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Methodological challenges of investigating intellectual cooperation, relational expertise, and transformative agency

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Abstract

Methodological issues arise with the research of societal practices of 'knowing'. This object of study is understood as *concrete human activity* that always integrates mental, communicative and practical behaviour in interaction and cooperation with others. Especially with regard to contemporary forms of labour in the high-tech-world, this issue has become a salient task. As it is explained, it implies investigation of people communicating and reasoning while *developing* concrete forms of activity. In particular, the methodological issues concern the *social* and *psychodynamic* quality of this practice. Within the tradition of cultural-historical research and activity theory, milestones of this matter have already been reached. Cultural-historical concepts like the 'motive' of an activity as well as the 'emotions' that bias the 'experience' of 'transformative engagements' with the world show that their theoretical and methodological understanding are adept to approach the dialectics between the social and the individual quality of practice and agency in general, but also with regard to contemporary challenges of intellectualized cooperation in particular. 'Double stimulation', a concept coined by Vygotsky, is relevant in this context as well. However, the paper discusses critically whether it fits with the system theoretical understanding of activities and transformative agency as it can be found in Engeström's writings. Finally, the core requirements for a VET-research methodology for intellectualized collaboration are resumed.

Keywords: activity theory, critical psychology, transformative agency, relational expertise, scientification of work, dialectics, double stimulation

Knowing as an integral part of work activities

Within the last decades, the insight has become more and more striking that many work activities today undergo an 'intellectualization', i.e. working with the body and with its muscles becomes less important in the world of digital automation technologies. Although there might be exceptions from this tendency, at large, robots and automation technologies replace manual manpower while working with the mind becomes more and more salient (cf. Langemeyer, 2005). It is vigorously discussed these days, how this development goes even further. Various work activities that concern the intellect and the creativity of human beings seem to be replaceable as well (Frey & Osborne, 2013). Thus, jobs that formerly were considered as secure to rationalisation may vanish due to digitalisation. Nevertheless, or rather therefore, we should reflect thoroughly the shifts towards work activities like research and development and along with it, communication and cooperation. This paper argues that, within the digitalisation process, intellectualized work activities develop through 'scientification' in the sense that scientific reasoning and expertise have become a force to render cognitive work activities (especially in relation to digitalisation and software development) more productive and effective (cf. Langemeyer, 2015a; Nerland & Jensen, 2010).

These shifts pose a challenge to VET-research to understand work activities as intellectualized, but not as a process in the individual mind only. The power of cognitive work is not an achievement of atomized individuals. Constructive forms of cooperation and communication, among others, are essential for it (Langemeyer, 2015a, b). And here is the problem to put in the centre of this paper: How can we define the theoretical and methodological problems of investigating 'collective knowing' then as part of new emerging forms of agency, especially 'collective agency'? If we assume that this phenomenon does not exist naturally, but societally and politically, as an essential dimension of the societal basis of human labour and practice, its understanding requires profound theorizing. More clearly, this objective aims at dialectical theorizing in social sciences (cf. Langemeyer & Roth, 2006) to not reduce mind and thinking to traits and human activity to an individual-psychological phenomenon, but to see both within the broader context of societal ways of making people's lives.

In VET-research on software developers and similar forms of labour in digitalisation processes, the relevant basic concepts are often not reflected methodologically. Advancements towards a social and practical understanding of knowing were however made in the research on 'situated cognition', 'situated learning', and 'situated action' by Jean Lave, Etienne Wenger, Lucy Suchman and others. Furthermore, the approach of Lev S. Vygotsky stresses the interdependencies between societal and individual development with regard to human consciousness and thinking. Following his track of theorizing, this paper discusses

concepts like 'transformative agency' introduced by Yrjö Engeström and collaborators and cognate approaches like Anne Edwards' 'relational expertise'; as both are highly recognised for their expertise on Vygotsky's work and both introduce innovative ideas to VET-research.

The paper starts with a summary of the latter which can be found in Edwards' article 'The role of common knowledge in achieving collaboration across practices' (2012). Following her main arguments, it deepens the discussion with regard to issues like the 'motive' in Cultural-historical Activity Theory (CHAT). It shows how interdependencies between individual and societal development are conceptualized. Next, it is resumed why the investigation of collective agency needs to drive away from static to psychodynamic concepts – e.g. from knowledge to *knowing*, away from states of the individual mind or individual feelings to the societal *activities* that encompass mental, emotional, communicative and practical behaviour. Furthermore, it is argued that the broader context of theorizing needs to become entangled with the creative and productive ways of making one's life. Its interdependencies are ultimately a societal and political question. Finally, concepts like 'transformative agency' and 'double stimulation' as presented in the work of Yrjö Engeström et al. (Engeström, Kajamaa, Lahtinen & Sannino, 2015; Engeström & Sannino, 2010, 2012; Engeström, Sannino & Virkkunen, 2014) are discussed critically. The question is raised whether this work could help to discern the essential relations of intellectual cooperation under particular societal conditions.

Collective knowing as relational expertise

Anne Edwards (2012, p. 26) introduced the term 'relational expertise' to understand 'interprofessional collaborations' which would emerge in general 'in a two stage process within a constant dynamic as people engage together in activities'. More precisely, this would imply:

> (i) working with others to expand the object of activity so that its complexity is revealed, by recognising the motives and the resources that others bring to bear as they too interpret it.
>
> (ii) aligning one's own responses to the newly enhanced interpretations, with the responses being made by the other professionals as they act on the expanded object. (ibid.)

