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AUTHOR	Vanderstraeten, Raf; Biesta, Gert
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ABSTRACT

In education, constructivist theories of knowledge have stimulated research, especially in the fields of mathematics and science education. Less attention has been given to the implications of constructivist epistemology for the overall concepts that guide education, such as the ideals of general or civic education or about the canon. This paper considers the more fundamental levels of the debate about the educational significance of a constructivist understanding of knowledge. The main aim is to make clear the way in which a constructivist approach cannot be used. It is argued that there is no such thing as an "epistemology of knowledge construction," and that, because of this, a consistent constructivism cannot be deployed as an overarching theory about the variety of constructed points of view. The main point of reference in the paper is the educational philosophy of John Dewey. Dewey presented a transactional constructivism that can account for both the subjective and intersubjective dimensions of the process of knowledge construction in a coherent way. Although Dewey's work contains an excellent clarification of the process of knowledge construction, it is not the only constructivist paradigm. The radical constructivism of von Glasersfeld and the approach of J. Banks are discussed. The constructivist reconceptualization of education leads to an increased awareness of the ethical dimension of education as it raises awareness of the complexity of education. (Contains 46 references.) (SLD)

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Education, Diversity, and Constructivism: A Pragmatic Point of View

Raf Vanderstraeten & Gert Biesta[1]
Utrecht University, The Netherlands

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Utrecht University
Dept. of Educational Sciences
Philosophy and History of Education
PO BOX 80.140
3508 TC Utrecht
The Netherlands

R.Vanderstraeten@fsw.ruu.nl
G.Biesta@fsw.ruu.nl

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1. Introduction

The growing recognition of social and cultural diversity and difference is accompanied by fundamental changes on the epistemological plane. The appeal of constructivist theories of knowledge is particularly remarkable. Constructivism rejects the notion of *representation* which plays a central role in traditional, i.e., Cartesian theories of knowledge. As Richard Rorty (1979) has shown, the mind has, ever since the seventeenth century, been compared to a mirror which reflects reality. On this account, knowledge is seen as a reflection or representation of reality. Science is designed to be the ultimate way of exploring what nature really looks like, while epistemology is concerned with the question of the accuracy and validity of these reflections.

From a constructivist point of view,[2] knowledge is not a reflection or representation of reality, but the result of the *active construction* by a knowing organism. Characteristics of the knowing organism form an indiscriminable part of what is known about the world. Consequently, constructivism discards any claim (including scientific claims) regarding the possibility of a privileged, uniquely true representation of reality. Constructivism therefore acknowledges and legitimizes *plurality*, *diversity* and *difference.*

In education, constructivist theories of knowledge have particularly stimulated research in the field of mathematics and science education. Possible translations of constructivist accounts of the processes of learning and assimilation into methods of instruction have recently also been explored in other curricular areas (see, e.g., Fosnot, 1996). What has, however, hitherto attracted less attention are the implications of constructivist epistemology for the overall concepts that guide education, such as the

ideals of *general* or *civic education* or about the canon. But here too, so we want to argue, a constructivist critique of the foundations of ideals like these might prove helpful for reconsidering the practice of education in an age of diversity and difference.

The idea of "Bildung," to give but one example, defines education as an introduction into knowledge which is thought to be general or universal. This particular knowledge is considered universal, because it is believed to be true. It is not difficult to see, that on this basis, education is unable to value plurality. If education is guided by ideals which presuppose the possibility of an accurate and definitive representation of reality inside human beings or the human mind, alternative or diverging points of view can hardly be afforded a proper place - or, to be more specific, they can only be given a place on moral but not on epistemic grounds (see, e.g., Siegel, 1995).

In this paper we want to pay attention to the more general - or more fundamental - level of the ongoing debate about the educational significance of a constructivist understanding of knowledge. While we will attempt to indicate in a positive way the possible implications of such an approach for our understanding of education, our main aim in this paper is to make clear in what way a constructivist approach can *not* be used. In short, the point of our argument is, that a consistent usage of a constructivist understanding of knowledge implies the end of the idea of epistemology, i.e., of the idea that it is possible to have an accurate *representation* of the process of knowledge construction. Contrary to what many people seem to believe, we will argue that there is no such thing as an "epistemology of knowledge construction" (see for this expression Sleeter, 1997). It is because of this, that a consistent constructivism cannot be deployed as an overarching theory about the variety of constructed points of view. It cannot be used, in other words, to unite the diversity of

different perspectives and bring them all under one constructivist umbrella. A consistent constructivism therefore puts a serious challenge to the idea that an important goal of education in an age of diversity and difference could be "to help students understand how knowledge is constructed" (Banks, 1993, p. 11). The difficult task of a constructivist understanding of constructivism, so we will conclude, will lead us away from epistemology and towards intersubjectivity, i.e., towards our relation with the other, which, to paraphrase Emmanuel Levinas, is not only a relationship "older than being," but also older than knowledge and definitely older than epistemology.

