Curious Parallels

An examination of terms and concepts shared between biology and linguistics,

and their relevance to the study of languages.

Appendices: Specialist Questionnaires

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Animal Communication Questionnaire QAC1

Background information:

The purpose of this questionnaire is to gather information which will help to establish the extent to which academics studying aspects of animal communication use theories and methods from linguistics in their research, and where animal communication sits as a discipline. Given the enormous scope of the field, some of the questions may seem rather broad or not directly relevant to your personal area of expertise. However, your view on as many questions as you would care to answer would, nevertheless, be welcome. A box is provided under every question for you to give (or expand upon) an answer. In the case of multiple choice questions, I would be grateful if you could highlight the answer(s) closest to your own view in colour or bold type.

The Questions:

Question 1: Do you consider the study of animal communication to be a branch of any of the following academic disciplines? (please highlight as many as you feel relevant):

a) Biology

b) Zoology

c) Ecology

d) Ethology

e) Behavioural science

f) Cognitive science

g) Psychology

h) Linguistics

i) Other (please specify)

If you would like to expand on the above response, please do so here:

Question 2: Do you consider yourself to be any of the following? (please highlight as many as you feel relevant):

a) Biologist

b) Zoologist

c) Ecologist

d) Ethologist

e) Behavioural scientist

f) Cognitive scientist

g) Psychologist

h) Linguist

i) Other (please specify)

If you would like to expand on the above response, please do so here:

Question 3: Could you explain in simple terms which aspects of animal communication have primarily featured in any research you have undertaken:

Early in my career, I focused on the structure and function of signals, including the mechanisms by which they were produced. I subsequently have worked extensively on the question of signal reliability, asking how reliability (i.e., "honesty") can be maintained in male-female and male-male signalling systems. Most recently, I've begun to take a sensory ecological approach, asking how perceptual mechanisms (such as categorical perception) enable or constrain the evolution of signalling systems.

Question 4: Does the study of animal communication in general have its own specific methods which are distinct from other disciplines?

I don't think so. Studying animal communication is inherently multidisciplinary and those who do it best draw on methods and perspectives from a wide range of disciplines.

Question 5: In your opinion, should human language fall within the scope of animal communication?

a) Yes, in principle, but due to its ubiquity and complexity, human language would still require a specific discipline of its own

b) No, its inclusion would detract from the study of other animal species

c) Partially, the study of human language should be seen as a 'sister' but separate discipline

d) Other?

If you would like to expand on the above response, please do so here:

Question 6: In your opinion, is collaborative research between animal communication and linguistics:

a) Unnecessary

b) Desirable

c) Essential

d) Other?

If you would like to expand on the above response, please do so here:

My best answer would be somewhere between “desirable” and “essential” – perhaps “highly desirable and likely to be productive” is the best answer.

Question 7: Do you use methods from linguistics in your study of animal communication?

a) Regularly

b) Often

c) Sometimes

d) Rarely

e) Only in very specific cases such as those related to the evolution of language

f) Never

g) Other

If you would like to expand on the above response, please do so here:

I sometimes use methods from linguistics in my studies of animal signals; I’ve also written reviews that more explicitly draw comparisons between animal signalling and human language that draw deeply from linguistics.

Question 8: Does any aspect of your specific personal research involve collaboration with linguists?

Not at present, but it has on occasion in the past and will likely require more such collaboration in the future.

Question 9: Does the study of animal communication in general routinely involve collaboration with linguists?

No, not as it is practiced by most researchers today.

Question 10: To the best of your knowledge, do linguists currently make use of findings from the field of animal communication?

a) Regularly

b) Often

c) Sometimes

d) Rarely

e) Only in very specific cases such as those related to the evolution of language

f) Never

g) Other

If you would like to expand on the above response, please do so here: I think biologists interested in animal communication are more likely to make use of findings from linguistics than are linguists interested in human language likely to make use of findings from those studying animal communication. Further (and perhaps unfortunately), I think linguists who do draw on findings from studies of animal communication sometimes "cherry pick" ideas and results and therefore draw on those studies in a shallow fashion.

Question 11: In your opinion, does the division of academic disciplines into natural sciences on the one hand and social sciences/humanities on the other:

a) Facilitate collaboration between animal communication and linguistics

b) Inhibit collaboration between animal communication and linguistics

c) Neither facilitate nor inhibit collaboration between animal communication and linguistics

d) Other?

If you would like to expand on the above response, please do so here:

Question 12: To the best of your knowledge, does research in animal communication suggest that **similarities across different animal species** are primarily driven by: (please highlight as many as you feel relevant):

a) Shared evolutionary inheritance (taxonomic genus/class etc)

b) Shared environmental factors (e.g. 'social' structures and living patterns)

c) Geographical proximity

d) Other?

If you would like to expand on the above response, please do so here:

Question 13: To the best of your knowledge, does research in animal communication suggest that **different 'dialects' or 'accents' found within the same individual species** are primarily: (please highlight as many as you feel relevant):

a) Inherited through the genes

b) The result of learned behaviour

c) The result of geographical separation

d) Other?

