in press). This subterranean aspect of learning in co-cofiguration puts a heavy emphasis on *actions of spatial transition and movement, repetition, stabilization and destabilization, and embodiment*. This is the invisible, rhizomatic infrastructure of new forms of expansive learning at work.

METHODOLOGY

Developmental work research (Engeström, 1993) is an application of cultural-historical activity theory (Leont'ev, 1978, Engeström, Miettinen & Punamäki, 1999) in the study of work and organizations. Within cultural-historical activity theory, formative experiments and developmental interventions have been an integral aspect of the methodology from the beginning (Vygotsky, 1978; for a recent discussion on interventionist methodology in developmental work research, see Engeström, 2000a).

Naturalistic social studies of science and technology (e.g., Latour & Woolgar, 1979) have been an influential model for ethnographic studies of professional work and discourse. Latour (1987) crystallized the quest of this research in his call: Follow the actors! Much of the recent ethnographic research in professional and industrial work has indeed focused on following the actors constructing their activities, social worlds and accepted truths by means of talk and text (e.g., Kunda, 1992, Darrah, 1996).

While this stance has surely been a healthy antidote to the tyranny of structures, there is a risk in focusing exclusively on actors. The professionals and their discursive interactions may appear as somewhat omnipotent constructors of their activities and social worlds. From the point of view of activity theory, this would mean that the material grounding and stubborn systemic dynamics of practical activities are lost or ignored, the resistance of objects is forgotten.

To an increasing degree, professional work and discourse are socio-spatially distributed among multiple organizational units and form long chains of interconnected practical and discursive actions. Actors become dispersed and replacable which renders the focus on actors increasingly vulnerable as a research strategy. What can keep radically distributed work and expertise together, coordinated and capable to act in concert when needed? I argue that the necessary glue is focus on the objects of professional work and discourse. As Knorr-Cetina (1997, p.9) points out, "objects serve as centering and integrating devices for regimes of expertise that transcend an expert's lifetime and create the collective conventions and the moral order communitarians are concerned about."

Objects should not be confused with goals. Goals are primarily conscious, relatively short-lived and finite aims of individual actions. The object is a heterogeneous and internally contradictory, yet enduring, constantly reproduced purpose of a collective activity system that motivates and defines the horizon of possible goals and actions (Leont'ev,

1978, Engeström, 1995).

Organizations may emerge through conversation, but they do not emerge for the sake of conversation. They emerge and continue to exist in order to produce goods, services, or less clearly definable outcomes for clients or users. If you take away patients and illnesses, you do not have hospitals. The object is not reducible to the raw material given or the product achieved. It is understandable as the trajectory from raw material to product in the emerging context of its eventual use by another activity system. Thus, the object of clinical work may be characterized as the trajectory from symptoms to treatment outcomes in the context of the patient's life activity. The object is projective and transitory, truly a moving horizon. But it is also specific and concrete, crystallized, embodied and re-problematized in every patient and illness entering the clinic.

All this indicates that we need to trace the objects of expert work as they move in space and time, across various situations and boundaries. History is not made by singular actors in singular situations but in the interlinking of multiple situations and actors accomplished by virtue of the durability and longevity of objects (see Engeström, Puonti & Seppänen, in press). This calls for a conscious expansion of attention beyond the subjects, to include and center on the objects of work and discourse. This is indeed the spirit of the more recent work of Latour (1996, 1999), as well as that of Knorr-Cetina (1997, 1999) and Daston (2000).

In cultural-historical activity theory, the object of activity is regarded as the key to understanding change and learning (Leont'ev, 1978). Expansive learning is above all stepwise expansion of the object. The potential for such expansion is best discovered by means of change experiments, interventions which open up the zone of proximal development of the activity system (Vygotsky, 1978). Thus, the study of expansive learning in co-configuration settings requires a longitudinal and interventionist approach which may be crystallized in the form of three methodological principles: (1) *follow the objects* of co-configuration work in their temporal and socio-spatial trajectories, (2) *give the objects a voice* by involving the clients or users in dialogues where the object is negotiated, (3) *expand the objects* by organizing intervention sessions where the producers and clients construct new shared models, concepts and tools to master their objects.

