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Aspects of an ecological theory of language

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A B S T R A C T

Our aim and knowledge-constitutive interest is to identify some central aspects of an ecological theory of language. In our understanding of building an integrative ecological theory of language, it seems useful to look first for roots of a special ecological understanding of language. Here forerunners can be identified in several philosophical approaches beginning in the 19th century. In Section 2, contours of the dialectical theory of language and communication and the theory of language–world-systems will be described to arrive at basic elements of an integrative approach in the last sections.

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1. Preliminary remarks

The term *ecolinguistics* is a broad umbrella term covering on the one hand traditional linguistic methods applied on texts and discourse of ecological importance and on the other hand deeper reflections on the theories of language inspired by the holistic paradigm of ecology. Among the theoretical approaches developed within the ecolinguistic community, two theories stand out, partly because they date back to the 1980s (i.e. before the ‘ecology of language’ became a more widespread model in the 1990s), partly because the ecological dimension in both of them is not confined to the object under scrutiny: both approaches have strived to develop theories based on ecological thinking, which are apt for studying linguistic practices of relevance to ecological and environmental problems. The two theories we have in mind are: *the Odense School of Dialectical Linguistics* (Bang, 1987, 1992, 1993, 2001, 2007; Bang and Døør, 1991, 1993, 1994, 2000a, 2000b, 2002, 2007; Bang et al., 2008; Bundsgaard and Steffensen, 2002; Bundsgaard et al., 2012; Lindø, 2002; Steffensen, 2007; Steffensen and Fill, 2013) and *the Bielefeld school of language–world-systems* (Trampe, 1990, 1996, 2002a,b, 2006a,b, 2007, 2008; Finke, 1983, 1996; Steffensen and Fill, 2013; Strohner, 1996). Especially in the 1990s and early 2000s, the dialogue between these two traditions has influenced the development of European ecolinguistics (cf. Alexander et al., 1993; Bang et al., 1996; Fill et al., 2002).

The aim of this article is to show some central elements of an integrative approach. Our aim and interest is to identify some key aspects of an ecological theory of language. In building an integrative ecological theory of language, we start by looking at the early 19th century forerunners of an ecological understanding of language (Section 2). In Section 3, we outline the contours of Dialectical Linguistics (Section 3.1) and the theory of language–world-systems (Section 3.2), and in Section 4 we identify some basic elements of an integrative ecological approach. We structure this integrative approach by using Kuhn’s (1970) concept of a *disciplinary matrix* – first called *paradigm*. As our focus is on the integrative ecological approach, we do not explicitly discuss the other approaches that also emphasize the importance of context/situations and that also reject one-dimensional, rule-based models of language, e.g. pragmatic approaches in general (Levinson, Skirbekk), integrational linguistics (Harris), critical discourse analyses (Fairclough), dialogism (Bakhtin), and interactional sociolinguistics (Gumperz).

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2. Roots of an ecological understanding of language

A comprehensive elucidation of the precursors of an ecological theory of language has yet to be written. First beginnings of a historical approach can be found in Trampe (1990: 49 et seq.). Three stages can be distinguished in the evolution of ecological approaches to language: the first is rooted in the 19th century with the model for language as an organism, the second in the middle of the 20th century with Wittgenstein's (1953) understanding of language as a part of a form of life and the third with the transfer of the metaphor of ecology to language, beginning with Haugen in 1970. The final stage has often been dealt with, so we will not consider this element in our discussion (see Fill and Mühlhäusler, 2001: 43 et seq.).

In the widest sense, the earliest forerunners of the concept of language as an organism were created at the height of the German Classical and Romantic periods of literature in the first half of the 19th century. At that time, it seemed natural to speak of the 'life' of languages, which were born, developed and finally died out. Though this imagery continues to be used in linguistics today (cf. Crystal, 2000), it has rarely been studied as a fundamental model concept of language. The German philologist Wilhelm von Humboldt employed this model concept in his most important writings on language (Humboldt, 1820, 1830/35). A structural aspect can be ascertained here – a systemic element, as Saussure's (1916, 1983) work has influenced us to say – whereby language is seen as an organic whole which is served by syntactical, lexical and phonological elements which are themselves reciprocally conditioned. The dynamics of language are explained by Humboldt with the concept of a teleological principle of organic entelechy (Aristotle) – in the sense of ever-increasing degrees of perfection, i.e. of maturation. However, it must be noted that Humboldt's terminology is mostly metaphorical and replete with vague concepts which are not explained.

