

## Identity and Community: Differences at Heart and Futures-to-Come

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For it is not the other which is another I, but the I which is an other, a fractured I. . . . In the psychic system of the I–Self, the Other thus functions as a centre of enwinding, envelopment or implication. It is the representative of the individuating factors. (Deleuze, 1968/1994, p. 61)

The One guards against/keeps some of the other. It protects *itself* from the other, but, in the movement of this jealous violence, it comprises in itself, thus guarding it, the self-otherness or self-difference (the difference from within oneself) which make it One. The “One differing, deferring from itself.” The One as the Other. (Derrida, 1996, p. 78)

Every culture is in itself “multicultural,” not only because there is a prior acculturation or because there is no pure and simple provenance, but more importantly because the gesture of culture is itself a gesture of *mêlée*: it’s to confront, transform, deviate, develop, recompose, combine, cobbling together. (Nancy, 2003, p. 283, my translation)

Identity and community are theoretical terms denoting particular experiences that arise from participation in human, cultural-historically contingent society. Although sociocultural and cultural-historical researchers have drawn on the way these concepts have been formulated within the tradition, they generally have not carried forward the fundamentally materialist dialectical way of thinking that has been central to the efforts of the ancestors of these theories (Hegel, Marx, Vygotsky, Leont’ev). In contrast, some of

the recent work concerning the two concepts does in fact use an inherently dialectical approach as exemplified in the introductory quotes. Thus, the first two suggest that one cannot understand identity (“I,” “Self,” the “One”) without understanding the Other; the third quote suggests—in contrast to much of the going literature—that *every* (community’s) culture inherently is multicultural, that it is different wherever we look, and that it is not a unitary, homogeneous solid defined by periphery and center. In some approaches to dialectics (Hegel but not Marx), Self and Other would be defined as mutual opposites, negatives (negations) of one another—in a Venn diagram, one term would then be on the inside of a circle (A) and the other constitute everything on the outside ( $\neg A$  or not-A). There are some inherent weaknesses in thinking the concepts in terms of opposites and oppositions, inside and outside, newcomer and old-timer.

In this chapter, I take a different route to theorizing identity and community by starting with a different ontology. Rather than opposing the Other and the Self as self-identical contraries, philosophers of difference show how the Self has to be understood as inherently Other, not as its negative but as a central aspect of its constitution; rather than understanding culture (or any other aspect of human life for that matter) as one (*the* “One”) I understand it as a plural singular. Self and Other, who are part of and constitute community, *are implicated* in one another, inseparably a One and a Many, simultaneously singular and plural in nature; and culture always is non-self-identical and thus heterogeneous, always is a *mêlée* of cultures brushing up against one another. Culture always is other than itself and, therefore in a strong sense, *is not*. Here I articulate a position with respect to *community* and *identity* that does not treat these concepts and the phenomena that they denote as self-identical but as different from themselves. I take each concept (phenomenon) to be a process of “heterogenesis, that is, an ordering of its moments by zones of neighborhood” (Deleuze & Guattari, 1991/2005, p. 26, my translation), where its constitution of “moments” means that it cannot ever be a unitary entity but always constitutes a difference at heart. This then allows me to better theorize

and model the kinds of communities and identities that we actually observe, always contradictory, always singular and plural simultaneously, always reproducing themselves differently in a process of eternal return, embodying difference at the very heart of identity. But how can we think of difference in and for itself, especially as it leads to the non-self-identity of the Self? In the following, I provide an analogy that shows how we can think individual and collective so that they no longer exist for themselves but always implicate the other, that is, always implicate a plural singular. I then provide an example from a second-grade mathematics lesson exhibiting the heterogeneity and hybridity of individuals and collective consistent with the analogy and the three quotes that begin this chapter.

### **Difference-in-and-for-Itself: An Analogy**

As an alternative to existing approaches, I have adopted into my theoretical repertoire the concept of *difference-in-and-for-itself* or, alternatively, of the *singular plural* (Nancy, 2000), which embodies difference and otherness at the heart of identity (which therefore cannot be identical to itself). And because the future-not-yet is part of Self and community, neither phenomenon *is* but always also constitutes the future-to-come (*à-venir*). Accordingly, any singularity (Self, Other, community) is what it is only in and through its relation to all other singularities including itself (self-relation), that is, in relation to the plurality. The plurality, as such, itself is a singularity, constituted by the multiplicity of existing singularities.

To make this concept of the singular plural more concrete, I use the following analogy with constraint satisfaction networks, which I have employed to model decision-making in complex social situations (e.g., Roth, 2001). Accordingly, a network (“community”) consists of some number of “singularities” (persons, here  $n = 6$ ); the value (identity) of any node at state  $t+1$  depends on the values of all nodes, including itself, at state  $t$  (Figure 1a).<sup>1</sup> That is, no node is stable, and the value of a node in the next instance cannot be taken from the node itself (with a self-relation of 1 or some other

value, which would mean, it is not reproduced identically) or from the ensemble of nodes. (Matrices that are asymmetrical model “power relations,” that is, for which the influence of  $S_1$  on  $S_2$  is different from the relation of  $S_2$  on  $S_1$ , that is,  $a_{12} \neq a_{21}$ .) Given one or more reference points—e.g., the states where the nodes all have either value 0 or 1—any state of the network can be given in terms of distance from the reference point. As soon as one new node is added, the configuration as a whole changes (Figure 1b) because of the additional relations that define the ensemble.<sup>2</sup>

Because the network is in continual change unless trapped in one of the extreme positions, no individual node never *is*, in the same way that a photograph never *is* the person: each state constitutes a snapshot of a process and stands in the same precarious relation to what it is (its being) in the same way that a photograph stands in relation to the person (when a person says looking at a photograph of herself, “I don’t like it, this is not me”). This situation is not improved when we animate the states like a movie animates still pictures, which return to their still states as soon as one stops the reel. We therefore have to think the nodes in terms of their movement from  $t$  to  $t+1$ : They only *are* in and through this movement, that is, in terms of their becoming. All of this also leads us to a situation where the relation of any node (member) of the network is a relation to all other nodes (members), that is, in the final instance therefore, a relation of the network to itself. The unity of this network (community) as a whole therefore is that of a self-relation of a plurality of members. In this network, therefore, all the members are equal despite their differences.

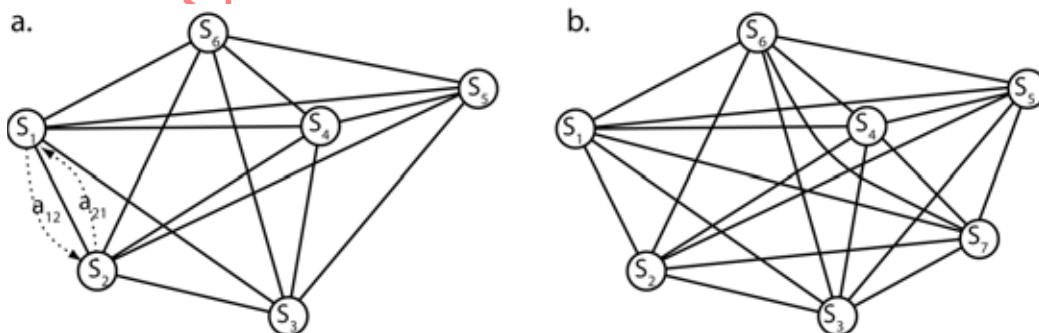


Figure 1. An analogy of thinking the singular plural and difference in and for itself.