Although we will introduce themes that might well be labelled postmodern, our main source of reference in this paper will be the "good old" pragmatism of John Dewey. Not only do we believe that Dewey's work still stands out as an unprecedented critique of the Cartesian framework; Dewey has also articulated an understanding of the constructive character of knowledge that goes beyond a rather prevalent dichotomy in the current debates about knowledge construction, viz., that between an individualistic or subjectivistic approach on the one hand and a social or sociological approach on the other. As we will try to make clear in the following pages, Dewey's *transactional constructivism* can account for both the "subjective" and the "intersubjective" dimensions of the process of knowledge construction in a coherent way. Moreover, this form of constructivism brings to the fore the crucial role of communication in the construction of knowledge, *not* as a process in which individual constructions of a common reality are exchanged, but rather as a process in which different realities are in a practical sense made "in common" (cf. Biesta, 1994).

We will start with a (re)construction of Dewey's transactional constructivism. We will then discuss the implications of this point of view for the (im)possibility of

epistemology, and we will suggest a way out of this predicament. In the final section we will make clear what negative and positive consequences follow from the adoption of a consistent constructivism in education in an age of diversity and difference.

2. Dewey's transactional constructivism

2.1. Transaction

Dewey's transactional constructivism takes its point of departure in a rejection of the dualistic assumptions of modern philosophy. Dewey does not start from the opposition between subject and object, between consciousness (*res cogitans*) and matter (*res extensa*). He does not begin with the logically flawed question how "a knower who is purely individual or 'subjective,' and whose being is wholly psychical and immaterial ... and a world to be known which is purely universal or 'objective,' and whose being is wholly mechanical and physical" can ever reach each other (1911, MW6: 441[3]). Instead, he takes his point of departure in the *transaction* of organism and environment. Dewey develops the basic framework for this point of view in his epoch-making article from 1896, *The reflex-arc concept in psychology* (1896, EW5: 96-109; see Langfeld, 1943).

In this text, which appeared well before Watson and Skinner developed their brand of behaviorism, Dewey comments on the use in psychological theory of the physiological notion of the reflex arc: the structural unity of afferent nerves, central nervous system and efferent nerves. The "translation" of this *structural* unity into a *functional* unity of sensory stimulus, central processing and motor response was meant to replace the dualistic assumptions of association psychology (see Smith, 1973). Dewey argues that this attempt has failed. "The older dualism between sensation and idea," he

writes, "is repeated in the current dualism of peripheral and central structures and functions; the older dualism of mind and soul finds a distinct echo in the current dualism of stimulus and respons." (1896, EW5: 96)

Dewey's main objection to the stimulus-response model is that it assumes the existence of an isolated, passive organism that only (re)acts upon external stimulation. This assumption ignores the fact that the organism is not inactive *until* it is stimulated, but that it is always already active. This means that a stimulus can only be a *change* in the direction and intensity of action, just as a response only marks a *change* in behavior (see 1930, LW5: 224). Stimulus and response, Dewey concludes, must therefore be understood as functioning factors within a "single concrete whole" (1896, EW5: 97). This single concrete whole cannot be the reflex arc, as this structure is entirely situated inside the organism. The unit of analysis has to be "the process *all the way around*" (Dewey in a letter to Angell, quoted in Coughlan, 1975, p. 139). This process all the way around is the interaction - or what Dewey near the end of his career referred to as the *transaction* (see Dewey & Bentley, 1949, LW16; Pronko & Herman, 1982) - of organism and environment.

Dewey's "transactionalism" entails an explicit rejection of "any form of behaviorism that defines behavior in terms of the nervous system or body alone" (1930, LW5: 220). For Dewey, the basic phenomenon is the *act*. While movement refers to the behavior of the organism, action refers to the coordinated transaction of organism-environment (see, e.g., 1899, MW1: 178). Stimulus and response are not external to the act, but are "always inside a co-ordination and have their significance purely from the part played in maintaining or reconstituting the co-ordination" (1896, EW5: 99).

The situation which gives rise to the "birth" of the stimulus is the situation where

there is a "conflict within the co-ordination," or, more precisely, when there is "doubt as to the next act" (1896, EW5: 107). This situation gives the motive to examining the act. The organism must actively "seek" the stimulus in order to be able to respond adequately. The stimulus is something "to be discovered," something "to be made out", and it is "the motor response which assists in discovering and constituting the stimulus" (1896, EW5: 109).

This process has to be understood transactionally. It is neither the case that the organism can simply "invent" the stimulus, nor - as is assumed in the position criticized by Dewey - that the stimulus is an external occurrence which completely determines the behavior of the organism. Dewey puts it as follows:

> The stimulus is that phase of the forming co-ordination which represents the conditions which have to be met in bringing it to a successful issue; the response is that phase of one and the same forming co-ordination which gives the key to meeting these conditions, which serves as instrument in effecting the successful co-ordination. They are therefore strictly correlative and contemporaneous. (1896, EW5: 109)

Contrary to the idea, then, that the stimulus is something that befalls the organism from without and only sets it into motion - making the organism, in a sense, a slave to the stimulus - Dewey argues that the stimulus is a *construction*, constituted by the "coordination-seeking" activities (responses) of the organism. Although the construction is an "achievement" of the organism, it is not a construction that is exclusively located on the side of the organism. Dewey's transactional framework secures that the construction concerns "the process all the way around."

