

Not by breadth alone: Imagining a Self-Organised Classroom

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This paper uses complexity theory as a means towards clarifying some of Gilles Deleuze's conceptualisations in communication and the philosophy of language. His neologisms and post-structuralist tropes are often complicated and appear to be merely metaphorical. However their meanings may be clarified and enriched provided they are grounded in the science of complexity and self-organising dynamics. Reconceptualizing communication in a manner consistent with Deleuze's philosophy enriches our understanding of the complexity involved in the process of learning and the whole of educational experience. The paper explores education as "becoming," that is, a process of growth and becoming-other enabled by creative communication. While the mathematics of complexity is beyond the scope of this paper, some of its conjunctions with Deleuze's philosophy will be examined for the purpose of addressing such problematic areas in education as, for example, specialisation and the breadth of curriculum. Finally, the paper moves to a practical level so as to construct an image of a (self-organised) classroom. Self-organising dynamics are posited as consistent with what Noddings (1993) called an excellent system of education. Education proceeds without any reference to an external aim. Rather, the "aim" is implicit in the experiential process of self-organisation and, as such, is conducive to students' learning, creation of meanings, and eliciting broad curricula.

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Introduction

The worldwide community of educational theorists is increasingly exploring the philosophy of French post-structuralist Gilles Deleuze (1925–1995). Several of Deleuze’s philosophical works were written with social psychologist Felix Guattari (Deleuze & Guattari, 1987; 1994), such a collaboration representing an approach to knowledge as shared and situated, and bringing philosophy “proper” into closer contact with practical concerns. The recent volume of the journal *Educational Philosophy and Theory* (Semetsky, 2004a) is titled *Deleuze and Education* and comprises a collection of articles by international scholars that relate Deleuze and Guattari’s practical philosophy to such educational concerns as policy texts, the post-modern subject, pedagogy and moral education, and learning as apprenticeship. Back in 1998, philosophers of education have already called for an exploration of Gilles Deleuze’s work in order to examine the “potential of thinking differently with respect to the public and current scholarly debates around educational theory and practice” (Leach & Boler, 1998, p. 150). Since then, new Deleuzian scholarship in education has been steadily growing (Semetsky, 2002; 2004b). Deleuze’s philosophy is significant for understanding education within the general knowledge economy (Peters, 2004a), and his concepts “have an easy resonance” (Peters, 2004b, p. 224) with educational theory. However, the Deleuze-Guattarian terminology is complicated and their discourse is rife with neologisms that at first glance appear to be just attractive metaphors lacking “scientific” meaning. In this paper, I read Deleuze through the lens of complexity science, focusing specifically on the problematic of language and communication. Reconceptualizing communication in a manner consistent with Deleuze’s philosophy enriches our understanding of such a complex open-ended process as learning (Roy, 2004) and the whole of educational experience (Semetsky, forthcoming). Deleuze and Guattari explicitly emphasize the value of *becoming*, that is, the possibility for our growth and *becoming-other* at each and every present moment. The focus of education shifts from transmitting knowledge as a collection of facts to the dynamic process of experiential knowing that has far-reaching implications for education as a developing and generative practice. If, as Nel Noddings (1993) states, excellence in education depends on early specialisation and the breadth of curriculum, then it is quite possible that complexity *theory* may provide a valuable resource for broadening curricula in *practice* by means of re-organization of classroom experience.

The Complexity of Communication

In the most general terms, complexity theory is a conceptual framework used for the purpose of analysing the behaviour of systems that consist of a

large number of interacting components. Human culture may be considered an example of a complex system.¹ The dynamics of complex systems are *relational*—that is, a relation or an interaction that serves as a unit of analysis. Moreover, the interactions constituting a system's dynamics act in a non-linear manner. Non-linearity—that is, the absence of a mechanistically direct causal connection between its many components—is the major qualitative feature of a complex system. In fact one and the same cause may lead to a multiplicity of effects. Conversely, a single effect may be produced by diverse causes. A system's history depends on the interactions between a system and its environment and between components within the system, therefore it can be described by both internal and external relations. The interactions—as in the interplay between many factors affecting the system's behaviour—are loop-like. The presence of multiple, back and forth, connections serves as feedback, the latter constituting a potential for the system to be self-organising, therefore problematising the distinction between the inside and the outside of such a system.

