

ed by Dorian.³ Mere days later, Trump called a conference in the Oval Office. There, he held up a forecast map doctored with black marker (a.k.a. Sharpie), now “showing” what Trump had “seen”: the cone of uncertainty well over Alabama. Now forced to reconcile two opposing versions, and respond to the President’s actions, the National Oceanic and Atmospheric Association (NOAA) released an unsigned, equivocal statement about Trump’s forecast. NOAA’s failure to explicitly uphold the scientific status of meteorology’s observation sent ripples throughout the profession.⁴ In an email he sent to an NOAA colleague, Neil Jacobs, the Assistant Secretary of Commerce for Environmental Observation and Prediction, pleaded: “You have no idea how hard I’m fighting to keep politics out of science.” Speaking on behalf of the collective of professional observers, Jacobs added, “We are an objective science agency, and we won’t and never will base any decisions on anything other than science[...].”⁵

« 10 » The way these events unfolded, starting from the way that Trump’s observations were pitted against those of meteorologists, and how the balance of power between what particular observers could say was restored by the Department of Commerce, is an account for another occasion. I mention it here as a way of problematizing the statement that “everything is said is said by an observer” (and to an observer) and whether it offers adequate explanation that not all observations are considered equal, for they emerge in – and allow for – relations of power.

3| “The storm has moved on, but Alabamans are still divided over Trump’s fake Hurricane Dorian warning,” by James Cullen, Insider, 12 September 2019. <https://www.insider.com/hurricane-dorian-alabama-controversy-birmingham-divided-2019-9>

4| “Debate over the politicization of weather intensifies,” by David Green and Mary Scott Hodgins, NPR, 10 September 2019. <https://www.wypublic.org/2019-09-10/debate-over-the-politicization-of-weather-intensifies>

5| Cited in “New emails show how President Trump roiled NOAA during Hurricane Dorian,” by Andrew Freedman and Jason Samenow, Washington Post, 1 February 2020. <https://www.washingtonpost.com/weather/2020/02/01/new-emails-show-how-president-trump-roiled-noaa-during-hurricane-dorian/>

References

- Antaki C. (2006) Producing a “cognition.” *Discourse Studies* 8(1): 9–15.
- Austin J. L. (1962) *How to do things with words*. University Press, Oxford.
- Bartasaghi M. (2009) Conversation and psychotherapy: How questioning reveals institutional answers. *Discourse Studies* 11(2): 153–177.
- Bartasaghi M. (2015) Intertextuality. In: Tracy K., Ilie C. & Sandel T. (eds.) *The international encyclopedia of language and social interaction*. Wiley-Blackwell, Hoboken NJ: 465–472.
- Bartasaghi M., Smithberger L., Laurent X., Martinez K. & Stewart S. (in press) Sharpiegate: Science, the state and professional vision in the constitution of weather. *Journal of Applied Linguistics in Professional Practice* 17(1).
- Chomsky N. (1968) *Language and thought*. Moyer Bell, Wakefield RI.
- Goodwin C. (1994) Professional vision. *American Anthropologist* 96(3): 606–633.
- Hauser M. D., Chomsky N. & Fitch W. T. (2002) The faculty of language: What is it, who has it, and how did it evolve? *Science* 298(5598): 1569–1579.
- Iedema R. (2003) Multimodality, resemiotization: Extending the analysis of discourse as multi-semiotic practice. *Visual Communication* 2(1): 29–57.
- Krippendorff K. (2008) Cybernetics’s reflexive turns. *Cybernetics and Human Knowing* 15(1): 173–184. ► <https://cepa.info/271>
- Kuhn T. (1962) *The structure of scientific revolutions*. The University of Chicago Press, Chicago.
- Maturana H. R. (1975) The organization of the living: A theory of the living organization. *International Journal of Man-Machine Studies* 7(3): 313–332. ► <https://cepa.info/547>
- Maturana H. R. (1980) *Biology of cognition*. In: Maturana H. R. & Varela, Autopoiesis and cognition: The realization of the living. Reidel, Dordrecht: 5–58. Originally published in 1970. ► <https://cepa.info/535>
- Saussure F. de (1916) *Cours de linguistique générale*, publié par Charles Bally et Albert Sechehayer. Payot and Cie, Paris. English translation: Saussure F. de (2011) *Course in general linguistics*. Translated by Wade Baskin. Edited by Perry Meisel and Haun

Saussure. Columbia University Press, New York.