The publication of Darwin's *The Origin of Species* in 1859 motivated August Schleicher (1873) to introduce these new ideas into language disciplines by interpreting the model of language as an organism in terms of evolution theory. Language was consequently understood as an independent organism. Thus Schleicher assigns linguistics to the natural sciences. His concept of language as organism, assessed as having autonomy as an independent, organic subject, reveals the inadequacy of this model, for language is merely the organic result of human living conditions which are themselves dependent on nature. No organism can be independent within the framework of nature – including the species of *Homo sapiens*. Interdependency is the chief characteristic of life processes. Johann Gottfried Herder summarizes this view, which can be defined as fundamentally ecological, when he writes about the relationship of the human being, cognition, language and the world as follows:

... we are all a part of the world. None of us is an isolated universe. We are human, conceived in the body of a mother. On entering the larger world, we found ourselves linked to a universe by the thousand bands of our senses, our needs and drives/instincts and from which the speculation of our reasoning power could not separate us. (...) One calculated by designating the particular to the general, the part to the whole. Only in this way did human language develop.

(Herder, 1799/1960: 218f.)

In many respects, Humboldt builds on Herder, seeing the human being and language rooted in cultural and natural contexts:

For man, as a species, is a singing creature, though the notes, in his case, are also coupled with thought. / But language does not merely implant an indefinable multitude of *material elements* out of nature into the soul; it also supplies the latter with that which confronts us from the totality as *form*. Nature unfolds before us a many-hued and, by all sensory impressions, a diverse manifold, suffused with a luminous clarity. Our subsequent reflection discovers therein a *regularity* congenial to our mental form. Aside from the bodily existence of things, their outlines are clothed, like a magic intended for man alone, with external beauty, in which regularity and sensory material enter an alliance that still remains inexplicable to us, in that we are seized and carried away by it. All this we find again in analogous harmonies within language, and language is able to depict it.

(Humboldt et al., 1999: 60–61)

According to Humboldt, the order in nature is related to that found in the structure of language and that which is brought forth by the "work of the mind". He calls on linguists to avoid pure speculation, and not to stop after isolating and analyzing elements, but rather to see language as an organism, which in its totality possesses specific qualities and characteristics. "For under no circumstances can language be examined like a dead plant. *Language* and *life* are inseparable concepts [...]" (Humboldt et al., 1999: 93).

In conclusion, it is legitimate to designate Humboldt's position as ecological in that he understands such principles as totality, reciprocity, creativity, dynamic permanence and connectiveness as central elements of a sustainable theory of language, which also make linguistic world views explainable. The concept of linguistic world views has also been used by Sapir and Whorf (cf. Whorf, 1956).

An extension and modification of the organism model in which language is seen, not as an independent organism, but rather as a result of the interdependent functions of linguistic organisms and their environment, opens a new *model concept* to view, which also contains all of the principles mentioned by Humboldt above: It deals with the concept of language as a form of life, as favoured by Ludwig Wittgenstein in his later philosophy. On the whole, it can be claimed that Wittgenstein's view of language is 'ecological' (cf. Trampe, 2002b).

The linguistic ecological concept of ‘forms of life’ appears in Wittgenstein’s *Philosophical Investigations* (1953) five times. The first mention is in § 19: “– And imagining a language means imagining a form of life”. A perfunctory consideration of the idea might lead one to think: Language is a form of life. The second appearance demonstrates that this is not so when Wittgenstein says in § 23: “The term ‘language game’ is meant to emphasize that the speaking of a language is a part of an action or a form of life.” (On the varied usages of the term ‘language game’ cf. Trampe, 2002b: 8f.) Where ‘language game’ is understood as an action within a life situation, the following interpretation emerges: ‘Language games’ are always embedded in linguistic environments and environments beyond language, i.e. in life forms analogous to those of organisms and their behavioural patterns, which are always inter-woven with their organic and inorganic environment – in ecological systems and/or ecological structures. Just as organisms and (their) environment are universally inter-connected through informational, energetic and material processes, a decisive characteristic of human beings is that they are inter-connected in their life forms through their language games.

On the basis of this analogy, Wittgenstein’s linguistic ecology becomes one possible precursor of an ecological theory of language, because he describes and explains the relationships of linguistic forms to their linguistic and non-linguistic environment. Other statements made by Wittgenstein indicate an ecological viewpoint, because for him a language becomes deeply rooted in human life, social and physical reality (Wittgenstein, 1953: §§ 43, 116, 117, 241, xi, 572).

