PEUT-ON TRANSMETTRE SAVOIRS ET CONNAISSANCES ?[•]

CAN WE TRANSMIT KNOWLEDGE?

SI POSSONO TRASMETTERE SAPERI E CONOSCENZE?

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Abstract

This article challenges the common idea that teaching means transmitting knowledge. This statement seems unsustainable if one analyzes the problems of communication in teaching. These problems are related to the ways of listening and understanding and also to the content of communication. Hence, we propose to focus our attention on teaching as a help for learning, on learning as a process of action and decision, and on the regulation of this process. This alternative point of view doesn't have the same considerable impasses that the idea of teaching as transmission does. Lastly, this paper clarifies the epistemological assumptions of the two competing points of view. Both the example of university education and the example of training for work analysis with the goal of prevention in a healthcare service are useful to the discussion.

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Can we transmit knowledge?[•]

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Introduction

It is often said that teaching means transmitting: transmission of knowledge. In these pages we will discuss this statement.

First of all, starting with the etymology of the two words, teaching and transmitting, we will ask ourselves about the problems regarding communication in teaching. In particular the problems that relate to the ways of listening and understanding and to the content of this communication. With the help of two examples, educational activity and training, we will discuss the particulars of what is transmitted and of what cannot be transmitted. We will focus on the learning process, on helping the learning process and on the regulation of the action of learning. By doing so we will present our point of view, that highlights the elaboration, the creation, and the development of the knowledge and capability of the learner. Lastly, we will try to understand the origin of the idea of teaching, meant as a transmission, and the considerable implications that come from both this idea and the point of view that focuses on learning.

This reflection about communication in teaching fits within the framework of our theory of *social action*. It thinks of human activities in terms of processes of action and decision which are continually produced and developed over time. Processes that are always open, always changing and always in relation to other processes. In this perspective, learning is viewed as a process of action inseparable from other processes of action regarding other human activities, in particular work activities, that need and are nourished by learning

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and teaching. Every process of action and each of the relationships among processes has a regulatory aspect, meaning an organizational aspect, that is fundamental for its production, development and comprehension. We call our point of view the *Theory of Organizational Action* (Maggi 1984/1990; 2003).

Teaching and transmitting

Is it true that teaching means transmitting, and more specifically transmitting knowledge? We will ponder the terms of this matter with the help of the historical French language dictionary, also useful for other neo-Latin languages (Rey, 1992).

On one hand we have the word "to teach", in French *enseigner*, derived from the popular Latin *insignare*, which comes from the classical Latin verb *insignire*, originally meaning "to make one understand with a sign" or " to signal". This meaning is still today in the French verb *renseigner*, while the verb *enseigner* (to teach) acquires the meaning "to educate" hereafter meaning "to teach someone". It is generally intended to mean "transmit knowledge to a student".

On the other hand the word "to transmit" (from the Latin *trans* + *mittere*) has a primary meaning which is "to make something reach someone else". It originally meant "to give away a right or a material possession" and then later came to mean "to make an object arrive from one place to another". The word transmission acquires a particular importance when talking about electrical signals, telecommunications and computer science. To transmit doesn't only mean to send (the Latin *mittere*) but to make something pass through or to make something reach another place. To be able to have a transmission someone needs to send and someone needs to receive, or at least have the possibility of receiving.

If teaching is transmission, should it be about sending messages and ensuring, in the best of cases, that there is a good reception? It seems necessary to ask ourselves about communication within teaching, the modalities, the

contents and the problems it raises. We can suggest some ideas that seem fundamental and that we will attempt to discuss.

Firstly, we should ask ourselves about the subject of listening. The initial question being, *is there listening?* The transmission exists even if the message doesn't always reach the receiver. If someone doesn't receive a television channel or doesn't receive an electronic message that others are receiving, we say the transmission at least happened. Similarly, there can be a good lesson in a classroom, applause at the end and even a high rating in the "evaluation" of the course, but one doesn't know who listened and who didn't listen. The "teacher" maybe has transmitted, but it is unknown if and to whom he taught something.