Silverstein M. & Urban G. (eds.) (1996) *Natural histories of discourse*. University of Chicago Press, Chicago.

Mariaelena Bartasaghi is an Associate Professor of Communication at the University of South Florida, USA. Her work in discourse studies focuses on institutionalization, or the way accounts are authorized and enregistered as social discourses of the way things are, with particular attention to the authority and accountability of professional versions.

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Stories Explaining Meaning

Sergio Rodríguez Gómez
Pontificia Universidad Javeriana,
Colombia • sergio_rodriguez/at/javeriana.edu.co

> Abstract • I pose three general questions to the target article: (a) How radical should the explanatory models of the prospective Maturanian turn be? To address this, I propose a recurrential, narrative approach focused on observing the history of meaning grounding of an agent and then explaining such history by creating a story. (b) Should this turn also avoid human exceptionalism and, instead, understand language as part of a bigger systemic structure of agents’ ways of sense-making and action? (c) What is the place of the latter theories of education proposed by Maturana, particularly the concept of emotioning, in the prospective turn?

« 1 » In his target article, Alexander Kravchenko proposes a novel change of perspective in linguistics, a Maturanian Turn, as a way to address explanatory gaps in the normal, hegemonic, orthodox, grand

theories of linguistics. To introduce the arguments, the article starts with an autobiographical account of the author's research path in linguistics and the discovery and adoption into his scholarship of some of the theories of the biologist and philosopher Humberto Maturana. I consider such an autobiographical account an essential part of the arguments that the author puts into play, since it serves as a meta, self-observing strategy to show that meaning and learning come in part from an individual's experience, ways of knowing, and subsequent ways of bringing forth a world.¹ This is consistent with what the author points out in §6, paraphrasing Maturana: that "everything said is said by an observer," and with the affirmation of second-order cyberneticians that the observer is also part of the system she tries to describe. In this self-observing way, Kravchenko shows how he builds his own path by reflecting on previous steps in his research. In consequence, we can approach the history of discovery and change of ideas by the author and, empathetically, we can then tune in to his stance regarding orthodox theories in linguistics and what he considers their gaps. Following this line, I agree with the author about Maturana's biology of cognition being insufficiently adopted in linguistics and semiotics, and the need for a more Maturanian turn.

How radical should the turn be in explanatory terms?

« 2 » Kravchenko recognizes and summarizes three grand orthodox theories in the history of linguistics:

- The *historical* paradigm, related to the biomorphic metaphor, which conceives of language as an evolutive lineage that could be studied with archeological methods;
- The *structuralist* paradigm, related to the instrumental metaphor, which conceives of language as an objective structure of sign relations that could be studied apart from the context and pragmatic uses of speakers; and, finally,

1| "Bringing forth a world" is an expression used in the enactivist literature (e.g., Varela, Rosch & Thompson 1991) to refer to the acquaintance of an agent with the meaningful structure of the world by means of making sense and acting.

- The *cognitivist* paradigm, related to the computer metaphor, which conceives of language as a set of algorithms that are ultimately body agnostic.
- 6 | Subsequently, as a main point in his article, the author recognizes major gaps in such theories: they lack a biology of cognition perspective, and they do not consider aspects like the particular evolution, embodiment, situation (context) and point of view of the observer. However, there are already alternative theories that are not mentioned in the target article and which originate as responses to the orthodox cognitivist paradigm:
- *Connectionist* theories, which conceive of minds as a complex system of simple entities that produce emergent effects; they originate in early cybernetics and have gained importance in contemporary science with increasingly more sophisticated neural networks and artificial language models (Brown et al. 2020);
 - *Embodied* and *situated* approaches to cognition, for which the body of an organism and its concrete spatio-temporal situation are the fundamental grounds of meaning making and the origin of the structures of language; and
 - *Enactive* theories, for which meaning and action become an inseparable, non-representational process that continuously brings forth a world for an agent.