From a practical standpoint, Wittgenstein can also be seen as a forerunner of an ecological theory of language to the extent that he employs language as a form of therapy – or therapies: “There is not one philosophical method but rather methods, i.e. various therapies” (Wittgenstein, 1953: § 133, see also § 255). By studying Wittgenstein’s therapeutic approaches, it is possible to gain the impression that a kind of homoeopathy is being practised here. It appears that Wittgenstein hopes to heal linguistic confusion by employing further linguistic irritation. If language were in fact, as we have established, a constitutive element of life forms, criticism of the use of language would also be criticism of life forms. At this point, ecological linguistic criticism can be initiated.

3. Steps towards an ecological theory of language

In the 1970s new horizons came into linguistic focus with the pragmatic turn in linguistics. Habermas’ concept of *Erkenntnisinteresse*, i.e. *knowledge-constitutive interests* (cf. Habermas, 1968, 1971), was reflected in a critical concern and discussion on theory and meta-theory, related to the sociologic impact of scholarly activities and the problems of society. Race, sex, gender, age, class, ethnicity, and children, workers, minorities, every suppressed and exploited group, became explicit in the formulation of projects within and across different scientific disciplines in general and in linguistics (cf. sociolinguistics, language and gender, language and sexuality, etc.). At the same time, the Western world was confronted with the first global oil crisis, pollution of water, air and soil. As a reaction to these problems, several linguists in the 1980s – inspired by e.g. Bateson (1972) and Næss (1986) – saw the necessity for the integration of environmental questions in their investigations (cf. for example, Böhler et al., 1986; Fill, 1987; Finke, 1983; Bang, 1987). In the following decades the world’s climate dramatically changed, and ‘environmental problems’ – often referred to as the ‘ecological crisis’ – became a common problematic for scientists all over the world discussing the human responsibility for nature and the ‘environment’.

In linguistics, the explanations of the interrelations between language and ecological crises reached a more systematic stage with the introduction of ecological approaches (cf. Bang, 1987; Trampe, 1990; Halliday, 1990; Alexander et al., 1993; Fill, 1993). As mentioned in our opening remarks, we address two main approaches – or *paradigms* – to establish an ecological theory of language: the tradition of Dialectical Linguistics and the language–world-systems model.

3.1. The dialectical theory of language and communication

Since the early seventies, the ecolinguistic school of *Dialectical Linguistics* (Bang and Døør, 1973, 1985–1995, 1986, 1991, 1993, 1994, 2000a, 2002; Bang and Døør, 2007; see also Lindø, 2002; Steffensen, 2007) has evolved in a critical dialogue, and through a dialogical critique of both dominating theories of linguistics (and the humanities and science in general) and societal problems.

The concept *dialectical* refers to a theoretical praxis which draws on both ancient and modern Western and Eastern traditions (cf. Bang and Døør, 2007: 40f.). At a general ontological level, the concept of dialectics implies that everything and everybody are considered as interdependently related and participating in each other’s mode of being and becoming. A dialectical relation between A and B is a co-implicative relation where:

- A and B mutually condition one another;
- they are different in certain respects and similar in others;
- one dominates the other, but over time the second may dominate the first;
- their relation is dynamic;
- one of them by definition does and must dialectically determine the historical conjunction (Bang and Døør, 2007: 39).

To the dialectical theorist who thinks in open contradictions “a contradiction is nothing bad in itself. The world of forms is simply constituted by contradictions” (Bang and Døør, 2000a: 53). As such, the concept ‘dialectical’ is related to the concept ‘ecological’ since both terms imply the assumption that any individual is constituted by its co-existence with other individ-

uals as a part of an environment (with a biological, sociological and ideological dimension). Thus any relation of two parts always dialectically implies an environment and other parts. Moreover, any individual and any individual activity are situated in specific historical contexts that are dialectically and ecologically constituted by differences and similarities, harmonies and conflicts, contradictions and diversities.

It is a core concern for the dialectical ecolinguist to contribute to democratic and ecological understandings and activities in a dialectically constituted world. This implies an ethical imperative to turn the dynamics of the dialectic relations into more healthy developments – healthy for all involved parties and the environment. Of course, this is a never-ending concern, but it has many important implications for the way we understand language by considering any text and utterance as parts of dialogues constituted by interacting persons in situational contexts. Thus the meaning of a text or an utterance, or a single word, has to be related to the specific situational context and the broader environment and history of the implied participants. Thereby, the dialogue becomes both an object for the dialectical ecolinguist and also a method for the research process. The selection of objects, methods, co-operators and the evaluation of processes and products are all dialogical processes – between researchers, between researchers and involved parties, and between researchers, involved parties and the environment. Thus the chemist Ilya Prigogine states that the “experimental dialogue with nature discovered by modern science involves activity rather than passive observation. [...] Description is dialogue, communication” (Prigogine and Stengers, 1984: 41, 300).

