

Chapter for:

LANGUAGE SOCIALIZATION AND LANGUAGE ACQUISITION:

ECOLOGICAL PERSPECTIVES

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Language Development and Identity:

Multiple Timescales in the Social Ecology of Learning

Jay L. Lemke

City University of New York

Language is appropriately used in the course of social activities only when it is deployed from some recognizable social stance or identifiable social role. We have not learned to speak academic English or scientific English if we do not know how academics or scientists speak across a range of social situations. To some degree we must be able to play the part and assume the identities, attitudes, values, and dispositions for making appropriate meanings with conventional linguistic forms. Identities can be conceptualized in this context as being constituted by the orientational stances we take, toward others and toward the contents and effects of our own utterances, in enacting roles within specialized subcultures by speaking and writing in the appropriate registers and genres. Language competence in this sense is as much an ensemble of virtual identities as a language itself is an ensemble of its heteroglossic voices (Bakhtin 1935).

How do we develop appropriate identities for competently using the specialized registers of a language? How do brief encounters in classrooms and laboratories, over time, come to add up to appropriate linguistic participation in a subculture? What are the ways in which individuals in communities integrate activity and meaning-making across timescales from the events of a minute to those of a day, from those of a day to those of a lifetime? What are the corresponding scales of the social ecologies in which such integrations take place, from local conversational settings to global institutions? How does the inevitable embedding of practices that take but a moment within longer-timescale processes condition and enable the acquisition of language-user identities?

I would like to try to more carefully define some of these issues and sketch out a theoretical framework within which they can be effectively investigated.

Identities, Trajectories, and Scales: Ecosocial dynamics

The theoretical framework within which I would like to address questions of language and identity development is a hybrid of social semiotics and ecosystem dynamics, which I have called ecosocial dynamics (e.g. Lemke 1993, 1995; see also Halliday 1978, Hodge & Kress 1988, and Gee 1992). Social semiotics is a theoretical approach deriving from the work of Michael Halliday on the role of language in society, which points to the way in which the social functions of language or other semiotic resources (e.g. visual

representations, ritualized actions, etc.) help determine the variety of those resources. Ecosystem dynamics is the set of theories in biology which examine the ways in which energy and matter flow through ecological systems and maintain relatively stable patterns of organization. In their synthesis, ecosocial dynamics (which only claims to be one useful perspective on general issues of social dynamics), we recognize first that human social systems are more specified instances of natural ecosystems, distinguished primarily by the role of semiotic practices in co-determining the flows of matter, energy, and information which constitute the system. Semiotic practices are themselves conceptualized as material processes in which variety and variation on lower-scale levels of organization is re-organized as useful information for higher-scale levels by the dynamical emergence of new, self-organizing phenomena at intermediate levels (Lemke 2000a). Ecosocial systems are, to a first approximation, hierarchies of organizational levels in which each emergent level of organization is constrained by the level above it in scale, while itself being an organization of units and interactions at the level one scale below. Scale is measured here quantitatively by differences of one to two orders of magnitude (i.e. factors of tenfold to a hundredfold increase) in typical energies, masses, spatial extent of organizational patterns, and especially in the characteristic times for typical processes to cycle or complete.

Within this general picture, human organisms constitute just one intermediate level of organization between those of physiology and cellular or molecular biochemistry below and social-ecological communities on various scales above. Each level is regarded as only a meta-stable, dynamically emergent pattern of organization, which exists by virtue

of interactions between the system and its environment, and in which order is accumulated and disorder exported to higher scale levels (i.e. dissipated, if we're lucky). The units of analysis at every level are most basically processes, because this aims to be a dynamical model. Structures are epiphenomena of material interaction processes taking place one level below and they may in turn function as virtual participants in processes at the next level above. A dynamical level of the system is defined as including everything (material and artifactual, whether biological or not) which significantly participates in system dynamics at the appropriate time-scale (i.e. in processes that take place at roughly the same rate within about a factor of ten).