Networks (communities) such as the one described exhibit interesting behaviors even in the symmetrical case of mutual influence ( $a_{ij} = a_{ji}$ ) and even in the case that the  $a_{ij}$  are held constant. Let us think of a small community of practice ( $n = 6$ )—such as the committees making funding decisions that I model elsewhere (Roth, 2002)—in which there is a positive reinforcing influence between the practices/identities among individuals 1–3 and 4–6 and a negative (critique) influence between the members of the first and second group. The system is sensitive to initial conditions. Figure 2 provides five different trajectories as a function of different starting points where the community defining practice(s) has (have) are yet to be developed. These trajectories cannot be given in closed mathematical form, as they are sensitive to variations in initial conditions—set random in the present modeling exercise—and to minor disturbances along the trajectory (not modeled here).

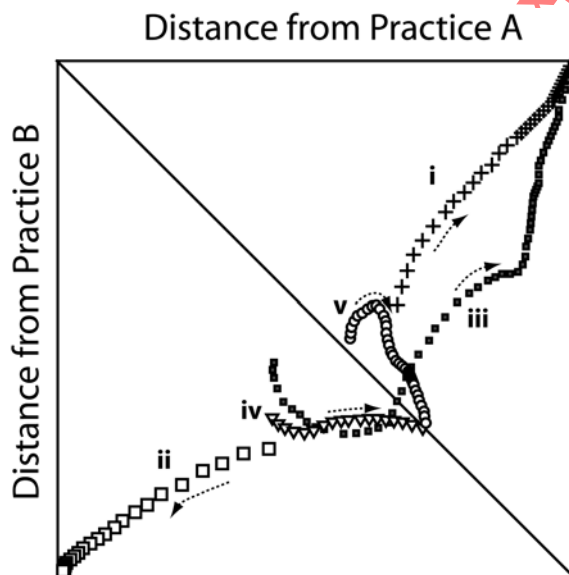


Figure 2. Trajectories of a community toward more stable practices A (ii), B (i, iii), or the co-presence of practices A and B (iv, v).

Cases (i) and (ii) are the ones with histories that one might expect, where the community with initial inclinations for practices B and A ends up with these practices as steady states. However, the three other cases are the more interesting ones in this simple

simulation. Thus, trajectory (iii) is that of the system beginning with a greater inclination for practice A nevertheless ends with practice B as the steady state (its end state is far away from practice A) and this despite an initial movement away from its final practice. Trajectories (iv) and (v) correspond to communities that begin with greater inclinations for A and B but end up with a final state where both practices are maintained simultaneously, that is, there is not one but there are two defining practices. It can easily be seen that despite beginning near each other, trajectories ii, iii, and iv lead to very different end states.

The trajectories in Figure 2 are but representations of the trajectory of the system (in distance space relative to two fixed points) as a whole, constituted by the plurality of individuals and their relations, each of which also is on an individual trajectory. During the entire trajectory, each node is in continual transition (mathematically, the value) and so is the collection of nodes as a whole: the network therefore is better characterized by its tendencies rather than by its states, which already embody and are constituted by the possibilities for the next states, that is, their own and collective future-not-yet. The value of each node (i.e., its "identity") is a (non-linear) function of the node collective, which exists only in as far as it is concretely realized in the individual nodes: therefore, both taken individually and collectively, the nodes exhibit singularity and plurality.

In my current thinking, this approach constitutes an interesting model for the transformation of a class of students, such as the second-grade mathematics class that I have use as an example below. Because of their mutually constitutive nature, individuals and collective are thought together; and any beginning implicates the future-not-yet that each individual for him/herself and the collective as a whole achieves. Thus, the mathematical nature of second-grade students' classification efforts, as I show in the next section, already is prefigured as a possibility in the non-mathematical classification they begin with. The individual trajectories are not relative to some fixed community, but each individual trajectory is constitutive of the collective trajectory, which reduces the

theoretical usefulness of notions such as “from periphery to center” as used in much of the research on “communities of practice.” There is no one center or margin that is privileged inherently, for any center and any margin is constructed as such by drawing arbitrary boundaries in an open space of continual becoming. Rather, there are as many centers as there are observers and constitutive members, each positioned, each dispositioned, each associated with presuppositions. The truth, then, lies in the multiplicity of the phenomenon, here both individual and community, neither of which can be reduced to the other and neither of which has a self-identical core (e.g., the “old-timers” who characterize the core in *Situated Learning*).

These trajectories suggest that we end up with different communities of practice—when viewed as a self-identical system—depending on minor variations in initial conditions and along the trajectories. In fact, there is no one community of practice but a continually changing plurality of ever changing practices. Minor variations of the parameters relating any two nodes also change the historical trajectory of the system as a whole and that of each individual. To make the model more complex and fitting the complexity of the modeled phenomenon, we may add an external influence, for example, modeling the teacher, which tends to constrain the system to move more toward one rather than another final state—even though this cannot be deterministically ascertained unless the model contains unreasonable parameters.

This approach has consequences. For example, time no longer is external physical time—e.g., measuring length of school years, developmental age, length of curricular units—there is an internal time associated with such systems that is distinctly different from the external time theorized and measured in the natural sciences (Prigogine & Stengers, 1979). The “age” of such a system is a function of the transformations, that is, of the successive states of a system that integrates itself over and, in this, becomes path dependent. This also is at the origin of the qualitative diversity of our world, which is different from nature and culture thought in terms of conformity with itself. In this

change or rather the experienced duration, there is a memory interior to the duration—transition similar to the one that I have characterized as missing in traditional conceptualizations of *community of practice* as used in educational research:

It is an interior memory but not personal memory exterior to the thing it retains, distinct from a past of which it guarantees its conservation; it is a memory internal to the change itself, a memory that prolongs the after in the before and which prevents them to be pure instants that appear and disappear in a present that is reborn without end. (Bergson, 1922, p. 35, my translation)

This form of memory is internal in systems such as the one I model here; it is internal to the communities that we have come to know about by reading *Situated Learning*; and it is internal to the school in Moussac, where individual students and the teacher do not have to think about what the practice looked like last year or the year before, but where the structure reproduces itself and changes in every action (Roth & Lee, 2006). But this form of memory disappears in normal classrooms, which are constituted at the beginning of the year for this or that administrative decision and which are disassembled, reconstituted, and assigned to new teachers at the transition points between the end of one school year and the beginning of the next.