As can be seen from this general description of the theory, it is grounded in a radically different philosophy of science (cf. Steffensen, 2007: 14–16). Thus, as early as the early 1970s, Bang and Døør (1973) express the central idea that every theory – including dialectical theory – is produced in some specific historical conditions and that it is hence inseparably related to the social praxis of the persons implied in the process of theorizing. In a later formulation, the authors say that “Science or scientific praxis is nothing more or less than a particular historical, social praxis and part of a specific socio-cultural order. Different cultures create different forms of science and every dominant scientific praxis organizes its people and problems in ways and by means that aim at the same ends as the culture as a whole” (Bang and Døør, 2000a: 53).

Theories are produced and used in social contexts and are therefore themselves social products. Thus the researcher is a part of social and societal processes and is not outside or neutral. There is no privileged neutral position, only partisan and partial positions. Thus the researcher becomes a responsible part of the problem field and related to the other participants and parts of the process. The explicit moral and ethic reflections are thus an integrated aspect of the dialectical theory, generally formulated as a responsibility to contribute to better and healthier life for all participants in the situation and parts of the environment.

This dialectical philosophy of science can be applied within the field of the language studies by emphasizing that everything and everybody exist *interdependently* – dialectically – related to the context and environment. Thus, the dialectical way to analyse and understand linguistic and textual phenomena is to be aware of the relevant and interesting contextual constitutive conditions for the problem field in question, including the way the researcher is a part of the problem field. As a heuristic method for grasping these conditions, Bang and Døør take the axiomatic position that every situation, every problematic and all personal relations are constituted by some *core contradictions* (Bang and Døør, 1991, 2007). The heuristics of core contradictions implies two methodological developments: first, a method of investigating the underlying contradictions; second, a method of investigating how these contradictions interact in concrete dialogical situations. This methodology implies that the dialogue, as well as the analysis of the dialogue, is always considered as a negotiation of the implied contradictions and conflicts, and as a mutual therapeutic intervention in each other’s lives.

The dialectical model of the *Core Contradictions of the Social Praxis* (see Fig. 1) was first published in Bang and Døør (1991). The model is a deductive and heuristic device that operates with nine core contradictions that constitute the universe of communication and the universe of discourse in any dialogue and communication, both intra-culturally and inter-culturally, as well as in any multicultural dialogue. Thus, a person is engaged in a specific dialectics of sex (male vs. female), age (child vs. adult vs. old), race (different “colours” and ethnicities), and ideology (e.g. different religions and concepts). This implies that any person differs from other persons by different backgrounds, interests, values, and meanings in a way that we have to be aware of in our communication and interpretative activities.

In a given dialogue and communication one part might be the dominant part, but the dominance is a historical and dynamical phenomenon which allows people to change the conjuncture of the contradictions. Remarkably, a radical shift of one contradiction seems to presuppose and imply remarkable shifts of the other contradictions as well, and social evolution and revolutions can be seen as the history and change of the way the core contradictions function, at a materialist, as well as a mental and sociological level (or with reference to the model: in the dimensions of socio-logics, bio-logics and ideologics). Thus, in a context of environmental problems, the town–country and culture–nature contradictions stand out as particularly relevant, but the analytic force is reduced if one ignores the analysis of the contradictions of sex, age, race, class, authority, ethnicity, and ideology, and the way the contradiction of public–private is organized.

In an ecolinguistic context, the model implies that it is part of the investigation and interpretation of a specific text, dialogue, and communicative event and that one is aware of the contradictions (and their implications) of the participants in the situation in question. How these unfold in concrete situations, is methodologically investigated as a dialogue analysis, and in Dialectical Linguistics, the heuristic tool for doing this is the dialectical dialogue model (Fig. 2), first presented in 1991, and here quoted from Bang and Døør (2007: 59):

Traditional models of the basic constituents of a dialogue imply two persons, more or less symmetrical, namely the speaker and the hearer (or the writer and the reader). Such models could be categorized as monological or ‘duological’. On

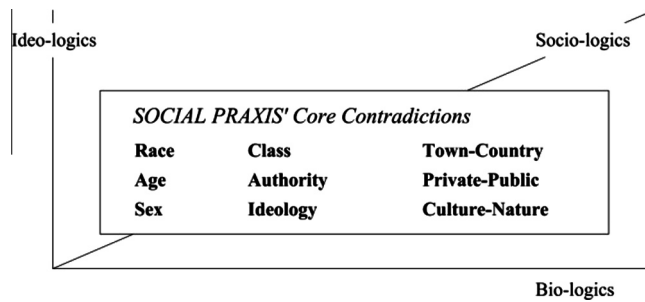


Fig. 1. The core contradictions of the social praxis. (From Bang and Døør, 2007: 67.)

