

Manuscript for:
Special issue, *Folia Linguistica*
Critical Discourse Analysis and Cognition
R. Wodak, issue editor

Discursive Technologies and the Social Organization of Meaning

Jay L. Lemke
The Graduate Center
City University of New York
JLLBC@CUNYVM.CUNY.EDU

The concept of meaning, like that of cognition itself, is increasingly being conceptualized today as the outcome of a process of interaction between the organism and its environment. Meanings are made by the interaction of brains and bodies with texts, artifacts, ecologies and persons, according to the social conventions of cultures, in particular situations and settings. The semantic systems of language and the typical forms of narratives and other genres of text and discourse are widely recognized today as essential cultural resources mobilized by individuals to do the work of institutions, relationship- and identity- building, and cultural innovation. Because language is made to do the work of organizing society, social technologies of organization get written into the forms of language and inscribed in the bodies and meaning-making habits of people. The thesis I would like to propose, somewhat tentatively, in this article is that contemporary changes in the organization of society, such as globalization, are associated with significant shifts in the dominance of particular discursive technologies.

The dominant discursive technology of late modernism has been the standardized text or discourse genre, epitomized perhaps in the bureaucratic ‘forms’ we fill in again and again in our lives, and which function to organize society, and us, on larger scales. I want to explore the relationship between this discourse technology and the social technology of organization that it serves. This relationship is highlighted when we begin to consider the ways in which such post-modern discourse technologies as hypertext afford us the possibility of creating new kinds of syntagmatic meanings by linking across the re-contextualized elements of traditional genres and forms. The meaningful traversal of a hypertext database is but one instance, I will argue, of a more general re-organization of the possibilities for post-modern identities, societies, and meanings. These *traversals* of many kinds suggest the emergence of new principles of social organization and control.

Critical discourse analysis is primarily concerned with understanding how we use language to maintain, resist, and change the social, cultural, economic, and political organization of society. I want to suggest that it can also be used to identify emergent new discourse technologies and modes of social organization and control, and that we need to study not just how language sustains the *status quo* in society, but how it is implicated in the profound changes now taking place in the global re-organization of society (cf. Gee, Hull, & Lankshear 1997; Fairclough 2000; Language in the New

Capitalism website). This project is profoundly relevant to the study of cognition, i.e. to understanding how people make situated local meaning, because it tells us something essential about how and why the meanings we make here and now are connected to those made by others with whom we form, if not necessarily a community, at least a network of mutual interdependence. Because we cannot survive alone, we do not think thoughts that are entirely our own.

An even more direct connection to issues of cognition arises from our understanding that we frame our identities through the narrative and other discourse genres of our community. If we still tell our lives as narratives, we may nonetheless be coming today to experience them more as hypertexts. We are learning to make meaning on multiple scales of human experiencing, and as we come do so more and more outside the limitations of standardized cultural genres, new kinds of lives, new kinds of communities, and new forms of personal humanity become possible.

In the sections that follow, I will first try to sketch a theoretical framework for understanding the role of texts and other semiotic-material artifacts in organizing the coherence of social-ecological systems across time and space. I will then outline briefly what I see as the connection between text genres as a technology of social organization and the characteristic principles of social control in late modern society. Finally, I will try to characterize some newly emergent forms of textuality as representative of a new technology of meaning-making practices that I call 'traversals' and then address the critical questions of the new modes of social control they may portend and the new human possibilities they may afford.

From Complex Material Systems to the Role of Texts

Complex systems theory is an attempt to characterize the common and distinctive features of dynamical systems in which large numbers of elements interact to produce determinate but unforeseeable new phenomena (Bar-Yam 1997). Human organisms, ecosystems, and human communities such as cities are all examples of complex dynamical systems of this sort. Living systems in general are complex dynamical systems, and they are characterized by a hierarchical organization across multiple levels (Salthe 1985, 1993) each with its characteristic time scales (for characterizing the rates of processes) and spatial-extensional scales (for typical sizes, masses, and energies).

In many such systems and across many such levels of organization, two general principles appear to hold (Lemke 2000a):

- (1) Adiabatic separation – processes which occur at radically different rates (50-100 times faster or slower) tend not to readily exchange energy with one another, and so not to exchange information efficiently, across distinct levels of system organization
- (2) Informational alternation – as we move from level to level, information from lower levels is re-organized by intermediate levels for higher levels in such a way

that differences of degree at the level below matter as differences of kind at the level above, and vice versa

More specifically, in most complex material and biological systems, intermediate levels of organization emerge from the potentialities of a lower level under the organizing constraints of a pre-existing higher level. When these new intermediate levels emerge, they have the effect of filtering only some sorts of information through to the higher level, while buffering that higher level against other information (noise) from below. Only directly adjacent levels significantly influence one another.