### **Elaboration of the Problematic**

The relationship between individual (Self) and collective (Self, Other) as well as the relationship between cultures and their concrete practices are central to sociocultural and cultural-historical approaches to understanding human (societally motivated) activities.<sup>3</sup> Yet there are problems and logical contradictions in research using these theoretical frameworks.<sup>4</sup> Here I present a way to realize the Hegel–Marx–Vygotsky–Leont’ev program of understanding the subject of activity and, correlatively, of understanding the (the culture of the) community with which individuals stand in an irreducible, because mutually constitutive relationship. In my way of understanding, as shown in the analogy

of the relations that constitute a constraint satisfaction network, *each* singular entity (concept) is understood as a multiplicity, a plurality, and therefore bears at its very heart an inner contradiction that eschews all reduction of cognition to the individual *or* the collective (community).<sup>5</sup>

Much recent work on identity and activity has shown how participation in activity constitutes identity as much as identity constitutes a resource for participating in activity and therefore constitutes a resource for knowing and learning (e.g., Holland et al., 1998; Holland & Lave, 2001). Although sociocultural and cultural-historical activity theories radically depart from other psychological approaches in their conception of identity and community, many if not most (Western) researchers drawing on these and related theoretical frameworks share with the latter a fundamental starting point: the ontological commitment to the *Same*. Thus, for example, *community* (of practice) is taken as a unitary, self-identical entity (being) that defines membership, level of competence (where an individual finds him-/herself along the trajectory from periphery to core participation); in this way, the heterogeneity at the very heart of community as phenomenon and theoretical term only exists as difference along a scale (e.g., newcomer to old-timer, periphery to core), which is not a difference at all (Hegel, 1806/1977). The problem with an ontology of the *Same* is that it defines difference as deviation from a self-identical entity, which inherently leads to the Kantian position of the power of knowledge that determines the conditions of possibility, representationalism (knowledge in the head), the isolation of the self from its societal and material context, and to the grounding of identity in intentionality and consciousness of self (Deleuze, 1968/1994). Invariably, for example, researchers pledge allegiance to Lev Vygotsky and then theorize learning as a movement of publicly constructed knowledge into the person in a process of *internalization*. Here inside and outside the person (individual, psychology) are opposites and learning is conceived of the movement of something from the Other on the outside

(interpsychological plane) to the Self on the inside (intrapsychological plane, community and culture).

An important work for mediating current understandings of community and identity has been *Situated Learning: Legitimate Peripheral Participation* (Lave & Wenger, 1991). In it, the community and its culture are more or less stable features of societal life and the changes individuals undergo are theorized in terms of *legitimate peripheral participation* that takes them from newcomer old-timer status and core participation.<sup>6</sup> In and through participation, the individual then comes to be “in the image of” the community—a fact especially clear in the way newcomers to Alcoholics Anonymous become old-timers as they appropriate the existing genres of telling their autobiographies. In the following, I take head on the fundamental contradiction articulated in *Situated Learning*:

[A] major contradiction lies between legitimate peripheral participation as the main means of achieving continuity over generations for the community of practice, and the displacement inherent in the same process as full participants are replaced (directly or indirectly) by newcomers-become-old-timers. (Lave & Wenger, 1991, p. 114)

The authors of *Situated Learning* go on to discuss the anthropological tradition of articulating this contradiction between continuity and renewal of a community, which is integral to learning. They state that this contradiction is “fundamental—a basic contradiction of social reproduction, transformation, and change” (p. 114). The particular contradiction arises only for researchers who frame the problem in terms of communities and participants that are self-identical rather than heterogeneous processes in and of flux (*durée*). Continuity (in flux) and inherent displacement go together without contradiction (Bergson, 1907/1969). Despite its good intentions, there are many other passages in *Situated Learning* that foster readings that militate against an appropriate understanding and theory of community and, correlatively, of identity, person, and Self.

To escape the problems that arise from an ontology of a self-identical Same (Lat. *idem*, which is the etymological precursor of *identity*), I work out here, with concrete examples from my research a theory of identity and community grounded in a philosophy of *difference*—in a theoretical position and tradition that ranges from Hegel to Marx to Vygotsky to Leont’ev and to the French philosophy of difference of the late 20<sup>th</sup> and early 21<sup>st</sup> century. Accordingly, difference and heterogeneity, because they constitute the heart of entities and persons, are the norm rather than something defined in terms of deviation from, and therefore less than, sameness: Identity and community then no longer are consciousness of self; they are relation to the other than self and awakening. This ontological starting point allows me to frame identity in terms of hybridity and heterogeneity as *positive* concepts for theorizing the experiences of learning science and mathematics in and out-of-schools. This approach allows me to overcome three disadvantages associated with other theories:

1. It is not advantageous to think community in terms of direct or indirect replacement of newcomers who become old-timers; rather, every act by anyone at any moment in time constitutes change—which allows us to understand the rapid cultural changes that may occur, for example, with the introduction of a new tool (mobile phone) in a culture, a change that is more rapid than changes by replacement;
2. It is not advantageous to think communities in terms of observed practices but instead we gain substantial theoretical leverage when we look at community and culture in terms of action possibilities that exist at the collective levels, possibilities that change with every single (productive) act;
3. It is not advantageous to think the individual in terms of a core identity that is unchanging or correlatively, in terms of a fractured self that changes with the societal setting, that is, to think identity in terms of something that is ontologically identical with itself ( $A = A$ ). It is the A that is held self-identical, and a different approach

might be to equate the process of equating something with something else as identity, which thereby becomes a process

An ontology of difference presupposes entities to be non-self-identical with themselves, inherently in flux between past achievements and future-not-yet.

### **Community and Identity in a Mathematics Lesson**

Recently a mathematics education colleague (Jennifer Thom) and I have begun a project on the role of the body in the learning of mathematical concepts. Locating cognition in the body comes with the potential danger of overly psychologizing mathematics (an essentially constructivist position) by failing to pay heed to constitutive relations that bind individual and collective. For me, the fundamental question of this research is how mathematics comes to be reproduced all the while recognizing that in the singularity of children's productive actions, it never is identically repeated. As I am pondering attendant theoretical issues, I come to think of repetition and difference in mathematical practices in a new way, especially as these pertain to the questions of *community* and *identity*. Here, I use one particular sorting task from the curricular unit as a concrete situation as a basis for my discussion of attendant issues. By means of this and other tasks, children are to be introduced to geometry; in fact, by bringing about a particular kind of sorting, the children are said to have learned (a little bit of) geometry. In other words, by producing the categorization of all mystery objects, the children reproduce geometry as a field and their actions can be recognized within the general semantic and practical fields of characterized by the adjective *geometrical*. How can children's productions be geometrical if the children do not think geometrically at the beginning of the lesson? The answer is that problem lies not with the children but in the framing of learning in terms of states—much like Zeno's problem is one of framing motion in terms of successive states. That is, if we consider children and community as hybrids of the immediate past and the (from emergence resulting) future-not-yet, then there is no contradiction between the novel production that each act constitutes and the

reproduction of culture: the two are not independent processes but one. That is, in acting, children change and they do so independently of the question of whether they had placed their object within an existing ([non-] empty) collection in a legitimate way. They change and with it, their collectivity, in and through the act of placing the object wherever this may be, because their acts and associated results give rise to new transactional *possibilities* that subsequently are realized within the collective.