At the level of the communities in which humans most directly participate, ecosocial systems include not only people, but artifacts, architectures, landscapes, soils, bacteria, food crops, etc. An ecosocial system consists most fundamentally of social processes and semiotic practices, not of organisms. (Semiotic models such as Latour's actant networks are similar in that actants, human and nonhuman, are defined as functional units in activities, not as ontologically prior realia; Latour 1993, 1999). Semiotic practices are conceptualized as ecosocial processes, which are simply the material processes by which organisms in communities interact with one another and with other actants in ways that are adaptive in the context of higher-scale levels than that at which the material interaction itself takes place. The whole organism, for example, may respond to an interaction between a sensor membrane (in the nose) and an inhaled molecule, not just at the level of molecular and membrane chemistry, but also at a higher-scale organismic level, "interpreting" the interaction as a telltale or sign of a food source, nearby predator,

or potential mate (i.e. by sense of smell). In ecosocial systems, the interpretation of actants as signs, as well as direct material interactions with them, lead to different patterns of activity, and different distributions and flows of matter, energy, and information; actions based on meanings co-constitute the ‘attractors’ of the system dynamics and participate in shaping epigenetic trajectories of development across all scale levels. (Attractors are the dynamical states toward which a system tends when left to its own devices. Epigenetic trajectories are the pathways of development trail-blazed for us by evolution, but recapitulated uniquely by every developing organism in interaction with its environment. ‘Epigenetic’ means following genetic guidance but also input from the environment during development.)

What does this mean for human development? First, that human organisms only develop normally in the presence of environmental distributions of available matter, energy, and information which afford recapitulation of phylogenetically evolved trajectories. Second, that molecular scale information in the genome assists in the self-organization of higher scale structures, but only if the phylogenetically ‘expected’ environmental complements are present, and only with the result that the emergent structures will themselves be ‘tuned’ to be selectively sensitive to particular kinds of further environmental input. Third, that all levels of organization in an ecosocial systems are in continuous process of development, enabling (from below) and constraining (from above) development at each intermediate level, but with each level developing at a significantly different characteristic timescale (i.e. rate; faster at lower levels, more slowly on the higher levels).

Along its developmental trajectory, an organism-in-community is both approximately recapitulating its evolutionary lineage, which characteristic of its type (species, culture, caste habitus) and also individuating uniquely, i.e. to some degree diverging from the typical pathway of its species. The unit of evolution is the whole developmental trajectory (cf. Salthe 1993), from conception to decomposition; it is the species-specific trajectory as a whole which is adaptive to environments on all relevant scales. Because developmental processes across different scale levels strongly interact with one another, there is no single linear progression in development, and no meaning to claims that later developmental stages (adults) are better adapted than earlier ones (children). It is the typical human conception-to-embryo-to-infant-to-child-to-juvenile-to-adult-to-elder-to-death trajectory that has evolved, and it is this trajectory as a whole that has come to be adapted to the human environment.

The shift from an organism-centered to to a multiple-timescale, system view of development has profound implications for our views of education, language learning, and indeed the social order of relations among humans at different ages. Serious moral and political questions are raised by this change in perspective; views often taken as common-sensical or scientific become suspect as ideologically motivated by the power interests of dominant age-groups, just as formerly gender domination and ethnic-racial dominations have had to be questioned as the intellectual paradigms supporting them have been superseded. I will return to these paramount issues later in this discussion.

Identity and Semiotic Practice

Let us narrow our focus now, toward language and the concept of identity. As an organism develops in an ecosocial community (and this is not a development that is strictly and predictably controlled from within, but a result of system-environment interactions, in many ways contingent and variable), among the emergent organizational patterns in its interactions with others is its coming-to-use-language. But not just language; indeed, in early stages it seems clear that there are proto-semiotics which are precursors to what we later analytically distinguish as language, gesture, mime, and all the forms of motor-based communication (for more discussion, see Lemke in press-a). Speaking is a specialization within vocal gesturing, integrated in behavior with other fine and gross motor communicative behavior patterns. Language is a formal sign system that arises for most (but not all) of us within the context of speaking-within-vocalizing-within-action. What linguistics calls 'language' is not, taken in isolation, an appropriate unit of analysis for developmental research; such units need to be defined more functionally, out of the flow and patternings of communicative-interactive-motor behavior. Only the temporary prestige of linguistics as an academic discipline has distracted research from this obvious principle (which is of course observed in practice, if not always made explicit in theory, by many researchers). You cannot, neither materially nor physiologically nor culturally, make meaning only with the formal linguistic sign system; other modes of meaning-making are always functionally coupled with language use in real activity.

Language in use is always language-within-activity: socially and culturally meaningful, directly observable behavior – equally social in its meanings whether interactional or solo in its production. Language is always ‘addressed’ and ‘dialogical’ (Bakhtin 1929, 1935); it always constructs an orientational stance towards real or potential interlocutors, and towards the contents of what is said. You cannot speak without offering or requesting information or action, without implicitly or explicitly evaluating the likelihood, usuality, desirability, appropriateness, or importance of what you or others say, without taking up a position within the system of possible social viewpoints on any topic, without providing indexical information by which you are viewed by others as occupying a position in the system of social statuses. Speaking is not possible without the constitution and construal of what we believe, what we value, and where we find ourselves in the systems of social classification.