The matter of listening regards also the modalities: *what kind of listening?* When the message has been received, it is unknown how it has been received. On one hand the receiver of the message could not have understood, for example because of lack of the appropriate knowledge. On the other hand the receiver could have understood but rejects the message. Or it can even be that the receiver could have understood but could have strayed from the message towards a direction or a use that is different from the intended one. Again the receiver could have understood according to a point of view different from the one implied in the message. In this case, the receiver thinks he/she has understood but hasn't understood at all.

Let's assume the receiver of the message has listened well and understood. In this case, we can say that he/she has learned? Ensuring good listening isn't enough. One has to question the relation between what is transmitted, or what one thinks is being transmitted, and what should be received. Said in another way, *why listen?* This matter focuses on the needs of learning for the receiver of the transmission. The receiver needs to learn to be able to act and in the majority of cases that regards future activity that he/she doesn't yet know. Therefore, the receiver is not able to give a response and it wouldn't make sense to ask him/her. But the activities the receiver of learning

will be involved in are not exactly known by the teacher either. We can think about the training concerning physical activity, in the example of sports, where the one who is teaching knows well the end result activity. But that is less true when the training concerns the example of work activities, and often impossible in those cases where the receiver of training has to deal with a new activity. This problem is even more important in the case of teaching in schools or universities. What kind of knowledge can both the professors and the students in an economics faculty have of the future work activities of the graduates?

Obviously, that which one decides and tries to transmit is based on the hypothesis, the comparisons, and the evaluations of what has already happened. However, it concerns learning that has to be adequate for the future. It is also true that there are only hypothesis on listening and understanding fundamental to teaching intended as a transmission. It can be called into question whether this teaching can also "make someone learn".

We also need to add the idea of making someone learn "something". But the "thing" that can be learnt is the "thing transmitted"? The most important question regards the content of communication: *what are we listening to?* We need to ask ourselves what we can and cannot transmit. Is it possible to transmit information, capability, practices, abstract ideas, knowledge, competences, values ...? This last matter calls together the sciences of education and training, the cognitive sciences and in general the social sciences, epistemology and philosophy.

Two examples

To add to the discussion and attempt to give some answers to the questions that we raised, we put forward two cases. In the first case, regarding university teaching, the "place of teaching" is very far from the future "place of work" of the students. In the second case, regarding training in the analysis of work with the goal of prevention, there is an overlap between the "training place" and the "work place".

As part of the degree of economics and management within the faculty of Economics at the University of Bologna, a second level course (a master degree, after an undergraduate degree) about organization had to be provided. We named this course *Organizational Change* and we decided to make students discuss in class a series of cases of organizational changes in companies, with two objectives. One was to bring students closer to real cases in the world of business that will form for them a natural professional outlet. The second was to teach students how they can use different theories to interpret organizational choices, in view of their professional futures in companies.

The cases used in the course regard different kinds of organizational transformation, for example the development of the automobile factory at Fiat or the alliance between Rinascente and Auchan. These cases were presented by the same protagonists to a group of their colleagues, managers of other companies. Then these cases were subject to discussion and interpretation by that same group of managers. The results of this work, that united cases and debates, were compiled in articles written by researchers and then published by us in volumes (Maggi 1998; 2001; Maggi and Masino, 2004). These volumes also were helpful in teaching courses. This research occurred within the scope of our Research Program on organizational changes called "L'Officina di Organizzazione" (The Organization Workshop, www.taoprograms.org).

The didactics that we adopt are clearly different than the traditional use of case studies. In our course every case has two consecutive sessions. During the first session students present and discuss the case they have read and try to pull together the different aspects of the organizational change concerned without referring to theories. In the second session the students work on possible interpretations by comparing (a comparison without a judgemental attitude) two or more theories which have been cited in the articles. The students also compare the different explanations that these theories propose.

From this didactic choice it follows that the texts, regarding the cases and the theoretical references, are studied before and not after the lesson. Thus, the

evaluation of the learning is progressive and follows the evolution of the course. This makes the traditional exam at the end of the course superfluous. We should also add that this course is meant for a class of about 30 students.

The second example regards the training of work analysis with a preventative goal meant for hospital and healthcare workers that takes place inside the healthcare center in the Province of Trento. This healthcare center, which serves about 500,000 people, with thirteen territorial sectors of which five include a hospital, has activated a general training based on the learning and the use of a method of organizational analysis that we propose in the research program "Organization and Well-being" (www.taoprograms.org). This has the goal of meeting the requirements of European and national norms regarding prevention in the work place.