2.2. The construction of the object

In later publications (especially 1912, MW7: 3-30), Dewey refers to the process of the constitution of the stimulus in terms of *perception*. He defines perception as the "functional transformation of the environment under conditions of uncertain action into conditions for determining an appropriate organic response" (1912, MW7: 19). In line with his transactionalism, Dewey stresses that perception cannot precede action, because

even when there is doubt as to the next act the organism cannot stop its behavior. Perception has to be understood as "a factor in organic action" (1912, MW7: 8). Moreover, the act of perception is a "temporal act" (1912, MW7: 23). It is not choice, accomplished all at once, but "a process of choosing" (ibid.). During this process, the "motor response ... is directed to *moving* the sense-organs so as to secure and perfect a stimulus for a complete organic readjustment - an attitude of the organism as a whole." Perception thus concerns the coordination of a number of "present but ineffectual motor tendencies" into "an effective but future respons" (1912, MW7: 28).

The crucial question here is, how such an effective response can be brought about. How are potential actions evaluated in the act of perception? Dewey argues, that perception can only be a useful part of the act of choosing a useful response, if the effects of previous responses are exhibited in such a way as to provide continuously improving stimuli for subsequent responses. Only through "a presentation in anticipation of the objective consequences of a possible action" can an organism "be guided to a choice of actions that would be anything except either mechanical or purely arbitrary" (1912, MW7: 24). This suggests, that the perceived subject-matter is not a manifestation of conditions antecedent to the organic responses. Perceived subject-matter, Dewey writes,

> at every point indicates a response that *has* taken effect with reference to its character in determining *further* response. It exhibits what the organism *has* done, but exhibits it with the qualities that attach to it as part of the process of determining what the organism is *to do* (1912, MW7: 20).

Perceived objects serve as *anticipations of consequences of possible actions.*

The outcome of the process of stimulus construction is the realization of an integrated or coordinated transaction of organism and environment. "Form is arrived at," Dewey writes, "whenever a stable, even though moving, equilibrium is reached." (1934, LW10: 20) In the behavior of higher organisms the outcome state is not identical with the state "out of which disequilibration and tension emerged" (ibid.). Not only will there be changes in the environment. There will also be "change in the organic structures that conditions further behavior" (ibid.). The latter modification constitutes what Dewey

refers to as *habit* (see especially 1922, MW14).

A habit is not a particular act but a *predisposition* to ways or modes of response. Habit means "special sensitiveness or accessibility to certain classes of stimuli" (1922, MW14: 32). Habits are the organic "sediments" of acts of stimulus construction. They store previous experiences and in this sense they can be considered as the "basis of organic learning" (1938, LW12: 38). The development of habits implies that the responses of the organism become more structured and more specific. After it has been established, e.g., that a light spot represents something edible, it is likely that the next time this spot enters the perceptual field of the organism, the habit formed in the first encounter with the yellow spot (e.g., grasping and eating) will be activated. The light spot has now acquired a (more) specific meaning (for the organism) in the sense in which Dewey conceives of meaning, viz., as "primarily a property of behavior" (1925, LW1: 141).

Given the fact that habits are developed in the organism-environment transaction, saying that habits become more structured and acquire more form is the same as saying that the perceptual field becomes more structured and acquires more form. We can say, therefore, that the events within the organism-environment transaction become (more) meaningful events. Events, Dewey writes, become *objects*, i.e., "events with meaning" (1925, LW1: 240). This means, then, that as a result of the process of stimulus construction a world of objects emerges from the transactional field of perception.

The foregoing account reveals that, according to Dewey, objects (of perception) are constructed in the organism-environment transaction and have their organic basis in the habit. Objects (of perception) in a sense summarize the outcome of previous processes of stimulus construction. In this way, objects guide the organism in future

(trans)action. "The character of an object," Dewey writes, "is that of a tool (...). (It) is an order of determination of sequential changes terminating in a foreseen consequence" (1925, LW1: 121). Objects (of perception) don't have a pre-existing, ontological status outside the organism. Objects are to be understood strictly transactional, i.e., as emerging in the organism-environment transaction.

2.3. Transactional constructivism, realism and subjectivism

Dewey's (transactional) interpretation of the reflex-arc concept, plus his ideas about coordinated action, perception, habit and objects, already contain the main elements of his transactional constructivism. The central characteristic of Dewey's constructivism lies in its focus on the construction of *objects* of perception instead of the construction of knowledge about these objects. The construction-process itself is understood transactionally, which means, that the objects of perception are not a mental construction. The reality of the objects of perception is secured by the fact that these objects emerge out off the organism-environment transaction. It is for the very same reason, that these objects do not represent the conditions antecedent to the acts of the organism. They do not represent, in other words, pre-existing objects in a mind- or organism-independent objective world. Objects of perception are always related to the (coordination-seeking) activities of the organism. Stated in more general terms, this means that the organism can only have "knowledge" (see below) of the world in function of its own actions.