In this model timescales (or rates) are a more general parameter for identifying a level of organization than are distances, sizes, masses, or energies. As Latour (1987) has noted in a critique of social systems models, the topology of social systems is more like that of an extended network than like that of a set of nested spheres of increasing size. For simpler biological and other material systems, scaling by time and by size produces the same definitions of levels, but even in these realms there are exceptions (Lemke 2000a, 2000b) and it is time that is the more reliable and general differentiator among levels because of the physical basis of the principle of adiabatic separation. One can describe social networks as consisting of interpenetrating and interlocking subnetworks, which are still relatively insulated from one another by their typical timescales for action or completion of some process. Conversations, for example, occur too quickly to be directly affected by the much slower processes of language change; those longer-term processes are normally mediated and buffered by many intermediate levels of social organization (communities, institutions, extended social networks) from the linguistic innovations in any particular conversation.

As Latour (1987) also notes, the networks that make society possible do not consist solely of humans. Human communities, whether villages or cities, are also ecosystems or components of ecosystems. We depend as much on soils, bacteria, plants, animals, and our own tools, buildings, and artifacts of all kinds as we do on one another, not just for our survival, but also for the functioning of our institutions and cultures. The systems we belong to and depend on are ecological-social systems or networks of humans and nonhumans. You cannot understand a technological civilization apart from its artifacts and ecosystem. You cannot account for the flows of matter and energy in the ecosystem itself without taking into account cultural values and discourses that mediate how we build and design, what plants we sow or root out, which species we cultivate or exterminate, and how we distribute resources geographically and socially. There are only ecosocial systems or networks, not separate purely social systems and purely 'natural' ones.

Texts, Heterochrony, and Mediation by Semiotic Artifacts

The role of meaning and values, of semiotic practices, in ecosocial systems (which could equally be called ecological-social-semiotic systems or actant-networks) creates some interesting paradoxes. How is it possible for human communities, in partnership with tools and raw materials, to coordinate the building of a cathedral over a centuries-long

timescale? How can centuries-old traditions and rituals be maintained in the actions of people and artifacts that take place on the timescale of minutes or hours or even days? Such things do not normally happen across such disparate timescales of organization in non-social, non-semiotic complex systems. If our own ecosocial feats of cross-temporal coordination seem unsurprising to us, it is because we are not looking at them from the perspective of more general kinds of complex dynamical systems where there are few violations of adiabatic separation across widely disparate timescales. Climate change and local weather tend to be highly buffered from one another; the long-term ecological succession in a large area of forest is not influenced by the cutting of one tree, and vice versa.

Heterochrony (which has several meanings in biology) is a convenient name for phenomena in which processes on non-adjacent, and more generally on many radically different timescales (taking place at radically different typical rates) strongly interact with one another to determine the phenomenon of interest (Lemke 2000c). In the case of human culture and history, M. Serres (1995) has referred to such phenomena in terms of the metaphor of 'folded time' in which events remote in time from one another may be culturally more relevant to a present event than other events nearer in time. There are two kinds of violation of simple notions of causality in complex dynamical systems: first, the complexity of coupling among processes on a single scale-level means that causal chains become circular, with the result that system-level, aggregate phenomena cannot be said to be 'caused' by any particular constituent or process (*contra* reductionism); and, second, across scale-levels, heterochrony permits the "folding" of time, so that nearness in time is no longer any guarantee of the greater causal relevance of an event.

It is not particularly unique to my own formulation to identify a critical role for written texts in producing coherence across time and space in human social systems (cf. Olson 1994 and many references therein). What is more specific to this model is to generalize the case of written texts to all material objects that persist over timescales long compared to the local and ephemeral events in which the objects are produced, circulated, and used on particular occasions, provided only that these objects carry information which is crucial in accounting for relationships between events distant in time. In a more detailed account, we would consider in detail the role of cross-scale semiotic processes, which imply that higher levels of social organization are required to determine the meaning of these objects for particular events (Lemke 2000a). Briefly, the cultural codes by which the objects are interpreted as meaningful are themselves phenomena of a higher level of organization and change on a much slower timescale than that of any interpretative particular event or meaning-sensitive use of the object.

In a more Latourian actant-network model, Star & Griesemer (1989) have identified the same role for what they call 'boundary objects,' highlighting the fact that such objects knit together different subnetworks by functioning in different ways in each, but preserving their own material integrity as they circulate from one to another. Thus information value is readily seen to lie not in the form of the artifact itself, but only in its relations to the practices of interpreting and using such objects in the different communities or subnetworks.

Finally, we should recognize that it is not just ‘texts’ in the ordinary sense of written language, or even texts in the extended sense that includes various forms of visual-graphical representation as well as language (e.g. Lemke 1998a), but tools and built environments, modifications of the natural environment, and even the malleable human body itself, which can function as semiotic ‘artifacts’. A special case of great interest is that identified by Bourdieu (1990) as ‘bodily habitus’, the sense in which culture and life experience are written into the body, not just in gait and physique, but in the subtler dispositions of our likes and dislikes, our habits of spontaneous reaction to cultural situations (sports, work, sexual play), and so forth.