### *The Sorting Task, Collectively*

The sorting task that constituted the first and introductory lesson of the curriculum unit required the participating second-grade students to pull a “mystery object” from a black plastic bag and then place it with an existing group (collection, category) of objects or create a new group (Figure 3). To start the task, the teacher has pulled an object, has placed it on a colored sheet, and thereby has begun a first group. Each of the 22 children in the class has its turn to pull and place/sort an object. At the end of the lesson, all 22 students have placed their objects. But in every single case, students do not initially articulate a rationale for the placement (grouping) of their object. The teacher then invites them to articulate their thinking, that is, to produce predicates that explain why they have placed their object in a particular group (“Now can you tell us what you are thinking?” “Explain your thinking!” “You have to tell us why!” “Before going on, explain your thinking!” “Don’t go away, tell us why you put it there?”).

As part of articulating similarities and differences, the present students hold their mystery objects next to others providing explanations such as “this is the closest object to it” or running their fingers across the mystery and comparison objects, running fingers along edges and corners and naming them as such, articulating roundness or noting the absence of sides (sphere). In the end, the children—in, through, and mediated by transactions with the teachers—produce a classification consistent with geometrical properties as these have emerged in the history of geometry. That is, as an outcome of their situated work and mediated by the teacher, the children collectively reproduced

geometry as a science. (Figure 3 shows the situation near the end of the sorting collective episode.) Although this is a first lesson, the children's actions, grounded in their everyday experience of the world, have become geometrical in and by re/producing geometry in a recognizable way—though also in ways characteristically different from what adult geometers might have done. In terms of the analogy provided earlier, the classroom collective, consisting of the singular actions of students, ended up in one of the reference states (Figure 2, trajectories i or ii).



Figure 3. A moment in the “sort-the-mystery-object” task, where each child gets a turn in sorting an initially unknown object by placing it, as shown on an occupied or unoccupied colored sheet, each representing a (named) collection of like objects.

Throughout the lesson, the teacher also reiterates other utterances that adults can hear as instructions: “Just take the first one you feel!” or “The first one you feel!” The sorting activity began with the teacher’s articulation of the rules relating to color and size. In the course of this part of the lesson, many children use size to articulate similarities and differences between objects, followed, when applicable by the teacher’s reiteration of the rules. As a result of the teacher contributions, the sorting session comes to be orchestrated, the teachers being in the conductor position, stating, restating, and reiterating instructions and rules; but it is the orchestration of a partially improvised

session, because only the teacher knows the score and the children attempt to play such that it comes to be consistent with the score they do not know at the time. If the teacher does not restate and reiterate a rule or instruction, the ongoing or immediately past act of classification and predication can be seen and heard as consistent with the (from the children hidden, yet to-be-discovered) rules and instructions. It is seen and heard as a successful action so that now the rules and instructions are descriptions of what has happened. After the fact, the rules and instructions may be said to have led to the successful classificatory act. We can therefore understand the teacher as the additional node in Figure 1b, which, in its interaction with all the nodes, radically changes the collective as a whole, bringing about a desired endpoint to the trajectory (standard geometry as reference point for the community).

At the end of the lesson, geometry (as praxis rather than as body of knowledge) emerges from the sorting task. The children, as members to the organized arrangements of this mathematics classroom are deciding, recognizing, and making evident the rational, coherent, chosen, planful, effective, methodical, and knowledgeable character of their inquiries as sorting, classifying, providing reasons, and so on. What is at issue for me in the present case is the role of identity and community with respect to *geometry-in-the-making* rather than to its *ready-made* counterpart that appears in books because across time, geometry, as an ideal object, can exist only in and through a second layer, the sensually embodied practices that localize and temporalize (e.g., Euclidean) geometry as non-local and non-temporal ideality (Husserl, 1939). Even though it could not be predicted from the children's actions prior to the unit, standard geometry emerged in and through their actions and the corrective feedback (constraints) provided through the teacher's utterances. Theorizing *community-in-the-making* means that we have to include the future-not-yet, the which can unpredictably emerge from the current conditions as the ground and material, because otherwise no community of geometry would have come off the ground of the utterly non-geometrical thinking that existed prior to its emergence.

More so, at the very moment the first geometrical theorems emerge, they are intelligible generally, which means, they have had to realize possibilities that already pre-existed.

Community then can be thought here in two ways. On the one hand, there is the particular classroom where participants have something in common (Lat. *communis*), thereby constituting something that can be called community. On the other hand, there are and have been people doing similar kinds of things, sorting geometrically, so that these students and their teacher have something in common with a community of geometers. The production and reproduction of geometry occurs with respect to the latter, whereas the former is more of a collection of individual brought together for administrative purposes.

The community of geometers is important to the subject because the objective nature of geometry exists in and through the emergence of geometry in the *practical* (material) actions of real, embodied, sensual human beings. Standard geometry emerges although no action has to be identical to any other action produced. It is in its *contingent* production that geometry as objective science can be reproduced across generations, thereby producing and reproducing a geometry community broadly conceived, one that includes society as a whole. It is not therefore that this (or, for that matter, any) geometry lesson *causes* students to do certain things; nor is it that in their actions, students produce geometry anew. Rather, the ideal and material nature of geometry as objective science emerges each time when a “member” produces and thereby reproduces practices that are both different and recognizably and therefore collectively geometrical in nature; it emerges because it is part of the collectively (societally) possible way of acting.<sup>7</sup> But for the community to change, the new state already has to be implicated in the current state; in fact, community thereby always comes to be other than itself, in continual suspension of being what it is and what it is not. *Community-in-the-making* then is a process that simultaneously embodies the different states at  $t$  and  $t+1$ , which are but two sides of the same coin and where state  $t+1$  may be an emergent one unpredictable from what is the

case at  $t$ . Community-in-the-making includes the possibilities of a future-not-yet, where I do not mean possibility in a metaphysical (Kantian) sense as logical possibility, derivable and foreseeable from current knowledge, in a phenomenological sense, that which is phenomenally possible in excess over the calculable and explainable in terms of causes and present conditions. Readers will be familiar with phenomena denoted by the concept of emergence: here, too, future states of a system cannot be predicted from the current state. (A popular example exists in Bénard convection cells where molecules in a disorganized state line themselves up to move in hexagonal convection cells when the external conditions are appropriate.) If the children could have completed the sorting task without intervention based on what they knew and could deduce from this knowledge, they (at least some of them) likely would have done so rationally.

Taking this route then allows me to understand how geometry can emerge from everyday, completely non-geometrical practices: the non-geometrical *from which* geometry emerges constitutes an essential part of it, for the former constitutes the very ground on which geometry has culturally historically emerged and continues to emerge on the ontogenetic level with each child. The production and reproduction of society therefore also is at the heart of geometrical practice, including all those parts that currently are not recognized as constitutive of geometry. As members of society, children appropriate and already have appropriated and available many of the resources that are presupposed and required for doing geometry, which in fact constitute the very grounds and conditions for acting geometrically.