The main gain of Dewey's point of view, is that it can both acknowledge that perception is not a passive registration of the world outside but that it is an active construction, *and* that this construction "refers" to reality - or, to put it more precisely: that this construction *is* real. As long as subject and object, or consciousness (*res*

cogitans) and matter (*res extensa*), are thought of as two separate realms, the act of construction is by definition an achievement of consciousness and therefore not really real. Dewey's "transactional realism" (R. Sleeper, 1986) locates the act of construction in the organism-environment *transaction*, and it is because of this that he is able to circumvent the choice between (idealistic) construction and (realistic) representation.

While the reconciliation of constructivism and realism is an important gain of Dewey's position, it could be argued that the price he has to pay for this achievement is too high. Dewey is able to regain the realism of constructivism by arguing that every object is constructed in the organism-environment transaction. Because the activities of the organism are a constitutive element of all objects constructed, this can only mean, however, that every organism constructs its own reality. This implies that Dewey can only reconcile constructivism and realism at the cost of a radical and fundamental *subjectivism*.

Is this radical subjectivism a problem? It is, as long as we assume that human communication requires an objective, or, to be more precise: an objectivistic foundation, i.e., if we assume that human communication can only succeed if all human beings "live" in the same world. If this would be so, than Dewey's radical subjectivism would indeed lead to a fatal form of solipsism. Dewey, however, takes a different road. He does not assume that human communication is only possible if we live in a common world. He does not assume, that "the correspondence of things and meanings is prior to discourse and social intercourse" (1925, LW1: 136). Dewey rather argues that human communication is the very process in which the world is *made* in common. This brings us to the second component of Dewey's transactional constructivism, viz., the *intersubjective* dimension.

2.4. Practical intersubjectivity

The basic framework in which Dewey conceives of human communication is in terms of *participation*. For Dewey, communication is not the exchange of information from one consciousness to another. Communication is "the establishment of cooperation in an activity in which there are partners, and in which the activity of each is modified and regulated by partnership" (1925, LW1: 141). This kind of interaction is not merely *sequential*, i.e., it is not merely a chain of events in which one actor reacts to the actions of the other. Dewey argues that successful cooperation requires that one actor reacts to the *meaning* of the acts of the other. To understand "is to anticipate together, it is to make a cross-reference which, when acted upon brings about a partaking in a common, inclusive undertaking" (1925, LW1: 141). It is, in other words, a "co-authored" looking ahead. Partaking in a common, inclusive activity thereby provokes a *generalization of meaning*. Dewey describes this as follows:

> The characteristic thing about B's understanding of A's movements and sounds is that he responds to the thing from the standpoint of A. He perceives the thing as it may function in A's experience, instead of just ego-centrically. Similarly, A ... conceives the thing not only in its direct relationship to himself, but as ... it may function in B's experience. Such is the essence and import of communication, signs and meaning. (1925, LW1: 140)

And it is in this way, that the world is "literally made in common in at least two different centres of behavior" (1925, LW1: 141).

Given this understanding of human communication as the construction of an intersubjective world by means of participation - hence *practical* intersubjectivity (see Biesta, 1994) - it is not too difficult to see, that the radical subjectivism of Dewey's transactional constructivism does not lead to solipsism. It neither leads, however, to a situation where all individual "worlds" or "realities" become identical. Dewey only

argues, that understanding one another means "that objects, including sounds, have the same value for both with respect to carrying on a common pursuit" (1916, MW9: 19). In order to accomplish "agreement in action" it is necessary to come to "likeness of attitude, or to agreement as to proper diversity of attitude" (1911, MW6: 17).

Among the pragmatists, it is most of all George Herbert Mead who has further clarified the architecture of human communication. One point that has especially been stressed by Mead, is that the intersubjective generalization of meaning does not entail a pathway to social consensus. The agreement in action is constantly threatened, and needs to be renewed time and time again. "Social conduct must be continually readjusted after it has already commenced, because the individuals to whose conduct our own answers, are themselves constantly varying their conduct as our responses become evident" (1981 [1910], p. 131). In line with Dewey's emphasis on the temporal orientation of human communication, Mead indicates that time offers a substitute for downright consensus. Understanding and cooperation only depends on a synchronization of the "time horizons" of the different actors. Time in a sense enables the simultaneous convergence and divergence of individual worlds.

2.5. Knowing and reflection

So far, we have discussed Dewey's ideas about the construction of objects of perception, and about the way in which individual realities are made in common. There is a sense, in which we could say that the construction of objects of perception is a process in which the organism acquires knowledge. Yet, two qualifying remarks must be made.

First of all, as we have already stressed before, Dewey's transactional approach implies that any knowledge acquired does not concern an external, mind- or organism-

independent reality, but concerns the *relationship* between the activities of the organism and the consequences these activities bring about. The fact that the world is never "available" independent of the activities of the organism, not only means that knowledge is always engaged in action, but also that knowing is not a registration but a form of intervention. It is "literally something which we do" (1916, MW10: 367).

It further should be noted, that in our account so far we have only discussed the construction of the objects of perception on the level of action and transaction. On this level the objects of perception are completely "embedded" in the organism-environment transaction, which means that, in a sense, the meaning they incorporate is restricted. It lives, as Dewey says, "in the muscles, not in consciousness" (1922, MW14: 124). In order to make the shift from the level of habits to the level of propositions or knowledge claims, we need to introduce two further, related, elements: language and thought.