« 3 » Taking these alternative theories into account, one could claim that an embodied, situated, perspectival turn in linguistics has been steadily growing in academia over the last two or three decades. Many cognitive linguistics theories rely on models that are open to considerations about the body, the situation, and the pragmatic context – even erasing the traditional distinction between semantics and pragmatics –, and thus take the observer into consideration. However, these theories ultimately reduce their models to quasi-computational descriptions that use bodily or situated descriptions of an ideal environment as inputs, as is the case for theories such as the conceptual metaphor theory (Lakoff & Johnson 2003), the image schema theory (Johnson 2009), or conceptual blending theory (Fauconnier & Turner 2003). (By quasi-computational I mean

that descriptions intend to account for sense-making² in terms of semantic functions³ operating with the vague concepts elicited in everyday-life communication; that is, they reduce semiosis to algorithms.) All these theories are embodied and pragmatic, in principle, but when they explain how sense-making operates, they resort to rather schematic explanations that see perception as input and a pragmatic situation as a function for obtaining meaning. These theories are ultimately internalist approaches, because they conceive of body and situation as being computed in the head. This is not to disparage such theories, because they all offer useful and insightful explanatory models, but to highlight that they lack a more granular and rich strategy for describing the multiple complexities of structural coupling, languaging, emotioning, conversation, interaction, and natural drift, to use Maturanian terms. And to overcome this limitation, explanation of interactional behavior could be reinterpreted by means of narrative descriptions or even visual models (see Rodríguez Gómez 2022 for a review of the visual thinking of Maturana and Varela). A more radical account could be to complement these schematic models from cognitive linguistics with what I have called "narrations of recurrences" (Rodríguez 2016; Rodríguez Gómez 2019). In general terms, recurrences are the different layers of history that scaffold and ground⁴ meaning for organisms. They account for how the past, be it evolutive, personal, or collective, defines how meaning will develop in the future. In this sense, recurrences are hysteretical processes. I distinguish three types of recurrences (Rodríguez 2016):

2| By sense-making I am referring here to what is called semiosis in semiotic theories: the general act of interpreting a sign and taking subsequent action.

3| Function in the mathematical sense: a mapping that transforms an input to an output, or projects a value from one domain onto another.

4| The concept of grounding is borrowed from the semiotic thinking of Charles Sanders Peirce (1960). For him, the ground is the relationship that links a Sign (or representamen) with its Object.

	Humans have superior faculties over other organisms	
	Yes	No
Evolution is a continuous process	Gradualism	Unitarism
Evolution is a discontinuous process	Transformativism	Pluralism

Table 1 • Classification of discourses about anthropological difference.

- *Phylogenetic recurrence*, or the evolutive history of an agent that determines the particular features of its body and its biologically based purposes;
- *Ontogenetic recurrence*, or the individual history of an agent's acquaintance with the environment through enaction; and
- *Collective recurrence*, or the history of creation of social institutions, knowledge, symbols, and customs, and socially assigned or imposed purposes.

« 4 » For describing recurrences, that is, the history of how meaning is grounded in organisms, one may take a narrative approach by telling a story⁵ about how these levels of recurrence ground certain ways of meaning making and certain ways of communication: how somebody came to know or interact in some way. In this sense, what we call here a story is the description of how meaning is grounded in previous evolutive, individual, and collective history, or how previous events bring about the possibility of a particular interpretation by an agent. While history implies events, a story is the selection and illustration, for explanatory purposes, of the most relevant causations of an act of sense-making (Rodríguez 2016). We can link this to the Maturanian notion that dancing is a form of conversation: Maturana affirms that –

“People say that dancing is a body language, a way of communicating. I say that dancing is a conversation, the intertwining of languaging and emotioning, and it is because dancing has, on the one hand, the story that its choreography evokes,

5 | In this case, narration is a system of description used to explain a particular development of meaning making that is established by observing patterns of events in changing contexts, and expressing that meaning as a story.

and on the other, the emotion that invites us to live”⁶ (Maturana & Bloch 1996: 13, my translation)

If we use the previously mentioned categories of recurrences, we could say that dancing involves an evolutive level that defines how it is possible for humans to move in certain ways, an evolved cultural level of musical genres and dance steps that enable coordination between dance partners based on collective customs, and an individual history of coupling to the practices and enjoyments of dancing. All these layers offer opportunities for narrating, and then better explaining, how the act of dancing as conversation takes place.