We may take the events described here to constitute an instance of a mathematics classroom where the teacher endeavors to *establish* certain practices to promote changes along specific hypothetical learning trajectories (Cobb, McClain, & Gravemeijer, 2003). But it also is the case that the teacher does a lot of work, which in other instances may be done by the community itself and without any or little teacher involvement in the planning of the curriculum (Roth & Lee, 2006). In the former case, the teacher is

responsible for the reproduction of culture from year to year, whereas in the latter case, there is a memory in the structure of the community itself. Such structural memory has been observed in the one-room school and village of Moussac (Poitou, France) community that Roth and Lee describe, which has reproduced itself and changed over a 20-year period with little direct teaching (Collot, 2002). Because each year the three or four oldest students (after the equivalent of grade 6) left and about the same number of kindergarten-aged students joined, there are history and memory of established, but ever-changing practices in which newcomers to the school participated and which they contributed to transforming. In my situation, as the many cases that Paul Cobb has described over the years, this is not the case and—contrary to the reproduction of communities of practice in the everyday world outside schools—the respective teachers therefore build some “community” from scratch at the beginning of the year. That is, in terms of my analogy presented in Figure 2, each year the second-grade class of my teacher begins at some initial state, rather than continuing the trajectories that have begun years or decades before (as in the Moussac school). As soon as the students move on to work with a new teacher, the community has disappeared, and with it any collective memory that might be used as resource for reproducing and further changing both community and its practices. (The sense of community also is disrupted when students change subject matter and teachers, which always is associated with changes in the structure of events.)

Such structural memory is the very presupposition on which a science such as geometry and the community that keeps it alive persists. Thus, central to persistence of geometry is the necessity of a structural nature that makes possible the everlasting mobility of a continual expansion in a horizon of geometric futures (Husserl, 1939). The community of geometers is not reproduced by means of handing down and appropriating of certain practices, but a continual synthesis in which the totality of prior achievements constitute the premise for future developments. However, this totality of some future state

could not have been evident at its beginning. Even though geometry has been invented and practiced by individuals it nevertheless has a dimension that from the very first moment has been independent of the subject (i.e., cultural) and curiously atemporal. This is characteristic of any scientific culture, but not so of school classrooms, which generally have not future effects after having been disassembled at the end of the year to be reconfigured anew in the subsequent school year.

*A Moment in the Sorting Task, Individually*

In the context of the global development, in fact constituting it in and through their actions, students not only change what they do (how they sort, how they articulate their rationales) but in the process exhibit and change who they are, that is, (part of) their mathematics(geometry)-related identities. The changes in the classroom as a whole cannot be theorized independent of the changes at the individual level that constitute them. In the present, some students complete the task to the teacher's satisfaction but others are asked to reconsider their classification and are encouraged to continue until they have placed their object consistent with a sort according to geometrical (shape) rather than other properties (color, size). Connor, characterized by the teacher as "weak in mathematics," is one of the latter students. After pulling his mystery object from the black plastic bag—which geometrically knowledgeable observers recognize as cube—he creates a new category rather than placing it with the existing set of cubical objects. The teacher first requests a rationale, which he answers by stating that his object is bigger than others. The teacher initially restates the rules for the task (no sorting according to size or color), then encourages him to reconsider and compare his object with all the others, eventually guiding the student to place the object with the other cubes. The following exchange ensues.

58 T: cube. does it meet the criteria of having the square or the  
cube? ((looks at Colby sternly, nods while talking))

59 (0.25)

60 X: <<p>no>

61 (0.25)  
62 T: do you think it does?  
63 (0.84)  
64 C: like what do you mean?  
65 (1.10)  
66 T: 'does it match. We said THAT this group ((points)) was  
'squa::re (0.31) or cube (0.49) ((looks at Colby, nods)) does  
it match that?

When the teacher speaks to Connor, she in fact presupposes his understanding even though the very lesson is designed to “teach him something he does not yet know.” Whatever is new to Connor in the teacher’s talk nevertheless has to be intelligible to him and therefore already prefigured as possibility in Connor’s exhibited understanding. Teaching would make little sense unless what is not yet known already is presupposed as possibility and exhibited in a forthcoming (discursive, manipulative) action. More so, because identity is tied to (others’ interpretation of) exhibited actions, includes both what currently is and what currently is not yet—acting in accordance with the rules of formal geometry. Connor therefore also *is*, what he is not yet but can be, that is, other than himself even though we may not be able to predict precisely on the basis of his current knowledgeability what his knowledgeability will be at any subsequent instant. (Cultural-historical activity theorists know about such contradictions, which are inherent in the object of activity, which includes both current states and materials and a vision of the future-to-come.) Actions, knowledgeability, and identity that an individual student exhibits therefore cannot be so new, because they already exist as possibilities in his current actions, knowledge, and identity (practice). At the very moment Connor exhibits the desired actions for a first time, and therefore exhibits a certain form of knowledge and identity, it also is the knowledge and identity *from* the other—they already are recognized and exist as possibilities in the culture generally—and it is knowledge and identity *for* the other, the recipient, his classmates, teacher, and society (which he reproduces in his Being). At the very heart of Connor’s actions, expressions of *his Self*, we also find the

Other, who is at the origin of the possibilities, the source, and recipient. That is, much like the nodes in my analogy (Figure 1), we cannot understand Connor independent of the classroom and culture as a whole as he already exhibits knowledgeabilities that are those of the others. Current models of identity do not include what a person *is* not and therefore can theorize identity, and with it, community, only in terms of still images. A dynamic theory of identity, however, needs to theorize also what Connor can be, including those facets that are emergent. Theorizing in this way leads us to a concept of *identity-in-the-making*, of which identity always only is like a photograph in relation to the continuous unfolding of life that we experience and for which there never exists *time out*.

In the present situation, Connor “challenges” the assumption about his competence by asking the teacher what she means; or rather, his utterance becomes part of a question–answer pair as the teacher utters ““does it match? We said that this group was square or cube does it match that?” (turn 66), which we can hear as an elaboration of her earlier utterance concerning the match between Connor’s mystery object and the criteria/name of the group where he placed it (turn 58). Learning and becoming therefore mean that the individual already is—if we can *be* anything at all—what s/he is not yet. And this is central the recent formulation of the nature of Self: “*Self* is precisely without return to self; *self* does not become what it already is: becoming is being outside of self—but such that this outside, this ex-position, is the very being of the subject” (Nancy, 2002, p. 57).

In understanding the question as question, the teacher acknowledges the intelligibility of what Connor says, even though she might not agree with it and even though she might not understand what the trouble in understanding is. But in using (speaking or hearing) the English language, she presupposes the intelligibility of the said and Connor’s understanding thereof. The (generalized) Other, here concretized in and by Connor, is implicated in the very articulation of her Self (as teacher) in the same way that the value of each node in my analogy (Figure 1) implicates the values of all other nodes. Similarly, Connor’s utterances cannot be understood as something that is singularly his own, an

expression of his subjectivity and singularity. Thus, when he utters “what do you mean?” he has to presuppose not only the intelligibility of each word of this utterance but also, aided by the prosody, the hearing of the utterance *as a question*. Presupposing the intelligibility of the utterance means that his production is but one concrete realization that presupposes another concrete realization by the hearer, here the teacher. Connor produces what we hear as a question *for the other*, drawing on language that has come to him from the Other, and which therefore, in and through the utterance, returns to the other. In its very singularity, Connor’s utterance produces and reproduces a cultural possibility collectively available to many, that is, he reproduces the general (universal) *as such*. Understanding generally and participating in communicative exchanges more specifically fundamentally acknowledges community. Here, both speakers realize the cultural possibility of this form of understanding (of this topic).

