

Symbiotic Learning Systems

Olav Eikeland¹, PhD, Professor, Akershus University College, oleik@online.no / olav.eikeland@hiak.no

Abstract: This paper launches the idea of “symbiotic learning systems” as an attempt to deal with the broad learning challenges posed by recent developments in the social organisation of knowledge distribution and generation (Gibbons et al, 1994, Nowotny et al, 2001), requiring closer and changed relations between research, higher education, and practical knowledge application. The paper discusses some aspects of these developments and presents work done by the author in recent and ongoing collaborative action research projects in Norway. For many years, the author has been involved in action research projects attempting to organize organisational learning and reflection in Norwegian, mostly public, work life organisations. In order to build the foundations for a changed and improved relationship between advanced work life organisations and institutions of higher education and research, the *general* preconditions for learning and research *in the work places themselves* need to be addressed. The model developed by the author since about 1990 for organizing collective practice learning in the work place will be explained and used as a starting point.

Key words: symbiotic learning system, organisational learning, action research

This paper launches the idea of “symbiotic learning systems” as an attempt to deal with the broad challenges of learning, and of knowledge generation and application posed by developments in the social organisation of knowledge distribution and generation over the last half-century at least (Gibbons et al, 1994, Nowotny et al, 2001). The paper discusses some aspects of these developments, and presents work done by the author in several recent and ongoing collaborative action research projects in Norway, mostly while at the Work Research Institute (from 1985 until 2008).

The idea of symbiotic learning systems has emerged gradually over the last 15 years, and developed through practical attempts at finding solutions to challenges like those listed below, in collaboration with several institutions of higher education in Norway (HiA [UiA], HiO, HiL, HiAk) and a number of public work life organisations (hospitals, nursery homes, schools, administrative units, etc.) (cf. Eikeland & Berg, 1997, etc.). The term *symbiosis* is used in a “pre-biological” sense, since “bios” in Greek originally did not mean abstract “life” as in modern biology. Rather, it meant “lifestyle” or “way of living” as in “bíos theoretikós”

¹ Olav Eikeland, Dr.Philos, Professor / Research director, Akershus University College, Faculty of Technical and Vocational Teacher Education, Mail address: P.O.Box 423, NO-2001 Lillestrøm, Norway, Street address: Instituttv. 24, NO-2007 Kjeller, Mobile phone: +4790822463, Office: +4764849135, E-mail: olav.eikeland@hiak.no / oleik@online.no, Web: www.hiak.no

and “*bíos praktikós*” in Aristotle. Hence, a sym-biosis would mean some form of entangled of interwoven relationship from which all involved partners benefit.

The idea of symbiotic learning systems addresses how the two major tasks of higher educational institutions of a) providing education and b) doing research must be rethought and transformed in light of the so-called “third task” of higher educational institutions; c) collaborating with external partners in regional and work-place development, and in light of d) the increased general need for continuous learning and innovation in business and work life.

An emerging “new knowledge management regime”, or “new mode of knowledge production” (Gibbons et al, 1994, Eikeland, 199x, etc.) – with increased competition, increasingly knowledge based and competence intensive work life, new ICT, highly educated workers at all levels, highly educated and informed users / customers / consumers, and increasing requirements in enterprises for continuous learning, improvement, development, and innovation – is gradually changing the relations between research, education, and work life (cf. e.g. Teare et al., 1998). Work life is often more “updated” than the educational institutions concerning technological and organisational solutions. Simultaneously work life organisations increasingly become populated by highly educated individuals. This challenges the old hierarchical models of organisation mostly based on a division of labour between thinking in the higher organisational echelons and “floor” performance by unskilled labor. The inherited conventional models presuppose that

- 1) Research is done in institutions separate from practice / performance / application.
- 2) Knowledge is transmitted primarily didactically and theoretically through teaching,
- 3) People are done with education in youth and work afterwards.
- 4) Learning is conceived as the appropriation of knowledge produced by others.
- 5) Practice is conceived as the application of knowledge, techniques, inventions, and innovations made by others.