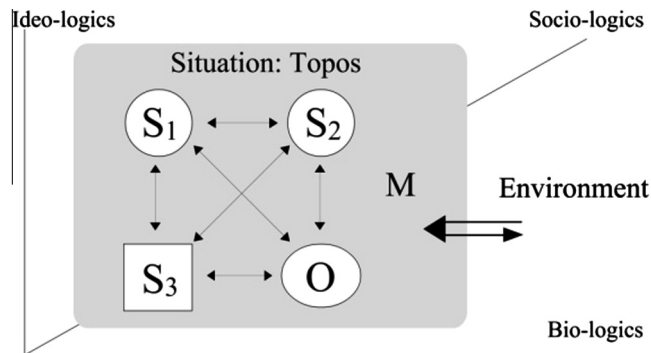


Fig. 2. The dialectical dialogue model. (From Bang and Døør, 2007: 59.)

considering Bakhtin (1981), the dialectical dialogue model points not only to a speaker (subject S1 in the model), a hearer (subject S2) and referential object (O in the model), but also a *third personal subject position*, S3. This position may be occupied by persons or quasi persons: authorities, gods, parents, neighbours, and/or others who play a role in the situation and communication.

S3 is both a logically defined part, namely the part that is neither the speaker nor the addressee, neither the 'I' nor the 'you', and a third part who influences, or is influenced by, the dialogue. Different persons have different S3s as background, and social relations and situations are constituted by different institutions, rules and authorities, incarnated by S3 subjects: S3 plays a role both at the mental level and the social level, whether the person is physically present or not. But the scope is wider; not only is the situation in question relevant, but the environment is also part of this model of communication. This means that the dialogue is topicalized in the historical universe of time and space and logics. The history, memory, means, cultures, etc. of the involved parties, as well as the situated activity and dialogue, impact on the environment and thus the conditions for future dialogical activities.

The dialectical interplay between contradictions, dialogues and their ecological constituents is further explored under the heading of *ecological imagination* (Bang, 2007), referring to Negt's (1968) concept *Soziologische Fantasie* (*sociological imagination*). Opposing the view that multicultural societies in a globalized world require a common, stable language constituted by a common grammar, lexicon, genres, and lifestyles, Dialectical Linguistics sees different meanings implied by different backgrounds, cultures and interests as sociological and ecological resources. Whereas the mono-logical view on language implies suppressive, de-communicative and ex-communicating forms of life, the dialectical position sees life, world, persons, and languages as multi-dimensional and multi-levelled. Ecological imagination is thus the means to develop peaceful forms of life and co-existence that flourish from heterogeneity and diversity.

3.2. The eco-system model: language–world-systems

It has already been suggested that the object of an ecological linguistic theory is the explanation of the structures and functions of language at various levels of complexity in reciprocal correlation with their environments from an ecological perspective. Language–world-system theory follows an ecological theory of language that pursues this aim on the basis of concepts and models from biological ecology. Thus, the ecology of language(s) becomes a central element of the ecology of man.

The language–world-system theory is based on the model concept of ecological systems ('ecosystem' as used in the ecology of biology, cf. Begon et al., 2005). At the end of the 20th century, preliminary work on this subject was conducted at the University of Bielefeld by Finke (1983, 1996), taken up by Trampe (1990, 1996), and then modified by Strohner (1991, 1996) in the framework of cognitive linguistics. The concept of language–world-systems has also found application in empirical

contexts, e.g. when considering so-called environmental problems (Trampe, 2002a,b) or as connected with dysfunctions in language development among children (Rothweiler, 2001).