Edwards thereby highlights essential dimensions of what I termed the 'intellectualization' and 'scientification' of work although her paper does not refer to these concepts explicitly. However, the argument can be clarified: Edwards seizes the collaboration between experts as a particular form of practice insofar as it does not deal with given or ready-made objects of work (like e.g. raw material and prefabricated components). The objects need 'enhanced interpretations' which is, in other words, the challenge to make correct, precise and relevant judgments about the issues at stake.

Seen from a philosophical and conceptual point of view, this essentially implies that these objects of work escape the positivist paradigm and contradict to it insofar positivism neglects the cultural-historical, interpretative and socio-practical relationship between subject(s) and their world. Positivism (before its self-criticism) regards the 'objective' world as immediately observable through 'facts' and assumes that these 'empirical' facts are 'speaking' to the researcher subject. Thus, the world appears as an assemblage of 'objective objects' that would not need any interpretation; the 'objects' are considered as immediately evident. Especially when we think of work objects like software architectures or societal transformations like changing the energy supply to sustainable energies, a positivistic understanding seems highly problematic.

However, within collaboration, as Edwards emphasizes, objects become interdependent to the subjects' activities when those involved start to 'reveal', 'expand', 'enhance', and 'interpret' them. Thus, they escape from the status of being merely an 'objective object'. They align with the subjects in practice and become societal, cultural, historical dimensions. Since the context of work is always social, collaboration is prevailing from the beginning. Like Edwards highlights, cooperation – like communication – is dependent on 'interpretations' as well as on 'aligning one's own responses' to other professionals. This can be identified as a determination of *knowing* as collective activity.

Following Edwards, we derive from this argument also the insight that social relationships like those in intellectual collaboration are not directly observable. The argument with Edwards (2012, p. 24) is however more general. According to her, cultural-historical research:

> … reminds us that the relationship between subject and object is never direct, but is always mediated by the knowledge and values that matter in a practice.

With regard to Engeström's 'activity system' as the unity of analysis, she argues that the 'analytic challenge for studies of interprofessional work' can be met by understanding 'what mediates collaboration across the boundaries of practices' (Edwards, 2012, p. 22).

It is in this context that Edwards makes it clear that we should think of knowledge and objects of practice (or work) as something unfolding rather than stable and inert. Related to this is the discussion of motives. Edwards follows Engeström's argument that motives would be objectified in the object of activity. We can underscore this argument by emphasizing the psychological insight that the subjective and simultaneously cultural nature of knowledge and objects of practice (cf. Schraube, 2009) is always connected to people's motivational and emotional way of experiencing the world. This is also true for the two modes of knowing: The knowing subject brings about imagination and anticipation on the one hand, and reflection and judgments on the other, both understandable only in relation to a particular situation. Thus, mediation is therefore not only a

connecting/transforming process 'across boundaries' and across different objects of practice, but also a psychodynamic change of a situation as to how it is perceived and addressed by several knowing subjects.

More systematically, this can be displayed as changes in (a) the subjective self-relation (concerning feelings, motives, cognitions and world views), (b) the social or collective relationships (concerning interactions between people involved, even though they might be absent in a situation), and (c) the societal relations (concerning the societal possibilities to act as well as the societal constraints, power structures, limitations, histories etc.) (Langemeyer, 2005; 2006). Methodically, these changes can be scrutinized by analysing shifts in the modes of participation, the forms of cooperation and the aspects of situatedness (ibid.; cf. Schraube & Højholt, 2016).

VET-research studying for example *workers*' knowledge and skill in software development and the like therefore cannot merely focus on individual capacities. It needs to scrutinize more comprehensively where the concrete human practice of cooperation develops. Collective capacities of acting and knowing are not identical with the sum of individual capacities which are usually conceived of as stable and inner properties. Essential determinations of collective capacities cannot be reconstructed if we ascribe causes for collective agency and knowing to individual-psychological entities only, thereby excluding social entities. In addition, these social entities would be misunderstood as merely objective structures or systemic dimensions, directly observable like mechanics in physics. Dialectical social science would instead highlight that the societal powers in human practice do not exist outside or independent from subjective powers but interdependently and only available through each other.

Scientification of knowing

Against this backdrop, my idea that today's work practices develop through scientification builds on dialectical theorizing. This also includes tensions between the individual and the societal plane, since individuals can be members of a collective but sometimes may not want to be part of it or seek to become part of a different collective. Psychodynamics often unfold with individual responses to their modes of participation.

The main argument with regard to scientification is however that the concomitant expertise (in digitalisation processes and the like) needs cultivation and development of scientific ways of thinking and acting *by a work collective*. Thus, the mere fact that scientific disciplines are societally institutionalized is considered as insufficient for this expertise. Furthermore, it is highlighted that cognition of an individual cannot be scientific only in relation to itself. To establish a relation to certain *scientific concepts, methods* and *research results* means to participate in a certain domain in the practice of scientific thinking and knowledge production. This is also true for the economic sectors where produc-

tion practices build on scientific knowledge. Digitalisation brings about a new level of scientification because it enables a close connection between the technological regulation of numerous processes and their mathematical operationalization. This means that without science the new digital 'universe' of information and information processing e.g. would be disjointed, incoherent and as such useless. Digital data would be unusable for automated control if it did not incorporate science.