Both Bourdieu and Foucault (1979, 1980) have documented the sense in which various social and cultural ‘disciplines of the body’ make us material products of our culture, who in turn carry that culture forward by how we act and react. Foucault in particular has seen such processes as technologies of social control.

My hope is that we can learn to read this analogy between disciplined bodies or bodily habitus and ‘texts’ backwards and ask more generally in what different ways, historically and contemporaneously, ‘texts’ and other semiotic artifacts index different modes of social control.

Beyond Standardized Genres and Modernist Social Control

The meanings we make are a product not only of our immediate needs but also of the modes of social organization in which we participate. We fill out forms, give job-talks, write essays, and make small-talk because we participate in larger- and smaller-scale social institutions from the nation-state to the family and the business office. Within these settings we deploy the resources appropriate to various more- and less- prescribed written and spoken genres as our immediate needs and longer-term ambitions dictate. What is true of the meanings made specifically with language is true more generally of the meanings made with every form of human action: each act participates in local constructions of meaning on shorter timescales at the same time that it also participates in the systematic networks of interdependent activities that sustain institutions and societies over much larger distances and longer times.

The high modern world is characterized by standardization: different people in widely separated times and places recreate similar forms and documents, acts and practices. As I have argued elsewhere (Lemke 2000a, c), it is the material embodiment of meaning in physical texts, documents, tools, artifacts, architecture, designed land- and city-scapes, and in our own human bodies that enables us to coordinate activities over long periods of time and so over global societies and virtual communities of millions of people and billions of artifacts. There is standardization of infrastructure and classification schemes (Star & Bowker 1999), standardization of instruments and measures, standardization of textual genres both written and spoken, and standardization of the routine activities of daily life and specialist practice. The making of texts and tools, the using of texts and

tools, the enactment with our own bodies of familiar rituals and routines does not just get some job done in the here and now. It also repeats key features familiar to others, which they in turn can make sense of and make use of, often for very different purposes in other times and places. In this basic way activities remote in time and space come to be articulated, coordinated, and ultimately interdependent.

Not surprisingly many of us rebel against this standardization. We magnify the significance of small variations, we seek novel meanings and creative practices. We also worry that over-standardization makes our social system too rigid, too little able to respond to the waves of change that pass through it, many of its own unplanned making. We live in practical terms only by conforming to standardization; we depend on the predictable practices and products of others in every aspect of our lives. We are caught in the web. Within the prescriptions of our modern genres of text and action, our standard templates for artifacts and institutions, we do find latitude. We can deploy the constituents of these genres in different ways that are still meaningful and still useful, and we sometimes deploy them tactically against the strategic interests of institutions we find oppressive (de Certeau 1984). More importantly perhaps, we can mix and combine genre templates and their components in novel ways with results unpredictable even to ourselves. Insofar as genres and standardized forms represent institutional idealizations, we do in fact never produce perfect instances of them, but always instead some sort of hybrid bricolage that is, we hope, functional enough to get by on, perhaps personal enough to be proud of, sometimes odd enough to be interesting in its own right.

Standardization is our solution to the problem of ecosocial scale. In many ways it is Nature's solution also. Large ecosystems are not simply made from the diversity of species, but from the endlessly repeated webs of relationships among different members of the same species (plural), identical enough for ecological purposes. Nature hedges her bets with many layers of redundant diversity: there are many phenotypically and genotypically different individuals of each species, each ready to play its role in the great webs in a slightly different, but often enough functionally equivalent manner. There are many species that occupy homologous niches, not quite but almost equally good as substitute food-source, competitor, predator, decomposer, or transporter. There are many fractally self-similar ecological patches on many spatial scales, each ready to function as the seed for regeneration of the larger ecosystem after its periodic and predictable local traumas. In species with wide ranges, individual organisms can in principle pick up their lives and survive even if artificially transported far from their native habitat. This is perhaps less true of the most highly social species, who may have individual attachments to particular mates and troops or hives and broods. Human cultural standardization extends our range as individuals and as members of social subgroups, not yet as widely as our species range (linguistic and cultural barriers are still serious obstacles), but much more widely than in earlier eras of the human past.

Social control under modernism, as Foucault has often described it (e.g. Foucault 1979, 80), consists essentially of technologies of standardization: artifactually mediated means of comparing people and events to idealized standardized forms and rewarding closer matches and sanctioning divergences outside some narrow range of tolerance. Society

prescribes for us ideal patterns of conformity; some we internalize, some we resist, but they all take this same form. This is a historically specific mode of social control. Although no doubt something like it has existed through all of human history, it only became the dominant mode of social control in modern times. It is part and parcel of the technology of social organization for large-scale, modern mass societies. In smaller-scale societies it is usually sufficient to assemble *ad hoc* applications of precedent and abstract values for each particular instance. There is no special need to enforce widespread conformity to codified norms; it is sufficient to adjust individual instances within local social tolerances (cf. tribal dispute resolution, witch-doctoring, mandarin courts, *qadi* justice).