### **Articulating the Contradictions**

In their utterances, Connor and his teacher presuppose the intelligibility of what they say. But there is contradiction apparent in the situation: the teacher assumes the intelligibility of her utterance “we’re not . . . counting size” despite the fact that Connor just has classified by size. That is, she presupposes that he understands although his most recent actions have been inconsistent with an earlier and repeatedly reiterated description of allowable and non-allowable actions and explanations for classifying objects. There is another inner contradiction. Connor has been asked to sort the task according to geometrical properties, even though he does not yet know geometry. In fact, the knowledge (practice) required to do the sorting task is the very knowledge (practice) that the lesson is designed to have as its results.

In the process of the sorting, Connor’s actions not only accomplish the sorting and resorting of his mystery object, but they also constitute evidence for making attributions about his identity. For example, in contrast to some other students, Connor is asked to reconsider his initial decision and, after a lengthy exchange and articulation of reasons,

he ultimately places his object with an existing class labeled “squares, cubes.” Here, the sequence of events and utterances that can be interpreted as “difficulties in understanding” may be used in support of a statement that “Connor has difficulties in mathematics,” “he is not a math wiz,” or that he “has learning disabilities, especially pertaining to mathematics.” In acting, we ex-scribe ourselves: the materiality of our actions lends itself to make attributions about our identities, about who we are, about our knowledgeabilities and competencies. However, actions that are possible but not yet realized are not captured in this way, for they are not yet seen precisely because the person does not know; and yet, they have to exist as possibilities otherwise the person (Connor) would not be able to enact this knowledge in the next instant. Who we are generally and who Connor is particularly also is circumscribed by the actions that *we could have performed instead* because they are already within the range of our possibilities.

There are further contradictions in traditional ways of theorizing community, identity, and the relation between the two. Communities are not boxes into which individuals are enculturated by moving along a trajectory of legitimate peripheral participation. Individuals constitute communities as much as communities constitute individuals. Whatever any individual does *constitutes* community in all its diversity: each moment of participation, each action, and each expression is both marginal and central (Roth, Hwang, Lee, & Goulart, 2005). Whereas the constitutive effect of the individual is, in many instances, important in the world outside school, it has little effect on schooling practices. It does matter very little to the mathematics class as a whole whether Connor classifies the object correctly or not, whether he is a math wizard or whether he fails (which may lead, in some countries other than Canada, to repeating the grade). More so, if he is diagnosed with a learning disability—the aleatory nature of which has been well described by others (e.g., Mehan, 1993)—he might be assigned to special classes to be

fixed (or to get his disability fixed) rather than be acknowledged for whatever special abilities he might contribute to the community at large.

Yet another contradiction can be framed as question: How can students produce and reproduce forms of geometrical knowledge unless they already embody the possibility of acting? The question is similar to the one that can be asked about the first human speaker: How can it make sense to have someone speak unless the first utterance presupposes its shared nature? At the very moment that the children produce and reproduce geometry they also reproduce both Self and Other. The resources available to them, the very patterns of actions that they have evolved from their birth to the moment of finding themselves with others of their age in this classroom, are cultural in nature; and the actions they realize are those constitutive of the culture in *this* classroom, which is only one concrete realization of possibilities of realizing geometry in the Anglo-Saxon (Canadian) culture more generally. That is, in the students' actions, they both realize themselves (their Selves) and more general, cultural possibilities that inherently are possibilities of the Other as well.

If the other, by the simple fact that I name it "other," seems to presuppose the "one" or the "same," and thus only to come later, this is the effect of a still abstract thought that has penetrated neither into the one nor into the other. The one does not begin: it beings *with* the other. With the other means near to the other, with the other at his place. (Nancy, 2002, p. 57)

At its very heart, each individual Self is marked by the Other, expresses itself using a language that is the language of the other, designed for the other, and returns to the other (who thereby has the resources and possibilities for responding in turn). Similarly, that an individual has possibilities that are not yet achieved points us to the heterogeneity of the Self (what I currently exhibit), which already is other than itself (my not-yet-realized action possibilities) in its embodiment of the future-not-yet. Otherness thereby becomes a defining characteristic of Self.

For me, therefore, the fundamental contradiction therefore is not the one outlined in *Situated Learning* but the non-self-identity of each, the individual and the community (culture), with itself. It is this claim that I work out in this chapter. According to *Situated Learning*, newcomers are caught in the dilemma that “they need to engage in the existing practice, which has developed over time: to understand it, to participate in it, and to become full members of the community in which it exists” (p. 115). In statements such as these, the practice is taken as something self-identical, historically constituted and contingent in nature, but self-identical nevertheless. This becomes the stable framework for the newcomer both in terms of apprenticeship and in terms of evaluating the progress with respect to expertise (as defined by the “core members”). It also allows reading expertise as something that is different along the proposed trajectory from periphery to core—and such differences, because they are continuous, are differences that are indifferent, that is, mean nothing within a dialectical theory (Hegel, 1806/1977).

*Situated Learning* continues with stating a second dilemma, whereby newcomers “have a stake in its [community’s] development as they begin to establish their own identity in its future” (p. 115). One of the tasks I set myself is to re-theorize the relationship between individual and collective (“community”), which, even in *Situated Learning*, can be read as constituting a box (e.g., “careers of newcomers *in* communities of practice” [p. 115, my emphasis]) into which newcomers enter and that is defined in terms of periphery and center. In particular, from the perspective I outline here, individual and community need to be thought in terms of processes, that is, as in-the-making, and therefore are other than themselves as they embody their own future-not-yet. It therefore is not as if newcomers begin to establish their own identity in its future, but this future already is here constituting the very otherness of community and Self.

A different concept of action and the associated notion of practice (i.e., a “patterned action” also is required. Anthropologists and educators frequently take a practice to encompass all that the members of a (sub-) culture can be observed to do, which is

associated with the (cultural) artifacts that members employ, deploy, and work on in the process. In this way, agency entirely is described in terms of what is observable. But this does not allow us to observe novelty, on the one hand, and makes us attribute innovation to individuals first observed to do something, on the other hand. This challenges our understanding of understanding: it does not account for how we can understand a new form of discourse if it is new. And if we can understand an innovation it is because it already is encompassed in our present understanding, as a possibility. There is not just *one* practice, nor is there simply a multiplicity of (observed, self-identical) practices: there is a multiplicity always-changing and never-self-identical practices. In this case, the notions of actions, agency, and practices need to be expanded to include the future-not-yet in the observed agential possibilities, which exist at the cultural (-historical) level and therefore are inherently shared. Each action not only reproduces culture but also produces it in new ways, even if this may not be perceptible immediately but only cumulatively over years and decades. With new artifacts available, possible actions change, with new actions in a praxis, the meaning of all others change (singular plural).