From the post-modern perspective (Byrne, 1998; Cilliers, 1998), complex systems—being either social or natural and including living systems, language, and education—are indeed *complex* by virtue of the impossibility of either a single unified theory prescribing their behaviour, or even a single meta-narrative as sufficient at the descriptive level. A complex system has its dynamics precluding permanency or constancy of any theory. The interactions within the system change with time, and time itself (contrary to the Newtonian paradigm) is one of the intervening variables, a directional irreversible “arrow.” The analysis of complex systems proceeds historically; at every present moment a system has its past temporal history and is also future-oriented. Language is a prime example of a complex system. In the case of language, the history of the system is its unorthodox memory (or the language's diachronic dimension). To function meaningfully, so as to enable communication, the language must have a structure that is flexible or plastic in order to be able to adjust to different contexts constituting discourse. It is therefore an open process-structure.

The complex dynamics inscribed in communication is characterized by the existence of multileveled relations constituting a heterogeneous (not simply hierarchical) structure. Because the relations have to “flow” in both directions, multiple interactions between individuals result in cultural or societal changes, and vice versa. Therefore, the analysis of complex communicative systems will, by necessity, cross the different planes, at least at both individual and social levels. Complexity theory regards the reductive analysis of the individual components of any system, such as the supposedly speaking, thinking and knowing “selves” to be an insufficient condition to come to terms with the system's dynamics as a whole, which has to

take into consideration many contingencies and intervening variables inscribed in the dynamics of the process. Due to multiple interactions, the overall correlations get modulated and may spread, or become *distributed*, from the immediate neighbouring regions to far-away territories.

Many non-local connections are formed by loops creating interactive feedbacks that contribute to the self-organising dynamics of the system as a whole. Such dynamics are characterised by some new properties emerging at levels that are not immediately connected with the preceding ones, but nevertheless continuous with the latter by virtue of the (non-local) effect produced at a new level. The whole is by necessity larger than the sum of its parts, because the system's non-linearity precludes its dynamics being described by a simple addition of its individual components. As a whole, the system remains open-ended, that is, it functions by means of constant interactions and transformations of matter/energy—or information, in the case of communication—with its environment, thereby betraying the notion of a strictly defined border between its own inside and outside. Philosophically, meanings—which make communication possible—cannot be defined as determined by either. The interactive dynamics are effectuated by feedback loops, which create multiple recurrences and self-referential closures as the very features that enable the system's dynamics. An operational closure represents a moment when a meaning emerges, and it is the relations between the structural components of the system at large that confer the possible meanings. Those in-between relations therefore become a precursor for the distributed representations inscribed in many interactions and connections, which are themselves potentially affected by these relations. Such are the dynamic of self-organisation.

The interaction between a system and its present environment induces a selective mechanism so that the environment (the outside of the system) does not directly determine the system's internal structure (its inside) but instead influences the system's developmental dynamics with the effect of producing new relations and making new connections. Cilliers (1998) points out that similar dynamics, in neural network terminology, would qualify as unsupervised learning (1998, p. 100) and contrasted with the direct information-processing model of knowledge structures. The communicative process itself is responsible for the continuously changing relations, and the system as a whole in which the process is inscribed is inherently capable of maintaining itself by virtue of continuous coping and adaptation. A complex system therefore has flexibility and plasticity enabling its own self-organisation. An open-ended process "is determined but unpredictable" (Doll, 1993, p. 72). The process's organisation is enabled by continuous, recursive and self-referential interactions that defy an absolute dichotomy between such binary opposites of modern discourse as objective reality and

subjective experience, facts and fantasy, profane and sacred, private and public, thereby overcoming “a process-product, objective-subjective split” (Doll, 1993, p. 13). The blurring of divisions between the rigid customary opposites in a complex system is its another qualitative feature, as well as its potential increase in complexity, that is, a system’s functioning on a succeeding level that would have incorporated a previous one. The boundaries of the system therefore have a tendency to expand by virtue of integrating the outside into its own inside.

Deleuze’s “Non-Philosophy” of Language

The philosophy of Gilles Deleuze is unorthodox and exists in an “essential and positive relation to nonphilosophy” (Deleuze, 1995, p. 140), thus requiring new means of philosophical expression that exceed rational thought alone. The new language of expression is as paramount for Deleuze, as for philosophers in the liberal tradition, but is not limited to its linguistic representation.² The language may take either linguistic or non-linguistic forms, from writing to film to hybrids like artistic images or signs. Deleuze affirms that language, in its multiple forms, is the only thing that can properly be said to have structure, “be it an esoteric or even a nonverbal language” (Deleuze, 1967, in Stivale, 1998, p. 259), such as pictorial, imaginary, or the “language” of dreams and the unconscious. For Deleuze, anything can possess a structure insofar as this “thing” maintains a *silent discourse*, such as the language of signs. Language, as any of the philosophical concepts for Deleuze, is posited as a multileveled system and described as an intensive multiplicity. Language becomes effective and expressive as long as the form of expression is *not separated* from, but is *supplemented* by the form of content: both exist systemically, in assemblage. A multiplicity is an open system, which functions *semiotically* in accord with the triadic logic of included middle. Precisely because a multiplicity is a complex network of connections, it cannot be divided—or reduced—to its parts; its parts do not add up to the whole; an intensive multiplicity cannot be divided without changing in nature, that is, altering its current state.