If you would like to expand on the above response, please do so here:
In some cases, such as birdsong, learning is clearly the primary source of dialect differences. In other cases there may be a mix and in yet other cases, genetic differences are the most parsimonious explanation. Evidence for learning of animal signals is pretty weak in most groups, but this is an understudied area.

Question 14: Would you be interested in participating in a brief semi-structured interview to expand on the subject matter raised in this questionnaire? (this would require permission to include your name)

a) Yes, of course

b) No, unfortunately not

c) Possibly, if a convenient time can be arranged

If you would like to expand on the above response, please do so here:

Thank you very much for your time,

Andrew Currie

Animal Communication Questionnaire QAC2

Background information:

The purpose of this questionnaire is to gather information which will help to establish the extent to which academics studying aspects of animal communication use theories and methods from linguistics in their research, and where animal communication sits as a discipline. Given the enormous scope of the field, some of the questions may seem rather broad or not directly relevant to your personal area of expertise. However, your view on as many questions as you would care to answer would, nevertheless, be welcome. A box is provided under every question for you to give (or expand upon) an answer. In the case of multiple choice questions, I would be grateful if you could highlight the answer(s) closest to your own view in colour or bold type.

The Questions:

Question 1: Do you consider the study of animal communication to be a branch of any of the following academic disciplines? (please highlight as many as you feel relevant):

a) Biology X

b) Zoology X

c) Ecology

d) Ethology X

e) Behavioural science

f) Cognitive science

g) Psychology

h) Linguistics

i) Other (please specify)

If you would like to expand on the above response, please do so here:

Question 2: Do you consider yourself to be any of the following? (please highlight as many as you feel relevant):

a) Biologist

b) Zoologist

c) Ecologist

d) Ethologist

e) Behavioural scientist X

f) Cognitive scientist X

g) Psychologist X

h) Linguist

i) Other (please specify)

If you would like to expand on the above response, please do so here:

Question 3: Could you explain in simple terms which aspects of animal communication have primarily featured in any research you have undertaken:

Perception and categorization of human speech prosody.

Question 4: Does the study of animal communication in general have its own specific methods which are distinct from other disciplines?

I think so, especially considering the different modalities of communication among the animal kingdom, and the specific constraints of every animal species.

Question 5: In your opinion, should human language fall within the scope of animal communication?

a) Yes, in principle, but due to its ubiquity and complexity, human language would still require a specific discipline of its own X

b) No, its inclusion would detract from the study of other animal species

c) Partially, the study of human language should be seen as a 'sister' but separate discipline

d) Other?

If you would like to expand on the above response, please do so here:

Question 6: In your opinion, is collaborative research between animal communication and linguistics:

a) Unnecessary

b) Desirable

c) Essential X

d) Other?

If you would like to expand on the above response, please do so here:

Question 7: Do you use methods from linguistics in your study of animal communication?

a) Regularly X

b) Often

c) Sometimes

d) Rarely

e) Only in very specific cases such as those related to the evolution of language

f) Never

g) Other

If you would like to expand on the above response, please do so here:

Question 8: Does any aspect of your specific personal research involve collaboration with linguists?

Yes, establishing and development of speech rhythmic and intonational patterns for testing prosody perception.

Question 9: Does the study of animal communication in general routinely involve collaboration with linguists?

I would say so, but I'm not really sure :(

Question 10: To the best of your knowledge, do linguists currently make use of findings from the field of animal communication?

a) Regularly

b) Often

c) Sometimes X

d) Rarely

e) Only in very specific cases such as those related to the evolution of language

f) Never

g) Other

If you would like to expand on the above response, please do so here:

Question 11: In your opinion, does the division of academic disciplines into natural sciences on the one hand and social sciences/humanities on the other:

a) Facilitate collaboration between animal communication and linguistics

b) Inhibit collaboration between animal communication and linguistics

c) Neither facilitate nor inhibit collaboration between animal communication and linguistics X

d) Other?

If you would like to expand on the above response, please do so here:

Question 12: To the best of your knowledge, does research in animal communication suggest that **similarities across different animal species** are primarily driven by: (please highlight as many as you feel relevant):

a) Shared evolutionary inheritance (taxonomic genus/class etc) X

b) Shared environmental factors (e.g. 'social' structures and living patterns) X

c) Geographical proximity

d) Other?

If you would like to expand on the above response, please do so here:

Question 13: To the best of your knowledge, does research in animal communication suggest that **different 'dialects' or 'accents' found within the same individual species** are primarily: (please highlight as many as you feel relevant):

a) Inherited through the genes

b) The result of learned behaviour

c) The result of geographical separation X

d) Other?