We have already noted this example elsewhere (Maggi, 2003; part III chapter 2) to aid the discussion on the relation of training, work analysis and interventions directed towards change. Let's go back to the description of the device that has been adopted. This device appears to be simple, based on the alternation between work in class and exercises by the participants that take pace in the field. The first part includes researchers from the program O&W who introduce participants to: (a) the training concept that is underlying the devices, (b) the normative rules regarding prevention in the work place and (c) the method of the Program. The second part includes: (a) participants who discuss examples of analysis and of organizational change derived from previous experiences from the O&W Program; (b) the participants, reunited in groups, attempt to use the method in order to analyze their own processes of work and propose, based on the analysis results, interventions that try to avoid risks and improve on the whole their work. This way training continues in a "laboratory" made up of the same work processes from the daily activities of the people involved. The third part includes participants who discuss and compare exercises done in the field, obviously after a certain period of time, with help from researchers from the O&W Program. This last phase has on one

hand the result of checking and reinforcing the learning of the method and, on the other hand, it initiates changes in their work process according to the desired objectives.

In the following paragraphs the references to these two examples allows us to offer real contents to the questions regarding the communication in teaching in educational and formative activity. It also shows how the two devices try to face the problems brought up by the questions and how they try to explicitate some of the elements of our theory.

Is there listening? What kind of listening? And why listen?

The first question proposed is very simple and it regards a *verification of listening.* It is even simpler to adopt devices, different than lessons and traditional training, which make it possible to assure the message has been received and verification of that reception. In our examples, the constant evaluation of listening is allowed, in the case of university courses, by the study done beforehand and the discussions in class, and in the case of training for prevention, by the commitment to using the method of analysis.

However the question develops and becomes more complicated if we consider the *ways of listening.* First, the message listened to is not necessarily understood. The best example is the linguistic difficulty and problems of comprehension in university courses *Erasmus* students have. But we can also consider messages that need prior knowledge, for example of a philosophical nature, which the student wasn't able to acquire before attending university. Second, the message is listened to and understood but isn't necessarily accepted. The university student or the healthcare worker, based on their prior knowledge and interest, can resist either the theoretical view or the use of a method of analysis. If this refusal is explicit, the communication in teaching can even be enriched, but if the student or healthcare worker is silent, teaching intended as transmission cannot take into account of this refusal. Finally, the accepted and (apparently) understood message can be, more or less

consciously, misguided or understood with an inadequate perspective. This raises problems concerning comprehension itself. To illustrate these last two possibilities, we will add more to the discussion.

An example is the debate about the transformation of the automobile factory during the university course. In this case it is the prevailing choices of outsourcing of various activities in the world of car manufacturing. Now, the objective of the discussion consists in bringing together organizational aspects of these choices. But the students' reasoning can lean too much on economic, judicial or other aspects, influenced by what they have previously listened to in other courses. In the case of training for prevention, think of the deviation of the method of work analysis utilization from the goal of prevention to the goal of, say, evaluating the know-how of the subjects involved in the work situation. In both cases the message was understood and it wasn't rejected. Misuse isn't a rejection, the subject accepts the message but uses it in way that isn't intended or desired.

Let's refer back to the university course. When he's asked to compare different possible interpretations in the case of organizational change, the student can recall a theory mistaking the vision of the world that that theory presupposes. For example accepting the concept of a "socio-technical system" without realizing the deterministic and functionalistic vision conveyed in that concept. At the same time in training courses for prevention the subjects involved can remain anchored to a predetermined vision of the work system and secondary prevention. The method they endeavor to apply presupposes another way of seeing, where the subjects themselves transform the work process with the goal of primary prevention. In theses cases the message is definitely heard and accepted and the recipient thinks he/she has understood. But, what have they understood? The definition of a concept or the criteria of a method have been received but from a point of view that hasn't created that concept or method. It is a point of view that reveals itself as contradictory and even incompatible.