To a large extent, the institutions of modernity have been both based and shaped on more or less implicit / explicit assumptions like these in their divisions of labour and ideas about knowledge and learning. But within the emerging new knowledge management regime, research is no longer done merely in separate research institutions, knowledge is no longer merely transmitted through teaching, lifelong learning is needed and encouraged, learning is

increasingly practice-based, and practical performance is not merely the application of separate and external theories.

As a cumulative consequence of the changes, work based learning and research at all levels is and must be upgraded as well. The very idea that knowledge should and actually must first be produced by external research individuals and institutions and then transmitted afterwards by equally external educational institutions in order finally to be applied by so-called practitioners (by following precepts or orders) cannot remain unchallenged and cannot be sustained without change. And concerning professional education, the so-called *practicum* as a limited part of basic education constitutes a too weak link between education and work, and at the same time it is too poorly organised in relation to learning².

Theories about triple helix alliances between institutions of higher education, government, and industry (Etzkowitz & Leydersdorff, 2000), learning regions (ref. xxxx), etc. tend to focus on relations between these parties more or less as they are currently, and at the same time they seem to focus more on research than on education. Without diminishing the emphasis on research, the idea of a “symbiosis” between work based learning and the graduation system in higher education starts in a different place; i.e. in the way work places are either organised or disorganised with respect to conditions for learning.

The symbiotic learning projects challenge all of the modernist presuppositions by *starting* to organize systems for collective, practical, and work based learning in the work places and *then* trying to use the learning activities within these learning systems as the basis for courses and degrees in higher education. Although within this approach, educational courses are used to support the establishment of such learning systems, the courses are different from many courses of further education in that whole departments in work life organizations are necessarily engaged simultaneously in establishing such systems. Many interventions by consultants and action researchers are deficient in making permanent changes in work organisation, work culture, etc. They are often too focused on specific problem-solving but lack a more general and systematic practical approach to learning. The basis and the starting point for building symbiotic learning systems is to organise the work place for learning; i.e. to

² The *practicum* is a historical reminiscence from an earlier, more widespread and more broadly conceived apprenticeship model of learning

secure the *general* preconditions for learning in the work place, involving all employees at all levels.

A broader and more thorough integration is required between research, learning / education and practical performance than provided by modernist models. Both a greater practical integration between these fields and new conceptualizations of their relations which relates knowledge to personally acquired practical experience and competence, are required. Neither the old scholastic and theoretical “education first – work afterwards”, nor a purely market relationship between suppliers and appliers of knowledge seem sufficient. Finne og Hubak (2004:iii) conclude their report for the Norwegian Research Council by emphasizing that neither an old linear transmission modell nor a pure commissioned research modell will be able to solve the challenges raised for new forms of collaboration between research and work life aimed at innovation. Their call is for ” good work forms for getting to grips with firms and develop the arenas and overlapping networks and communities of practice that are able to contribute to developing both research institutions and firms mutually” (ibid:iv).

Some form on new and more “symbiotic” infrastructure seems required which promotes mutual learning relationships and research in educational institutions as well as in work life itself. In work life organisations, learning and development work can no longer be done merely casually and on an ad hoc basis. It needs to be systematized and organised. But even ordinary project work aimed at solving unique and temporary tasks needs to be transcended in order to integrate learning and development in ordinary work life activities.

The Challenge of Customized Studies

Traditionally, ordinary basic higher education normally and necessarily invites a broad cross section of young and no-longer-so-young adults with no particular relations to each other or to any part of work life to acquire general knowledge and competence within different fields. Over the last few decades, as the demand for “lifelong learning” has grown, an increasing number of so-called ”customized studies” have been offered from Norwegian institutions of higher education where individuals employed in ordinary work life are admitted as students. These studies often and increasingly take as their point of departure project-work by individual students in their work place to be elaborated in light of general theoretical knowledge. The students participate individually in the same courses coming from many different work places.