The theory of language–world-systems, as a linguistic theory of ecological systems, differs from other linguistic theories, which are also systemic theories, in its ecological orientation, in that it endeavours to align the field of human communication with concepts and models borrowed from biological ecology (for an introduction see Begon/Harper/Townsend, 2006). Among these concepts are habitat, population, reciprocity, symbiosis, and ecological niche. The ecosystem approach allows a differentiated perspective on language and its situational, individual, social, cultural and environmental implications (see Trampe, 1990, 1996). Thus questions are raised here as to reciprocity, cycles, networking, symbiosis, diversity, succession/evolution, homeostasis, pollution, extinction, etc. This is not chiefly a metaphorical application of the concept of ecology, as was the case with Haugen (1972), or of ecological terms, but rather of parallel and/or isomorphic and shared applications in ecological linguistic theory and in the ecology of biology. It is suggested that parallels apply between material, energetic and informational processes. This amounts to the study of reciprocal relationships between organisms using languages (speakers, listeners, individuals, groups, communities etc.) and the environment around them, or more accurately, their conjoint environment; or even shorter, the world.

Language is understood as a part of the informational form of processing taking place in ecological systems – within the constant flow of information, energy and material. Generally speaking, within ecology as a biologic discipline, informational processing form has been neglected or ignored completely. To achieve a holistic perspective on language, a theory of language–world-systems must relate to the minutest elements of language (like the sounds of languages) as well as to the totality of all language–world-systems/spheres of language (like universals of languages). Language–world-systems can be understood as self-organizational systems.

The language community in its language habitat is the basic unit providing the prerequisite for the development of natural language life (natural languages). The language habitat is defined as the total complex of phenomena determining the linguistic behaviour and the linguistic system of a speaker–listener–individual/a speaker–listener–group/a speaker community at any one time and place during which linguistic processes take effect and reverberate.

Basic ecolinguistic principles within the evolution of language–world-systems are linguistic creativity, stability and diversity. By linguistic creativity is meant that new language–world-relations are continually being created, and the principle of stability guarantees a relative degree of constancy without which survival would not be possible. Linguistic diversity arises from the many linguistic niches which tend to come into being within language–world-systems. This also gives a different perspective on the evolution of language as it is traditionally represented (Fitch, 2010). The recognition that human beings do not live in self-sustaining cognitive realities but rather primarily in relational contexts makes a new perspective possible, one of particular significance with respect to language–world-systems, anthropogenic ecological systems and the ecological crisis. For example, it makes a great difference for our understanding of the elements of the ecological crises if you call the emission of a million tons of oil in the Pacific *pollution of the environment or destruction of natural habitats*. Every subject lives in a specific experiential world based on its phylogenetic and ontogenetic senses – its material form (Uexküll, 1928/1973). On the basis of predominant experiences, this can be simply and starkly stated as: lots of small mammals live in a systematic world of smell, birds in a world of sound and human beings in a systematically ordered world of language (see also Steffensen, 2011).

The formation of respective linguistic differentiations is the result of social interaction, which categorizes and cultivates specific experiences in respectively particularized ways. Language–world-systems are thus systems of experience in the sense that they develop out of experiences with the social, cultural and natural world and with our self – language and ‘world’ are reciprocally related to one another (principle of reciprocity). When structures in language–world-systems within the evolution/succession prove to be relatively stable (principle of stability/homeostasis), this quality is to be explained on the basis of the respective sustainable structures that are experienced. Thus within natural language–world-systems, grammatical and lexical forms can be seen as linguistic conventionalized forms of social selectivity and a perspective on the imprint of experience. This is demonstrated for example in Indo-European language–world-system complexes in the grammatical tendency to favor statement forms where the agent and/or the cause of processes are emphasized even when ontologically speaking the content should be presented differently (e.g. the ontologically wrong categorization: *The sun is going down at the beach*, as opposed to the ontologically realistic description: *It seems for me like the sun is going down at the beach*).

In light of the ecological crisis, it is of particular importance to consider the linguistic experiential approach in which lexical and syntactical forms manifest their relationship to nature. In Trampe (2002a), two divergent linguistic perspectives of the ‘convironment’ (cf. German ‘Mitwelt’ as opposed to ‘Umwelt’) were contrasted: the language use in industrial agriculture on the one hand, and conventional farming agriculture on the other (two divergent language–world-systems of agriculture).

4. Elements of an integrative approach

Both theoretical frameworks on their own offer important alternative perspectives to orthodox research, and both take environmental communication as a central theme. These similarities justify a project of outlining an integrative ecological approach. Evidently, a deeper theoretical development is beyond the scope of this article, as too is a detailed comparison between the two approaches.

Rather, our aim is to specify how two integrative ecolinguistic theories can emerge from the dialogical interaction between two ecolinguistic positions. This is our aim not just because it is of interest in and of itself, but also because it is suggestive of how the field of ecolinguistics can develop by systematic dialogical convergence and contradiction.