Our first major intervention studies in health care settings were conducted in the late 1980s (see Engeström, 1990, 1991). An overview of the 15-year lineage of this research is given in a forthcoming book titled *Collaborative Expertise: Expansive Learning in Medical Work* (Engeström, in press). In the mid-1990s, researchers in the Center for Activity Theory and Developmental Work Research at University of Helsinki developed a new intervention methodology under the generic name of *Change Laboratory* (Engeström & al., 1996). Variations of this method have been used in a large number of intervention studies in settings ranging from post offices and factories to schools and newsrooms.
The Change Laboratory sessions are a *purposeful blend* of elements familiar from existing workplace practices and new elements brought in by the researchers. They are designed to serve as *microcosms* where potentials of co-configuration and knotworking can be experienced and experimented with.

"A microcosm is a social testbench and a spearhead of the coming culturally more advanced form of the activity system. ...the microcosm is supposed to reach within itself and propagate outwards reflective communication while at the same time expanding and therefore eventually dissolving into the whole community of the activity." (Engeström, 1987, p.277-278)

In practice, the methodological principles sketched above mean that selected objects of work in the research settings are first followed ethnographically. Critical incidents and examples from the ethnographic material are brought into a series of Change Laboratory sessions to stimulate analysis and negotiation between the participants. The laboratory sessions themselves are videotaped for analysis. The participants of the sessions engage in constructing shared models and tools to enhance their collaborative mastery of the object. The objects are again followed as the new tools and models are being implemented. Drawing on Vygotsky's (1978) method of dual stimulation, this methodology is an

expansion of the design experiments described by Brown (1992). It allows for the collection of rich longitudinal data on the micro-interactions and cognitive processes involved in expansive learning as the participants make visible their work, moving between actions and activity, between the past, the present, and the envisioned future (see Engeström, 1999a, 2000).

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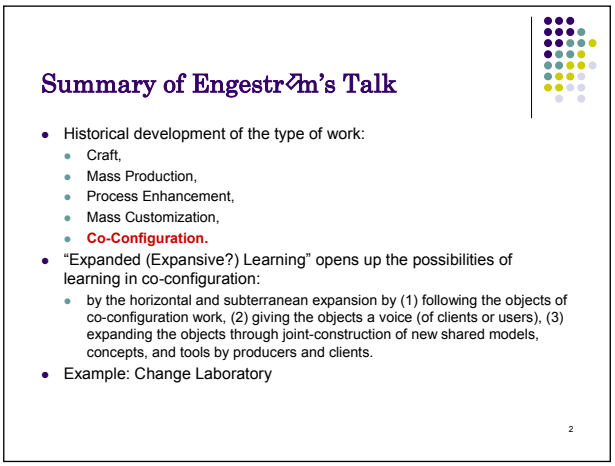
Comments

[Sayeki]: Uh, I don't have a loud voice, so I'm going to use this microphone, OK? I prepared my comment following this handout, but there can be some misunderstanding. I am afraid I focused on different issues than what he tried to stress on, and have prepared different things.