Dewey's account of knowledge, which, as will become clear, is for the larger part a restatement of what we have already seen in terms of stimulus construction and perception, takes its point of departure in the notion of experience. "Experience" refers to the transaction of "*living* creatures with their environment" (1939, LW14:15, emph. added). It is the "close connection between doing and ... undergoing" (1920, MW12: 129). Because experience is understood transactionally, it follows that experience "is not a veil that shuts man off from nature," but that it is "a means of penetrating continually further into the heart of nature" (1925, LW1: 5). One of the most crucial consequences Dewey draws from this (transactional) point of departure, is his rejection of the idea that experience is identical to knowledge. Knowledge, Dewey argues, is only a *mode* of experience.

> (T)hings are objects to be treated, used, acted upon and with, enjoyed and endured, even more than things to be known. They are things *had* before

they are things cognized. (1925, LW1: 28)

This means, that "we do not have to go to knowledge to obtain an exclusive hold on reality. The world as we experience it is the real world" (1929, LW4: 235).

Although Dewey's transactional definition of experience indeed can be said to secure that the world as we experience it is the real world, which means that "as manifestations of interactions of a naturally existent organism and existent environing conditions all experienced materials stand on exactly the same level," this does not mean, "that with respect to their *evidential* value, their function as dependable sings, they stand on the same level" (1939, LW14: 26). It is precisely this question which is at stake when the organism is confronted with "the appearance of incompatible factors within the empirical situation," because in such a situation "opposed responses are provoked which cannot be taken simultaneously in overt action" (1916, MW10: 326).

We have already seen, that this predicament can be solved on the level of action by means of a process of trial and error (viz., the construction of the stimulus through the "coordination-seeking" activities of the organism). In some places Dewey refers to this operation as "knowing." In other places, however, Dewey does not restrict the usage of this term exclusively to the *operations* "that give experienced objects a form in which the relations, upon which the onward course of events depends, are securely experienced" (1929, LW4: 235), but refers to the overall process in which these operations are "guided" by thinking or reflection. Here, knowing is defined as "the reflective determination of things with reference to their specifically meaning other things" (1906, MW3: 117).

Of course, there is only one way in which the organism can be sure about the kind of situation he is confronted with, and that is by actually responding. This is not

different when thinking intervenes. But thinking is a way to find out in imagination what the various lines of possible actions might lead up to. The crucial difference between trial and error and an approach where "activity is turned from execution into intra-organic channels, resulting in dramatic rehearsal" (1922, MW14: 133), i.e., in experimenting with various lines of action on a *symbolic* or *conceptual* level, is that it does not commit the organism to actual consequences. "(W)e perform experiments by means of symbols which have results which are themselves only symbolized" (1929, LW4: 121). Symbolic or conceptual operations provide the organism with "a medium of a postponed conclusion and of investigation continued till better grounds for affirming an objects (making a definite, unified response) are given" (1915, MW8: 77). It is this which transforms action into intelligent action (though it should not be forgotten, that the intervention of conceptual operations can only make action *more* intelligent but can never lead to total certainty).

The foregoing first of all reveals, that knowing has to do with the ability of the organism to use given "things" as signs or indications for something else not directly given. Making such *inferences* is a precarious journey. Inference "(brings) truth and falsity in the world" (1915, MW8: 70). It makes no sense to look for truth in the present situation, because the present is what it is. Responding to an absent thing as if it were present, however, adds the property of affording assurance and correction, of confirming and refuting. "Truth and falsity present themselves as significant facts only in situations in which specific meanings and their already experienced fulfilments and non-fulfilments are intentionally compared and contrasted with reference to the question of the worth ... of the given meaning or class of meanings" (1906, MW3: 118). Or, as Dewey writes elsewhere, "the agreement, correspondence, is between purpose, plan, and its own

execution, fulfillment" (1907, MW4, p.84). Truth does not refer to the correspondence of an utterance and the world at the same moment. Truth refers to the correspondence of suggested meaning and realized meaning, it refers to coherence in the course of time.

This further reveals, that the main condition for the transformation of a trial and error approach into intelligent action lies in the ability of human organisms to use symbols. Dewey sees this ability as "far the greatest event in the history of man" (1929, LW4: 121) as it provides the way, and the *only* way to escape from a "submergence in existence" (1929, LW4: 129). What is important at this point, is Dewey's claim that the ability to use symbols, to respond to a thing as meaning another thing, has a social or intersubjective origin.

> Gestures and cries are not primarily expressive and communicative. They are modes of organic behavior as much as are locomotion, seizing and crunching. (...) The story of language is the story of the *use* made of these occurrences (...) But they became language only when used within a context of mutual assistance and direction. The latter are alone of prime importance in considering the transformation of organic gestures and cries into names, things with significance, or the origin of language. (LW1, 1925: 138-139)

Because intelligent action is the result of the cooperation of existential operations (actions) and conceptual operations (thought), we can first of all conclude, that the possibility for intelligent action has itself a social or intersubjective origin. Further, we can say that "the reflective determination of things with reference to their specifically meaning other things," if successful, not only results in coordinated action, but, because of the fact that conceptual operations have been part of this process, also has a "conceptual result." Certain operations and certain relations within the "conceptual system" used, have proved to be effective in dealing with a problematic situation. This does not mean, that these operations and relations can from now on be considered true. Yet, we can say - and this is the term Dewey prefers - that the conceptual result of

intelligent action leads to "warranted assertions" (primarily) about certain actions and the consequences of these actions.