In order to pursue this agenda, we first have to clarify what it means to have an ecological point of view. We can distinguish between three different 'ecological' perspectives: in the sense of biology, in a trans-disciplinary sense and as a prescriptive category (cf. Trampe, 2006a,b). For an ecological theory of language, a trans-disciplinary understanding of ecology is fundamental. An ecological theory of language manifests itself as a linguistic ecological theory, i.e. a linguistic and trans-disciplinary approach that generates empirical hypotheses which describe and explain the manifestation and organization of linguistic processes in organism–environment relations.

We structure this integrative discussion by using Kuhn's (1970) concept of a *disciplinary matrix* – first called paradigm. Kuhn includes four integral elements which constitute a theoretic approach: (i) model concepts, (ii) symbolic generalizations, (iii) shared values and (iv) exemplars for problem-solving. Especially a new model concept which delivers analogies and metaphors for heuristic activities is a central focus within our ecological perspective on language. Here we will introduce a new vision as an alternative to well known model concepts for language, e.g. language as a tool or instrument (e.g. Bühler, Shannon/Weaver), as an organ (e.g. Condillac, Priestley), as a system (e.g. Saussure, Chomsky), as a game of chess (Saussure), and as an action (e.g. Leontjew, Austin, Searle). For an elaboration of these model concepts, see Trampe (1990: 49ff.).

If we attempt to apply Kuhn's concepts to an ecological theory of language, we have to start with *model concepts*, because model concepts have the function of constituting a theory in the first phases of theoretical evolution. A central ecological model concept is Wittgenstein's 'language as a part of a form of life', which is used in both the dialectical and the ecosystemic approach (Bang and Døør, 2007; Trampe, 2002b). It implies both the dialogue model of communication and the model of language–world-systems. In a wide sense, one can even say that forms of life are language–world-systems. This model concept also integrates other views on language, for example Humboldt's *ergon*- and *energeia*-model (Humboldt, 1830–35: 418; Humboldt et al., 1999: 49) and the concept of linguistic world view ("sprachliche Weltsicht"). Moreover, it is possible to expand and to further differentiate Wittgenstein's model concept with system-theoretical ideas in the form of the language–world-system model – analogous to the model of the ecological system in biology.

Thus, the model concept 'form of life' represents the foundation of an ecological theory of language: No linguistic entity exists out of relationship, it is always connected with others. With this model concept it is possible to formulate an ecological approach to the traditional areas of linguistics, i.e. syntax, semantics and pragmatics. Thus, from a 'form of life' perspective, syntax, semantics and pragmatics are dialectically interrelated: a syntactic interpretation is based upon a pragmatic judgement and on ontological identifications of the expressions making sense by being syntactically interrelated in specific ways. Syntax and semantics are always constituted by persons in (a) dialogue. As these persons are always different in several aspects, syntax and semantics cannot be reduced to external rules, but must be realized and elaborated by the interacting persons.

The second Kuhnian concept to be discussed here is *symbolic generalisations*. Symbolic generalisation is of specific importance for the development of ecolinguistics, because it has been used by representatives of this perspective to designate themselves as 'ecolinguists'. This designation has allowed ecolinguists to draw boundaries between themselves and others, creating a community of shared values, theories and methods. Other symbolic generalisations also have the same function of defining a scholarly community that sets its practitioners apart from other linguists, thus making it possible to talk in and of a new paradigm.

Examples of such symbolic generalizations are typical notions from ecological theories of language: 'linguistic eco-system', 'language habitat', 'environment of language', 'linguaging the environment', 'ecological discourse analysis', and 'language pollution', to name a few. Likewise, common formulas like "Languages are systems of experience" (cf. Halliday, 1990) or "Languages and their environments exhibit reciprocity" have this extra-theoretical function. The common use of such symbolic generalizations indicates an ecological point of view on language. As central elements of our integrative dialogue, we pay specific attention to four features which are often discussed within ecological perspectives on language: environmental bonding or situatedness, creativeness, interaction or interrelatedness, holism and dynamism/evolution (for others see Garner, 2004: 36 et seq.). These features define a shared ground for both the dialectical and the language–world-system model. Both approaches see language as a part of the environment just as the environment is influenced by language, and both theories consider language as embedded in situational contexts on different levels. Further, reciprocity characterises the relation between language and environment: language is understood as a part of the informational form of processing found in ecological systems – within the constant flow of information, energy and matter. Generally speaking, informational processing has been neglected or ignored completely within the biological perspective on ecological systems. At this point ecolinguistics and ecosemiotics enter. Ecosemiotics examines the semiotic interdependences between organisms and the environment from an ecological perspective, i.e. it emerges from various energy, material and informational processes. (Nöth, 2000; Trampe, 2006a,b, 2008). Thus, ecosemiotics represents a different approach from biosemiotics, where biological processes are understood as sign processes (Hoffmeyer, 2008).