Let me summarize what Engeström said. First, he explained

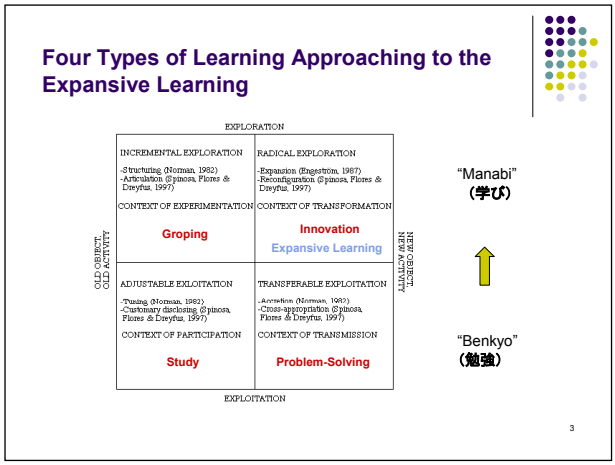


his thoughts on development of the type of work; from craft, to mass production, to process enhancement, to mass customization, and to co-configuration. He focused more extensively on the concept of co-configuration as well as "expanded learning" shown in the title of this paper. But you (to Engeström) used the term, "expansive learning." Which is correct? Expansive?

[Engeström]: Yeah, I actually got the original title from Professor Sato, and it was expanded. (laughter) I can follow his lead, but usually I call it "expansive." But I thought that probably they are the same.

[Sato]: Sorry. I thought I was correct.

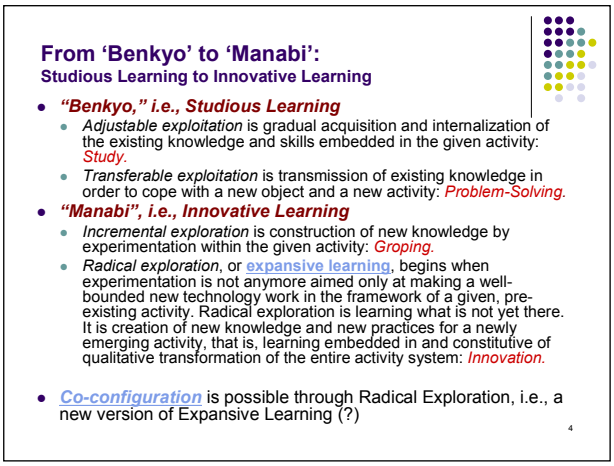
[Sayeki]: So, he mentioned expansive learning opens up the possibility of learning in co-configuration by the horizontal and subterranean expansion following the objects of co-configuration work. And secondly, giving the objects a voice by involving the clients or users. And the third, expanding the objects through joint-construction of the new shared models, concepts and tools of producers and clients. And the example follows. It's supposed to be about the Change Laboratory, but you have explained so little about the Change Lab, which I expected. Now, here are the four types of learning which are brought to, approaching to the expansive learning. And I sort of re-defined them in my



own understanding. The below left is context of participation which I call study and the below right is problem-solving. In both of them, goals are set by the outside of learners and are evaluated by the measures of the attainment. I think that those exploitation types of learning are what we Japanese call "benkyo." There are two different concepts of learning in Japanese language: "benkyo" and "manabi." You know, first name of Sato, Manabu which is different from "exploitation". (laughter) And upper left, "groping" is searching.

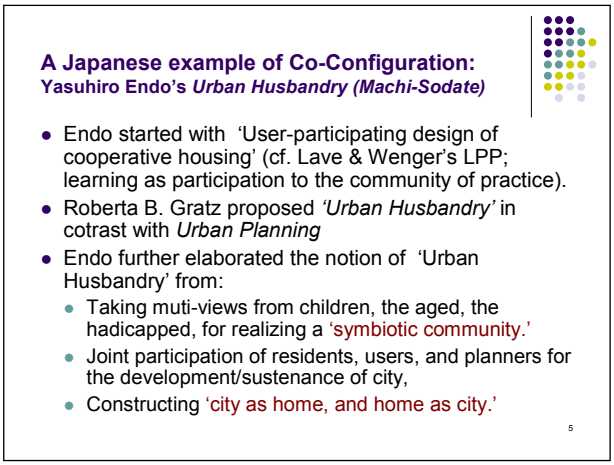
[Engeström]: What did you say now, groping?