### **Rethinking Community and Identity from Difference-in-and-for-Itself**

In the previous sections, I provide descriptions of community and identity in a second-grade mathematics classroom. In the context of these descriptions, I articulate why we have to think the two concepts not as things or in terms of states but as processes perpetually suspended between immediate-past is and future-not-yet.

Despite warnings that communities of practice are characteristically different from the collectivities that are assembled into classrooms on administrative grounds rather than grounds that are found within communities themselves, many educators have embraced the term both proactively (for designing learning environments) and theoretically (for describing what happens within the situations observed). Important to me and my present considerations, the very singular way in which the term *community of practice* is used leads to insurmountable theoretical difficulties. This is so because the notion of practice,

if used in the singular (as evident in the image of trajectory from periphery to core) inherently differentiates according to an ontology of the same, which does not appreciate inherent variations within the practice of interest; and with the lack of properly theorizing practice any reasons for historical changes to occur disappear. The traditional dialectical approach (Hegel, 1806/1977), which theorizes the Other as other than Self—its negative or negation—does not assist us in improving much on the concepts of community and identity because it thinks difference in terms of the same.<sup>8</sup> This approach (abstract is a property abstracted from the concrete) is inverted in a dialectical materialist approach so that the sensually concrete comes to be an *expression* of the concrete universal (denoting possibilities) realized in it (Il'enkov, 1982), which brings together the concrete now and the future-not-yet in one and the same phenomenon (concept).<sup>9</sup>

Rather than thinking of students as being “enculturated” and “acculturated” along a trajectory from the legitimate peripheral participation (here, in this classroom) to—for some of the students perhaps some time in the future—full participation in mathematical (geometrical) practices, I think of these children as *constitutive* members; and membership constitutes the children *as* what they are in this classroom. Thus, whereas the authors of *Situated Learning* view change occurring as “full participants are replaced (directly or indirectly) by newcomers-become-old-timers,” I see change occurring with every act and by every person (newcomer or old-timer); and continuity derives from the process of flux, whereby the new already is implicated and present in the old. As such, any “newcomer” already *constitutes the mathematical culture generally* as what it is, in all its diversity and heterogeneity. If we do not approach the problem in this way, we would not be able to explain how geometry (physics, chemistry) ever got off the ground, immediately imbued with collective sense given the essentially non-geometrical (non-scientific) nature of practices that preceded them? That is, each individual *produces* culture not merely reproduce it, as they produce and reproduce the very possibilities of

culture to act in this and that already possible way; and any non-mathematical way of acting constitutes the very (positive) material and ground for mathematics to emerge.

As an alternative to classical theories, we can think of practice in terms of a singular plural so that—if we want to define it as a community, the practice of a second-grade mathematics classroom is defined by the engagement collectively, as the plurality of patterned singular actions. This replaces the approach of defining a practice in terms of a region within which every action is part of the practice and everything falling without is not. From my perspective, the classroom already is mathematical even at the very beginning of the lesson when nobody exhibits mathematical practices classically perceived; it is mathematical in the sense that the correct classifications of objects according to mathematical (geometrical) properties is already within the range of possibilities of its members. That is, all possible but not-yet-observed actions define the practice as much as those actions that already have been observed, allowing the new actions to be imbued immediately with collective intelligibility (there is no singular intelligibility)—because even when observed for a first time each action realizes a collective possibility (Roth, 2007b).

Every action—concretely realized or possible—contributes to constituting a practice, which therefore is a singular plural rather than a monolithic entity. Difference comes to be the norm because each action differs from every other action (produced by the “same” or a different individual). If it were not thus, we would understand or theorize how apparently routine ever repeating task where every move *appears* to be the same as any previous and subsequent move nevertheless change people so that experts easily can see change that has occurred over longer periods of time (Lee & Roth, 2005). Similarly, the forms of (discursive) actions in this classroom has changed over time, even though during the sorting task the teacher frequently repeats the same rules until, in some later session, children no longer sort three-dimensional geometrical objects according to size or color. Change therefore is inherent whether a new “member,” an apprentice, “a” learner, “an”

old-timer, or teacher produces an action. Any stable and historically unchanging practice therefore is a construction on the part of the researcher. Any “apprenticeship” and “enculturation” and any addition or loss of member constitutes change, every concrete realization of an action possibility (both as new agential resources are produced, artifact, image of action) constitutes change and the transformations in the body of the agent. This has radical consequences for thinking individual and community.

A “community of practice” *is* not but continuously *becomes*, is a *community-to-come*; a Self (identity) *is* not, but always a *Self to come*.<sup>10</sup> Individuality and identity are never accomplished, which makes it difficult and even impossible to give a precise and general definition thereof. This is so because “vital properties are never realized in their entirety, but forever in the process of realization; these are less *states* than *tendencies*” (Bergson, 1907/1967, p. 13, my translation). (Identity harbors an inner contradiction in that there is a tendency to reproduce itself in each action all the while there is evident change in social, biological, and physical-chemical constituents of the body and its relations.)

### Coda

A pure identity would not only be inert, empty, colorless, and flavorless . . .  
 . it would be an absurdity. . . . A pure identity annuls itself, cannot identify  
 itself. (Nancy, 1993, p. 14)

I began this investigation with the goal of overcoming the aporia inherent in thinking identity and community on the basis of an ontology of the same. For the continuity that is required for *identity* to exist, we need repetition. But this repetition, this return, is (following Nietzsche) always a renewal, never a return to something; the return itself is the phenomenon. This allows us to understand the instability of the *self* and of identity, which *may* be the same, but which also may be different, therefore opening up the possibility for change at the very moment of continuity.

*Self* is precisely what reverts to nothing else: not as a pure given and independent subsistence (substance), for such a thing does not yet revert to

itself, does not turn upon itself in being simply what it is. Manifestation, to the contrary, makes a return and is nothing but this return. But because this return does not come to a presupposed substance, it is return to nothing—or it is not a return, and it only comes back to itself in throwing itself forth, at the surface, of which it will have been neither the underside nor the prerequisite ground—being thrown out of self as self, *being* this throw itself, and thereby its *own* passage into the other. (Nancy, 2002, p. 38–39)

In the entire mathematics lesson generally and in the excerpt involving Connor specifically, the teacher can be understood as having “scaffolded” students so that they classify their mystery objects in a way consistent with classical geometry. Researchers working with sociocultural perspective frequently theorize such teaching–learning situations in terms of the *zone of proximal development*, where the child (or less able) first comes to participate in a practice on an interpsychological plane prior to reproducing the practice on an intrapsychological plane. In the process, the child becomes like the other, appropriates culture and becomes cultural. Such an explication, however, is fraught with inner contradictions as Connor’s very participation means that something is happening on an intrapsychological plane. Here, I propose a different way of looking at/theorizing such events, beginning with a different ontology based on difference as such. Students such as Connor then are thought of as inherently different from themselves in a number of ways including: (a) using language *of*, *from*, and *for* the Other to express their Selves, which therefore inherently are other and (b) embodying the possibility of the very knowledgeabilities that they do not yet exhibit as such but that are as concrete as the ones that they do exhibit.