However, because scientification and technologization also increase the distance between the world of objects and the working subjects, their relationship becomes more indirect, more theoretical. The problems IT-workers deal with are in several ways opaque and complex (e.g. software systems) and become intelligible only with activities to 'interpret', 'reveal', 'expand', experiment, test, and re-interpret the object of work. Within these research activities, workers may however be thrown back on believing and relying blindly on interpretations, testing, calculations, and solutions produced elsewhere. A quite common phenomenon is therefore that particular work activities nowadays have become *similar-scientific* activities: In this mode, subjects who are *striving* for comprehension and agency in relation to unresolved problems are dependent on societal institutions that provide expertise (and sometimes pseudo-expertise) in testing, elaborating, and reconfiguring the matters to bring under control (cf. Langemeyer, 2015a, b, 2018). Usually, these similar-scientific activities are for sure conducted individually and sometimes collectively. In any case, their potential mainly unfolds by overcoming the limits of distorted comprehension. Similar-scientific activities can therefore be interpreted as a transitory form of practice that becomes more powerful through a scientification of human practice, i.e. by activities that critically test and theorize in depth why they are incomplete or imperfect and which strive to get the broader picture of interrelations (ibid.). This transition from similar-scientific to scientificated practices includes communication to ensure correct, precise and appropriate thinking and reasoning.

Methodologically, studies of scientificated work practices require therefore a different understanding of mind and reason and they reject like Donald Schön (1983) models of technicistic rationality and like Gilbert Ryle (1949) misconceptions of mentalist approaches. They need to recognize the dialectics between individual, social and cultural dimension of human development to understand human forms of agency and the particular power relations they are part of (cf. Langemeyer, 2014b; Stetsenko, 2008).

Transformative agency

In that sense, the deeper methodological problem connects also to research conducted by Yrjö Engeström et al. on 'transformative agency'. The topic of

agency is not exclusive to Engeström's activity theoretical framework. In what follows, I too refer to the work of Klaus Holzkamp who developed together with collaborators at the Free University of Berlin, at the University of Tübingen, and at the University of Copenhagen a subject-scientific approach of Critical Psychology.

Notions of agency and societal relations

This subject-scientific approach of Critical Psychology is concerned with attributing human subjectivity with dialectical concepts that seize the interdependencies between the societal and individual level. In what follows, subject-scientific notions of emotion, motivation, cognition, learning, and acting shall be outlined. As we can see in the following quote, Holzkamp acknowledges that

> … human beings are the producers of their life conditions at the overall societal level and that scientific theorizing needs to explain how people are able to participate in this process (Holzkamp, 2013, p. 23).

Moreover, he stresses the subjective reality as produced and maintained not within an 'abstract society, but rather under distinct historical conditions' which is why it is important to scrutinize not the relationship between humans and the world in an ahistorical generalized way, but more concretely 'the antagonistic class conditions of capitalist society' (Holzkamp, 2013, p. 23).

Furthermore, Holzkamp explains:

> … we are attempting to elaborate this two-sided relation as an interrelationship, i.e. to analyze human beings as producers of the life conditions to which they are simultaneously subject, and to conceptualize the mediation between the vital necessities of sustaining the societal system as a whole and these necessities on the subjective level of the discrete individuals. This is based on the idea that human beings not only live under conditions, but also need to control the conditions of their lives. (Holzkamp, 2013, pp. 19–20)

Against this backdrop, Critical Psychology (the 'subject-scientific' approach) emphasizes the way of making one's life under capitalist relations imply in particular ways a lack of control. One important dimension of this lack is discernible in relation to employees who are dependent on wage labour. The majority of employees is free of capital and only formally free to sign contracts. Therefore, workers dependent on wage labour are forced to subordinate themselves to employers who consume and exploit their subjective powers. Depending on the mode of production, the jurisdiction and societal standards, employers might contribute to developing the employee's skills and potentials. However, in any case the capitalist interest in employees' potentials is not their well-being, their autonomy *as an end in itself*, but (if at all) as a means to gains and surplus. This ambivalent relationship of belonging to a collective (the enterprise or the work collective) can serve as a model for many dominant forms of participating in society: The societal powers of control are simultaneously (or dialec-

tically) an empowerment of people as well as a loss of control on the individual level. The societal powers of producing the basis for people's lives are turned against the individual powers of making one's life. Of course, this contradiction can have different appearances and different historical backgrounds. Sometimes emancipatory aspects may come into the foreground, sometimes the ugly face of exploitation is salient. In any case, according to Holzkamp, the underlying contradiction of capitalist dependencies has an impact on forms of knowing – yet the impact is indirect and occurs in manifold ways. The way people tend to interpret the world is influenced by the motive to control one's life and to confirm or defend the illusion of being free. But since the affirmation of the real dependencies is a recurring motive in people's life, their worldview is characterized by fading-out or suppressing the contradiction and the side-effects of ambivalent societal relations they are part of. Thus, people are prone to affirm ideological practices or even false believes.

Let us compare these insights with Engeström's approach. Similarly, but in a slightly different way, Engeström primarily acknowledges effects of capitalism in relation to his concept of the 'activity system'. He assumes contradictions in relation to Marx's distinction between use value and exchange value that:

> In capitalism, the pervasive primary contradiction between use value and exchange value is inherent to every commodity, and all spheres of life are subject to commoditization. This pervasive primary contradiction takes its specific shape and acquires its particular contents differently in every historical phase and every activity system. (Engeström & Sannino, 2010, p. 4)

Here, Engeström derives theoretical insights from Marx's analysis of capitalism as an overall societal system or structure to become immediately entangled with the system-theoretical modelling of concrete human activity as a commodified way to act. The system quality seems to be influencing the quality of human activity on an individual level always and directly. Actors – or more precisely their actions – are seen as immediately determined by the contradiction between use- and exchange-value. However, the concrete subject's worldview is not considered closely.