The educational institution organizes discussion groups and cooperation in projects among the students during the study period. Still, they do not normally organize permanent measures in the work places themselves for handling learning in the organization more broadly and generally. Customized studies are normally organized as temporary projects themselves. *They* organize the activities, primarily for the sake of getting everyone through the study period, but they are closed down when their task of providing the exam for the students is achieved. The necessarily temporary organization of students into groups and projects is dissolved when the task is done. Hence, normally, little or nothing has changed in the work places themselves when the students return to everyday life in their different organisations. For the most part, colleagues at work have not been much involved or they have been only marginally involved. The projects are easily encapsulated and isolated by colleagues and conceived primarily as serving the qualification needs of the students. Normally, no general reorganization in order to handle learning has been achieved at the work place, neither from these kinds of customized studies nor from special projects run with the aid from consultants and targeted at solving specific problems.

Hence, to the extent that new competence has been achieved individually by students, it still has difficulty being recognized and utilized in daily work, because such utilization normally requires reorganizations, mutual adjustments, and learning from many individuals simultaneously. What is required is not merely individual acquisition of new competence outside the work place but collective acquisition of competence in the work place, where improved collective competence means improved ability to solve everyday tasks together. This is why organizational and trans-professional learning in the work-place need to be focused.

In order to avoid the insufficiencies of most customized studies and more narrowly targeted projects, then, it is decisive to make learning at the work place itself the point of departure rather than the organization of the educational courses as such. Everyone – both managers and employees – must be involved. The organisation of learning and reflection within the work organisation itself must be directive, and serve as the starting point. But the point here is not to go against customized studies or specifically targeted projects. Both the studies of individuals and the specifically targeted projects must be organized as sub-projects within the construction and organisation of a general learning system.

In order to build a learning system that is able to handle the many challenges in relation to learning, education, research, development, knowledge application, and innovation the first and most fundamental precondition is that the work places – i.e. the firms and enterprises – take on the responsibility for their own learning, and that they work systematically with their collective and individual learning. This implies organizing. *Then*, this system, when established in the work places, can be utilized for systematic learning and research both by the worker-collective and by individuals taking their exams in educational institutions at bachelor, master, or doctoral levels.

A model like this was developed and tested by the author and others in an organisational learning project in the Norwegian municipality of Arendal during the years 2000-2004 (Ref. Eikeland, HiAk-biennale), organized as a college course in organizational learning. Employees from four different departments participated. The objective was (ref. Eikeland & Klemsdal, studieplan):

- To train the ability for improved collective learning / task solution in the work place,
- To combine a) the work with organising learning in the work place with b) formally meriting education.
- To exploit the practically based learning in the work place as a basis for formal competence development,
- To build new relations between work places and educational institutions as a learning system.

Later projects have developed this model.

Norwegian and Scandinavian universities and university colleges are legally obliged to perform a third task alongside the former tasks of education and research. Working with symbiotic learning systems entails focusing on the third task, seen from the educational perspective. Some of the projects have lived with an internal tension between a broad and a more narrow understanding of the third task. The broad understanding includes a basic reconsideration of institutional relations and new infrastructure to handle the changing relations between work life, education, and research. The narrower approach have worked with a more limited focus on certain aspects of the third task through the transmission of knowledge, commercialisation and innovation of ideas springing from the activity of

researchers. Although the weight has been on the second one, there is no necessary contradiction of opposition between these. The second focus is somewhat simpler however. Basically, it can take the conventional institutional framework for granted with its division of labour between research, education, and application. The question is, however, what more the third task can and probably must consist in than the commercialisation and transmission of knowledge. Transmission and commercialisation of knowledge has received much attention because they are easier to focus on without questioning research methods, ways of learning, and the institutionalization / organization of the relations between research, learning, and practical performance.

As already indicated, Finne og Hubak (2004:iii) conclude that neither an older linear transmission model nor a conventional commissioned research model will be able to solve the challenges raised by new requirements for collaboration between research institutions and work life. Both of these models are really transmission models based on a division of labour, either by teaching and education, by popularization, or by commercialization. Exactly this division of labour or dualism between thinking and performing, knowledge generation and application, producing and receiving knowledge, needs to be problematized, however. New infrastructure must be established in order to promote a mutually learning relationship between research, education and practice which stimulates research and learning, and innovative products and practices in all camps.