With these quick examples it becomes clear that teaching conceived as transmission doesn't permit one to deal with several problems that are inherent in said transmission and doesn't even allow for an awareness of the problems. If a good teacher has to worry about these problems in order to ensure good transmission, we can come back and say that we need to abandon the idea of teaching as transmission to be able to respond to these worries. Can the teaching and training devices evoked avoid these problems? Certainly not, but they allow for a recognition and a partial resolution. On one hand they allow for verification, while teaching, if there is or isn't understanding. On the other hand, in cases of the misuse of the message or errors of perspective, the work of discussions and analysis can correct the mistakes. Also the rejection of the message cannot be hidden. The appearance of refusal is enough to show that the teaching is not realized with mere transmission.

We also would like to show that a message that has been well listened to and well understood isn't necessarily also *learned*. Can educational activity or training limit itself to transmission or must they also worry about learning? And how can they make sure there is learning, not confusing learning with memorization, as usually occurs on school and university tests? Thinking of a simple while effective way to verify if the message has been learned, we can refer to its use. For example we can say that a university student has learned a theory if the student proves he uses the theory to be able to interpret a case of organizational change. The health care worker has learned the method of analysis if he/she actually uses it in analyzing his/her work process.

This leads to a reflection on the relationship between the process of teaching and the processes of the activities of the subjects who receive the teachings. These different *processes of action* can be close or far in terms of space and time. We should reflect on this point.

In the case of training for healthcare workers the device is created in a way to bring together the action process of training and the action process of work done by those workers. The training, the work analysis and the

intervention which leads to changes and prevention, are different aspects of the same process of action that takes place in the work of the involved subjects. According to the logic of teaching as transmission, there is an overlap between what one would call the "training place" and the "work place". The device is based upon a concept of training (Maggi, 1991: Introduction; 2003: part III) that responds to the needs of learning, where the results are evaluated in relation to the satisfaction of those needs. The needs of learning for healthcare workers regard the capability to analyse and intervene with the goal of primary prevention. If the highest level of prevention is achieved then it can be said that the learning was satisfactory and the training was effective.

Instead, the university education process is very distant from the future work processes of graduates. In which company, big or small, will the student end up working? In what industry? And what task? Neither the professor nor the student knows which work process the student will face upon leaving university. Neither one has seen from the inside the processes of said company. The view of a professor of economics or a teacher from a business school as a consultant is not the same thing. This shows how university education can be disconnected from what students need to learn. What can be done? We are aware that the device of the course we have mentioned offers only partial and insufficient solutions. On one hand, with the goal of bringing together the "place of teaching" and the "work place", the device uses cases of organizational change that haven't been described from the outside, but are based on the stories of the protagonists with their interpretations and in comparison to their equals. On the other hand the device leads the student to discuss these cases using different theories. Like it was stated before, it therefore allows for the verification of learning of said theories. It is unknown if this learning will satisfy the needs of the students in their future work action, since evaluating whether teaching is limited on the students' acquisition and capability to use different theories to interpret the processes of a company.

While considering listening (which the idea of teaching intended as transmission implies without taking into account its problems), the focus has moved to learning. Teaching doesn't seem to "transmit" as much as it "makes someone learn". However we still need to discuss what we can and cannot transmit.

What is transmitted?

We started the discussion from the widespread idea that teaching is "transmitting knowledge to a student". Therefore we can agree to start with the knowledge if we want to reflect on the *content* of the communication in teaching.

First of all it is necessary to define *knowledge*. This is an extremely complicated task (and maybe for this reason it is a task that has been neglected by some literature which claims to cover the topic, as the "knowledge management" stream of literature). If not convinced, consult a philosophy dictionary. Over the course of philosophy's development born in the Mediterranean civilization, knowledge has been viewed from very different angles. On one hand, the starting point within Greek thinking has been the interpretation of knowledge as identification with an object or its reproduction. On the other hand it has been the presentation itself of the object. The two interpretations have developed on multiple paths, where one of the more relevant ideas has been the opposition between identifying the idea with a known object and the representation of the object according to the conditions of knowledge and the knowledgeable subject (Abbagnano, 1971).

We find ourselves in front of different ways to deal with knowledge even if we refer to the currents of cognitive science, as suggested by T.M. Fabbri in an important book on organizational learning (Fabbri, 2003: chapter 3). Following F. Varela we can differentiate: according to "cognitivism", the interpretation of knowledge is given as a "mental representation" based on a manipulation of symbols; according to "connectionism", the interpretation is given in terms of

an "emergency" of a global status rather than manipulations of particular symbols; the approach of "enaction" criticizes the representation of an external world, and provides the interpretation of knowledge as "a simultaneous manifestation of a world and a thought" in the action (Varela, Thompson, Rosch, 1993: 32-35).