The dynamics of becoming, whereby any given multiplicity increases in dimensions and by necessity “changes in nature as it expands its connections” (Deleuze & Guattari, 1987, p. 8), is a distinctive feature of Deleuzian thought. The macro-perspective of a single theory, or meta-narrative, is insufficient to describe the dynamics of *becoming-other*. Instead Deleuze recognizes the micro-political and micro-perceptual dimension as a contextual site, which is always an open space: an open-ended system. From the perspective of complexity, Deleuze’s notion of *becoming* may be reconceptualised as a process-structure constituting a heterogeneous system

of multiple intersecting, what he calls *rhizomatic*, lines. Deleuze uses a biological notion of a rhizome to describe an interactive open system that he contrasts with the rigid *arborescent*, or the tree-like, rule-based, linear structure.³ The multiplicity of planes constituting this system combine social, psychological, and aesthetic dimensions. It is multileveled. The concept “should express an event rather than an essence” (Deleuze, 1995, p. 25) and is to be understood not in a classical representational sense but as a dynamic distribution of points on a plane, or a field of lines going in multiple directions.

The philosophy of representations is based on the dyadic logic of the signifier (word) and signified (world) correspondence. However, in accord with Deleuze and Guattari’s (1987) *a-signifying* triadic semiotics, the primacy of content cannot be posited in a binary opposition to the primacy of expression. The dichotomy of orders is irrelevant because both content and expression are embedded in a complex system of relations in such a way that one reciprocally presupposes the other. They are “located” on the different planes or levels constituting a multiplicity. For Deleuze, “utterances are not content to describe corresponding states of things: these are rather ... two non-parallel formalizations ... assembling signs and bodies as heterogeneous components of the same machine” (Deleuze & Parnet, 1987, p. 71). What Deleuze calls his poetic undertaking is oriented towards creating a new non-representational language of expression, exemplified in its performative aspect. The language *structure* goes through the *process* of its own *becoming-other* and undergoes a series of transformations giving birth to a new, as if foreign and unfamiliar, expressive language. Emphasizing the potential of such a language to be truly creative, Deleuze and Guattari (1987), refer to Proust “who said that ‘masterpieces are written in a kind of foreign language’” (Deleuze & Guattari, 1987, p. 98). The language functions along its own boundary in a form of “*the outside* of language, not outside of it” (Deleuze, 1994, p. 28)—that is, as a limit case of language modulations.

The language becomes effective as long as the form of expression exists in a reciprocal relationship with the form of content. The reciprocity between the two is derived from “a different logic of social practice, an intensive and affective logic of the included middle” (Bosteels, 1998, p. 151) that defines them “by their mutual solidarity, and neither of them can be identified otherwise” (Deleuze & Guattari, 1987, p. 45). In its most effective mode the binary opposition between content and expression becomes blurred leading to the emergence of a new property, an intensive and expressive enunciation. Deleuze’s philosophy is different from a rational consensus. It is non-philosophy in the sense that an intellectual understanding gives way to an “intensity, resonance, [and] musical harmony” (Deleuze, 1995, p. 86).

An intensity of language is what produces some new form of content because “a milieu functioning as the conductor of discourse brings together ... the whisper, the stutter ... or the vibrato and imparts upon words the resonance of the affect under consideration” (Deleuze, 1994, p. 24).

Deleuze describes *affect* as *becoming* so as to emphasise its dynamic structure. It is not a noun but a verb. Affect is tantamount to the modification of experience, whose process-structure is constituted by variations and transformations. Affect serves as a precondition for resonance. It is extra-representational, that is, a-signifying, and it is by having produced a state of a-signifying rupture that “the transfer from the form of expression to the form of content has been completed” (Deleuze, 1994, p. 26). In other words, we witness the transfer between the system’s heterogeneous levels, the conferment of meaning, or *sens* (in French) onto the content by virtue of, as Deleuze says, tracing the “lines of flight” (1995, p. 141). A line of flight is a line of *becoming* that brings the system to yet another level of complexity by virtue of the new knowledge, new concepts, new meanings. The language de-territorialises itself in the process of its own becoming-other and re-territorialises in virtue of an invented concept, a novel meaning.