What else is an identity but the performance, verbally and nonverbally, of a possible constellation of attitudes, beliefs, and values that has a recognizable coherence by the criteria of some community? Of course identity is complex; we define it on many timescales of behavioral coherence. There are the identities we assume in each particular activity type in which we engage: the identities we perform in the conference room, in the playroom, and in the bedroom. There are also the identities we maintain, or construct for ourselves and ask others to uphold for us, across settings: our gender identities, our social class identities, our age-group identities.

It is particularly important that we not be deluded by the normative ideal of a consistent, fixed, stereotypical identity. This 'ideal' is the product of our highly regulative, institution-dominated, modernist culture. Modernist institutions (families, schools, corporations, etc.) and the values they support tend to coerce us towards fixed and predictable, role-adapted identities, but most people in fact mobilize and strategically deploy, on various timescales, identity performances and identity claims that are contradictory from the standpoint of modernist identity standardization. Many of us successfully play with identity performances and claims that are by turns both macho and gentle, feminine and assertive, African and Latino, middle- and working-class, secular and spiritual, juvenile and elder, conformist and rebellious, rational and poetic, normal and queer, anglophone and francophone. We surf across the identity possibilities of our cultures, taking them as semiotic resources to play with rather than as essentialist necessities of our being. Generation by generation, and especially among those most free from or most ignored by dominant institutions, identity has become a work-in-progress, more stabilized by boredom, habit, and social routine than by institutionalized conformity.

Individual developmental trajectories on longer timescales may be envisioned as 'envelopes' of the shorter timescale trajectories. Lifelong development is a vague trending summation, usually retrospective, over many specific kinds of changes in our patterns of behavior, each of which accumulated from many specific incidents or periods of engagement in some activity. Seen from the short-term scale, this moment's performance may or may not ever again recur; some culturally significant aspects of it

may be enacted again, soon or much later; there may be other kinds of continuity constructed among these events or none. What ties together the learning of minutes to make the learning of day? or of a lifetime? The most basic answer is the physiological continuity (such as it is) of the body itself, and along with it, of the many signifying artifacts and animate others that mediate and afford our momentary performances and our efforts to construct long-timescale continuities and trends (via our skimpy diaries and full closets, our libraries and gardens, friends and children, pets and scars).

A Multi-scale Model of Development: Becoming the Village

A traditional saying has it that ‘it takes a village to raise a child’. Why? In the ecosocial model, the answer is that what normal development is is the process of ‘becoming the village’ (Lemke, in press-b). By this I mean that to live successfully in a community we have to learn to interact across the inevitable and substantial differences that constitute the diversity of a community. Communities, like other ecosystems, are not defined by what all their participants share in common, but by how their interdependence on one another articulates across differences of viewpoint, beliefs, values, and practices (cf. Wallace 1970 on ‘ordered heterogeneity’). At every age we normally live in communities of those both younger and older than ourselves and those similar and different along all the dimensions that are used to constitute social castes by age, gender, sexuality, class, occupation, religion, ethnicity, ‘race’ or whatever other arbitrary reductions of the high-dimensional variety of human behaviors come to count in a community. We have to learn how to interact successfully with the whole range of diversity in our village; we have to be able to shift our own patterns of behavior responsively, and so to ‘mirror’ in ourselves

(not by replication but by functional responsiveness) this diversity. If we could watch any villager, at any age, seeing only their body and actions and hearing only their speech and vocalizations, as they went about a day of living and doing, but blanking out all else, we would still learn a great deal about the whole village: its terrain and its artifacts, its human diversity, activity types, and much else.

What we call our identities are our modes of response to the diversity of our villages. Identities are fractal, as ecosocial systems themselves are fractal mosaics. On each scale of space and time, of projects activities and interactions, there are more localized and more globally relevant identities. We have a specialized identity for every person we meet, for every activity we engage in, but each of these grows in part out of our prior patterns of interaction with others, as well as the uniqueness of the moment. Mediating all of these is the continuity of material objects, of our own body and all that surrounds us, as participants to varying degrees in our activities, by which we link across time from moment to moment and event to event, person to person, activity to activity, on many timescales. From body hexis to every cultural habitus (Bourdieu 1990), our physiologies are also our diaries, along with what is written on paper or cut into cloth or wood. All these material mediators not only remind us of our past, but are taken up again and again as partners in activity that better afford some modes of action on our part than others, aiding our continuity by extending the body through persistent tools and material signs.