But this requires that we see the three tasks – research, education, and practical development – as connected and integrated. The third task is not merely mediation or transmission narrowly understood as something complementary to the first two unchanged. A more comprehensive model for thinking about the third task will have to start by discussing the relations between the three tasks critically. Solving the third task challenges the ways even the first two tasks – research and education / learning – have been solved traditionally. Thinking critically about the third task, with the relationship between and the ways of solving the different tasks as its starting point, is more than mere transmission. It could be called a "fusion model" or a symbiotic model where changes in one entails changes in the others. This also requires a different and closer relationship between educational institutions and work life.

A symbiotic learning system is designed to contribute in this direction. It is designed in order that

- 1) Both collective and individual learning and competence development is handled in an organised, systematic and continuous way for everyone in the workplace,
- 2) Students in basic training and education are better taken care of in the work place as apprentices in their practicum since learning is systematized among all employees through (1),
- 3) The preconditions for an increased and improved use of practice-learning and practical work experiences in master- and PhD-studies are provided,
- 4) The relations to users, suppliers, and collaboratorators are handled in a more learning way.
- 5) A greater openness for and ability to utilise knoweldge and innovations from other surces, conventional R&D, etc.

The first objective is basic to the others. It concerns providing the space for; i.e. to systematize and organize the work with learning and quality development of all aspects in the work of everyone. Such organization of learning in the work place requires participation from everyone through experience based dialogue and the development of common understanding of common conditions. Both organisational learning in the work place and work with the third task of universites and colleges in an integrated way where all thre tasks are involved, will profit from the construction of symbiotic learning systems. But the first and foremost precondition is that work places establish learning systems in their organizations. Projects in order to establish learning systems must be done in collaboration between work places and educational institutions.

The learning model used in the projects is explained in Eikeland og Berg (1997) and in Eikeland (1997) and (2008) where the basic model describes how to systematize an alternation between action and reflection for all employees or more metaphorically between playing roles or performing on stage, and dialogical reflection, changing roles and improvment and perfection “back stage”. The space back stage constitutes a dialogue based counter public sphere internal to the organization. I will elaborate somewhat more on organizational learning and learning system.

Organizational learning in this terminology, is a special form or way of learning, and I am using this term a little differently from many others³. As I see it, there are important

³ See for example Easterby-Smith, Burgoyne & Araujo (eds.) (1999)

differences between a) “learning *in* organizations”, b) “learning *organizations*” and c) “*organizational* learning”. a) Learning *in* organizations in a way comprises all sorts of learning, training and knowledge production going on in certain *places* or *systems* if you like, called organizations or work places. The conscious part of this is often called training (opplæring), which is an attempt at bringing people up to a predetermined standard of skill or knowledge, often also by sending them out of the workplace or organization for a period of time, taking courses in colleges and universities. There may be learning going on through the use of questionnaires and surveys among employees or customers as well, and certainly there is a lot of informal learning going on in the organization, for example when new employees enter the workplace and have to adjust to the local culture and informal authorities. The point I want to make is that organizational learning is not just the sum total of all the learning of different kinds of all the individuals in the organization, added together. It is something different and something both more and less.

b) But *organizational* learning is not the same as a “learning *organization*” either. A learning organization in my view, is a *unit* that learns, just as a machine, a human individual, an animal and other units may learn⁴. Units may learn in different ways. A learning *organization* may for example learn by means of a given and traditional organizational structure, as when a CEO hears about some new “device” which the organization then gets hold of, trains the employees for, and then implements it to perform new and old tasks in better ways. In this way the organization as a whole and unchanged unit, has learned to use the new device. But this is still not *organizational* learning.

c) *Organizational* learning is neither a specific *place* for learning nor is it a certain *unit* that learns. It is a *way* or a *form* of learning. In my work with municipalities over the last 15-20 years we have tried to distinguish between four different forms of learning, without pretending to exhaust all possibilities or aspects of learning through these simple divisions. Along one dimension we distinguish between a) individual learning and b) collective learning. Along another one between c) theoretical learning and what we might call d) experiential-experimental or practical learning. Organizational learning, as we define it, is characterized by being both collective and experiential. What does this mean? *Theoretical* learning in this