If language were a closed system, it won’t be capable of making sense for us. Language can exist in a form of discursive or non-discursive, or visible, assemblages. Neither is reducible to the other; instead they are connected by the “third”, in-between, element in the structure that Deleuze and Guattari call a “diagram.” It is a diagram that, by bringing in the outside, establishes a resonance between inside and outside as two co-resonating systems. A diagrammatic mode serves as a connective link along which all knowledge is produced; it runs between the visible and the articulable. In its “piloting” (Deleuze & Guattari, 1987, p. 142) role, a diagram serves a connective function. It forms “a bridge, a transversality” (Guattari, 1995, p. 23) crossing over an a-signifying gap by virtue of its own “extreme contiguity” (Deleuze & Guattari, 1994, p. 173). A diagram is a necessary third in a semiotic communicative process: an eternal sign.

Transversal Communication and the Creation of Meanings

Deleuze uses concepts from the theory of communication that I earlier qualified as belonging to the family of complex systems, namely: how information is transmitted in a channel as a sign/signal system. A signal is produced at the moment of structural coupling (what I earlier called an operational closure) between two heterogeneous series of events operating at the different levels. This does not mean that “something” actually flows through the channel, just that a relation, or interaction, is being established. A sign as a “bit” of information is Janus-faced: it provides a link as a bridge be-

tween events without actually passing from one to another (cf. DeLanda, 2002, p. 103). It makes possible the transversal communication, and only as transversal, communication can enable the conferment of (the necessarily shared) meanings. A diagram, in its function of linking discursive and non-discursive modes of expression, acts as a diagonal connection between the planes, and its purpose is to “pursue the different series, to travel along the different levels, and cross all thresholds; instead of simply displaying phenomena or statements in their vertical or horizontal dimensions, one must form a transversal or mobile diagonal line” (Deleuze, 1988, p. 22), a line of flight. A diagram:

has only ‘traits’ of content and expression, between which it establishes a connection.... The diagram retains the most deterritorialized content and the most deterritorialized expression, in order to conjugate them.... The diagrammatic or abstract machine does not function to represent, even something real, but rather constructs a real that is yet to come, a new type of reality.... [O]n the diagrammatic level ... form of expression is no longer really distinct from form of content. The diagram knows only traits and cutting edges that are still elements of content insofar as they are material and of expression insofar as they are functional, but which draw one another along, form relays, and meld in a shared deterritorialization. (Deleuze & Guattari, 1987, pp. 141–142)

The traits of content and expression are like memory traces, always beyond the level of consciousness, therefore capable of manifesting as *affects*, not yet concepts, the latter to be invented or created, according to Deleuze (*not represent, but construct the real yet to come, as becoming-real*). The traits have no *explicit* content or meaning. The problematic of representation is a real problem in analytic philosophy, which generally adopts an atomistic approach—that is, starting from taking representations for granted, then separating language structure into two independent levels, syntactic and semantic, without attempting to analyse how they may be interdependent. Deleuze, however, posits the grammar of disequilibrium as a precondition for the production of meanings, and which can be considered a specific syntax of a self-organised language-system.

The meanings are conferred not by reference to an external object but by internal structure (the relational network) of the system. Complex systems always operate under the far from equilibrium conditions, which create a tension or difference⁴ between the levels enabling interaction as a mutual transformation of energy or information. The language of expression—and we remember that Deleuze refers to it as *foreign*, that is always implying a new content by means of a new expressive form—comprises heterogeneous levels and is unstable, described by “style [that] carves differences of potential between which ... a spark can flash and break out of language

itself, to make us see and think what was lying in the shadow around the words, things we were hardly aware existed" (Deleuze, 1995, p. 141). The language may be subtle, sometimes even "like silence, or like stammering ... something letting language slip through and making itself heard" (Deleuze, 1995, p. 41), or appearing in its extra-linguistic mode of functioning as the regime of signs. Such a mode of communication is indirect and operates in order to bring the whole assemblage "to the light of the day, to select the whispering voices, to gather the tribes and secret idioms from which I extract something I call my Self (*Moi*)" (Deleuze & Guattari, 1987, p. 84). We can see that the self cannot be posited *a-priori*—similar to the fact that the analysis of the complex system cannot be reduced to (or divided into) its individual components.⁵ Instead, the subject is produced in relations, or as Nel Noddings says (1998, p. 183), it is *constituted*. When extracted from the context of experiential events and situations, such "my Self" becomes itself a sign-event embedded in the complex dynamics of the whole relational system.