[Sayeki]: Yeah. Somehow, more general concept of manabi, I'm going to explain. And the upper right is what I call "innovation". And I'll explain a little bit more. "Benkyo" is studious learning which is, first of all, of course, adjustable exploitation: gradual acquisition and internalization of the existing knowledge and skills embedded in the given activities. I call this "study". Just "study". The below right is transferable exploitation: transmission of existing knowledge in order to cope with a new object and a new activity. That's problem-solving. "Manabi" is the upper half. It's innovative learning which I call it. The first type of the



innovative learning is incremental exploration: construction of new knowledge by experimentation within the given activity. That's what I call "groping." Searching or inquiring. And radical exploration, or expansive learning, begins when experimentation is not anymore aimed only at making a well-bounded new technology work within the framework of a given pre-existing activity. Radical exploration is learning what is not yet there. It is creation of new knowledge and new practices for newly emerging activities. That is learning embedded in and constitutive of qualitative transformation of the entire activity system. That's what I call "innovation." And as far as I understand it, co-configuration is possible through radical exploration. That is a new version of expansive learning. I was not sure, but I'm now sure.

Now, there is an example of co-configuration in Japan. This



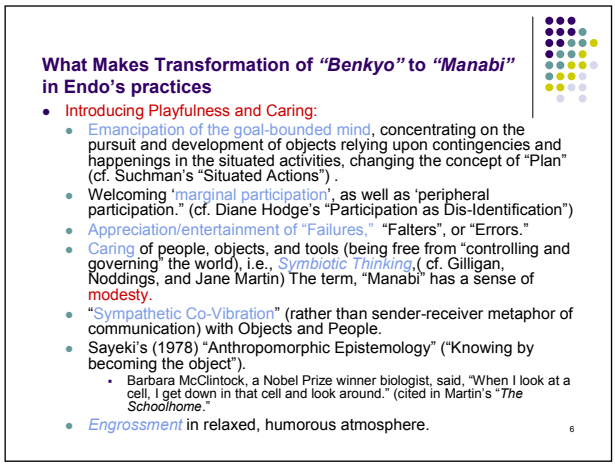
is Yasuhiro Endo's urban husbandry. This is Yasuhiro Endo's. You got this one? Yes. This is exactly the example of the co-configuration activity in Japan ... This architect, Yasuhiro Endo is an architect. Endo started with "user-participating design of cooperative housing". And that was, I think, 10 years ago or something. And he called upon me to explain Lave and Wenger's LPP. Because he was excited about Lave and Wenger's concept of learning as participation to the communities of practice. Because Endo and their colleagues and their group are doing learning as participation to the communities of practice. And the user participating design, the future residence of the housing, came together, and discussed, like changed that kind of stuff, you know. And when I jumped into that group discussion, some facilitators drew a cartoon type of illustration from a talk among lots of people, different kinds of people, and then they tried to discuss, and tried to make up what kind of design of the cooperative housing might be very good for themselves, and so no architect professional insisted with their skills and knowledge. They are just there, and they get together with a variety of kinds of people to live in the housing. Young, old, handicapped, everyone. They came together to design the user-participating design. And so, the key concept was participation. Participation. So, they just were so enthusiastic about the notion of learning as participation. And so they invited me to explain Lave and Wenger's concept of LPP and I explained to them, and they were very enthusiastic about the concept. And that was 10 years ago or something. And this is a more recent one. And he followed the concept of Roberta Gratz's concept of urban husbandry. Husbandry is breeding or cultivating something. And Roberta Gratz used the term "urban husbandry" in contrast with "urban planning." Urban planning is planned by professionals and architects, and they build up a city, but sometimes distracted from the environment, and not working. So people took in residents, resident people, and a variety of other people, get together, and discuss and express their idea, and some kind of participating in the planning. And that kind of concept was proposed by Gratz, and she called it urban husbandry. And Endo further elaborated the notion of urban husbandry by taking multiple views of children, the aged, or the handicapped, for realizing a symbiotic community. And in the first half,