⁴ Talking about “organizations” as units that learn is useful and meaningful as an abbreviation. It does not imply any specific commitment or opinion about the ontological status of organizations, however.

division means mainly learning by listening or reading. New terminology and new concepts appropriated through reading or listening may of course create new perspectives, new “maps” that make new options visible, and contribute to the reinterpretation and reorganization of existing experience, and there is nothing wrong with this. On the contrary. But this kind of learning in itself hardly changes the learners’ basic ability to do things; to perform. Practice, exercise, and habituation are usually necessary for the formation of new experience and the development of new skills and abilities to do things.

Now we can practise alone or we can practise together. When we practise together we can either practise *in parallel* without “touching” each other, or we can practise *in common*, trying to improve our ability to perform some task together or solve a common problem or challenge. This mutual adjustment to each other in trying to identify and develop collective “best practices” is organizational learning in our terminology, since this implies actually changing the relations between individuals - their division of labor, their communication patterns, their leadership and authority structures, in one word: their “organization” if you like - in order to become better collectively. This can not be done without individual skill development and learning of course, but it is still something different and something more than the development of individual skills in parallel and the sum of these added together. This is all pretty obvious in football or in music and dancing where a bunch of individual virtuosos and soloists still doesn’t make a winning team or orchestra or dance ensemble. The difference, change and progress from starting out as a crowd, and then successively becoming an amateur football team, and later on a professional team, in a way *is* organizational learning. A number of people assembled, changing from the crowd’s *inability* to perform a certain complex task, through “team stages” from novice to expert or virtuoso performance of the same task, in a way *is* organizational learning.

Most people, when they talk about the organization of their work place, talk about their *work organization*. The work organization organizes the performance of the primary tasks of the organization, the reason it exists; the production of things, services, knowledge or whatever. The work organization says something about the division of labor and relations of superiority and subordination between departments, levels and individuals in the organization. Most people seem to believe in “flat” work organizations with few levels these days. In addition to the work organization which organizes tasks of a semi-permanent character, lasting for years and repeated continuously, most work places create short term “*project organizations*” - “task

forces” - in order to deal with unique and short term tasks. Project organizations are often created by people from several departments or disciplines, and they are terminated when the assignments are done. For some organizations, like the shipbuilding industry, most of their work is organized as large projects, and even health and social workers are increasingly forming interdisciplinary teams surrounding clients where each and every client becomes a project.

It is not unusual to think of development work as well, whether organizational, professional or other kinds, in terms of projects. And many development tasks can and should undoubtedly be done as projects. But when organizations are increasingly forced into “continuous improvement” in all fields in order to survive, the development and learning tasks no longer stay temporary. They become permanent, and move from the periphery to the centre. This then creates tasks that are permanent, but still different from and on a “meta-level” in relation to the mere performance of the primary tasks in predetermined ways. Then the *general* conditions for learning need to be addressed.

This is one reason why some of us since the late 1980s (ref.) have started to think in terms of permanently organized development work or learning activities, and baptized it “development organization” to distinguish it from both work organizations and task forces / project organizations. *Developing* and improving people, work organizations, relations, professional competence, product quality, ways of communicating etc. demand different ways of relating, communicating and organizing than simply performing within these dimensions. We have pulled this metaphor from the performing arts all the way and started to talk about organizational learning and development work in terms of alternating between being “on stage” performing, and “back stage” discussing the performance, changing and improving it, rewriting the script, practising, switching roles to perform etc. Going back stage, everyone has to step out of the role each plays on stage and terminate the division of labor from on stage, in order to discuss on equal terms what went well and what went wrong. In relation to performing on stage, back stage is a “free space”, “open space” or *forum* for non-competitive conversation or *dialogue* – a counter-public sphere – where collaboration in clarifying mutual and common understanding, and learning to do things better *together* – developing collective, team competence – is important, not winning an argument. It is worth some reflection that the original Greek word skholê, which is the basis for “school” – the place for learning par

excellence – in almost all European languages, simply means just this: a free and open space – leisure, a break – from necessary work and labor.