Standardization is here to stay, but it is not the last word in human organizational technologies or social forms. The logical endpoint of this strategy is global uniformity on such a scale as to diminish the diversity of the human 'meme-pool' to dangerously low levels. There must be countervailing tendencies at work. Those which operate solely within the tolerances of standardized genres and templates, the limited creativity of 'normal science' and 'normal life', while wondrously diverse under the microscope of micro-analysis, cannot account for the emergence of radically new ecosocial and cultural-natural phenomena. What *can* account for them, in the view of complex systems theory, is the unpredictability of strong-coupling: multiple feedback loops and nonlinear reinforcement of small effects toward the larger scale by the collective and cooperative phenomena of whole systems (Kauffman 1993; Lemke 2000a, b; Bar-Yam 1997). Most simply it is new networks, new couplings, connections, and interdependencies that can surprise us.

What do new networks look like in their embryonic forms, before we can say whether they, too, will in their turn become standardized? Do they *need* to become standardized in order to play a significant role in ecosocial systems? in culture, identity, and behavior? or as grounds of meaningful activity?

I wish to propose here a new class of theoretical object, which I am calling *traversals*. Traversals are temporal-experiential linkings, sequences, and catenations of meaningful elements that deliberately or accidentally, but radically, cross genre boundaries. A traversal is a traversal *across* standardized genres, themes, types, practices, or activities that nevertheless creates at least an ephemeral or idiosyncratic meaning for its human participants, and represents at least a temporarily functional connection or relationship among all its constituent processes and their (human or nonhuman) participants (i.e. *actants*).

I believe that traversals are becoming a particularly significant ecosocial and natural-cultural phenomenon in this period of world history, the late 20th and the 21st century, in the same sense in which genres and standardization became particularly significant in the high modern era of the 19th and early 20th centuries. As there have come to be in the high modern period more genres, more standardized types, and so stronger and more rigid boundaries and principles of classifications to define and separate them, so there have also come to be more more resources for hybridization, for creative and stylistic

combination and catenation of these types as elements separated from their usual contexts.

But why now? For this we have to look still further outward to the level of social organization achieved for the first time only at the beginning of the high modern era, when genres and standardization became particularly important because they were absolutely necessary to the coordination and coherence of ecosocial systems of unprecedented scale, not just geographically, but in terms of numbers of people and numbers and types of artifacts. It is the dependence of our lives on organization at this mega-scale which has raised the dangers of over-standardization at the same time that it provides us with abundant boundaries to be transgressed and types and constituents to be combined, concatenated, and serialized.

But still, why now? We must finally, I think, look still further outwards, because we are today once again at the threshold of a still larger scale of ecosocial organization: global and planetary. Global, species-wide standardization really would threaten our biological survival. Whatever countervailing possibilities are available to us, they are now likely to start being seriously explored. It is a general principle of complex systems theory that as new higher levels of organization emerge, they provide new criteria for fault-tolerance at lower levels, freeing up what was formerly constrained, so that now many different possibilities are equally functional so long as they sustain the new higher level's needs (cf. Lemke 2000a).

I believe that it is becoming safer to break the rules that were formerly necessary to the survival-by-standardization of nation-states and national cultures because the global economy and its emerging meta-culture provides a stabilizing outer-envelope within which transgressions need not be disastrous for individuals or social networks. Traversals are, I believe, the characteristic form that is becoming salient and significant in the transition to globalization; the form that will truly characterize the successor to modernism.

What are traversals?

Definitions belong to the end-days of theory-building; they are never truly starting points. I gave a notional definition of traversal above; do not regard it as definitive or generative, but only as a way in to the intellectual construction and examination of a putative phenomenon.

Examples are more helpful at this early stage of theory construction. Traversals include such phenomena as:

hypertexts, experienced in time as jumping from one element in one modern genre or type to another that may be quite disparate, e.g. narrative to poem to diagram to table to dialogue to video to quantitative graph, etc. (Landow 1997; Lemke, in press) and also linking across topics and themes that may have no typical cultural collocations ;

websurfing, which generalizes the simple hypertext across radically different content categories, linguistic registers, and domains of human activity, but with some logical connective relations at each juncture or link, and with a sense, like that for hypertext, of a coherent meaning-experience along a whole experiential trajectory;

channel-surfing, the immediate predecessor of web-surfing, in which the viewer jumps at various rates among the widely different television programs and genres (adventure to cooking to news to talkshow, etc.), again creating a unique and in some sense coherent meaning-making experience, in which the viewer is a more active creator of the trajectory than s/he could be in relation to any single program;

mall-cruising, an architectural experience, or ‘reading’ of assembled space, in which, whether as shopper or social visitor, over a relatively short span of time, individuals move from food-court to clothes-mart to movie theatre to furnished public space, again assembling the trajectory of a coherent visit-to-the-mall.