Indeed, interpretations of knowledge imply different concepts that link to different visions of the world, that is to say, to irreconcilable points of view or, even better, points of view that are incommensurable. These brief references are enough to make it clear. In any case, without having to engage in a debate about knowledge, these brief references are enough to exclude the idea that knowledge can be "transmitted".

The distinction proposed by J.M. Barbier between interiorized knowledge (*connaissances*) and disciplinary knowledge (*savoirs*) can be helpful. Also, this distinction is proposed by the author to acknowledge a "lexicon of intervention on human activity", specifically in the fields of education and training. This allows us to refer to the works by this author when discussing this matter in this field of study (Barbier, 1998; Barbier, Galatanu, 2004). "The combined use of notions of interiorized knowledge and disciplinary knowledge in organized educational contexts… according to a logic of communication" - Barbier says - should allow a recognition of disciplinary knowledge possibility to design storable, cumulative utterances that are possible objects of communication/transmission and that can be acquired by multiple subjects. It should also allow knowledge to designate "states" resulting from cognitive experiences, especially from the interiorization of knowledge following learning. Therefore knowledge could be "activated", "variable for each individual" within a "history of the subjects".

With these definitions and, again, recalling our examples, one can say it would be possible to have communication, regarding theoretical knowledge in a university course and criteria of analysis in training for prevention. The receiver could listen and even understand what he/she has listened to without

activating knowledge on their part. According to our point of view, to have knowledge there should be an intentional action by the subject, that is, "learning". Soon we will return to this point.

If it is not possible to transmit knowledge, it is possible instead to transmit disciplinary knowledge according to the lexicon of education and training discussed by Barbier. Likewise the *capabilities* could be transferred, de-contextualized from a practice and then re-contextualized in another practice. However it seems to us that it is doubtful whether even disciplinary knowledge and capabilities are transmittable.

In the case of university courses the communication concerns theories. Keep in mind that the students are committed to interpreting an organizational change using different theoretical perspectives. In order to do this, students must acquire the concepts and hypotheses of two or more theories. Does the teacher "transmit" these concepts and these hypotheses? Rather, shouldn't one acknowledge that the teacher merely illustrates these concepts, that is to say, he talks about them? For example the teacher says the concept of "role" has a certain meaning according to functionalism, while its meaning is completely different according to the social phenomenology. By doing so has the teacher transmitted the two different concepts of role or has teacher simply talked about the two concepts? In the case of training for prevention, the involved subjects have to acquire the method of analysis of work. We can say that in this case some "methodological knowledge" are involved that obviously presuppose theoretical knowledge. But can it be said that the method is "transmitted"? Or is the content of the communication only a number of "words about" the method and not the method itself? According to the lexicon given by Barbier, disciplinary knowledge is a set of "utterances" and hence could be transmissible. For us, the contents of communication are only utterances concerning the "disciplinary knowledge -utterances".

The School of Palo Alto put it plainly when it said that communication shouldn't be understood simply as a transmission of information from sender

to receiver but as a relationship, an exchange (Watzlawick, Beavin, Jackson, 1967). According to D. Sperber, what forms the basis of communication is the "relevance" of the information emitted, that allows the receiver to process it (Sperber, Wilson, 1986). We add that communication is neither an "exchange of information", nor a "double processing of information". Information is worked out by the subject involved - in our case the student or the healthcare worker. Following this logic the example of the much discussed e-learning, for us isn't education or training, but merely electronic messages.

Moreover, in the two devices used in the university course and in the training for prevention, there aren't only conversations about disciplinary knowledge like in a traditional lesson would be. In the course of organizational change the teacher shows how to use concepts and hypotheses. In the training for prevention the researchers of the O&W Program show how to use the method and how it was used in previous analysis. Finally, the students on one hand and the healthcare workers on the other hand, are lead - individually and collectively - to work on the interpretation or the analysis. In this case usually one refers to the "transmission of capability". With the goal of activating an acquisition of disciplinary knowledge, theoretical or methodological, that is to say the new knowledge necessary to bring the work of interpretation or analysis to a good end, while discussing we show how it is done. But even with this purpose, we believe there is no transmission. There are discussions and demonstrations on how it should be done, but it's the students and the healthcare workers that draw upon their own capabilities. The same happens during training for a physical activity like sports. Communication encompasses abstract notions as well as demonstrations. The capability that sport performances reveal is drawn from and developed by the trainee.