We are what we eat, how we dress, where we walk, what we read and write, hear and say, to this other and to that, in this repeated activity type and that. But increasingly we are

not so bound to the habitus of class, gender, sexuality, or culture as Bourdieu's idealized model of modernist identity presumes. Many of us simply do not live our lives entirely within the institutions and millieux of a single culture or social class, and even when we do, the forces of social control they exert to deny us wider latitude in our behavior grow weaker as we are presented by the larger society with more alternatives. We do not have to obey or believe parents, clergy, teachers, bosses, governments or media to the extent that we have other feasible options. Moreover, few communities today insulate their members effectively from the subversive texts and values of other communities. Barriers between cultures and languages are weaker today; our loyalties to them moderated by our multiple lives and lifestyles.

Identity in education: extending behavioral repertory to longer timescales

Let's specify again, towards the case of classroom learning as an example of the general process of ecosocially-mediated development. Schooling is supposed to facilitate certain longterm changes in the behavior patterns of students. Both educators and their critics wonder how lasting these changes are and how far they carry beyond the walls of the school. Do lasting changes occur in the course of a 40 minute lesson? Even if we imagined that some apparently fundamental change did take place in a 'breakthrough' moment, would it still count if it disappeared the next day? Or the next week?

Fundamental change in attitudes or habits of reasoning, cannot take place on short timescales. Even if short-term events contribute toward such changes, it is only the fact that they are not soon erased, do not quickly fade – that subsequent events do not reverse the change – which makes it fundamental. It is the longer-term process, including the

effects of subsequent events, which determines for us the reality of basic human social development.

So how could events on the timescale of a conversation or an experiment or reading a story ever contribute to identity development in this sense? The classroom is no different from anywhere else in our world of social artifacts. Its developmental input is there not only on the walls but in the very fact that there are walls; not just in the words in the textbook, but in the existence and use of textbooks. But it is first and foremost in those respects in which the classroom is exactly like the rest of the social world that it contributes to the formation of identities and habits of action that are formed across the longer timescales we also spend in other places. It is not what is unique about classrooms that contributes to our identity development, but what is the same about them compared to many other sites in our culture. Identities develop over intermediate timescales, during which the trajectory of the developing social person takes him and her from classroom to classroom, from school to schoolyard, to street corner, home, shopping mall, Web and TV worlds. The timescale for sampling all these worlds that is relevant to identity development is the timescale on which we move from world to world and create ways of mobilizing consistent identity features across multiple venues.

There is a second key factor in the role of momentary experience in the development of longer-term patterns of behavior. Not just when or how often do we have occasion to repeat (always with variation) some learned practice or way of interacting with a person or an artifact (or a natural place), but how intensely do these experiences matter to us?

The person we become for a moment with a new stranger for whom we have no strong feelings and whom we never see or remember again may be transient indeed. The person we feel ourselves to be when interacting with someone we feel strongly about, again and again over the course of a lifetime, becomes an essential part of who we are. The self I am when I am writing, or teaching, or doing those things that mean something fundamental to me, and that I can do over many years, is basic to my identity. Even the self I am whenever I read a particular book, hear a particular kind of music, play or sing or dance to that music, if I feel strongly enough about it, can become basic to my identity. When I teach, or write, or have conversations with colleagues, I am often working to recreate activities and senses of self that are basic to my identity repertory. I am seeking to keep identity-constituting processes going on longer timescales and across a wider range of settings and participants. To some extent, whatever I am doing, I am also doing 'identity work', and what I choose to do more often and with greater affective engagement, may well be what works best for me in confirming elements of my identity repertory about which I have the strongest concerns (e.g. gender identity, class identity, and other more specific culturally salient aspects of identity resources).

It is somewhat ironic that classroom education and formal curricula that are supposed to create longer-term continuity from lesson to lesson and unit to unit (though not, after the earliest years, from hour to hour across the school day or from year to year even in the same subject) are narrowly focused on informational content which is more or less unique to school experience, while the major developmental processes of these years appear to be about the accumulation of identity resources that can instantiate larger-scale

social stereotypes for gender-, class-, age-, and culture- specific identities. Students are mainly going about the business of learning to act like six-year-olds or twelve-year-olds, to act masculine or feminine, gay or heterosexual, middle-class or working-class, Jewish or Catholic, Irish-American or Jamaican-American, or any of the many dozens of sociotypical identities for which there are identity-kits available in a particular community (cf. Gee 1992). Many are of course also learning to mobilize and hybridize multiple identities that modernist institutions have traditionally seen as incompatible. Whatever we offer up in the classroom becomes an opportunity to pursue longer-term agendas of building identity repertoires and resources. Our primary affective engagement is with this agenda, with becoming all the selves we want to be, and not with learning this or that bit of curriculum, except insofar as it fits our particular agenda or insofar as 'being a good student' or 'not falling for that bullshit' belongs to our repertoire. Perhaps later in schooling a few of us are also working to acquire, within these larger identity repertoires, specific resources for identities as 'future scientists' or 'future teachers'.