To these we can add such less radically heterogeneous precursors as: video montages, disco sound and record ‘mixes’, the distinctive mixed-period style of some postmodern architecture, and even that hybrid reality of all texts that leads to the famous dictum of Derrida that you cannot *not* mix genres. Let me analyze this dictum as a way of making salient the role of *scale* in defining and characterizing traversals.

Of course you *can* produce a pure, idealized genre (boring and predictable as that is likely to be), but only if it is short, brief, or simply repetitive with prescribed limits of variation. Every standardized bureaucratic document-form is such a pure genre. So are simple genres like the sonnet, sonata, or haiku, extending perhaps to the folktale, to ritual speech genres, the simple mathematical proof, the patent application, perhaps the typical scientific research article. We can produce pure instances of ideal genres of indefinite length by recursion, as with dictionaries, encyclopedias, or linked folktales as in the 1001 Arabian Nights. But once we try to produce really long single texts, or really long-term sequences of action, the inherent messiness of life intrudes. There are always ‘circumstances beyond our control’, lapses of memory, errors of production, interruptions, intrusions, our own perverse need to diverge, and digress. There are improvisations, irrefusable opportunities to improve, create, individualize. There is the simple impossibility of prescribing in sufficient detail all the elements of a text or activity that is semantically heterogeneous (i.e. does not keep repeating the same meaning patterns over and over) or functionally developmental (i.e. having got to some point in the sequence of action, new possibilities emerge just because of what we have done so far, possibilities that could not have been foreseen before we did it; cf. Lemke 1991). There is simply no functional point in trying to pre-specify the total course of a lengthy activity or the total shape of a lengthy text. Lengthy activities must allow for unforeseeable opportunities and contingencies, for emergent goals. Long texts are written to make meanings that do not serve only standardized functions (Lemke, in preparation).

The novel is not a genre; even the most predictable ‘genre novel’ is not actually written to a formula, or if it is, it does not serve for us all the important functions of a novel. No

book which develops a related cluster of themes for its entire length of hundreds of printed pages can be said to be an instance of a predictable, formulaic genre. An ode or an elegy may be highly standardized, but an epic is not. The *interest* of a long text lies partly in its unpredictability, whether narrative (the novel, the drama) or informational (the essay, the treatise). Standardized scientific textbooks are perhaps the longest texts to realize pure genres in both form and content; they represent an epitome of modernism, texts so similar in form and content that they are more like translations of one another than like original works.

What is important, however, for the theory of traversals, is that we make new kinds of meanings across very long texts which are qualitatively different from those we make with short texts. If every possible meaning could be made in a single clause, we would have no need of complex sentences. If moderate length sentences afforded the entire meaning potential of language, we would have no occasion to create longer texts. It is a very important and largely unanswered question in the theory of text semantics just what kinds of meanings we can and do create with longer-scales texts that we cannot make with shorter texts? (Lemke, in preparation). Traversals are also conceptualized as meaning-makings, and what characterizes a traversal is precisely that some kind of coherent meaning is made in the unpredictable sequencing of unlike types over 'text-scales' that are longer than the scales of the standardized elements which are strung together along the traversal.

Hypertext and its extension to hypermedia afford the most text-like instances of traversals. The user's trajectory or pathway through a hypertext environment (a set of texts or other media objects, with specific links among them) may afford the possibility of moving from text page to video playback to map display, and from poetry to expository argument to narrative, in many possible sequences, some planned by the creators of the hypertext and many not (Lemke 1998b). Of course hypertext also affords, like print, the simultaneous display of different genres of text and other media, and we know that the reading experience of print is also one in which our eye and attention move at different rates along various visual and logical pathways to attend to these elements sequentially (including alternately, back and forth). Hypertext simply extends this affordance but also make it possible for reader-users to create much more original and unpredictable traversals through the resources of the hypertext environment. What is most important about hypertext traversals, and traversals in general, are the kinds of meanings that we make, coherently and cumulatively, along the traversal, on its longest scales.