What are the implications of this argument? It is unclear whether Engeström conveys that this contradiction between use- and exchange-value is conscious to (all) the subject/s and whether different and even opposite forms of consciousness (distorted or false) must be taken into account. It is furthermore not explained whether the subject/s necessarily experience/s that contradiction in every activity and whether they are confronted with reconciling the opposites all the time. I interpret these blank spaces as indicative for a certain system theoretical approach which neglects the dialectics between the individual and the societal level of development.

Different from Engeström, the 'subject-scientific' foundation of Critical Psychology works with the concept of 'agency' ('Handlungsfähigkeit' = also trans-

lated as 'power to act' or 'capacity to act') to analyse different mediating contradictory power relations of our societies as concrete experienced forms of agency. It thereby takes into account 'degrees of freedom' of human consciousness to imagine and to distance itself from sensual perception and immediateness. To do so, it analyses the concrete historical and material mediations between societal possibilities to act and the ways real subjects endorse, embrace, use, refuse or transform these possibilities. In this methodological conception, the power of societal structures or relations is not denied. However, it is not immediately seen in an imposing mechanical or systemic power over the individual. It is rather analysed – similar to Michel Foucault's work (Foucault, 1987) – as power relations that *go through* the subjects and subjectivities in different and situation-related moments of practice. That means by analysing the subject's standpoint in relation to his or her societally mediated way of life, the subject's concrete reality of societal power relations is discerned:

> Producing the conditions under which we live means that every single individual is, in one way or another, participating in the production, transformation, affirmation and reproduction of the circumstances under which we live. Our main task, then, is to psychologically concretize this interrelationship. (Holzkamp, 2013, p. 20)

In Critical Psychology, this analysis begins with concrete empirical descriptions of how someone attaches meaning to the concrete situation he/she is in. It then proceeds with analysing the relationship between the subject's standpoint and societal conditions entangled with someone's ways of acting. With a more profound understanding of this concrete human practice, the question is posed whether someone's agency is part of an affirmation of power relations and contradictions rather than a mode of overcoming them. This research strategy does not aim at classifying others but at developing a 'discourse of reason' for creating a concrete, self-critical relationship towards the world.

At first sight, Engeström seems to have established a quite similar methodological approach. However, the complex reciprocal effects between the individual and the societal level that Critical Psychology intends to excavate are interpreted in a different way. This becomes obvious when we look closer at the interpretation of the concept of motives as simultaneously subjective and societal or system-related 'drives' to human practice and its changes.

Engeström interprets the individual motive in the light of the material or objectified activity so that the concrete object of an activity can be seen as more or less *identical* with the individual motive. This argument refers back to Alexej N. Leont'ev's concept of object-oriented activity (Keiler, 1997, 2010). For example, Engeström and Sannino (2010, p. 4) write:

> … the object [of an activity, I.L.] is both resistant raw material and the future-oriented purpose of an activity. The object is the true carrier of the motive of the activity.

> Thus, in expansive learning activity, motives and motivation are not sought primarily inside individual subjects – they are in the object to be transformed and expanded. (ibid.)

A similar explanation is presented in Engeström et al. (2015, p. 93):

> A human activity is a collective and systemic formation oriented at an object (Leont'ev, 1978). The object is an entity out there, with its own life, that human beings encounter and struggle within their activity—such as illness for medical practitioners or crime for law enforcement professionals. The object carries in itself the purpose and motive of the activity. The object is internally contradictory and constantly shaped by the activity. Different participants of the activity take different partial perspectives on the object. It is reinstantiated and reconstructed in every specific encounter and every particular manifestation. Historically different forms of the object are typically simultaneously available to the participants of an activity. Yet the object is robust and durable; it gives longevity to the activity.

The argument can be regarded as strong and convincing insofar as it rejects an individualistic and positivist interpretation of the object of activity. The object is more than just a thing at hand: It is a crystallization of a socio-historical relationship and societal contradiction; it is in some ways resistant and powerful through perseverance, but it is also a moment of joint efforts, a purpose that becomes visible in the future. Engeström also acknowledges that the object of activity needs to be interpreted from the subjective point of view as a potentially comprehended purpose (motive) of an activity, thus as a meaningful way to participate as an individual in the societal reproduction of life. This is very much in line with the methodological approach of Critical Psychology. Simultaneously, it is essential for VET-research in general.

However, seen from a subject-scientific (i.e. Critical-psychological) point of view, the problem is that the argument invites the researcher-subject to conflate the particular First person perspective with the overall system or societal perspective which is always a Third person perspective. The societal purpose of a practice (as well as the contradiction) is thus *projected* onto the motive-meaning of the concrete material object (as an element of the activity system). This interpretation reminds us of the determination of an organisation of its own purpose – a perspective which neglects the tensions of disidentification (i.e. a rejection of identifying with being a member) or mistrust etc. that the purpose might evoke in the organisation's members.

On an individual level, the concrete subject usually has manifold motives and might accent or stress changing motives (purposes) and interpretation of the object throughout his or her particular worldview. In relation to this, it is important to reconstruct in the analysis, how someone's worldview also depends on the more general experience of societal participation (cf. Nissen, 2012). Given that each person develops her-/himself in different forms of participation, worldviews can be bizarre and individual engagements with the practices might contradict the purpose of an organisation's practice. Conflicts in terms of

inner conflicts as well as social tensions are likely and contribute to psychodynamics within groups and their members.