Language and identity: Categorical semantics and meaning-by-degree

No one seems to doubt that language, both in its communicative functions, and in its systems of semantic classification, plays a major role in identity development. I have mainly spoken so far about the communicative-interactional function, but what is most specific about the contribution of language arises from its categorical semantics. Natural language construes relations among types and between types and instances of types. It makes meaning by creating differences of kind, far more than by creating differences of degree. Yet we also know that material phenomena of all kinds differ significantly by

degree, and that differences of degree may become resources for the emergence of new kinds or types. Mathematics begins and develops over much of its history as an extension of the semantics of natural language toward more precise description of differences of degree (Lemke 1999, in press-a).

The semantics of natural language is complemented by resources for meaning-by-degree such as vocal intensity and coloring, bodily and facial gesture and posture, the pacing of speech and activity, and drawing and visual representations of many kinds, with their resources for variations of degree in color, shape, shading, etc. Identities may be constituted and expressed as much in how we draw as in what we write, as much by our movement and vocal styles as by the semantic content of our talk. But natural language semantics lends itself far better to categorical distinction than to subtleties of degree. It is language that allows us to dichotomously contrast male and female, straight and gay, child and adult, black and white, Dutch and Deutsch, when we really know better that none of these are singular categories; all are constructed from variation along many potentially independent dimensions, and most variation along each of these is far more nearly quasi-continuous than categorical. Logocentric cultures and modes of academic analysis bias us to classify identity options too categorially, to marginalize the normal hybridity of identities across our artificial categories, and to pay too much attention to the verbal-typological construction and performance of identity, and not enough to the integral nonverbal-continuous modes by which we make meaning and meaningful identity.

Do we construct different identities for ourselves when speaking different languages or different dialects of ‘the same’ language? In the ways I have defined identity we surely do, and moreso as we consistently distribute our use of language varieties and languages among different activity types and typical settings (cf. code-switching, diglossia). More also as in speaking we perform differences in styles of vocalization, in speech rhythms and intonation patterns, and in facial, gestural and movement styles. Identity differences will also be greater insofar as we come to speak different registers and use different genres in the two languages, as we come to use different registers of politeness and constructions that index and constitute different modes of interpersonal relationships (formality, intimacy, aggression, conciliation, affiliation, empathy), and as we come to enact different social roles through the varieties and take up different social statuses and positions. At the same time, given the patterns of redundancy that make culture, we are likely to also express different beliefs, attitudes, and values, even if only to the degree that such matters are untranslatable between the semantic systems of different languages and dialects.

At the later stages of socialization, particularly in academic contexts, we use language to put on professional or pre-professional identities. There are substantial differences in values, attitudes, and semantic orientations (Hasan 1996), indexed and constituted in part through language use, not only between differently gendered speakers, or those with different class-habitus repertoires, but also among historians, literary critics, biologists, and mathematicians (not to mention lawyers, librarians, and administrators!).

Professional subcommunities regulate the range and types of identities that are

considered acceptable or 'promising' and may well do so with evident class and gender biases, but also with subtler distinctions that make them seem more compatible with acceptable identities in various ethnic cultural traditions as well. Much of this, in logocentric academia, is regulated by specifying the pragmatics of register use. It is not enough to master the vocabulary, the preferred grammatical constructions, the semantic systems of classification and collocation; you have to learn how and when to make which kinds of jokes, how to mix the formal register with informal talk, to appear to 'think' and 'come from' the preferred attitudinal stance of physicists or economists or computer programmers.

It is a wonderful mystery how language socialization and specialist enculturation take place in their normal contexts. But it is a more poignant and humanly crucial question how they so often fail to occur in educational settings. Modern democratic systems of mass education seek, in their own eyes, to make the opportunities of middle-class lifestyles available to all. More cynically, we may say that they seek to produce as many well-trained workers for middle-class occupations as the employment economy needs, and that unwittingly (for the most part) they also serve to justify the lesser life chances of all the rest in terms of individual lack of talent or willingness to study. A few supporters of critical educational models seek to empower all students to understand social inequities and the belief and attitude systems which sustain them. On a larger scale, however, the very structural artifacts of our educational system may well serve to maximize the disparity in achievement between those who come to school most ready to learn what and how the school teaches, and all the rest.