Organized hypertexts often have relatively thematically constrained textual and other media resources. But the WorldWideWeb is itself the largest scale hypertext known, or probably today imaginable. Following its links across only a few webpages can readily shift the thematic domain quite radically and unpredictably, and many of us have often found ourselves enjoying 'surfing the web' in this way. A complete surfing 'session' may have for us, retrospectively or even in real time as it is occurring, a sense of meaningfulness, of idiosyncratic coherence. Taken as a whole, or perhaps retrospectively and more selectively assembled from various of its constituent experiences/pages, we can

feel that we have ‘done something’ or ‘got somewhere’ or just had a good exploratory tour. This experience is I think akin to ‘channel-surfing’ and the cumulative experience of a unique juxtaposition (really serialization) of moments from programs and commercials of widely different genres (weather, beer, comedy, action, feminine deodorant, news). Sometimes the results are hilarious, sometimes depressing; sometimes we linger, sometimes we keep moving along, but this is ‘an activity’ – it is ‘viewing’ or ‘surfing’ and not simply a meaningless instrumental interlude *en route* to real television viewing. It is a mode of television use or experiencing, and one that has a lot of popularity, especially among younger people for whom the organized content of television is often boring or irrelevant.

This notion of traversal began to emerge in a conversation I had with Jerome Bruner in 1998 about his useful view that our identities are constructed along narrative principles, and often constructed and reconstructed in the actual telling of stories about ourselves in daily life, in family groups, etc. (Bruner 1990; see also Gergen 1991, Wortham 2001). There is a critical tradition in the theory of autobiography (e.g. Freeman 1993), as also for the evaluation of testimony in trial law (e.g. Jackson 1995), which points out that we organize the stories of our lives, what we have done and what we have witnessed, according to the standardized genres of culturally valued narratives. We want to make our lives sound heroic or tragic, or at least interesting, as stories. We tell stories of events in ways that seem to make sense because they fit familiar patterns in which sensible motives seem to lie behind actions and events. So on this view, while constructed identities very likely are narrative effects, there must be a pre-narrative mode in which we actually experience our lives as meaningful as they happen, rather than only retrospectively. My proposal to Bruner was that ‘we tell our lives as narratives, but we experience them as hypertexts’.

So it is not just the more specialized forms of traversal experience in channel- and web-surfing that I have in mind, but the way in which we experience the meaningfulness of a day in our lives as having some wholeness or coherence to it, as being some sort of unique ‘text’-- retrospectively seen and told as a narrative, perhaps, but originally experienced meaningfully as a traversal or hypertext. I believe that we are now passing historically from the era of simply making sense of our lives as they happen, at various timescales, to a more deliberate and artificial, historically specific, cultural *practice* of creating days of our lives as works of art, or at least as works of craft. It may not of course be the whole day, though I rather suspect that the day is a culturally salient scale for traversal meaning. The work of ‘making the day interesting’ may well be partly responsive to or in reaction against those parts of it that were boring or unpleasant, or began and promised to be so. Leisure days are the most obvious instances of this, but I think that increasingly some people, perhaps again younger people, are looking at all of their days in this way. Not necessarily to make a good tellable story of the day, though we also do that, but at least to make a day that has a certain satisfaction to it, taken as a whole.

Traversal Repertoires: Emergent Modes of Social Control

How do traversals matter to the larger ecosocial system? What difference does it make if this person or that makes some sense of a traversal across a disparate and unusual collection of genre fragments and otherwise standardized activities or events? More specifically, how do traversals have consequences on much longer timescales?

Let us go back again to the case of genres and standardized activities. These too take place, instance by instance, on relatively short timescales, times of the order of hours or days in most cases. How does it happen that their *forms* recur in different times and places, so that the typical lifetime of influence of the form is decades or centuries? As I have argued elsewhere, this heterochrony or linkage across radically different timescales is always mediated by the temporal persistence of material artifacts, including the human body itself (Lemke 2000c). In brief, material texts and other semiotic artifacts persist and circulate in society over timescales much longer than the characteristic timescale on which they are written or read and used in shorter-term activities. The conventions for making meaning with these artifacts (i.e. meanings above and beyond, yet made by reference to, their strictly physical and biological affordances) are themselves also preserved and circulated through such artifacts. Ecosocial systems, at least insofar as human culture matters in them, are made both more complex and more tightly coupled at larger scales by these practices/processes, these material technologies of ecosocial organization.

A particular traversal may of course be the precursor to a future standardized genre. It may be repeated, exactly or with some tolerable variation, by the same person, or by other persons, on occasions nearer or more remote in time and place. It may become regularized by word of mouth, by written accounts, by arrangements of artifacts and land- or city-scapes that make it more likely for a similar traversal to be made again. The traversal must leave some enduring trace, in an account or record of itself (symbolic signs), or by its effects on the world (indexical signs). Its near-replicas, of course, are also (iconic) signs renewing its meaning and possibility for us.