Consequently, also the collective knowing to which subjects contribute by participating actively in practice are in a flow. It is influenced by their worldview (or consciousness in general) as well, especially when it undergoes a deeper change. According to Critical Psychology, this change is obstructed on a motivational level by forms of suppressing and obscuring the broader societal context of power relations and fostered by quest for knowledge and emancipatory forms of knowing (cf. Langemeyer, 2015a). A profound analysis of the situation where awareness is raised is therefore essential.

This problem that I have addressed already in two former critiques (Langemeyer, 2006; Langemeyer & Roth, 2006) shall now be discussed with respect to the idea of 'transformative agency'.

Historical-critical analysis of agency

'Transformative agency' is defined by Engeström and his collaborators in opposition to other notions of agency:

> [It] differs from conventional notions of agency in that it stems from encounters with and examinations of disturbances, conflicts, and contradictions in the collective activity. Transformative agency develops the participants' joint activity by explicating and envisioning new possibilities. Transformative agency goes beyond the individual as it seeks possibilities for collective change efforts. (Engeström et al., 2014, p. 124)

Moreover it

> … is not limited to the relations of an individual expert in that it underlines the crucial importance of expansive transitions from individual initiatives toward collective actions to accomplish systemic change. Transformative agency also goes beyond situational here-and-now actions as it emerges and evolves over time, often through complex debates and stepwise crystallizations of a vision to be implemented. (Ibid.)

This definition of 'transformative agency' has many parallels with the Critical psychological concept of 'agency' as Klaus Holzkamp (2013, p. 20) defines it in relation to emancipatory projects (the quote has been presented earlier but is now expanded):

> A basic principle of Critical Psychology is that we cannot assume human beings are the producers of their life conditions at the overall societal level […]. Producing the conditions under which we live means that every individual is, in one way or another, participating in the production, transformation, affirmation, and reproduction of the circumstances under which we live. Our main task, then, is to psychologically concretize this interrelationship. The basic category in our efforts to develop this concretization is agency (*Handlungsfähigkeit*). Here, it is not confined to the individual, but is defined as mediating between individual and societal life-sustaining activities. It refers to the human capacity to gain, in cooperation with others, control over each individual's own life conditions.

Considering these two explanations, we see that the basic critical-psychological concept of 'agency' implies most aspects that Engeström and Sannino ascribe to 'transformative agency'. First, it rejects static in favour of developmental features determining the societal-subjective quality of agency. Second, the development of agency is derived from individual experiences within societal (or collective) practices. Therefore, the possibility for someone to act upon a situation is thirdly not inferred from a pure individual capacity mainly. Neither are action possibilities and the endeavour to realize them confined to an inner state of mind. Both are seen in relation to the mediating collective practices, in the socio-material world in which someone participates and communicates with others, develops ideas, visions and longings of how one's life could be.

But Holzkamp illuminates more clearly that the societal and the individual level of (re-)producing life is not immediately entangled. The individual subject is not directly facing in practice the overall societal level. In fact, consciousness of this overall societal level is according to Critical Psychology a fundamental problem of what I termed earlier as 'knowing'. This is why Holzkamp highlights the political aspect of emancipation, i.e. the need of collectively gaining *control* or *power* over the life-conditions and therefore also on understanding the inherent necessities which refer back to the overall societal context. This is, according to Holzkamp, the main characteristic of emancipatory agency and knowing to reach out for a reasonable society. The lack of this control however unravels anxieties and suffering and affects someone's ways of comprehending reality (Holzkamp, 1983). Distorted understanding of how life is reproduced at the overall societal level is often functional on a subjective level and part of the common sense of everyday life, while questioning this way of understanding often unravels conflicts with colleagues, employers, friends, neighbours etc.

However, Critical Psychology differentiates between two qualities of human agency: 'generalized' and 'restricted human agency' and connects to it an analysis of distorted, limited or suppressing forms of knowing. The distinction between generalized and restricted agency is explained by the following argument:

> Each individual's existential orientation is a subjective aspect of the type and degree of her/his agency – that is, opportunities to act and constraints on those opportunities. Human suffering or, generally, any injury, including anxiety, has the quality of being exposed to and dependent upon other-directed circumstances, dissociated from possibilities of controlling essential, long-term conditions, i.e. constraints on possibilities to act. Correspondingly, overcoming suffering and anxiety, and the human quality of satisfaction is not obtainable merely by actual satisfaction and protection, but only by achieving control over the resources of satisfaction – that is, the conditions upon which one's possibilities for living and developing depend. […] My existential orientation is the experienced quality of my opportunities to act, or their restrictions. Accordingly, it cannot primarily be changed on the psychic level; a real improvement in the subjective quality of my life is synonymous with enhanced influence over my objective life conditions – that is, with my opportunities for forming alliances, i.e. uniting with others. (Holzkamp, 2013, p. 20–21)

Struggling for 'generalized humans agency' is accordingly a quality of practice directed towards gaining influence over my objective life conditions by associating or uniting with others, while 'restricted human agency' points at 'the central contradiction' in life

> that by attempting to obtain some discretion to act through participating in power and utilizing the allowed leeway, one concurrently confirms and reinforces the conditions of one's own dependency. If I attempt to gain some freedom of action within given power relations, in a certain sense I negate this freedom myself, since it is vouchsafed by the particular authorities and can be rescinded at any time. In such a situation, for the sake of short-term security and satisfaction, I violate my general long-term life interest. […] This restrictive alternative of agency, pointing to the contradictoriness of acting, is a central concept in our psychological analyses." (ibid., p. 24)

Here, like in my outline of the 'Contradictions in Expansive Learning' (Langemeyer, 2005, 2006, 2012), it is made clear that Holzkamp tackles societal contradictions as a challenge to self-determination. Since this affects someone's ways of knowing, someone's consciousness in practice, contradictions cannot serve straight out as a starting point for innovations, transformation, and expansive learning. Therefore, we would mistake an analytical challenge if we would identify motives with the purpose of an activity. First, the restrictions to agency must become in some ways conscious and stir a quest to (deeper, better) knowledge about one's relationships to the world. And accordingly, the subject/s need/s to reflect self-critically in what ways their own perception and worldview is influenced by and part and parcel of their restricted agency.