Heterochrony, heterogeneity, and development

I want to conclude this theoretical discussion by contrasting my description of the normal course of 'becoming the village' with the artificial educational arrangements in modern societies that claim to facilitate this process. At the same time I will raise some troubling questions about the ideological dimensions of our supposedly scientific theories of human development, including language development and language learning.

Schooling segregates students by age; natural communities insure interactions across all age groups. The model of multi-scale, ecosocially-mediated development I have presented here is a sort of grand generalization of the social learning theories of Vygotsky, not unlike many more directly neo-Vygotskian models (e.g Lave and Wenger 1991, Rogoff 1990, Cole 1996). But it implies a more radical educational critique. If natural intellectual and social development is supported by participation in communities with all their diversity intact, particularly their age diversity, then every homogenization of schooling environments, especially age-grading, is likely to block many natural and necessary processes of developmental input.

On its face, our society is one in which a particular culturally self-defined age group (broadly from age 30-70, more narrowly 40-60, and most dominantly 50-60) has so ordered our institutions as to enable it to allocate to itself disproportionate social resources and opportunities at the expense of all those of younger and older ages. I see this as no different from social-class inequity and exploitation, gender/sexuality domination, or the

politics of racism and ethnocentrism. Women, workers, serfs, gays, and people of color have all been compared to 'children' in efforts to rationalize their exploitation and lack of access to institutional power. To these disempowered castes one can add 'senior citizens' and younger adults, not to mention the youngest age groups themselves. Developmental theory today is often used to justify the disempowerment of non-dominant age-groups just as many other once-accepted scientific doctrines have played this role in the past, justifying racism, sexism, and class oppression.

The logic of biology and dynamical systems theory implies that it is the whole dynamical-developmental life-trajectory which is the unit of adaptive evolution, and not, certainly, just the adult phase alone. As a species we are equally well (or poorly) adapted to our natural and social environments at all ages from womb to tomb. Ideologically, however, it is not in the interests of the dominant age group to recognize too visibly the many ways in which younger humans are superior to mature adults. We originally separated age groups in schools out of 18th-century fears that older students would morally corrupt younger ones, but we continue today to rationalize this separation by the doctrine that there must be some ideal method of teaching that is specific to each small range of ages and radically distinct from those appropriate to other age groups. We ground this notion of linear developmental change in a highly implausible model that maps linear notions of clock-time onto complex, multiple time-scale, developmental processes.

Biology and dynamical systems theory afford a critique of the application of linear notions of time to complex multi-scale systems. This critique replaces the notion of a single dynamical time with a hierarchy of overlapping characteristic times of processes on the many different scales of dynamical organization of the system. A particular event on some local timescale may simultaneously also be part of many other processes on longer timescales, where the minimal functionally meaningful time-steps will span some distance into the event's past and its future as measured on its own timescale. Thus, from the viewpoint of 'linear time' for such systems, the dominant temporal regime is one of heterochrony: certain events widely separated in linear time may be more relevant to meaningful behavior now than other events which are closer in linear time.

In ecosocial systems, I believe, it is particularly the circulation of material artifacts that function as signs (e.g. texts, but also inscribed bodies and other semiotic artifacts; Lemke 2000b) which serve to integrate social processes across timescales from the interactional to the institutional, from the local to the global. A book written hundreds of years ago, kept in print and circulation by the actions of persons and institutions functioning across many intermediate timescales (critics, educators, publishers, bankers, foresters, makers of presses, truck drivers, etc. etc.), made more likely to fall into our hands at this moment by customary linkages among social practices and settings, now mediates our present, short-term conversation. Our conversation in turn, our buying the book, or borrowing it from a library, participates in and sustains many social-institutional processes on many intermediate timescales. Architectural plans, scale models, and paintings made decades

ago for a modern cathedral, copied and transformed and in the hands of builders, alter the builders' interactions with stone and steel now.

What then of development? It certainly does not run by clocktime, but by its own internally generated timeclocks, many of them, on many different timescales, cycling at vastly different rates (molecular, cellular, organismic, ecological), and 'synchronized' not by the calibrations of some Bureau of Standards clock, but by actual dynamical interdependences and the transfer of information across levels of organization. Which past events are most relevant to the now of learning? Not, in general, those which most immediately precede by clock-time. What larger-scale, longer term developmental processes, such as identity development, play a role in learning now? What sign-carriers, themselves the products of larger-scale longer-time institutional or social and cultural developments, intervene in the now and entrain it as part of their own dynamics?