In this way of thinking then, performing “on stage” equals being in a “work-organised” mode, while going “back stage” discussing the performance, practising etc. equals entering a “development-organised” mode. Creating back stage foras for dialogical reflection in the work places in a way means creating “schools” integrated in practical contexts. To create a learning system within the work place means, then, to create a permanent system that gives everyone the opportunity to alternate between the work organization on stage, and the development organization back stage. This could mean systematizing the use of meeting places or fora already present in the work place, or creating new ones for collective and individual reflection on work experiences. The use of dialogue conferences and workshops is *one* way of operationalizing a back stage forum or development organization. The challenge is to find permanent ways of integrating and institutionalising these back stage foras for reflection at the work place.

Thinking in terms of organized development work and organizational learning as an alternation between being on stage and back stage also opens for a slightly different way of working with “learning by doing” than many people seem to do these days. There is a tendency to think of learning through practice or experience in terms of project learning or problem based learning. But even though these in my opinion have many things to be said in favor of them, not all practical learning can reasonably be reduced to problem- or project based learning. Reflections on ordinary, everyday practice can not. Neither can the articulation of tacit knowledge and making implicit skills and understanding explicit. Practice and exercise as in learning to play musical instruments cannot either. Problem- and project based learning and problem solving, as these activities are often described, *relies* to a large extent on existing expertise and specialization and on the effective utilization of existing information. But practice, exercise, experimentation and reflection tries to *develop* expertise, virtuosity and “peak” competence and performance. Even though there doesn’t have to be any contradiction or opposition between these two ways of thinking about learning through practice and experience, thinking in terms of switching between “on stage” and “back stage” opens more clearly for those forms of learning that are practically based, but *not* simply learning through solving problems or participating in projects. This way of thinking also allows us to think of knowledge generation and production more generally, not as the

privilege of spectators in the audience “off stage”, but as situated in the middle of - *within* - different practices, alternating between “on-stage” performance experience and “back-stage” reflection and analysis. Even though I will not try to elaborate, I think this way of working can produce “theory” in the good sense of articulate insight and understanding as well.

The study supposed to support the construction of a learning system is based on project work in the work place like in most ordinary customised courses, but with the big difference also that although only some articulate as students, whole departments participate in establishing a learning system. Through the educational course the participants are supposed to:

- Acquire skills and competence in collective learning and competence development in the work place.
- Acquire competence in systematic knowledge generation based on experience from organisational practice, work and professional performance
- Acquire insight and competence in questions concerning research methods and theory knowledge connected to relevant forms of knowledge generation and learning
- Acquire understanding and insight in societal developments forming the background for the increased need for strengthening learning and competence development in the work place.
- Be able to work as facilitators for practice based learning activities in other divisions than their own.

Conclusion not written: on connecting this to the symbiotic learning system between educational institutions and work life organisations.

REFERENCES (TOTALLY INCOMPLETE):

Eikeland, Olav (1997):

Erfaring, dialogikk og politikk - Den antikke dialogfilosofiens betydning for rekonstruksjonen av moderne empirisk samfunnsvitenskap. Et begrephistorisk og filosofisk bidrag, 3.utgave, Universitetsforlaget, Oslo

Eikeland, Olav & Berg, Anne Marie (1997):

Medvirkningsbasert organisasjonslæring og utviklingsarbeid i kommunene, Kommuneforlaget, Oslo

Finne, Håkon & Hubak, Marit (2004):

Still embryonic, unfinished, and preliminary draft article for the OLKC 2009 Conference in Amsterdam. This text only delineates the basic framework of what will be elaborated more in a finished text. It still lacks references, and theoretical elaboration besides being unfinished in structure and content. Do not quote without permission!

Nye Arbeidsformer for MOBI? Om kompetansebruk i bedrifter og samhandling mellom forskning og bedrift, Sintef & Norges Forskningsråd, Trondheim & Oslo