The system is open-ended, and its dynamics is constituted by movement that is established, in Deleuze's words, "between the parts of each system and between one system and another, which crosses them all, stirs them all up together and subjects them all to the condition that prevents them all to be absolutely closed. It is ... a mobile section" (Deleuze, 1986, p. 59). The movement, or the mobility of the process, is not mechanical (see note 1, above). Deleuze called it *machinic* to underline its functioning as not limited to rigid mechanical laws, based on a direct cause-effect connection. It is consistent with non-linear dynamics embedded in the whole of material universe (cf. DeLanda, 2002). The line of flight traverses old boundaries, thereby establishing a new external structure of a language-system, meanwhile sustaining the integrity of its internal structure, or what Deleuze aptly called the fold of "the inside of the outside" (1988, p. 97). Because of the presence of transversal communication the line of flight acquires the meaning of an escape from some old frame of reference, within which this flight appears to be as yet a sort of immaterial vanishing through some imaginary event-horizon. Instead of mimetic representations, a concept—or meaning—is created semiotically along "a transversal or mobile diagonal line" (Deleuze, 1988, p. 22), which potentially enables one to cross the threshold of a habitual event-horizon.

The transversal (in other words, non-linear, that is, feeding back on itself) communication acts in a self-organised manner. I said earlier that a sign is Janus-faced, that is, it closes "as if" on itself, however—and this is crucial—by its very closure it is capable of *becoming-other* at the new level of complexity, that is, at the level of emergent contents or meanings. For Deleuze, what is involved, is not a reproduction (representation) of the same,

but a repetition of the different. In a complex system, the “repetition” of interactions results in a formation of new internal structure, not in a linear combination of old connections.⁶ We may say that what is *implicated* in a Deleuzian fold is not only *explicated* but also, in a process of becoming-other, involves *complication*, that is, a new level of organisation in a complex system. Becoming-other therefore constitutes a transformation, a metamorphosis. It is a transfer to a new mode of existence, which is characterized, as Deleuze says, by “new percepts and new affects” (Deleuze, 1995, p. 164) as some new ways of thinking, feeling, and perceiving. Deleuze emphasised the triadic relationship based on the inseparability of percepts, affects, and concepts.

In the process of stretching beyond limits and inventing new concepts, philosophical thinking (as a mode of internal communication) necessarily acts in a self-organising manner. It continuously produces discontinuities and a-signifying ruptures in the form of multiple cross-cuttings so that the concept has no reference outside itself. It becomes self-referential. That is, at the moment of creation, it posits itself and its object simultaneously. Concepts, for Deleuze, are invented, or created, or reborn. The concept stops being a logical proposition: “it does not belong to a discursive system and it does not have a reference. The concept shows itself” (Deleuze & Guattari, 1994, p. 140). Cuttings and cross-cuttings establish multiple becomings as “a new threshold, a new direction of zigzagging line, a new course for the border” (Deleuze, 1995, p. 45), leading to a new meaning.

Deleuze stresses the a-personal and collective nature of the language-system by referring to the concept of the fourth person singular as the specific language expressing the singularity of the event. The subject who (as if) speaks in the fourth person singular is not the *a priori* given intentional and speaking subject. As becoming, developing, and learning by means of multiple interactions embedded in experiential events, it is a collective subject capable of overcoming the Cartesian dualism. An event *per se* is as yet subject-less because it is always of the nature of relationships, in which the distinction between first, second or third person is not at all clear. As a multiplicity, it speaks (or thinks, or acts) “in the form of undetermined infinitive. ... It is poetry itself. As it expresses in language all events in one, the infinitive expresses the event of language—language being a unique event which merges now with that which renders it possible” (Deleuze, 1995, p. 185). The expressionism of a poet or an artist is complemented by the constructionism of a craftsman. The new meanings are created because communication functions in accordance with the triadic semiotics that defies the dualistic “either-or” rule of propositional logic, which is based on the law of excluded middle. It is along the line of flight that non-linearity enters the process establishing, as Deleuze says, “a new direction of the zigzag-

ging line" (Deleuze, 1995, p. 45). The new direction brings novelty into the system. For Deleuze, the concepts are to be created; only as such they acquire new *sens*.

Positing concepts as created, Deleuze describes them in terms of a cinematic image, or a musical composition, or an artistic creation irreducible to the propositional language. For Deleuze, "a painter is someone who creates in the domain of lines and colors.... Likewise a philosopher is someone who creates in the domain of concepts, someone who invents new concepts.... Concepts are singularities which react with ordinary life, with ordinary or everyday fluxes of thought" (Deleuze, original French, quoted in Bogue, 1989, p. 155). As contingent on experience, concepts are inseparable from affects and percepts. Because of the uncertainty and unpredictability embedded in each particular experiential situation (the non-linearity of the system), the Deleuzian line of flight "effectively folds into a spiral" (Deleuze, 1993, p. 17), each fold adding up to the complexity of the total process. A communicative process, that includes in itself the Deleuzian transversal communication as a condition of its own dynamics, is indeed a *creative becoming* because it brings forth "the tenor of existence, the intensification of life" (Deleuze & Guattari, 1994, p. 74) and the increase in knowledge by virtue of the creation of meanings: a complex system expands its own boundaries.