if you read this one, he first initiated the project by letting children explore the city. And children just, he said, "hakken", "tanken", and "hottoken". "Hakken" is discovery. "Tanken" is exploration, discovery is "hakken", and "hottoken" is can't stay around or something. So, those three kinds of words are used by children to explore the city, and then see what the problem is, and what to do. And also, he did the same thing to the aged people, or the handicapped people, to explore the world, to explore the city and then picked up the information, what the trouble is, what kind of things need to be done. And those kinds of things Endo started with, and then did joint participation of residents, users, and planners, for the development and sustenance of the city. Actually it's not just making up the city, but sustaining. Yeah, exactly the same ideas you (=Engeström) mentioned. So that sustainability of the city is also quite important. So it just goes on and on. A never-ending kind of activity. So what he (=Endo) said is urban husbandry.

[Sato]: What is "urban husbandry" in Japanese?

[Sayeki]: Machi-zukuri. No, "Machi-zukuri" is urban planning. Machi-sodate. Machi-sodate. That's his term for urban husbandry.

And he said that city as home, and home as city. So, city should be something like home. They feel very homely in a city, but home also should be felt as city. Lots of people come together, and some kind of interaction should be done in the city. So those kinds of concepts he tried to continue to be cultivating always. So, those kinds of ideas are exactly the realization of co-configuration in Japanese urban husbandry practice by Endo. And I think it's very good. So what makes -- I'm thinking of what makes it possible to transit from "benkyo" to "manabi" in Endo's practice. I see Endo's practice; it's quite different from "benkyo" kind of activity. Rather, his practice should be more "manabi" kind of practice. And I see the key point is introducing playfulness and caring in his activities. And actually, he first introduced a kind of game to play among the people to get together. So, they become relaxed and feel very cozy with each other, and express themselves freely, and so he arranges lots of play and games to play with. And



he himself draws cartoons, kind of drawing, and very enjoyable, humorous kind of atmosphere, with which he entertains himself. But actually, what is important in the playfulness is emancipation of the goal-bounded mind, which is extremely important, concentrating on the pursuit and development of objects, relying upon contingencies and happenings in the situated activities. So, I think you (=Engeström) also focus on the pursuit of the object of the activity rather than a goal. He (=Engeström) made a clear distinction in his paper, the distinction between "goal" and "object." And I'm exactly the same. Endo, also, not to be bounded by a goal. A goal should be generated and maybe changed, so you don't have to stick to the goal. And you have to stick to the object, what to be developed, how to expand or change, to develop it. That kind of thing is very important concept in the Endo's activity, and I think that kind of concept is exactly like Suchman's concept of plan in her book, "Situated Action." So it's very similar to the flexible and object-dependent activity rather than goal-bounded. So, this is the point Endo stressed. And another thing is welcoming marginal participation, as well as peripheral one. And the concept of marginal participation is very important. And I think you know Diane Hodges' participation in "Mind, activity, and -- what?"

[Engeström]: "Mind, culture, and activity."

[Sayeki]: Yeah, "Mind, culture, and activity". "Participation as Dis-Identification". And Diana Hodges tried to become a caretaker in the early childhood education, a kindergarten

teacher, but actually she was repelled, because she was in a certain condition. But she acknowledges participation as dis-identification, not becoming a full member of the kindergarten teacher's society, but outside of it. But very close to the outside, very close to the community, so that she can see the problems inside the community, so she can see what the fundamental problems of the early childhood education, because of her condition of not becoming a full member of a community. So I think it is very important. So, actually, that kind of a group, Endo's group invited me, a complete outsider -- but I am very closely related to Endo, and I talk a different direction and lots of comments on their activities. And also, they invited lots of marginal persons, not real participants, but related people, and called upon those people to discuss with them. And appreciation and entertainment of failures. This point is also mentioned in Yrjö's paper. But I think failure or fault of errors is appreciated. It sometimes has a nice opportunity to think new things. So, they really enjoy errors, and making errors. So, they enjoy making errors. And also, I think their attitudes is based upon the caring concept of the people, like the underdogs you (=Engeström) mentioned. People who are handicapped, aged, young children, babies. Those kinds of people care a lot about those things. And also, they care about the object, too, maintaining and trying to sustain the system, not to be distracted from. Those kinds of caring concept, and people, objects, and tools. And it's a kind of being free from the controlling and governing the world. And I think this is a symbiotic thinking. And it is something in common with what Gilligan, Noddings, and Jane Martin call "caring." I think those kinds of thinking are feministic notions. It's not what people govern and control the world, an old type of learning and studying. Controlling. Why do you learn? Because you have to control the world. But, for Gilligan and Noddings, "No, no, we have to live together." It's a completely different kind of basic assumption of learning and knowing. And this is very important. And the term, "manabi" has a sense of modesty. "Manabi" does not mean becoming a strong man. If I said I did "manabi" -- I would become more modest. I would become more acceptable, more "ojigi." Oh, Manabu Sato is an example. (laughter)