Is it possible to transmit *competencies*? As cited before, we need to distinguish among the meanings attributed to the notion of competence which are discussed by a large number of literatures, by different languages and according to world views that span languages and literatures (Maggi, 2001:

Introduction; 2003: part III, chapter 3). It is said that competences are transmitted when they are conceived as know-how (for example in management literature). But it cannot be said that there is transmission when they are conceived as competence in deciding and competence in judging. We share the idea that competence should be understood as a combination of heterogeneous elements: knowledge, experience, values, personal history and the history of the profession, and all of this within the moment of individual, subjective and social action (Schwartz, 1999). We also share the definition of competence as a quality ascribed to a subject that is given to such subject in relation to a specific action, where there is a value judgment and a positive evaluation connected with it (Barbier, Galatanu, 2003). But, for the reasons we have tried to illustrate in the previous pages, we think not even those who imagine competence as know-how can maintain there is transmission.

Lastly, can *values* be transmitted? We have demonstrated in other contributions (Maggi, 1991: Introduction; 2003: part III, chapter 1) how ideas widely diffused in social psychology that lead to a separate consideration of knowledge, know-how and values, are untenable. To think of values detached from human action is only an abstraction. It's impossible to imagine an action or an attitude without values, and all knowledge like all know-how assumes the existence of values. The matter is always the same: it concerns the possibility to transmit knowledge and capabilities.

We believe that teaching is never a "transmission of knowledge" like it is often said. Insisting on transmission means returning to a very distant definition of "teaching", that is, teaching as providing "indications" or directions. On one hand it is doubtful that we mean this and, on the other hand, even "information" as we have seen it isn't an object of transmission. We prefer to focus on the meaning of teaching as "making someone learn". This leads us to discuss *learning*.

Teaching and learning

The French word *apprendre* (to learn) comes from the Latin *apprehendere* to which the French term *appréhender* (to capture) is connected. In the ancient use of this language *apprendre* means to "catch with the mind" and "acquire knowledge for one self" (Rey, 1992). It can be also referred to others: the meaning of "to give learning to someone" is more common in French with the verb *apprendre* than the corresponding English verb.

Learning is the action of acquiring with the mind, which can include "learning something" and "learning to do something". Both actions are activated by the same subject or stimulated by others.

The literature on the phenomenon of learning, mainly in the psychological field, is enormous. We suggest referring to the work of T.M. Fabbri and its rich bibliography in order to call forth the main approaches (Fabbri, 2003: chapter 2). The vast behavioural stream has proposed a concept of learning in terms of a response to "associative stimuli" following an experience. Instead, the cognitive approach has proposed a process conception of acquisition and building of knowledge on the part of the subject while highlighting his active, intentional action. Furthermore one can distinguish an approach called "self-regulated learning" emphasizing "meta-cognition", that is, cognitive activity which has as its object the same cognitive process. Finally, a last approach, called "situated and social learning", conceives learning as joined to practice, in a physical and collective context, as the only way to recognize the acquisition of knowledge.

Again, as it was noted before about the interpretations of knowledge, different concepts of learning reveal different visions of the world. Learning is seen as a stimulus - response behaviour, or intended as a cognitive process, more or less sophisticated and on different levels, or it is recognized after the fact in the "doing" that happens in practice.

Let's recall our examples once again. In the device of a university course the student can learn the theoretical knowledge and can learn to use these

theories to interpret organizational change. This use helps the learning of disciplinary knowledge and also allows the student to evaluate their learning. In the same way with the training for prevention, the involved subjects can learn the methodological knowledge, how to use the method in order to understand and learn the categories of analysis and also to get to the underlying theory. Even in this case the subjects themselves are able to evaluate step by step their learning. It seems important to highlight that the two devices allow for the *continual evaluation of learning* as well as the listening and the understanding with its varied problems. This evaluation can be done *by the subjects who learn*.