Communication, as I said earlier, is not limited to exclusively verbal. The act of communication establishes different and new relations between components because it triggers a compensatory operation (the *inside* of the system) that itself is part and parcel of the environmental perturbation (the *outside*). As transversal, this operation (co-operation?) is "neither imitation nor resemblance ... but an increase in valence, a veritable becoming" (Deleuze & Guattari, 1987, p. 10). It enables "creativity [as well as] emergence" (Deleuze, 1989, p. 147) of new concepts, meanings and values. Signs that are involved in such a communicative action are embedded in experience; they are "not representative but affective" (Deleuze & Guattari, 1987, p. 257).⁷ Because one always "has to invent new concepts for unknown lands" (Deleuze, 1995, p. 103), it is a totality of the experiential situation (an unknown land) that enables learning as a construction of new knowledge by providing conditions "under which something new is produced" (Deleuze, 1995, p. vii) as a result of what Deleuze and Guattari called (and I quoted earlier) a shared de-territorialisation. Thinking enriched with its affective dimension, "is always experiencing, experimenting ... and what we experience, experiment with, is ... what's coming into being, what's new, what's taking shape" (Deleuze, 1995, p. 104). Such experimentation with the new may very well begin in a classroom.

Constructing a Self-Organised Classroom⁸

Let me now imagine a classroom which functions in a self-organised manner and where transversal communication flows freely. I am going to address Nel Noddings' (1993) conceptualisations of excellence and specialisation in education by reading them through the lens of Deleuze's "non-philosophy" of language explored in the previous section. Noddings argues for diversity in curriculum and for introducing specialisation early in schooling. Some important aspects of excellence should include attention to "the quality of life experienced by its students and teachers, ... should provide a means for them to explore matters of interest common to most human beings, and ... should develop the legitimate interests and talents" (Noddings, 1993, p. 8) of students. The (affective) quality of present experience, as described by Noddings, may be considered as sharing its qualities with Deleuze's *present-becoming*; the learning process is therefore reconceptualized as *becoming-other*. Describing the actual activities that she and her students engaged in, Noddings notices that children "enjoyed what they were doing, made their environment more beautiful, ... shared their knowledge, ... and grew as competent, caring, loving and lovable people" (Noddings, 1993, p. 9).⁹ They were able therefore to reinvent through practice a new concept—the cornerstone of Deleuze's philosophy—for what is traditionally considered learning.

Noddings insists that schools should permit the early specialisation of students. Deleuze's philosophy would have supported Noddings' argument in favour of specialisation based on students' own wants, interests, and needs. Deleuze, reflecting on his own teaching experience, commented that among his students, "nobody took in everything, but everyone took what they needed or wanted" (Deleuze, 1995, p. 139). In fact, as he acknowledged in 1990 in a series of interviews, it was precisely during Deleuze's teaching days at Vincennes, when he was actually engaged in educational practice and everyday relationships with students, that he "realized how much philosophy needs not only a philosophical understanding, through concepts, but a nonphilosophical understanding, rooted in percepts and affects" (Deleuze, 1995, p. 139) embedded in experience.

In what follows, I not only address Noddings' notion of specialisation but also expand its boundaries by stretching this concept so as to cover some of the figurations derived from Deleuze's philosophy. I agree with Noddings that "specialization construed in [an] alternative way, might actually produce more 'breadth'" (Noddings, 1993, p. 14). By defining specialisation in terms of self-organisation, based on transversal communication effectuated by means of Deleuze's assemblages of experience, I contend that specialisation presupposes the plurality and variability of choices

available for students to make. In this sense specialisation is indeed linked to what Noddings qualifies as a breadth of curriculum. When defined in terms of self-organisation, specialisation may lead towards naturalising the concept of learning, which therefore becomes an emergent property of the interactions between teachers, students and the subject matter even in the absence of direct instruction and teaching as traditionally defined. In this respect it is self-organisation *per se* that constitutes learning because of the ever-expanding levels of complexity. The experiential folds are formed in the critical junctions that would have required a student making a selection, a choice. These folds are themselves the tightest relations functioning in the capacity of the so-called self-organised criticality. Specialisation as making a choice or *selecting* among available options requires therefore not only that those options are present. It will have to also stimulate the mode of thinking and acting so that students are not horrified by possible contradictions and choices that may seem to oppose each other in their making a selection.