[Engeström]: I don't know.

[Sayeki]: His parents wanted him to be, you know. (laughter) Anyway, that modesty-oriented kind of learning is a very important. And configuration, I think, has a kind of underlying principle of modesty kind of learning. It's not just conquering or just sharpening up, but more moderate and about living together where differences are OK. Those kinds of ideas. And I think "manabi" has those senses. "Manabi" is a rather whole person kind of concept. It's not just one thing or one skill, particular knowledge-oriented thing. Rather, whole person. How have "manabi"-oriented people become changed? They would become more modest, more accepting, and more prudent. That kind of thinking is the concept of "manabi." So, I think, the co-configuration idea is more based upon the "manabi" concept than that of "benkyo." "Benkyo" connotes strong achievement, struggle for living, or something like that. It's different. And it is important to see it. Now, from here, I'll connect the above concept to my own idea, "Anthropomorphic Epistemology." This is a sympathetic co-vibration, rather than a sender-receiver metaphor of communication. Communication is not about message ping-pong where messages are sent and received. Communication is a kind of sympathetic co-vibration. "Yeah, yeah, oh yeah." -- That kind of thing is what we want. Japanese younger people say, "nori" -- "no rules". A good "no rules", surfing kind of concept. We have vibration in the same way. Those "nori" is a sympathetic kind of... yeah, that's exactly the point of communication. Not just telling one thing and, "OK, I accept it." No, "I agree" -- "That's important. That's fantastic." That kind of agreement, and co-vibration. Let's do good things, let's do good things. That kind of co-vibration is a very important notion of communication, not just sending the necessary information, but the important is co-vibrating. And this kind of concept is truly based upon my own anthropomorphic epistemology. A very long time ago, 1978, I proposed it. And my colleagues have always been telling me, "What happened to anthropomorphic epistemology?"

[Engeström]: Yeah, I've read it in English. Where is it all?

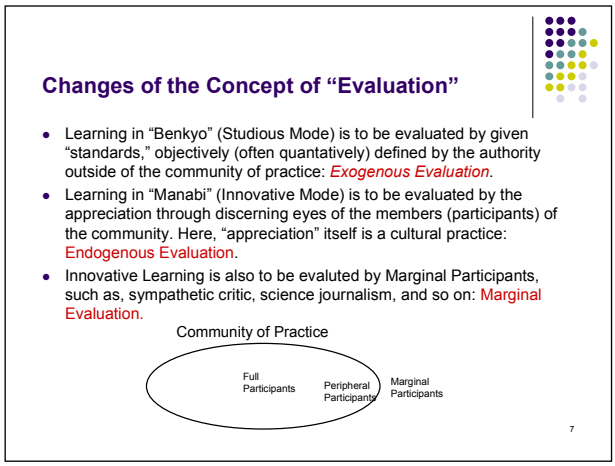
[Sayeki]: Yeah, he always asks me, though I forgot it a long

time ago. It's not a kind of way of knowing by a rule or laws, but knowing by becoming the object. This is anthropomorphism. And I think this is a symbiotic or sympathetic co-vibration kind of knowing, I think. And actually, Jane Martin cited Barbara McClintock in the Jane Martin's recent book, "The Schoolhome." This is being translated now?