But all this is distinctly a matter of timescale, and timescales are matters of degree, however much discrete, order-of-magnitude differences of timescale are the basis of system organization. A single traversal persists on its own timescale; its memory may persist longer in an individual. There may be indexical traces of its having occurred that persist in the environment; it may be visible to others; accounts of it may circulate. This does not mean that it will ever be replicated or imitated. But in addition to standardized genres and institutionalized repertoires of activities, ecosocial systems are characterized on shorter timescales by *repertoires of possibility*. Sometimes called ‘the thinkable’ or ‘the imaginable’ in contrast with the presumptively not-imaginable, with doings that have no meanings and which therefore cannot be imagined through their meanings, and so can only be encountered by circumstance or accident. There are things we can fall into that we could not have imagined. Most times these happenings are not, for us, events at all, just confusions, lacking even so much meaningfulness as identifiability as discrete or segmentable occasions or events. But sometimes we encounter an event, a happening in

the world, even one in which we find ourselves an unintentional participant, that has meaning during or after the experience even though it had no place in our system of possibles and thinkables before. The repertoire of possibles is thereby expanded for us. Sometimes its structural organization is even overturned or modified, though probably more often such events are added as singulars, still not part of any generative systemic potential.

Traversals can enlarge the repertoire of possibles. This is, after all, part of the motivation I gave at the beginning for their species-survival value. And in particular what they can do is to create local and ephemeral possibilities of meaningful connection or catenation among otherwise radically distinguished and separated genres and domains of activity. And not just one to another, but whole *sets* of genres, domains, topics, themes, and categories of persons, experiences, actions, or activities that are united by the thread of even a single traversal that passes through all of them.

Local and ephemeral (on some timescale), traversal repertoires can potentially become regularized, standardized, repeated, and disseminated over larger scales and for longer times. Or they may not. A traversal repertoire may portend a new category-in-the-making or a new activity-genre-in-the-making, or it may not. History is contingent, at many scales. There may be a place or function for the new activity in some larger-scale structure, or not. The smaller-scale enabling events needed to promote institutionalization may occur, or they may not.

But this way of thinking about the sequelae of traversals is still modernist, still privileges the way of standardization, as if all that mattered in human life or the dynamics of an ecosocial system were its relatively fixed invariant forms. This importance, I believe, attaches to invariants because they mediate modernist social control. Is there an emerging mode of social control analogously associated with traversals and traversal repertoires? If so, then it may well become the dominant mode in a future where global meta-culture operates above, beyond, and to some extent outside of traditional modernist norms of conformity and standardization. I would no more expect norm-conformity to disappear in such a future than I would expect standardization to do so, but just as the emergence of higher levels of organization in the global economy permit relaxing the rigidity of many standardized practices such as standardized career paths or loyalty to national cultural ideals, so the corresponding global meta-culture will depend less on strict predictability of longer-term traversals (such as biographical-scale ones) and more on these traversals' sharing some less restrictive features.

Here, finally, is my guess and my quandary about what seems to me to be the mode of social control that will grow in importance as traversals are added on top of activity genres and conformity to genre norms, which will in turn grow less important, at least on the longer timescales now to be dominated by traversals instead. My guess is that traversals will be characterized by something like a *style*. Something more like a holistic aesthetic judgment rather than, as with genre-like norms, by objective conformity to codified criteria that specify analytical components. We judge genre-conformity by looking at the separate parts and their criterial features; if all the parts are present, if each

has the canonical features, if they are all ordered in the normative manner, the text or activity passes muster. There is no special sense of the whole; no emergent quality of the whole that is taken to be more than the sum of its parts. Genre-conformity is an eminently linear and summative strategy, a true product of the machine age. Traversal judgments, on the other hand, are eminently holistic, or at least they operate ‘in the large’, with the meaningfulness and quality of the longer-scale portions of the traversal more important than the smaller-scale ones. Traversals are emergent all the way down. They are characteristic of the age of complex (including biological and ecosocial) systems theory.

Late modernist technologies of mass social organization require a historically unprecedented degree of social control and widespread standardization and conformity. As they expand, modernist societies find that each effort to enforce standardization runs afoul of the messiness of complex systems, their inherent unpredictability arising from multiple cross-couplings and interlocking, circular causal loops. Each effort to enforce conformity in such a system requires that more and more aspects of life must in turn also be controlled. A global-scale society built on modernist principles will be extremely precarious, teetering permanently at the edge of collapse, requiring the most minute control of every aspect of human life and ecological processes to maintain itself. We will, I think, never actually reach this stage. Rather we will shift uneasily between the last gasps of modernism, its periodic crises of regional or global collapse (economic and ecological) arising from over-control, and an emerging counter-system predicated on relaxing control over people and ecosystems, reducing expectations, accepting disasters as inevitable rather than further increasing control in futile efforts to prevent them that only lead to other greater disasters. We will have to finally let go of the modernist Faustian fantasy of total control over the world and our own lives, and embrace instead a value system which privileges the whole over the part, the complete ecosocial system over humanity alone, and the quality of a day or a life over the standardization of a word or an action.

In all these scenarios, the new ways we learn to use language to make new, emergently possible kinds of meanings in traversals across widely different scales (of time, text, or experience), will play a key role. It is the work of critical discourse analysis and applied linguistics to tell us *how*.