3. Transactional constructivism and the end of epistemology

In the introduction of this paper, we argued that constructivism can account for, and legitimizes, plurality - because it does not describe knowledge as the representation of an independent reality, but as a construction. Dewey's work contains an excellent clarification of the process of knowledge construction. However, it is not the only constructivist "paradigm". Before discussing some implications for education, we will clarify what is characteristic of Dewey's position.

Most important is the transactional framework in which Dewey situates the process of construction. Dewey does not depart from the distinction between subject and object, c.q. between consciousness and world. Consciousness does not play a fundamental role in Dewey's account. The organism is first of all at the level of action connected with the world. Consciousness only comes in when the reflexive reconstruction of experience - intelligent action - is at stake. Thus, Dewey's claim that the object of perception is constructed does not mean that the world is a purely mental construction, something which totally ensues from the subject, c.q. from consciousness. Objects of perception are constructed in the transaction. Dewey's constructivism is a realism, although no realism in the traditional sense of a theory which accepts an organism-independent reality of pre-existing objects. "The essential contrast is that reality ... for pragmatism is still in the making" (1907, MW4: 99).

But what is reflection's role in action, according to Dewey? Thanks to reflection, the coordination of organism and environment no longer just depends on existential operations (1938, LW12), i.e. on trial and error, but gets embedded in symbolic operations. The symbolic operations themselves are means, instruments. They don't describe or represent a reality outside the subject, but are put to use in deliberations, to come to intelligent action. On the symbolic level, it comes to warranted assertions about the relations between acts and consequences, and to these warranted assertions an organism can recur in later situations -as a resource, not as definite truth. The source of this reflexivity is located in the intersubjective sphere. What things are used as signs or indications for something else (i.e. as symbols) is the outcome of social interaction.[4]

We might further clarify Dewey's transactional constructivism by opposing it to an, in contemporary discussions, very prominent brand of constructivism, i.e. von Glasersfeld's "radical constructivism". Although radical constructivism pretends to incorporate the pragmatic theory of knowledge and truth, we will indicate that Deweyan pragmatism provides us with the materials for a constructivist critique of radical constructivism. Contrary to von Glasersfeld's claim that his 'constructivism *is* a form of pragmatism and shares with it the attitude towards knowledge and truth' (1989, p.124), there is a crucial and decisive difference between his radical constructivism and Dewey's transactional constructivism (cf. Garrison, 1997).

At first sight, both positions seem to share a wholehearted resistance against traditional epistemology. Like Dewey, von Glasersfeld attempts to overcome the "modern" opposition of subject and object. But his "unconventional approach to the problems of knowledge and knowing" starts from the idea that no *subject* can transcend the limits of her/his own experience (von Glasersfeld, 1995, p.1). It does not focus on

the basic level of (trans-)action; it privileges the perspective of the subject. And this accent is not weakened but *strengthened* by the refutation of the assumption of a subject-independent world.

> It is not an orientation that claims to reveal an ultimate picture of the world. It claims to be no more than a coherent way of thinking that helps to deal with the fundamentally inexplicable world of our experience and, most important perhaps, places the responsibility for actions and thoughts where it belongs: on the individual thinker. (von Glasersfeld, 1995, p.19)

Radical constructivism uses its accentuation of the subject to keep off the specter of arbitrariness which accompanies any relativist theory of knowledge. Self-consciousness and individual needs have to guarantee a certain degree of coherence and consistency in the stream of consciousness. The one-legged starting point makes it, nonetheless, in addition necessary to postulate an outside reality -and therefore this (constructivist) approach better is not called "radical". Von Glasersfeld accepts some "ontological constraints": "the only instruction or information a human knower can possibly receive from 'nature' or 'reality' is negative" (1996, p.19; for a critique of this "empiricist legacy", see Matthews, 1994, p.150ff). In his eyes, "reality" does not determine what we should think, but does limit the imagination of subjects. But what counts as an instruction from "reality"? What makes the difference between bad luck and a recalcitrant "reality"? How do we know, i.e. construct, that/when we are meeting "reality"? In fact, these questions are logically flawed and spring from an inaccurate, dualistic formulation of the problem of knowledge.