If you face a 12-year old in the classroom, do you not also face elements of his behavioral repertory that were formed at age 10, or age six, and still remain active or dormant and waiting to be recalled? Do you not also face a human being who has been learning to interact with a six-year old sibling and a ten-year old friend, a 15-year old nemesis and a 30-year old parent? Do we imagine that this 12-year old does not have responsive repertories that mirror the behavioral patterns, beliefs, attitudes, and values of these different-age others? And how can this person not have also formed anticipations and expectations about the behavior of people, and of himself, at still later ages? He may be twelve by the calibrations of calendars, but as a member of the community he is

dynamically heterochronous, some mix of every age he's already been, and every age he's learned to cope with, and many ages he's begun to understand and imagine and model. The age we see is to a large degree the age-identity we know how to call forth; it is itself always an age-identity mix, with which he responds to us and to this situation.

If you face a second 12-year old, she will almost certainly presents a different age-mixing profile in response to the activity of the moment. She has after all lived a different life, mixed with a different combination of people of different ages, interacted with them to different degrees, and formed different ways of doing so. We should not think of someone's developmental stage as specific to their chronological age, but rather, at each chronological age as a distribution across their acquired repertory of age-typical behaviors and ways of responding. As we become the village we come to embody something of all the ages we encounter in the village. We are, at every age, a unique mix of our younger selves, our ways of being with those who are younger, and those who are close to us in age and also those who are much older. By the calendar we may have a single age, but developmentally, in a community, we are best characterized by a distribution of age-typical behaviors and responses. Development of this kind is clearly inhibited by educational practices such as age-grading that artificially reduces the opportunity of students to interact with those both much younger and much older than themselves across a wide range of normal social situations.

Language Socialization and Academic Language Study

Among the questions which preoccupy language students, language teachers, and researchers today, there are three which I would like to address from the viewpoint of the multiple timescales approach to ecosocial systems.

What constitutes the highest level of success in language learning? The traditional answer to this question is some notion of ‘fluency’, which for me presents a very impoverished view of what people use language to do. It is a merely instrumental notion: that we should be ready to speak and comprehend as fast as a native speaker, that our use of the language should have become relatively automatic and transparent as a medium, so that our thoughts become words and their words become meanings almost as if language played no part, completely unproblematically. This seems to me a robotic notion, a survival from the last century, before we understood that there is no meaning (and no Mind) apart from semiotic systems and strategies through which meaning is constructed. It also seems to be a view that specifically oriented to industrial notions of efficiency as maximal work product per unit time.

Let me propose some alternatives. At the shortest timescale, of conversational interaction and repartee, the most sophisticated things we do with language are our manipulations of social situations in culturally acceptable and favored ways: humour and wit, sincerity and authenticity of emotion, the power to mesmerize our interlocutors and bring them to laughter or tears. It is, in short, the affective sensibility of language use that we must better articulate in order to orient language learners to what language, first or second, is

fully capable of. Formal linguistics, allied with an over-rationalized cognitive psychology, has effectively dehumanized the dominant conception of language as much as it has unsocialized it. We can learn to write mathematical theorems, engineering specifications, or computer program helpfiles with almost no sophistication in a second language, and for competent readers our errors or infelicities will have almost no functional consequences at all. Even the skills of integrating language with visual representations in technical writing (e.g. Lemke 1998, Lynch & Woolgar 1988, Ochs et al. 1996), while important are not particularly sophisticated as modes of language use. Machine translation is already almost good enough for these purposes in specialized domains; there is hardly much point today to teaching or learning a language if this is all we wish to achieve. We need to articulate how much more there is to the human uses of language, and begin to think about how they are taught and learned.

The next relevant timescale, I think, is that of longer-term activities, stretching over days and weeks, in which texts integrate the work of a group. Here it is the social-collaborative uses of language that matter most, and if a second language is relevant it can only be because the group is collectively bi- or multi-lingual. In that case collaborative activity is most efficient when members use their multiple languages (including multiple dialects) in communicating and coordinating over time. The corresponding language skills are again ones that are almost totally ignored by modernist notions of the autonomy of Languages, namely the skills of code-shifting and code-mixing. Language in use in the multilingual situation, which has been common enough in the past and is likely to become almost universal in the future, is not a matter of translation between discrete and distinct

language systems. It is rather a matter of their functional integration. Students should learn to construct bilingual dialogues and bilingual texts which break every traditional rule of the separateness and autonomy of distinct languages, for those rules serve the interests of 19th-century nationalism and are anachronistic in the 21st-century world of global networks and communities. If we do stay with a single language tradition throughout an extended text, then that should be recognized as itself a meaningful choice we have learned to make within our multilingual repertory.