The insight of this argument is essentially political. Intervention is to be envisaged as a change of societal conditions but simultaneously as a creation of concrete societal options of acting and knowing. Thus, the question of the interplay between individual and collective agency is important as an intervention into the interdependence between to societal and the individual level of agency (Langemeyer, 2015a).

Seen from a subject-scientific point of view, the comprehension of 'transformative agency' would however be superficial by merely switching in research between the subjective and the systemic perspectives. This method is suggested by Engeström and Sannino in the following argument:

> But for the theory [of Engeström, I.L.] itself, switching between the perspective of the subject and systemic perspective is foundational. […] The switching is aimed at transcending the dichotomy between the subject and the system. This means that an individual subject's ideas and aspirations are not only taken as idiosyncratic expressions of the subject's particular life history; they always also draw upon and interact with generalized cultural models and motives, or social representations. Correspondingly, when for example in a Change Laboratory subjects jointly construct a vision for their own future, or a 'where-to' artifact, they generate a tentative, imaginative systems view rooted in their subjective experience, desire, and will. (Engeström & Sannino, 2010, p. 18)

This conclusion is partially approved. However, the central question of the entire complex of creating possibilities to increase the availability of *long-term* control and of collaborative knowing, is how to appropriate the societal means and competences of this control and how to create a *long-term* motivation to the resilience needed when obstructions, power relations and forms of domination afflict with the subjects' efforts, engagements, and forms of knowing. In my eyes, this theoretical and political challenge essentially calls for investigating not only forms of ideologies but also the ambivalent role of science in the societal developments. How can it really foster the integral development of human capacities to act and to think so that long-term control emerges and ensures self-determination? A critique on particular ways of doing science is essential.

Vygotsky pursued throughout his life-project the question how the challenge of a free human development is simultaneously a matter of the socio-historical realization of 'higher mental functions' and how this is intimately bound to the cultural advancement of scientific thinking. He is therefore an important inspiration for researching the scientification of work and its emancipatory potential.

The research on the societal role of science (nor ideology) has not been a primary concern of Engeström and collaborators (exceptions are e.g. Lehenkari & Miettinen, 2002; Miettinen, Tuunainen & Esko, 2015). In what ways does this affect the concept of 'transformative agency' and why should we contradict to some of his system theoretical arguments? The next section explains the problematic by highlighting the connection between Vygotsky's indirect method (Vygotskij, 2003c), the concept of 'double stimulation' and its reference to Engeström's idea of 'transformative agency' which he adopted from Virkkunen. The final section afterwards resumes the discussion of VET-research on intellectual cooperative work.

Vygotsky's indirect method, double stimulation, and transformative agency

> Within the activity-theoretical framework, Virkkunen (2006) defines transformative agency as 'breaking away from the given frame of action and taking the initiative to transform it' (p. 49) (Engeström et al., 2014, p. 124)

The concept of 'agency', the authors convey, would have been indirectly derived from Vygotsky's insights to 'higher psychic functions' gained by using things or stimuli that help to control behaviour (Vygotskij, 2003a).

> In other words, the subject's agency, his or her capacity to change the world and his or her own behaviour, becomes a central focus. Vygotsky built his interventionist methodology of double stimulation on this insight. Instead of merely giving the subject a task to solve, Vygotsky gave the subject both a demanding task (first stimulus) and a 'neutral' or ambiguous external artefact (second stimulus) the subject could fill with meaning and turn into a new mediating sign that would enhance his or her actions and potentially lead to reframing of the task. Expansive

> learning typically calls for formative interventions based of the principle of double stimulation. (Engeström & Sannino, 2010, p. 5)

In Vygotsky's work, 'double stimulation' served as an intervention against reflex-theory which he criticised for taking the stimulus-response-relation as a direct one only, as a mechanistic relationship so to speak. Consequently, human development could only be grasped as a process imposed on the subject not as something over which the conscious subject could possibly gain control, especially long-term control. Therefore, Vygotsky argued, for human beings, we would need to conceptualize a more indirect relationship due to 'mediating activities' by which symbolic or more generally cultural means (including scientific concepts) come into play. To memorize an appointment people often use a knot in their handkerchief. The knot is not a 'direct' representation for the appointment but only an auxiliary means (an arbitrary sign) to memorization. It is not that kind of stimulus that simply causes the meeting of an appointment, nor is it a direct form of control over this event. Rather the indirect, mediating activity of associating the knot with the memory content ('appointment to meet') is responsible for remembering consciously. Vygotsky's argument was not that memorizing would not take place without the knot as an auxiliary means or without the mediating activity symbolizing the memory task. Yet the use of symbols and cultural techniques enables the person to memorize and recall more deliberately. From this, Vygotsky infers that all human 'higher psychological functions' like logical thinking, deliberate memory, intentional action, advanced motoric behaviour, reflection, intellectual communication etc. depend on cultural innovations of mediating activities with artefacts (tools as well as symbols and signs) (Vygotskij, 2002).