The differences between the positions of Dewey and von Glasersfeld are not trivial. The point that we want to make is that what is at stake, is precisely the very idea - and the very possibility - of epistemology (for which we reason we also want to suggest, that Dewey's constructivism is the more "radical" one). "Epistemology" does

not refer to any particular theory or any particular idea about knowledge. Epistemology is a specific branch of modern philosophy which takes as its point of departure the Cartesian distinction between subject and object, i.e. between consciousness (res cogitans) and matter (res extensa), and which arrogates to itself the task to make clear how knowledge at large is possible, and how knowledge at large is valid. Epistemology is a relevant enterprise, as long as it can be assumed that the distinction between consciousness and matter is original and inevitable, *and* as long as it can be assumed that philosophical knowing is essentially different from (and superior to) other kinds of knowing.[5]

Against this background, we can clearly see that von Glasersfeld's radical constructivism stays completely within the terms of modern epistemology. He assumes that no subject can transcend the limits of her own experience and yet at the very same time tries to explain how knowing and learning happen (or at least how we should conceive of knowing and learning). He is, to put it differently, at the very same time sceptical on the level of knowledge and non-sceptical (or empiristic) on the level of the theory of knowledge. The main advantage of Dewey's transactional constructivism is that it moves beyond the scepticism of traditional epistemology, for the very reason that it rejects the assumption that "experience is something set over against the world" (1916, MW10: 23). As soon, however, as this modern assumption is rejected, or, in Dewey's own words, as soon as it is accepted that this assumption "is contrary to fact", the epistemological problem of "how self or mind or subjective experience or consciousness can reach knowledge of an external world" has become "a meaningless problem" (1916, MW10: 23).

According to Dewey, this does not imply that it has become impossible to say

anything at all about knowing (and it should be noted, that a large part of Dewey's work precisely deals with empirical or "naturalistic" questions about knowing). The only conclusion Dewey draws, is that we should give up the idea that there exists a special form of knowing - viz., epistemology - which can explain and justify all other knowledge. The only conclusion he draws, in short, is that his transactional constructivism means the end of epistemology.

A second argument for the end of epistemology ensues from the simple application of the idea that all knowledge is constructed on this claim itself. It makes clear that the claim that knowledge is a construction can no longer be put forward as an epistemological claim, i.e., as a claim about the whole field of knowing and knowledge construction. The claim can only be understood as itself a construction, and, in this sense, as one of the positions in the "field." The idea that constructivism can be articulated as an epistemology, i.e., as a representation of what knowing and knowledge construction really is, is inconsistent. A consistent constructivism needs to give up its epistemological pretentions. In order to show what this would imply for the adoption of constructivism in education, we will turn to an example of the use of constructivism in the debate about multicultural education.

4. Constructivism, diversity and education

Exemplary of the purport of a significant part of the rapidly growing literature on multicultural education are the arguments and suggestions which have been put forward on several occasions by James Banks. In an article entitled "The canon debate, knowledge construction, and multicultural education", Banks tries to elaborate a

"typology of the kinds of knowledge that exist in society and in educational institutions" (1993, p.5). He distinguishes between 5 types (personal/cultural knowledge, popular knowledge, mainstream academic knowledge, transformative academic knowledge, school knowledge). In his view, each type reflects "particular values, assumptions, perspectives, and ideological positions". Although each type of knowledge contains its own "biases", Banks believes they are all worthwhile in their own right. According to Banks, "teachers should help students to understand all types of knowledge" (p.5-6). Or, more specifically: "The main goals of presenting different kinds of knowledge are to help students understand how knowledge is constructed and how it reflects the social context in which it is created and to enable them to develop the understandings and skills needed to become knowledge builders themselves" (p.12).

From this account of Banks' position, it is fairly obvious that the problems return, which we indicated with regard to von Glasersfeld's radical constructivism. At first, although Banks indicates that his work is within the transformative tradition, and thus should "present a highly selective view of social reality" (p.11), he does not pay attention to the consequences of a self-application of his theory. What bias, which ideological interests are hidden behind this words? Banks uses his typology of knowledge as an epistemological theory, which gives a neutral, uncontaminated description of the world of knowledge. He uses his theory of knowledge construction as if it were no theory, no knowledge construction itself. The consequences of this 'neglect' are not only situated on the technical-philosophical plane. If one has a clear idea of the different types of social knowledge, the "problem" of the multicultural society seems to be under control. The different types now all seem within the school's (or the knower's) reach; they seem to be pieces of the same jigsaw. But this implies that

different knowledge ceases to be radically different. The differences are in a sense domesticated. With an adequate representation of the different forms of knowledge, plurality and difference in fact have to disappear.

Like von Glasersfeld's radical constructivism, it seems that the majority of the literature dealing with multicultural education starts from a subject-object distinction. From this background, plurality is understood in terms of a multitude of perspectives on the world. The different perspectives, or the different types of knowledge, are not radically different. Their divergence is explainable. It can be contained within the subject-object scheme. It are subjective perspectives, different views on the objective world. A recognition of the plurality of worlds (not: the plurality of perspectives on the world) is beyond the scope of this "constructivism".

To recognize the fundamental or radical plurality of knowledge constructions, it is necessary not to depart from the a priori distinction between subject and object. A truly constructivist approach, as the one developed by Dewey, starts from the intrinsic connection of organism and world. From this starting point, one can make clear that knowing is always tied to conditions which preclude knowledge of a world which is not affected by this knowing. Every act creates a new world. Hence also the importance of Dewey's notion of practical intersubjectivity (see Biesta, 1994).