We said that the involved subject "can" learn. In the end it depends on him/her. The fact that at times learning can be in part unaware, like some approaches emphasize, doesn't take anything away from the intentionality of the action of learning. According to our point of view, *learning is an action*. As defined by Max Weber, it is a *social action*, an action with a sense of intent on the part of the subject, which is oriented towards others' attitudes (Weber, 1922) because it regards the existence of the subject in his/her world.

We argue that learning is a process of actions and decisions always in relation to other processes of actions and decisions. The two cases of education and training taken as examples clearly show this. The process of learning of each university student and each healthcare worker is created and developed in relation to the processes of learning of their colleagues as well as the processes of communication concerning disciplinary knowledge and the ways of using them. In the case of training for prevention it is also evident the relationship with the work processes of the workers. But even the process of learning by an individual subject is always in relation to other processes of action and decision, because of its being a social action (Vygotskij, 1934/1997). A child learns in relation to its processes of action and the processes of action of those who surround him/her. Robinson on the deserted island learns to orient his actions in relation to the civilization he has left and to which he wants to return.

Let's add a clarification. Speaking of action or social action, highlighting the help given to learning produced by the use of disciplinary knowledge, doesn't lead us to share the conception of knowledge as "enaction" and learning as emerging from a "community of practice". Our conception of learning intended as a process of action doesn't need this to understand the action and the cognition as well as the social and situational character of action. Our conception of learning includes all of this and, at the same time, affirms the intentionality of action and thought: this presupposes a different epistemology.

Hence, teaching for us is not transmission, its value being the *learning*, in the sense of *helping to learn* and even *learning to learn* as said by G. Bateson (1972), that is, helping to learn the process of learning. It can be said that knowledge, capabilities, attitudes and even the ways of seeing, "pass" from one subject to another subject but not because they are transmitted. That which seems to be a passage, attributed to a transmission that doesn't exist, is in effect a *sharing* due to a learning action and can be stimulated by a "dialogic relationship" (Bakhtin, 1952/1984) between teacher and student. In this way, learning can be helped by the multiple forms of what we call "teaching", while keeping in mind that this is not indispensable.

Now it could be helpful to return briefly to the various problems of communication that we have laid out thus far, with the goal of gathering a relevant aspect of teaching intended as aids to learning. It is the aspect of *persuasion*, "the action of convincing" while explaining what is known and making it valuable. As maintained by G. Mosconi, the psycho-rhetoric dimension of speech should not be limited to persuasive speech in the narrow sense of "changing someone's opinion". This regards also demonstrative and explanatory speech, especially in teaching (Mosconi, 1987; 1989). We tend to say that all effective communication in teaching of both speeches and demonstrations, abundantly uses persuasion. With persuasion, in the university course as in training for prevention, it is possible to stimulate listening, change a refusal of communication into an acceptance, correct the misuse of

disciplinary knowledge and capabilities, and even lead to a renunciation of views for the adoption of different views.

The communication in teaching has multiple ways of persuading: from restriction and sanction to providing advantages to subjects that learn and even the activation of new desires and orientations toward action. An example of persuasion through a sanction is a negative grade in a university course. An example of providing advantages is showing a health care worker that the proposed method allows him/her to achieve a desired level of primary prevention. Lastly, examples of activation of new desires and orientations toward action can be letting students discover the possibility to interpret business cases with perspectives they've never imagined. Or there is the example of letting health care workers directly participate in the improvement of their work process while they analyse it. Or, again, there is the example of allowing children the enjoyment of riding a bicycle or playing a musical instrument. G. Mosconi says the different modalities of persuasion are based on the psycho-rhetoric rules of communication of which the most important is starting from the thoughts, motivations and sense of actions of the subjects one is addressing to.

This stress on the *rules* of communication in teaching leads us to highlight one last point. If teaching is considered a process of action directed toward others' learning, and learning is considered as a process of action by the subject that learns, one can understand the relationship between these processes becoming a meeting of a *multiplicity of rules* of different natures and sources. On one side the process of teaching recalls the rules of disciplinary knowledge and capabilities produced and defined by disciplinary processes. On the other side the process of learning recalls the rules of the process of action in which the learner is involved - study processes for the student and the work processes for the healthcare worker. This kind of meeting of different rules isn't without consequences. The regulation of the learning process is produced by manipulating and reworking the disciplinary rules and the rules of the process

of action transformed by a new knowledge coming from learning, as well as producing new rules. The importance of the *regulatory aspect,* that is *organizational,* is highlighted by the social action that is learning.