Moreover, by virtue of the complex, interactive and self-organising, character of the students' learning process, I suggest the inherent incapacity for students to experience failure at any point within the process. Even when *folded* in conflicting experiences, or precisely *when* enfolded in such an experience, students may learn from this experience rather than perceiving a sense of failure. It is from their own experiences that students can extract some forces that vitalise the system by diversifying it, that is, by enriching the system with *variations*. The tension that may exist between seemingly contradictory options itself becomes a contingent factor feeding back into the process and, according to the dynamics of complex systems, amplifying (and *le pli* means *the fold* in French) its potential for self-organisation by acting from within as the quasi-necessary, albeit unorthodox, educational "aim." In this respect no special educative aim, which would be imposed from without, is presupposed. The Deleuzian transversal communication in a classroom purports "to open opportunities—never to close them" (Noddings, 1993, p. 13) thereby enabling what Noddings would have called an excellent system of education.

The absence of an external aim inherent in the self-organising dynamics may also eliminate the hierarchical power structure specific to traditional present-day schooling. The distribution of knowledge becomes a function of the shared de-territorialisation rather than of a centrally administered curriculum. What takes place is the heterogeneous distribution of knowledge that, in its shared activity, becomes available to all who *want* it. The body of knowledge, rather than being focused on some abstract future *goal*—in the guise of "access to college" (Noddings, 1993, p. 9), for example, or future job, or social status—is being held together by virtue of distribution

in the experimental and experiential field of action. Each “here-and-now” (Deleuze, 1994, p. xx) experiential encounter in the classroom is characterized by Noddings’ quality of the present experience and is itself a precondition for the emergence of, as Deleuze says, “ever new, differently distributed ‘heres’ and ‘nows’” (Deleuze, 1994, p. xxi). Learning is the creation of concepts, or “a transcoded passage from one milieu to another ... [and] whenever there is transcoding, ... there is not a simple addition, but a constitution of a new plane, as of a surplus value. A melodic or rhythmic plane, surplus value of passage or bridging ... ” (Deleuze and Guattari, 1987, pp. 313–314). We remember that a complex self-organised system indeed cannot be characterised by “a simple addition” because now and then a new encounter with otherness would have generated the necessity for a new selection, which would therefore *zigzag* (using Deleuze’s term) into being, introducing a non-linearity in the process by means of its *marking off a new direction* and therefore—and in agreement with Noddings—actually producing “more ‘breadth’” (Noddings, 1993, p. 10).

Conclusion under Uncertainty

The conceptualisations advocated here may face some reservations, however. What if a system becomes over-saturated with information? How would the students react? In case of it being overloaded, for example, the system may display “either ... chaotic behavior or ... catatonic shutdown” (Cilliers, 1998, p. 119). What if the multiplicity of options presented to students contribute not to self-organisation but to complete dis-organisation up to the point of total chaos? What if teachers unreasonably, even if unintentionally, exceedingly maximise or neglectfully minimise the availability of alternatives by imposing some form of centralized control onto the classroom environment? Too much diversity, however, is constrained by self-organisation: as embedded in the same process, teachers too will have been learning! The role of a teacher will have been shifting from strictly “causal [to] transformative” (Soltis, in Doll, 1993, p. xi). By its very nature, a self-organised system *opens* itself to “challenges, perturbations, disruptions [that are] the *sine qua non* of the transformative process” (Doll, 1993, p. 14). It is the totality of experience that emits signs, which by necessity exceed any given system of significations. Learning is enabled by means of *shared* de-territorialisation thereby ensuring potential transformations at the teaching “end” as well. Teachers themselves are always already part of the educational system and depend on its vitality for their own coping: as partaking on Deleuze’s rhizomatic structure, they will have to de- and re-territorialise.¹⁰ Says Noddings: “As teachers, we are as dependent on our students as they are on us” (1998, p. 196).

To conclude, the explorations of philosophical foundations in education should follow Deleuze's ideas with regard to de- and re-territorialisation. However, under the conditions of uncertain and ever-developing knowledge, it remains to be seen if new connections would be formed and any new rhizomatic lines, constituting the very *breadth* of the self-organised educational system, would proliferate. Deleuze used to say that we are made up of lines, and the strangest line is the one that carries us across many thresholds towards a destination, which is not foreseeable and unpredictable. There is always a space for further explication, for forming yet another line of flight therefore *becoming-other* in the process. Learning and teaching, when defined as the making and remaking of concepts, proceed in a self-organised classroom "along a moving horizon, from an always decentered center, from an always displaced periphery" (Deleuze, 1994, p. xxi). Yet such a paradoxical decentered centre *holds* notwithstanding the "polyvocality of directions" (Deleuze & Guattari, 1987, p. 382) and the plurality of options. Indeed, it is the very interplay of choices that makes the centre hold.