« 5 » It is for this reason that I highlighted the power of the biographical account in the introduction of Kravchenko's article: it is a story showing how a particular way of bringing forth a world develops and changes, and also how the author structurally couples to its theoretical environment. I agree with what the author says in (§39); it is easier to talk about what one knows, because our ways of meaning are connected to our histories of living. The explanatory method of narrating the grounding of meaning helps one to recognize oneself as an observer in a particular here and now. In this sense, the strategy of narrating recurrences has the same purposes that Kravchenko proposes: namely the need for a linguistic theory that takes into account cognitive domains, situ-

6 | The Spanish original reads, “La gente dice que el baile es un lenguaje corporal, un modo de comunicarse. Yo digo que bailar es un conversar, el entrelazamiento del lenguajear y el emocionar, y que lo es porque el baile tiene, por un lado, el cuento que evoca su coreografía, y por el otro, la emoción que invita a vivir.”

ated contexts, evolutionary history, and embodiment.

« 6 » Regarding the idea of an extended adoption of Maturanian insights into linguistics, I wonder: How radical should a paradigmatic turn be in terms of explanatory models? How do we account for the many layers of evolutive, collective and individual groundings of languaging and bringing forth a world? Should this Maturanian Turn use traditional descriptive practices of linguistics and science, or should it take a more narrative, or even poetic methodology? Q1

Human exceptionalism

« 7 » Related to Q1, if we adopt a more radical, multiple-layered, encompassing view, we could also defend a position that does not stand for human exceptionalism. This position suggests a shift in linguistics from the question of what makes us human and what makes our manner of languaging unique to the question of how language is embedded in a broader common ground shared with multiple living beings with their own ways of sense making and even their own ways of languaging. It suggests displacing our interest from only humans to what is common to all forms of sense-making and sign production, and to what is specific to each of the myriads of ways of communication. Studies in biosemiotics have pointed out different discursive postures about anthropological difference, most saliently in the work of Filip Jaroš and Timo Maran (2019), who classify such discourses according to their conception of evolution (continuous or discontinuous) and human faculties (superior or not superior in degree rather than in kind) (Table 1).

« 8 » In the target article, §§16, 23, and 46f seem to allude to a gradualist or transformativist discourse, especially the argument about orthodox linguistic theories be-

ing “prescience” because they do not “offer a scientific notion of language as a uniquely distinct systemic feature of our biological species” (§17). Even when Maturana was ambivalent with respect to humans’ cognitive and languaging capabilities’ superiority in relation to other organisms,⁷ he was also resonant with biosemiotic and posthuman views (Rodríguez Gómez 2021) that attempt to decenter human experience and consider it, from a systemic point of view, as a part of a much richer intertwining of semiospheres. If we adopt a recurrent methodology, we could also narrate complex ways of communication by other organisms and situate human language in the larger scheme. So, this makes me wonder: Is human exceptionalism implicated in the Maturanian turn? ¹²

Theories of education, emotion and language advanced by Maturana

« 9 » In the 1990s and 2000s, Maturana wrote multiple articles and essays that reflected on the problem of education from a biology of cognition and a biology of love perspective (Maturana 1991; Dávila & Maturana 2009; Maturana & Verden-Zöller 2008; Maturana & Dávila 2015). In these reflections, Maturana and his colleagues tackled the dynamics of languaging, world making and conversation, which Kravchenko addressed in the article, but also the role of what Maturana called emotioning. The concept of emotioning is important for language teaching, one of the main topics of the target article, because it addresses the connections between sentiments, beliefs, and dispositions to act. Besides the remarks that Kravchenko makes about the insufficiency of grammars to account for the expressions of speakers (§4), there are also other social factors that could be addressed from a Maturanian perspective: namely, opening spaces for convivence and a creation of a common history of respect for and appreciation

7| For example, in *El árbol del conocimiento* (Maturana & Varela 2003), the authors present the notion of natural drift and a horizontal view of evolution, neither of which portrays the ability of any given organism as superior but as the result of adaptive change, while in *Amor y juego* (Maturana & Verden-Zöller 1993), the authors defend language as an exceptional and essential human ability.