Consequently, Vygotsky's understanding of science differs from positivist, empiricist and functionalistic notions. If symbols and signs do not capture, mirror or discern reality but serve only as auxiliaries of mediating activities to develop higher forms of knowing, they have no self-reliant form of power. Consequently, all scientific knowledge can only be a power as an integral part of collective forms of knowing and agency (Langemeyer, 2011, 2015a; cf. Vygotskij, 2003b).

Research on this kind of development can however not rely on direct observations. To investigate it, Vygotsky assumes that an indirect method would be imperative. Methodologically, the double stimulus is therefore a means to this indirect way of studying higher mental functions as well as the internalisation of different culturally invented 'mediating activities' which transform someone's entire behaviour. One example for the methodological use of double stimulation can thus be discussed with respect to the following:

> Humboldt relates an anecdote about a peasant who was listening to student astronomers as they were discussing the stars. At one point, the peasant turned to the students and said: 'I understand that people have measured the distance from the

> Earth to the most distant stars with these instruments, that they have identified their distribution and movement. What I want to know is how they learned their names.' Here, the peasant has assumed that the names of the stars can only be learned from the stars themselves. (Vygotskij, 2002, p. 407)

This diagnosis gains significance by the theory-related observation of distorted logical thinking. By stimulating the peasant to verbalise not only stored pieces of his knowledge of astronomy, but also his reasoning about it, it is possible to detect in his reflections a clash of arguments. This clash is revealed in his wondering about their names. It discerns that the peasant attaches objective truth not only to the ontological being of an object, but also to names. Thus, he is inclined to infer that also these signs would capture the stars' ontological essence. The constructivist insight that the significant is not predetermined by the significate is not integrated in his worldview (cf. Vygotskij, 2003b). And we may add, the peasant's worldview also indicates a blind belief in the superior societal position of scientists to discover truth.

This methodological approach to higher mental functions is obviously interesting with regard to collaborative intellectualized work activities as previously depicted. We return to this later and scrutinize the adaptation of this approach by Engeström, first.

Not only in relation to the concept of double stimulation, but also by means of his triangular model Engeström invokes parallels to Vygotsky's idea of emphasising the role of cultural artefacts. But when we look closely at his theory, we must realise that he misunderstands several theoretical implications the latter addressed.

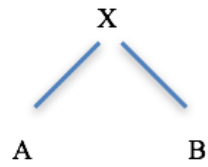

Figure 1. The mediating activity. (Vygotskij, 2003c, p. 311)

With the model presented in figure 1, Vygotsky expanded the behaviourist concept of the stimulus-response relation. The 'X' stands for an artefact which contributes to developing a mediating activity. A and B represent two different stimuli interconnected by a mediating activity.

By contrast, Engeström's triangle is however well known with this interpretation of Vygotsky's figure:

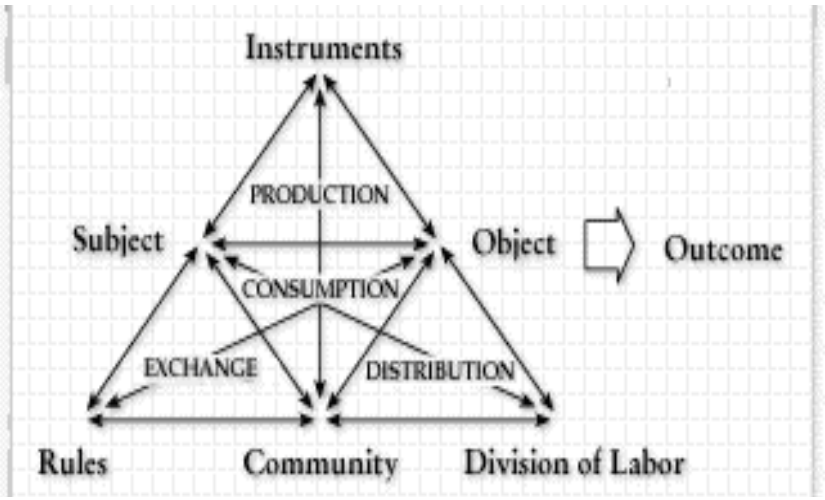

Figure 2. The activity system. (Engeström, 1987, p. 78)

In Engeström's framework, on top of the triangle (figure 2) the instrument should remind us of the artefact in Vygotsky's 'mediating activity' (figure 1), but in fact, it represents a 'mediated activity' (cf. Friedrich, 1993; Veresov, 2010). The latter signifies the subject's acting upon an object by using a tool (e.g. the axe to chop a tree). The former, the mediating activity however refers to the 'ruse' (Hegel) to use some properties of an object to transform the activity in itself (e.g. by memorizing something with the help of a knot in the handkerchief, the activity of remembering becomes a deliberate act) (Vygotskij, 1992).

Other variants of Engeström's triangular model also have 'artefact' or 'tool' or 'sign' or 'concept' at the top (Engeström, 2005, p. 61). Engeström did this on purpose. He conveys that Vygotsky would have developed only the upper part of this triangle and that he would have expanded this triangle by the three other dimensions below – integrating insights from Marx's 'Grundrisse' on the interdependence of production, consumption, exchange, and distribution (ibid.).