This organizational action of transformation and production of rules, without which learning would be in vain or wouldn't exist at all, can be more or less aided by the teaching process. But it is above all something belonging to the learning process.

Ways to see teaching and what comes from those different ways

When we emphasize learning and learning as an process of action, we move the perspective from knowledge and capability "to be transmitted" to the *needs of knowledge*, from a somewhat passive position of the "receiver" of the activities of education and training, to an *elaboration* and a constant *development*, always changing and renewing itself, of knowledge on the part of the acting subject, *by his/her processes of action, and for the same processes of action.*

What are the presuppositions and the most important implications of this diversity in points of view?

First of all we should ask ourselves where the idea of "transmission" (of knowledge, capabilities ...) comes from. On one side, this comes from an objectivist vision of the world. According to this vision there exists an objective reality with accumulated knowledge, know-how and shared values. The subjects are instructed, educated and trained so that they can adapt in the best way to this pre-existing and pre-determined world. We have seen how certain interpretations of learning, and even knowledge, presuppose this vision.

On the other side, the idea of "transmission" also belongs to the subjectivist vision of the world, at times called "constructivist". According to this vision reality is constructed by subjects, it is a social construction. Reality objectifies itself following paths of institutionalization, and by doing so it becomes coercive and regulatory for the same subjects that take part in its construction. Through systems of symbols, knowledge, know-how and values

root themselves into society and become transmissible. The transmission of symbolic universes in particular allows for connections between the generations in terms of socialization (for example, a very clear presentation of this point of view can be found in Berger, Luckmann, 1966). We have seen that even this vision has produced interpretations of knowledge and learning.

Our point of view is very different. The stress is placed on the *action endowed with meaning by the subjects,* on their *processes of action and decisions*; permanent processes, never finished, that develop on different levels, always interconnected with other processes. Reality becomes trivial. It is neither determined nor undetermined. Each subject has his own reality, always changing. Above all, it is neither reified nor reifiable. Knowledge, capabilities and values are more or less shared and spread by means of relations among processes of action, not because of a transmission but because of appropriation and *learning*. We have seen that there are interpretations of knowledge and learning that are consistent with this different point of view.

Let's get to the implications, at least in relation to some relevant points for this discussion.

The first implication regards the relationship between a subject and his world. The objectivist and subjectivist visions, by reifying reality, they separate the "system" and the "actor". In this case one usually speaks of "contexts", of "places" where various activities are carried on. In this way the "places of education" and the "work places" are separated, or even reified. These are the places that can generally be identified as the ones toward which teaching "transmits" knowledge and capabilities that are useful and usable. According to the vision based on processes of action, the acting subject isn't separable from the processes that concern him/her. The acting subject acquires knowledge and capabilities in as much as he enters into relation to the disciplinary processes. He/she appropriates them starting from inherent competences to his/her processes of actions, and uses them by transforming and incorporating them into such processes of action.

A second implication, strictly connected to the first one, concerns the aspects of teaching that are neglected or not sufficiently thought out from the views presupposed by the idea of "transmission". We have seen how this idea leads to a neglect of the problems of listening and understanding, and underestimates the problems of learning and the utilization of what is learned. This also leads to a confining of judgment on what needs to be taught and the evaluation of the results of teaching on the same teaching activity. Better said, there is a disconnection from the processes of action that activates and uses learning - an example being the future work process of students and the actual work of healthcare workers. Instead, according to our point of view, it is only starting from these processes of action, inseparable from the subjects involved, which are continually produced and transformed by the subjects themselves, that one can evaluate both the need for learning as well as the results of teaching.

A last implication regards the ways to see the relationships between disciplinary knowledge and capabilities and the competences of the learners, and the rules concerning the disciplines and the ones regarding the activities of the subjects. According to the visions which lead to the idea of "transmission" these relationships create problems because of the presumed separations from said visions; in particular the problem of finding solutions to place in relation what has been separated. According to our point of view these problems don't exist. The *epistemology* allowing to reason in terms of *processes of action* implies that it is not possible to separate, but only to distinguish the processes that are in reciprocal relation which are connected and interconnected: the processes of working, teaching and learning.

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