of one another as essential factors for teaching and learning a language. For example, as Rodrigo Aragão (2011) describes in his article about a study of teachers of English as a Foreign Language in Brazil, sentiments of fear, frustration, anxiety, shame, and loneliness can hinder someone’s interactions and dispositions to engage in conversation. For this reason, Aragão insists in the creation of “safe and welcoming conversational spaces” (ibid: 273) by understanding the relationship of languaging, or mutual differentiation, with emotioning, or the flow of emotions in relational spaces. This takes me to my final question: What is the place of the latter works of Maturana on education in this proposal of a Maturanian Turn in linguistics? ¹³

References

- Aragão R. (2011) Beliefs and emotions in foreign language learning. *System* 39(3): 302–313.
- Brown T., Mann B., Ryder N., Subbiah M., Kaplan J. D., Dhariwal P., Neelakantan A., Shyam P., Sastry G., Askell A., Agarwal S., Herbert-Voss A., Krueger G., Henighan T., Child R., Ramesh A., Ziegler D., Wu J., Winter C., Hesse C., Chen M., Sigler E., Litwin M., Gray S., Chess B., Clark J., Berner C., McCandlish S., Radford A., Sutskever I. & Amodei D. (2020) Language models are few-shot learners. In: Larochelle H., Ranzato M., Hadsell R., Balcan M. F. & Lin H. (eds.) *Advances in Neural Information Processing Systems* 33 (NeurIPS 2020). Neural Information Processing Systems Foundation Inc, La Jolla CA: 1877–1901.
- Dávila X. Y. & Maturana H. R. (2009) Hacia una era post posmoderna en las comunidades educativas [Towards a post-postmodern era in educational communities]. *Revista Iberoamericana de Educación* 49: 135–161. ► <https://cepa.info/723>
- Fauconnier G. & Mark T. (2003) *The way we think: Conceptual blending and the mind’s hidden complexities*. Basic Books, New York.
- Jaroš F. & Maran T. (2019) Humans on top, humans among the other animals: Narratives of anthropological difference. *Biosemiotics* 12(3): 381–403.
- Johnson M. (2009) *The body in the mind: The bodily basis of meaning, imagination, and reason*. University of Chicago Press, Chicago.
- Lakoff G. & Johnson M. (2003) *Metaphors we live by*. University of Chicago Press, Chicago.
- Maturana H. R. (1991) El sentido de lo humano [The meaning of the human]. In collaboration with Sima Nisis de Razezka. *Granica*, Buenos Aires. Dolmen, Santiago.
- Maturana H. R. & Bloch A. S. (1996) *Biología del emocionar y alba emoting: Respiración y emoción, bailando juntos* [Biology of emotion and alba emoting: Breathing and emotion]. Dolmen, Santiago.
- Maturana H. R. & Dávila Y. X. (2015) *El árbol del vivir* [The tree of life]. Escuela Matriztica, MVP Editores, Santiago.
- Maturana H. R. & Varela F. J. (2003) *El árbol del conocimiento: Las bases biológicas del conocimiento humano*. Lumen, Buenos Aires. Originally published in 1984. English translation: Maturana H. R. & Varela F. J. (1987) *The tree of knowledge: The biological roots of human understanding*. Shambhala, Boston.
- Maturana H. R. & Verden-Zöller G. (1993) *Amor y juego: Fundamentos olvidados de lo humano. Desde el patriarcado a la democracia* [Love and play: Forgotten foundations of the human. From the patriarchy to democracy]. Editorial Instituto de Terapia Cognitiva, Santiago.
- Maturana H. R. & Verden-Zöller G. (2008) *The origin of humanness in the biology of love*. Edited by Pille Bunnell. Imprint Academic, Exeter.
- Peirce C. S. (1960) *Collected papers of Charles Sanders Peirce*. Harvard University Press, Cambridge.
- Rodríguez S. (2016) Recurrences and human agential meaning grounding: Laying a path in walking. *Biosemiotics* 9(2): 169–184. ► <https://cepa.info/8112>
- Rodríguez Gómez S. (2019) An agential-narrative approach on art semiosis. *Technoetic Arts* 17(3): 281–295. ► <https://cepa.info/8114>
- Rodríguez Gómez S. (2021) Organización, experiencia y adaptación: Tres conexiones biosemióticas entre el pensamiento de von Uexküll y la biología enactiva de Maturana y Varela [Organization, experience and adaptation. Three biosemiotic connections between von Uexküll’s thought and Maturana and Varela’s enactive biology]. *Revista Colombiana de Filosofía de La Ciencia* 21(43): 389–404. ► <https://cepa.info/8157>

Rodríguez Gómez S. (2022) Conjectural artworks: Seeing at and beyond Maturana and Varela's visual thinking on life and cognition. *AI & Society* 37: 1307–1318.