[Sato]: No.

[Sayeki]: Not being translated? I'm sorry. Well, Barbara McClintock is a Nobel-prize winner biologist, and she said, "When I look at a cell, I get down in that cell and look around." And this way of looking at things is a very important co-configuration, too. Yrjö made a lot of examples today of becoming a patient, not looking her as a symptom of disease, but becoming a patient. And those kinds of "becoming something" and then see around. See around for that agent. And then they discovered lots of problems around themselves. So, that kind of ways of seeing is an anthropomorphic epistemology kind of way of knowing, and caring. And those are rather different modes of learning and knowing activities. And also, engrossment. Just very excited, attention, full attention, but in relaxed, humorous atmosphere So, Endo presented lots of playing games, and free talk, and manga-like illustration. And they use manga-like illustration and so-called facilitators to pick up those opinions and to illustrate in that nice picture. And then discuss about, "No, I'm not that way." -- those kinds of discussions going. But it's a very relaxed, humorous atmosphere. And this is, I think, a completely different from "benkyo" type of learning, and it's a lot more "manabi" kind of thing.

So, the "manabi" kind of learning changes the concept of evaluation. Learning in "benkyo" -- studious mode of learning -- is to be evaluated by given standards objectively, often quantitatively, defined by the authority outside the community of practice. So, exogenous evaluation, I like to call it. On the other hand, learning in "manabi" -- innovative mode -- is to be evaluated by the appreciation through discerning eyes of the members, participants of the community. Here, appreciation itself is a cultural practice



of the community. So, that's an endogenous evaluation. And another evaluation I propose here, is innovative learning which is also to be evaluated by marginal participants, such as sympathetic critics, science journalism, and so on. Those are the marginal evaluations. So, three kinds of evaluation are to be integrated in the total activity of the evaluation, and I'm just showing the members of full participants, and peripheral participants, that's the novice, and coming from another community, but they determine to be full members of the community. But marginal participants are not to be members of the community, just evaluating from a variety of points of view or from a variety of backgrounds, on what's the variable in the activity of the community. So, those marginal evaluations are also quite important.

Now, I'm just going to show the case of a 90-year old, or now he's a 92-year old, engineer, who saved the company's crisis. And he got hundreds of patents, and actually, his patent is used in NASA's rocket for freezing the gas. And also, his patent is used in the Nagano Olympics ice arena. He's working on a freezing machinery company, so he's a very active and innovative person. And also, I don't think an old person has just crystallized intelligence. It's a very fluid type of intelligence, because when young scientists, young engineers, come to a deadlock and cannot find any way to solve, he thinks about completely different ideas, just completely new ideas to overcome. And he saved the company. I am not going to explain it today, but this guy is an extremely interesting person, because in a way, he's like a child. Very much like a child. You can see, this is his lab.

(video) Inoue is now experimenting with the spring, and sending electric currents in a spring, and now what happens to the spring? Actually, he expected that the spring should shrink by introducing the currents, and he is testing this expectation, his hypothesis.

Oh no, it's finished! (laughter) I should show you. Sorry. His face is just like a kid's. Very entertaining kind of person. He said that "This is my toy. My favorite toy." (in Japanese) (laughter) The purpose of this is just to enjoy. This measuring device is made of junk. He picked up the garbage, and he prepared, sort of living in a garbage house, or something. So, he's enjoying his playing or his experimentation. So, very much like a playfulness and also caring about lots of things, and this company also grants his activity, and young people often visit him and love to talk with him. So, very relaxed, nice conversation about his background, his experience, and shared them with young people. And those kinds of playfulness, and enjoying, relaxed formation of the company made lots and lots of new inventions. This is a small company, but very much innovative products they made. So, I think the important things are playfulness and caring in the basic of the co-configuration activity. OK, that's all. Thank you.

(applause)

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