References

Folia references

Bar-Yam, Y. 1997. *Dynamics of complex systems*. Cambridge MA: Perseus Publishing.

Bourdieu, P. 1990. *The Logic of Practice*. Stanford CA: Stanford University Press.

Bruner, J. 1990. *Acts of meaning*. Cambridge, MA: Harvard University Press.

De Certeau, M. 1984. *The practice of everyday life*. Berkeley: University of California Press.

- Fairclough, N. 2000. Language in the new capitalism. <http://www.uoc.es/humfil/nlc/CA-15egd.doc> .
- Foucault, M. 1979. *Discipline and punish*. New York: Random House.
- Foucault, M. 1980. *The History of Sexuality*. Volume 1. New York: Random House
- Freeman, M. 1993. *Rewriting the self: History, memory, narrative*. New York: Routledge.
- Gee, J.P., Hull, G. & Lankshear, C. 1997. *The New Work Order: Behind the Language of the New Capitalism*. New York: Westview.
- Gergen, K. 1991. *The saturated self*. New York: Basic Books.
- Jackson, B.S. 1995. *Making sense in law: Linguistic, psychological and semiotic perspectives*. Liverpool: Deborah Charles Publications.
- Kauffman, S. 1993. *The origins of order*. New York: Oxford University Press.
- Landow, G. 1997. *Hypertext 2.0*. Baltimore: Johns Hopkins University Press.
- Lankshear, C. 1997. "Language and the New Capitalism." *The International Journal of Inclusive Education*. 1(4): 309-321. Online at: <http://www.geocities.com/Athens/Academy/1160/langnewcap.html>
- Language in the New Capitalism (Website): <http://www.uoc.es/humfil/nlc/LNC-ENG/lnc-eng.html>
- Latour, B. 1987. *Science in action*. Cambridge, MA: Harvard University Press.
- Lemke, J.L. 1991. "Text Production and Dynamic Text Semantics." In E. Ventola, Ed. *Functional and Systemic Linguistics: Approaches and Uses*. [pp. 23-38]. Berlin: Mouton/deGruyter (*Trends in Linguistics: Studies and Monographs* 55).
- Lemke, J.L. 1998a. "Multiplying Meaning: Visual and Verbal Semiotics in Scientific Text" in J.R. Martin & R. Veel, Eds., *Reading Science*. London: Routledge. (pp.87-113).
- Lemke, J.L. 1998b. "Hypertext Semantics." Paper presented at the International Congress of Systemic-Functional Linguistics, Cardiff, 1998. Online at: <http://academic.brooklyn.cuny.edu/education/jlemke/webs/hypertext/tsld001.htm>

- Lemke, J.L. 2000a. "Opening Up Closure: Semiotics Across Scales" In J. Chandler and G. van de Vijver, Eds. *Closure: Emergent Organizations and their Dynamics* (Volume 901: Annals of the NYAS). New York: New York Academy of Science Press. pp. 100-111.
- Lemke, J.L. 2000b. "Material Sign Processes and Ecosocial Organization." In P.B. Andersen, C. Emmeche, and N.O. Finnemann-Nielsen, Eds. *Downward Causation: Self-organization in Biology, Psychology, and Society*. Aarhus University Press (Denmark). pp. 181-213.
- Lemke, J.L. 2000c. "Across the Scales of Time: Artifacts, Activities, and Meanings in Ecosocial Systems" *Mind, Culture, and Activity* 7(4): 273-290.
- Lemke, J.L. In press. "Multimedia genres for science education and scientific literacy." In M. Schleppegrell & M.C. Colombi, Eds. *Developing Advanced Literacy in First and Second Languages*. Mahwah, NJ: Erlbaum.
- Lemke, J.L. In preparation. "Textuality and the mediation of social control." Plenary address for the International Congress of Systemic-Functional Linguistics, Ottawa, 2001.
- Olson, D.R. 1994. *The world on paper*. New York: Cambridge University Press.
- Salthe, S.N. 1985. *Evolving hierarchical systems*. New York: Columbia University Press.
- Salthe, S.N. 1993. *Development and evolution*. Cambridge: MIT Press.
- Serres, M. 1995. *Conversations on science, culture, and time*. (R. Lapidus, Trans.) Ann Arbor, MI: University of Michigan Press.
- Star, S.L. & Bowker, G. 1999. *Sorting things out: Classification and its consequences*. Cambridge, MA: MIT Press.
- Star, S.L. & Griesemer, J.R. 1989. Institutional ecology, 'translations' and boundary objects: Amateurs and professionals in Berkeley's Museum of Vertebrate Zoology, 1907-39." *Social Studies of Science* 19: 387-420.
- Wortham, S. *Narratives in action*. New York: Teachers College Press.