► <https://cepa.info/8115>

Varela F. J., Thompson E. & Rosch E. & (1991) *The embodied mind: Cognitive science and human experience*. MIT Press, Cambridge MA.

Sergio Rodríguez Gómez works on topics related to biosemiotics, aesthetics, and digital arts and humanities. He has a Master's degree in semiotics and is a doctoral candidate in Communication, Languages, and Information at Pontificia Universidad Javeriana in Bogotá, Colombia. Bachelor of fine arts. Besides being a comic-book author he has written various articles about biosemiotics, Humberto Maturana and Francisco Varela's philosophy, aesthetics and semiotics, and digital research in the humanities.

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Author's Response Towards a Paradigm Change in Language Studies

Alexander V. Kravchenko
Baikal State University, Russia
sashakr/at@hotmail.com

> Abstract • Instead of trying to transform orthodox linguistics into a science, language researchers should focus on the new epistemological foundations of language science, facilitating the oncoming change in the scientific paradigm.

« 1 » There are three major issues my commentators seem to converge on: (a) how Humberto Maturana's ideas on language and cognition complement, or fit in with, the body of linguistic knowledge accumulated over the history of language studies, (b) whether the general systems approach clarifies Maturana's approach to language, and (c) whether his constructivist epistemology built around the notion of the observer may be viewed as a sound scientific fundament for transdisciplinary research in the human sciences. Accordingly, I will try to address these issues in that order.

“Linguistics” vs “language science”

« 2 » There is a tendency in contemporary research to use the term “linguistics” as a cover term for any academic activity concerned with various kinds of questions about language asked over the millennia-long history of language studies. The aims and goals of such studies have been diverse, defined by the particular agendas pursued, and, as a branch of knowledge, such studies have been, and still are, known as “philology” (not to mention a somewhat more confined area of hermeneutics). Envisioned by Ferdinand de Saussure as an autonomous discipline within social sciences, a scientific (that is, “objective”) study of language as a sign system to which analytical procedures can be applied, linguistics, with its instrumental view of language instilled in our minds by the education system (Kravchenko 2016), continues to inform our daily social practices. As I have argued in Kravchenko (2020a), from the very start linguistics as an

“objective science” chose to view language as something “out there,” a thing that existed on its own in “external reality” and was used by humans just as they use other material objects to meet their pragmatic needs.

« 3 » For the above-mentioned reason, as a term used to designate the scientific study of language, “linguistics” has been seriously compromised. Since its initiation by Saussure, over a century ago, it has acquired a host of undesirable connotations interwoven in its very meaning. The epistemologically and methodologically limited view of language as a functional tool has dominated language studies, and just the use of the term “linguistics” invokes a set of structuralist ideas about language as a conventional symbolic system used in an instrumental function. It is for this reason that “linguistics” may no longer be seen as an appropriate name for scientific explorations of language and should be replaced with a more neutral term. “Language science” would be a good candidate, and it is used in the title of the target article for a purpose: while I do not see good prospects for linguistics, I do see them for language science. This is a very important distinction that may have escaped my commentators' attention. Thus, **Ekaterina Sangati** attributes to me a claim I never make, that “the Maturanian view on language is a better foundation for linguistics as a science than previously or currently dominant approaches” (§1) and speaks of “Maturanian linguistics” (§11); **Mariaelena Bartesaghi** thinks my aim is to reconstruct linguistics to make it a science (§§1, 5); and **Vincent Kenny** believes I am interested in “revolutionizing the discipline of linguistics” (§1). Similarly, I find **Aaron Braver's** (§§1f) interchangeable use of the terms, “linguistics” and “language sciences” with a biological foundation, misleading, contributing to the already profound methodological confusion as far as the subject matter of language science goes.

« 4 » **Braver's** (§9) conclusion that “many linguists already do take heed” of my agenda for the language sciences articulated in the target article stems from another confusion, this time a conceptual one. Scholars familiar with Humberto Maturana's biology of language and 4E cognitive science would immediately contend that it is neither about the Chomskyan biolinguistics **Braver** men-