The third feature that Kuhn (1970: 196ff.) points out is *shared values*. In Kuhn's conception, values, i.e. ethical convictions, are more readily accepted in scientific communities than symbolic generalizations or models, and they make a significant contribution to the creation of a feeling of community. Relating this discussion to the presentation in Section 3, values have to do with the '*Erkenntnisinteressen*', i.e. the knowledge-constitutive interests (cf. Habermas, 1968, 1971), because ecolinguists see themselves as responsible for scientific forms of life and human life conditions in general. The two approaches,

and indeed ecolinguistic practitioners in general, consent on the idea that an ecological theory of language has to be useful for society and nature: it should make a contribution to the conservation of linguistic diversity and creativity at various structural levels, spanning from the linguistic creativity of the individual human being in different settings, to the diversity of languages as a central part of human forms of life. In this way, an ecological theory of language is a critical theory insofar as the *knowledge-constitutive interests* are not orientated on the affirmation of social circumstances. Ecolinguists have a responsibility for contributing to a solution of the ecological crisis, e.g. by means of ecologically motivated criticism of language and discourse. This ethical dimension, and the wider set of shared values associated with it, is a key reason why an ecological point of view is accepted by more and more linguists. A further feature and value shared between the two approaches is the trans-disciplinary orientation of an ecological theory of language, as both rely on cooperation with other disciplines like biology, eco-psychology, environmental studies and human ecology.

The last element of the disciplinary matrix of an ecological theory of language is *exemplars for problem solving*, i.e. concrete problem-solving complexes that include cases, methods and analyses. Students, amongst others, are made familiar with these exemplars when acquainting themselves with concrete examples, e.g. various investigations of language–world-systems, like agricultural language–world-systems (Trampe, 2002a), ecologically oriented critical discourse analysis (Alexander, 2009), research on linguistic influences on our perception of nature in dialectical approaches (Bang et al., 1996), and analyses of endangered indigenous languages (Mühlhäusler in Fill, 1996: 105–130). The practical relevance of an ecological theory of language lies in its applicative context. This relevance has been convincingly demonstrated in numerous empirical studies that show the necessity and fertility of ecological perspectives on language; examples are Alexander (2009), Bang and Døør (1993, 2007), Döring (2005), Döring et al. (2008), Fill (1993), Fill et al. (2002), Fill and Mühlhäusler (2001), Fill and Penz (2007), Harré et al. (1999), Mühlhäusler (1996), and Trampe (2002a, 2007, 2010).¹

5. Conclusion

Our discussion of the main elements of Dialectical Linguistics, the language–world-system model and the integrative promises of a future development in ecolinguistics were fragmentary of necessity. But these short remarks show that an ecological theory of language raises many interesting and difficult questions. If linguists accept an eco-logical turn in the language sciences, it could be a fruitful alternative to orthodox research, opening new paths and insights. Amongst such paths, we point to that of *ecological complexity*. Ecolinguistic thinking is concerned with complex systems and situations. 'Language levels' themselves are organized holistically, so that the whole is more than the sum of its parts, and the parts reflect the whole. Ecolinguistics approaches the ecological complexity of language by transcending the synchrony–diachrony dichotomy. Thus, the explanation of the evolutionary dynamics of natural languages is a central, but still under-investigated, element of an ecological theory of language. We think that future studies will demonstrate that principles similar to the succession and evolution of ecosystems may be fruitful for the description of processes of language change. Another important theme that holds promise in future ecolinguistic studies is minority languages, because these languages contain and offer unique experiences of nature and knowledge, which have to be saved for future generations, especially in the sense of sustainability.

This article has argued that the diversity of ecolinguistic traditions, and not least their integrative potentials, point to the viability of a new perspective on the ecological crisis, and they show that the ecological crisis is also a crisis of our language about nature and the environment. This could result in, not just an ecological turn in linguistics, but also a linguistic turn in the environmental sciences. Indeed, both turns are necessary if the world is to turn towards sustainable development.

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¹ The empirical studies listed here do not only consider the linguistic categorization of the environmental crisis. Other key issues are the interdependence between linguistic and ecological diversity, the role of minority languages, the language teaching with the aim of ecological communicative competence (Bang 2007; Trampe, 2002a).

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