The longest timescale I will consider here is that of the years over which we come to subtlety in our use of a language. For the individual, this means acquiring a feel for a language, in a very bodily sense. There are changes over time and development with another language in how we ‘hold ourselves’, not just our vocal apparatus, but our whole face, our whole posture and stance, our body hexis. There are changes in how we move and how we feel, in the rhythms and musicality of our speech, the timbre and ‘grain’ of our voice. We add new dimensions to our Selves; we expand, through use of the language, our repertory of possible identities and ways of being human. And this implies also a change in the communities we participate in. We should not imagine that individuals come to speak second and third languages apart from the norms and values of their communities. In a community that prizes monolingualism, learning another language is often an empty exercise: merely academic, merely instrumental, merely a status marker. The long-term goal of language teaching and language learning must be to create a society that values multilingualism and practices multilingualism. That goal does not have to be achieved in every local geographical community in which we participate.

It is sufficient if enough of our lives, enough of what matters to us in life, takes place in some community, perhaps a distributed and global one, where we can be free to assemble more complex humanities for ourselves and our friends than those that are permitted in communities that actively repress human diversity.

How should we gauge success in language learning? Not, certainly by any means that looks only at a single timescale of language use. No test or task that lasts but a few minutes or an hour gauges what we can do with language across the full range of human timescales. Nor can any test or task separate language skills from the social skills and cultural knowledge needed for every task. Why do we not gauge language skills comparatively? in each of two languages (say the L1 and L2) and in the free intermixture of those languages? to see how people accomplish a task similarly and differently in each of these three natural conditions? Why do we not gauge language development in an L2 (and with the L1-L2 mix) longitudinally over months and years, looking not simply-mindedly at the current ‘final state’ but at patterns of development: the invariances and changes, the habits won and lost, the emergence of styles and preferences? There is no ‘final state’ for processes that are always still on-going in language learning and development. It is those processes themselves which are the phenomenon, not what someone does on any given day in some relatively short period of time. We cannot in principle observe developmental processes with short-term tasks. There is also no relevant ‘final state’ in the sense that the whole point of gauging language development is to act with respect to the future: to recommend what to do next, to set a course of learning

for a longer future period, to develop expectations of what we can do with the language in various possible futures.

What should be our research agendas for studying language development in the coming decades? I hope it is clear that I am deliberately using the phrase ‘language development’ here against the grain of the learning/acquisition/development and L1/L2 distinctions. The phenomenon which actually occurs is that people add elements of a new linguistic resource system to their communicative and semantic repertoires. Language use is integral to personal and social development, part of the short- and long-term developmental processes of both persons and communities. Personal and community development continues to occur through the medium of additional languages as well as the first language, and, I believe, most naturally and basically by the functional integration of what nation-states and formal linguists demand be kept strictly separated. It might be a salutary inversion of traditional research perspectives to begin by looking at the role of multilingual activity (or its suppression) in a community, and then taking this as the context in relation to which individuals develop (in part) by using more than one ‘language’.

I also think we need to welcome into our research a renewed skepticism regarding the autonomy and coherence of ‘languages’. The notion of ‘a language’ seems to me little more than a Platonist relic. I cannot see it as a cogent unit of analysis, neither behaviorally, nor socially. Its unity is a purely formal construction of our current ways of describing verbal behavior in the aggregate, rather than on the actual occasions of its

occurrence as a material-semiotic phenomenon. It is not at all obvious that if they were not politically prevented from doing so, ‘languages’ would not mix and dissolve into one another, but we understand almost nothing of such a process, and so almost nothing of the actual functional units in terms of which this mixing might take place. We have theories of the artificially maintained formal structural systems of “Languages”, but not of the dynamic social processes of multilingual communication and activity not tightly constrained by institutional norms. Could it be that all our current pedagogical methods in fact make multilingual development more difficult than it need be, simply because we bow to dominant political and ideological pressures to keep ‘languages’ pure and separate? How would we know? We have at this point so ‘naturalized’ the process of (especially second-) “language acquisition” as if it took place in an imaginary parallel universe of Mind, that we are left with almost no understanding of how it occurs in the real social ecology of persons, artifacts, sounds, and material activities. We have a vast research literature on what happens under the artificial conditions of academic language learning, but very little on what people might actually do socially under conditions of partial multilingualism outside stable multilingual communities. What do we know about how communities “acquire” additional languages? In the model of ecosocial system dynamics that I have partially sketched here, that knowledge is a pre-requisite for any better understanding of multiple language development in individuals.

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