However, Engeström drives away from the problematic raised by Vygotsky's figure. It is designed to understand the important role of cultural development as it takes place on the psychological plane of internalised mediating activities which are integrated into culturally developed forms of behaviour. To be precise: Engeström does not neglect this as an aspect of Vygotsky's theory but in the act of conflating Vygotsky's figure with his systemic view, Engeström ascribes to the activity as a *system* to act independently from the concrete human subjects and their consciousness. This becomes obvious when activity systems are confused with a real acting subject:

> Activity systems realise and reproduce themselves by generating actions and operations. (Engeström, 2005, p. 63)

This opportune reification due to a systemic view necessarily includes neglecting the standpoint of the concrete subjects, its concrete psychological development and worldview in favour of a more functionalistic and organisational view on human practice and its overall goal. It ignores the complex cognitive work which is necessary to gain insight into the societal conditions of one's own existence and one's particular ways of developing a conscious relationship towards them. The view of the subjects is strongly conflated with a Third person perspective (the system perspective) and the object recedes into a positivist framework. Thus, the indirect method loses its meaning and is no longer a methodological means to criticise and develop collective forms of knowing. As I showed (Langemeyer & Roth, 2006), in research, Engeström does not prevent positivist and empiricist tendencies; he rather invites and embraces them by providing a tool (the triangle) to apply to practices without further methodological consideration. The study by Haapasaari, Engeström and Kerusuo (2016, p. 241) is an example of how his approach remains on the surface of the deeper problematic by merely interpreting each individual expression ('speaking turn') as 'one' and 'in some exceptional cases' as 'two types of expressions of agency' so that the 'movement from individual initiatives to more collective forms of transformative agency' can be tracked in statistics over 'speaking turns'.

In what ways is the concept of double stimulation then adapted in his work? Engeström et al. merely read it as a *means* to help participants in 'change laboratories' when they develop a new activity (system). Its function is subsidiary (see above, Engeström & Sannino, 2010, p. 5). However, in this simplification, researchers are persuaded to abstract from the different societal structures entangled with people's way of life. This abstraction needs to be overcome from a Critical psychological point of view. 'Means' in human development are never neutral. They always relate to the 'mediatedness' of the subjectively experienced control over one's life on an overall societal level (Holzkamp, 2013, p. 35). This insight is essential for VET-research.

Engeström's argument to the double stimulation in the context of 'transformative agency' is therefore highly problematic. The following quotes may show this:

> Double stimulation explains how volitional action emerges out of a conflict of motives with the help of an auxiliary stimulus, an artifact filled with meaning and turned into a sign. (Engeström et al., 2014, p. 124)

> The formation of new solutions, concepts, and skills in double stimulation is much more than just a cognitive learning achievement. It is a liberating achievement of agency formation, which gives expansive personal and collective meaning to the associated cognitive and cultural learning contents. (Engeström, 2007, p. 374)

Looking closely, we find ambivalence in these quotes. On the one hand agency is seen as evoked by individual volition which is why motivational conflicts are tackled as an impairment to transformative agency, on the other, an 'auxiliary

stimulus' (double stimulation) should be a sufficient precondition to the liberation of agency formation in its full meaning of societal change. In contrast to some system theoretical arguments, these assumptions seem to turn radically towards the subjectivity of agents in societal practice by recognizing the psychic plane of societal conflicts. In doing so, Engeström however fades out that ultimately the societal conflicts have to be considered as relevant to the change, not just the subjective experience of them of inner conflicts which only *appears as* the lack of volitional strength. The solution of the real societal conflicts on the labour market e.g. do not require an 'auxiliary stimulus' only but also the collective engagement with gaining control and developing people's conscious relationship with the world. Engeström's argument only makes sense if the 'auxiliary stimulus' would belong to the societal plane of activity – such as employee rights or the scientification of work – when powers are achieved that transcend the *societal* contradictions (not only volitional conflicts) at hand. Engeström's silence about this problematic indicates that his approach is simplifying and playing down the real power relations in society – including the ways they form people's consciousness as conscious forms of making one's life.

I therefore suggest rejecting the idea of double stimulation as a key to relevant change in practice, if a subject-scientific critique on power relations and the importance of scientification as the cultural basis of gaining powers of control is neglected. Nevertheless the concept by Vygotsky itself captures relevant methodological insights as this paper has shown.

Conclusion

The subject-scientific approach of Critical Psychology elaborates deeper insights into the contradictory nature of human practice. It is argued that this is essential for investigating transformative agency and forms of knowing in general and for intellectualized collaborative work in particular. Methodologically, the transformation of the societal relations needs to be understood not only as a coincidence of new artefacts and the volition of collaborators to use them for a change in their practice. Like Edwards (2012, p. 30) emphasizes, attention needs to be paid to the improvement and elaboration of 'common knowledge' which include 'comprising the different "whys" or purposes of potentially collaborating practices'. But right here the dialectics between the societal and individual level of control, between long term and short term control, including its implications on agency and knowing are salient. It is likely that the collaborators need to question, similarly to researcher-subjects when they are doubting and questioning deeply their own knowledge and experience, how they have come to their interpretations and knowing of their work objects and how they can develop these to more advanced forms of collective knowing. This kind of en-

gagement is theorized as possible only against the backdrop of scientificated ways of thinking (Langemeyer, 2012).

Without this kind of questioning, 'transformative agency' becomes here an empty phrase, a deception to emancipation because the complex societal level of control is neglected or simplified to some volitional aspects of individual control. For the societal level, system qualities of society need consideration. But it is important to reconstruct in what ways they are abstractions from the real concrete human practice. Thus, they should not be projected onto that concrete level as qualities collaborators experience immediately. In so doing, researchers would deflect from understanding how 'human beings are the producers of their life conditions at the overall societal level' and from analysing 'how people are able to participate in this process' and how they might generate more emancipated forms of this (Holzkamp, 2013, p. 23). Without this critical theorizing, the methodological basis of VET-research is insufficient and highly problematic.

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