The “community,” too, is non-self-identical because it consists of a plurality of centers (nodes), each singular and therefore different from others. This plurality, in turn, constrains (but does not determine) the individuals that constitute it. The teacher of the

one-room school in Moussac—which integrated village and school life one in the other (Roth & Lee, 2006)—perfectly realized what was happening. Confronted by a journalist with the statement that the children in his class do very well without him, Bernard Collot responded: “Not entirely, not entirely. It’s not what they want, but what the collective activity of the class, what the events globally bring about. So what I try is to order these events somewhat.” This global activity comes about in and through the action of individual students, who do not what they want but are constraint by the events globally.

In this chapter, I use a constraint satisfaction network as an analogy for thinking about the relation between individual and collective that puts difference at the heart of Self (individual and collective identity). It is a very simple model to get our thinking started, but it is limited in numerous ways, including the fact that as used, relations between nodes were symmetrical and constant. To arrive at even more appropriate models for communities in constant transformation, one would need to open the system to external influences embedded in a system of constitutive systems, allow for the number of members to change, and allow the relational parameters both to be dissymmetric and changeable in time. The system then would be under continuous transformation and steady end states will not (might not) be achieved. Any additional “member” in the network, any additional outside influence, any change in the status of individual members, and any change in the (generally non-symmetrical) relationships between pairs of members influences the trajectory of the system as a whole.

The view on community and identity that I develop here, which is associated with a temporality internal to the things, is consistent both with recent philosophy that takes into account the dynamics of non-linear systems (Prigogine & Stengers, 1979) and with the philosophy of duration (*durée* [Bergson, 1907/1969]). Thus, “universe persists. The more we deepen [our understanding of] the nature of time, the more we understand that duration [*durée*] signifies invention, creation of forms, continuous elaboration of the absolutely new” (p. 11, my translation).

In closing, I add a word of caution: It would not be good essentializing the constructs introduced here, for *métissage* (hybridization) *is not something* or some thing unless it is already understood both as process and *mêlée*, a continuous struggle inside and outside of any boundary one might construct. Mixture *is* not but continually arrives, deriving from a process of *mêlée* that interbreeds, crossbreeds, weaves, divides, exchanges; it is something that happens and overcomes us. This, too, is the case for identity, for “if the *métis*—this *métis* that each of us is in his/her way—is *someone*, it is not due to an essence of *métissage* (a contradictory notion), but is insofar as the *métis* gives a punctuation, a singular configuration, to the without-essence of the *métissage*” (Nancy, 1993, p. 12, my translation). In fact, it is in this way for each (theoretical) concept, which is “always dislocating itself because it is never one with itself. It is the same with the thesis which posits and arranges the concepts, the history of concepts, their formation as much as their archivization” (Derrida, 1996, p. 84).

Theorizing identity and community in this manner questions our received ways of thinking identity, precisely because it questions the ontology of the *same*. But then, there also has to be at least one way in which we can, from phenomenological perspectives, understand our experiences. There therefore must be some way in which psychic systems come to be implicated in the process of being explicated, or, in other words,

there must be centres of envelopment which testify to the presence of individuating factors. These centres are clearly constituted neither by the I nor by the Self, but by a completely different structure belonging to the I–Self system. This structure should be designated by the name “other.” It refers only to the self for the other I and the other I for the self. (Deleuze, 1968/1994, p. 260)

Grounded in very different philosophical traditions—biblical hermeneutics, phenomenology—other philosophers come to the same conclusions concerning the nature

of identity: if there is anything such as the Self, it always and already implicates and implies the other (Franck, 1981; Ricœur, 1990).

In my experience, there is a lot that researchers working from sociocultural and cultural-historical perspectives can learn from the thinking and theorizing that scholars in other disciplines have evolved. Questioning one's own preconceptions generally and one's ontology more specifically is part of critical inquiry and a questioning of the nature of the concepts we use.

### Notes

<sup>1</sup> Mathematically, the ensemble of nodes at time  $t+1$  can be expressed by a vector  $S$  of dimension  $n$  and an operator  $A$  (dimensions  $n \times n$ ) that expresses the influence each node has on all the others:

$$S_{t+1} = A \cdot S_t$$

In the modeling of decision-making, I used a fixed and symmetric operator  $A$ , that is, the way in which two nodes influence each other is symmetrical and independent of time. In real systems, both of these constraints need to be abandoned to allow for differential institutional power and time-dependence of or temporally changing human relationships (e.g., Roth & Middleton, 2006).

<sup>2</sup> This is consistent with recent approaches to understanding concepts and theories: "Let's suppose a constitutive component is added to a concept: it [concept] probably will break up or undergo a complete change involving, perhaps, another plane [theory], at any rate, other problems" (Deleuze & Guattari, 1991/2005, p. 34–35, my translation). The authors theorize concepts similarly to the way in which I theorize identity and community.

<sup>3</sup> English does not distinguish between two forms of activities that are, in the German and Russian of the originators of activity theory, radically different: *Tätigkeit* (*deyatel'nost'*) refers to events that are societally motivated formations, whereas *Aktivität* (*aktivnost'*) denotes the fact that something is being done. Children in schools engage in tasks, not activity (systems); but they participate in the activity of schooling.

<sup>4</sup> Whereas inner contradictions are central to dialectical concepts and processes responsible for the development of the latter, logical contradictions testify to problems in thinking and theorizing (Il'enkov, 1960/1982).

<sup>5</sup> In my way of understanding cultural-historical activity theory, there always are two planes, an ideal and a material, and the former is a (non-mirror-like, non-linear, non-causal) reflection in consciousness of the latter.

<sup>6</sup> Today, Étienne Wenger (personal communication, September 12, 2007) does no longer adhere to the descriptions provided in *Situated Learning* but rather has adapted a dynamic view of community and identity compatible with the one I articulate here.

<sup>7</sup> Because idealities are taken up by new idealities, “newcomers” to geometry do not have to reproduce the phylogeny of geometry; a corollary is that earlier idealities are not necessarily recoverable at some later time (Husserl, 1939).

<sup>8</sup> Throughout *Das Kapital* (Capital), Karl Marx practices this approach, theorizing the “general” as *concrete* (collective) possibility at the very heart of the sensually concrete (Il'enkov, 1982).

<sup>9</sup> This issue also can be framed different, in terms of the double nature of the object: it appears twice, once on an ideal plane, once on the material plane, both of which simultaneously appear in activity, related in a dialectical fashion (Leont'ev, 1978). Others have made similar statements concerning the subject specifically (“The identity of the concept and singularity is properly the identity of the subject. It is the identity of negativity related to itself twice over: once in the idea, and once in concretion” [Nancy, 2002, p. 56] and for the activity system more generally (Roth, 2007a).

<sup>10</sup> The French language allows associating homophonously the verb *to come* (à venir) with the noun future (avenir).

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