What is characteristic of the position propagated by Banks c.s., is the idea that education is capable of mastering the problems of multiculturality and divergence. Teachers (still) are thought to be able to systematically introduce their pupils into the complexities of (post-)modern life. This perspective clearly shows its attachment to ideals of control and transparency, of a surveyable reduction of complexity. From its view, hat is necessary if the environment becomes more complex, is a more complex

typology of knowledge. In our constructivist view, what matters less is offering particular knowledge matter, including knowledge about how knowledge is constructed. Perhaps education should convey most of all the idea that every individual is capable of learning, of individual emancipation. And that is only possible if the education process itself moves away from a situation in which the teacher brings in the different knowledge forms, in which the teacher is in charge and guides and guards the multiculturality of the process of knowledge acquisition. Good education is characterized by fundamental respect for pupils. And respect is something different from e.g. politeness.

In our view, what should distinguish a constructivist reconsideration of education is its focus on the relation between individual action and social cooperation, on the mutual dependence *and* independence of subjectivity on the one hand and intersubjectivity on the other. Taking the relative autonomy of both realms into account, has fundamental repercussions for our ideas about steering, control and intervention. By means of cooperation, one can only try to "disturb" or "irritate" the transaction of individual organisms. From this point of view, causal explanations - and corresponding ambitions and aspirations - in the field of intervention and of education have to be given up. Educators do not make or mold individuals; education is an organized, incessant process of "irritating" individuals. With Derrida, one can in this regard also speak of the use of 'transcendental violence'.

Education is in a certain sense situated *in between* intersubjectivity and subjectivity. It is concerned with making lasting impressions on individual organisms and their habits. Education, however, needs the intersubjective medium to reach the subject (which has to be educated). This operative condition preserves degrees of

freedom for the educandus, which s/he can use to select a reaction to particular stimuli, and eventually to construct her/his own development. Several of the experiences which ensue from this state of affairs are quite common, but hardly influenced educational theory. E.g., that education is a difficult undertaking, that it results are unpredictable, that best intentions do not suffice, etc. From the point of view of parents and teachers, educating indeed resembles a "trial and error" undertaking - the more so in the school class where teachers have little knowledge of the particular background and history of their pupils. But that these phenomena are depicted as problems, which have to be remedied, is related to the use of a Cartesian subject-object framework. From a constructivist point of view, they are illustrations of the basic condition of education.

Constructivism is no proclamation of the end of education. But the constructivist reconceptualization of education leads to an increased awareness of the ethical dimension of education. Moreover, it raises our awareness of the complexity of education, and thus might provide us with a better account of the possibilities which are left.

Endnotes

1.The research for this paper is in part sponsored by an NAE Spencer postdoctoral fellowship, entitled to Gert Biesta.

2. As a matter of fact, there are "many faces of constructivism" (Phillips, 1995; see, e.g., Steffe & Gale, 1995), yet we believe that all of them share this general point of view. Gale (1995, p. xiii), e.g., distinguishes between six paradigms, all of which differ "from the Cartesian model in viewing knowledge in a nondualistic manner so as to avoid the mind-body split of endogenic (mind-centered) and exogenic (reality-centered) knowledge".

3. References are to the collected works of John Dewey, published by Southern Illinois University Press, Carbondale & Edwardsville, Il., under the general editorship of Jo Ann Boydston. The collected works consist of three series, the Early Works, the Middle Works, and the Later Works, to which we will refer as EW, MW, and LW, followed by volume number and page(s) and preceded by the original year of publication of the text.

4. The idea that mind is not "an original datum" but rather represents "something acquired" (1916 or 1917, MW10: 60, 58) is, to our understanding, one of the central insights of pragmatism. While this insight plays a central role in Dewey's work, one of us has shown elsewhere, that George H. Mead gives a more accurate and detailed account of this insight. See Biesta, in press and Biesta 1997.

5. This formulation of the task and assumptions of epistemology is taken from Dewey (1906, MW3: 119), but is, up to the present day, recognized as an adequate account of what the main question of epistemology is (see, e.g., Dancy, 1985).

With respect to the latter assumption, Dewey points to the fact, that "(t)he philosophical tradition that comes to us from classic Greek thought and that was reinforced by Christian philosophy in the Middle Ages discriminates philosophical knowing from other modes of knowing by means of an alleged peculiarly intimate concern with supreme, ultimate, true reality" (1917, MW10: 38). And with respect to the former assumption, he observes, that "the problem of knowledge *überhaupt* exists because it is assumed that there is knower in general, who is outside of the world to be known, and who is defined in terms antithetical to the traits of the world" (1917, MW10: 23-24).

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1899	MW1:175-191	Principles of mental development as illustrated in early infancy
1906	MW3:107-127	The experimental theory of knowledge
1907	MW4:78-90	The control of ideas by facts
1911	MW6:12-68	The problem of truth
1911	MW6:357-467	Contributions to *A cyclopedia of education*

1912	MW7:3-30	Perception and organic action
1915	MW8:14-82	The logic of judgments of practice
1916	MW9	*Democracy and education*
1916	MW10:320-365	Introduction to *Essays in Experimental Logic*
1916?	MW10:53-63	The need for social psychology
1917	MW10:3-48	The need for a recovery of philosophy
1920	MW12:77-201	*Reconstruction in philosophy*
1922	MW14	*Human nature and conduct*
1925	LW1	*Experience and nature*
1929	LW4	*The quest for certainty*
1930	LW5:218-235	Conduct and experience
1934	LW10	*Art as experience*
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