The body of knowledge is distributed in the experiential educational space, the centre of which is constantly shifting, because of selections, and its periphery (as a boundary) expanding because of variations. An external aim, or a rule-based computation, or a calculus reduced to logical identity, would have been impoverishing the diversity of possible meanings embedded in experience. A self-organised classroom enables broadening of experiences over and above the traditional curricular breadth. The poetic, creative language, which is capable of continuously diversifying itself, expresses new meanings not solely in the form of deductive reasoning from some pre-given axioms, but in a manner of analogies (see note 7 above) and interpretations, or as a regime of signs that traverses experiential situations and events. Meaning or sense, according to Deleuze, is always "produced ... [quasi-] caused and derived" (Deleuze, 1990, p. 95). As an activity produced in relations, it requires work to be done. It is that "work that forces us to frame a new question" (Deleuze, 1995, p. 114), to continue an inquiry. At any given moment the novelty of experience and the multiplicity of alternatives will be organising themselves thereby making learning not a rationally deduced abstraction but a meaningful encounter expressed in terms of students' literally making sense out of their own experiences.

Notes

1. The same may be applied to nature should Newtonian laws prove insufficient to describe the dynamics of the natural world. Physical laws do describe interactions, but only between pairs of variables—as expressed, for example, in the universal formula " $F = ma$ " of classical mechanics. The interactions between three "things" can create an unsolvable (within the equations of classical paradigm) problem.

2. Cf. Gerald Edelman's (1987) rejection of the account of memory based on the assumption of representation or replication (in Cilliers 1998, p. 101).
3. The tree metaphor accords with the infamous tree of Porphyry, which is an example of the classificatory system, or a hierarchical structure based on precise definitions that serve as the foundation for rationally demonstratable knowledge, episteme. See Tiles and Tiles (1993, pp. 130–133). The tree of Porphyry operates in accord with what Deleuze calls an arborescent reasoning, that is, a type of syllogistic logic incorporating the method of division—a linear method—as a form of precise catalogue. The hierarchical structure precludes any interdependence, relationships, or harmony between “things” located at the separate branches of the sacramental tree.
4. Difference (although largely out of the scope of the present paper) is a fundamental concept in Deleuze's ontology. See Semetsky 2003; 2004c.
5. Complexity science posits the whole as exceeding the sum of its parts. Analogously, for Deleuze, there is always a surplus signification or an excess of meanings.
6. See Cilliers who notes that in a (neural) network the outside is being “repeated or reiterated on the inside” (1998, p. 83), closing off the dualistic split between (supposedly private) language and the (public) world. See also Tiles and Tiles (1993) elaborating on the language as a system of representations (as distinguished from signs). A representational system presupposes a class of things represented, which are not representations themselves (1993, p. 165), that is, things in the world are posited as existing outside the language. A linguistic sign (other regimes of signs are ignored) represents transparently or literally. On this account, poetic language, which “represents” symbolically (that is, it does not represent in a strict sense, cannot be “objective”). Not so for Deleuze.
7. Regarding language as a system of representations versus a system of signs, Foucault in *The Order of Things*, notes that the language and the world form a single semiotic fabric—that is, things in the world also function as signs. We may say that things are like signs, that is, the relationship is analogical—not strictly logical, as in the system of representations. Deleuze, in his characteristic language, expresses the difference by contrasting the logical copula “is” with the radical conjunction “and.” Such is Deleuze's logic of multiplicities (in other words, a-signifying semiotics).
8. This section is a re-worked version of the section titled “Specialisation and its discontents” in my earlier paper “Philosophy as Infinite Learning, or: The New Scholarship on Deleuze” that was initially presented at the Philosophy of Education Society of Australasia Annual Meeting, 26–27 November 2004, Australian Catholic University, St. Patrick's Campus, Melbourne. The full paper appeared in the proceedings volume (Semetsky, 2004a).
9. Excellence, for Noddings, does not have to be exclusively academic, and specialisation is not limited to students being introduced to a specific subject matter but includes a variety of different activities. Noddings (1993) lists putting on a Christmas play or operating a school newspaper among those.
10. Contrary to centralised control and rule-based models, a self-organising system, as we said earlier, is plastic and flexible. This means the dynamics proceed so that a system is capable of continuously adjusting—organising—itself “in order to select that which is to be inhibited and that which is to be enhanced. Robustness and flexibility are two sides of the same coin” (Cilliers, 1998, p. 119), precisely as it is supposed to be with the Janus-faced signs.

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