If you would like to expand on the above response, please do so here:

Question 14: Would you be interested in participating in a brief semi-structured interview to expand on the subject matter raised in this questionnaire? (this would require permission to include your name)

a) Yes, of course

b) No, unfortunately not X

c) Possibly, if a convenient time can be arranged

If you would like to expand on the above response, please do so here:

Thank you very much for your time,

Andrew Currie

Animal Communication Questionnaire QAC3

Background information:

The purpose of this questionnaire is to gather information which will help to establish the extent to which academics studying aspects of animal communication use theories and methods from linguistics in their research, and where animal communication sits as a discipline. Given the enormous scope of the field, some of the questions may seem rather broad or not directly relevant to your personal area of expertise. However, your view on as many questions as you would care to answer would, nevertheless, be welcome. A box is provided under every question for you to give (or expand upon) an answer. In the case of multiple choice questions, I would be grateful if you could highlight the answer(s) closest to your own view in colour or bold type.

The Questions:

Question 1: Do you consider the study of animal communication to be a branch of any of the following academic disciplines? (please highlight as many as you feel relevant):

a) Biology

b) Zoology

c) Ecology

d) Ethology

e) Behavioural science

f) Cognitive science

g) Psychology

h) Linguistics

i) Other (please specify)

If you would like to expand on the above response, please do so here:

Question 2: Do you consider yourself to be any of the following? (please highlight as many as you feel relevant):

a) Biologist

b) Zoologist

c) Ecologist

d) Ethologist

e) Behavioural scientist

f) Cognitive scientist

g) Psychologist

h) Linguist

i) Other (please specify)

If you would like to expand on the above response, please do so here:

Question 3: Could you explain in simple terms which aspects of animal communication have primarily featured in any research you have undertaken:

Language evolution; bio-acoustics; eco-acoustics; articulation; semantics; syntax; socio-ecology

Question 4: Does the study of animal communication in general have its own specific methods which are distinct from other disciplines?

No.

Question 5: In your opinion, should human language fall within the scope of animal communication?

a) Yes, in principle, but due to its ubiquity and complexity, human language would still require a specific discipline of its own

b) No, its inclusion would detract from the study of other animal species

c) Partially, the study of human language should be seen as a 'sister' but separate discipline

d) Other?

If you would like to expand on the above response, please do so here:

Question 6: In your opinion, is collaborative research between animal communication and linguistics:

a) Unnecessary

b) Desirable

c) Essential

d) Other?

If you would like to expand on the above response, please do so here:

Question 7: Do you use methods from linguistics in your study of animal communication?

a) Regularly

b) Often

d) Sometimes

d) Rarely

e) Only in very specific cases such as those related to the evolution of language

f) Never

g) Other

If you would like to expand on the above response, please do so here:

Question 8: Does any aspect of your specific personal research involve collaboration with linguists?

Yes.

Question 9: Does the study of animal communication in general routinely involve collaboration with linguists?

Only occasionally.

Question 10: To the best of your knowledge, do linguists currently make use of findings from the field of animal communication?

a) Regularly

b) Often

d) Sometimes

d) Rarely

e) Only in very specific cases such as those related to the evolution of language

f) Never

g) Other

If you would like to expand on the above response, please do so here:

Question 11: In your opinion, does the division of academic disciplines into natural sciences on the one hand and social sciences/humanities on the other:

a) Facilitate collaboration between animal communication and linguistics

b) Inhibit collaboration between animal communication and linguistics

c) Neither facilitate nor inhibit collaboration between animal communication and linguistics

d) Other?

No particular opinion.

Question 12: To the best of your knowledge, does research in animal communication suggest that **similarities across different animal species** are primarily driven by: (please highlight as many as you feel relevant):

a) Shared evolutionary inheritance (taxonomic genus/class etc)

b) Shared environmental factors (e.g. 'social' structures and living patterns)

c) Geographical proximity

d) Other?

For any pair of species, the reasons will be different.

Question 13: To the best of your knowledge, does research in animal communication suggest that **different 'dialects' or 'accents' found within the same individual species** are primarily: (please highlight as many as you feel relevant):

a) Inherited through the genes

b) The result of learned behaviour

c) The result of geographical separation

d) Other?

Both types of variation can be either innate or learned.

Question 14: Would you be interested in participating in a brief semi-structured interview to expand on the subject matter raised in this questionnaire? (this would require permission to include your name)

a) Yes, of course

b) No, unfortunately not

c) Possibly, if a convenient time can be arranged

If you would like to expand on the above response, please do so here:

Thank you very much for your time,

Andrew Currie

Animal Communication Questionnaire QAC4

Background information:

The purpose of this questionnaire is to gather information which will help to establish the extent to which academics studying aspects of animal communication use theories and methods from linguistics in their research, and where animal communication sits as a discipline. Given the enormous scope of the field, some of the questions may seem rather broad or not directly relevant to your personal area of expertise. However, your view on as many questions as you would care to answer would, nevertheless, be welcome. A box is provided under every question for you to give (or expand upon) an answer. In the case of multiple choice questions, I would be grateful if you could highlight the answer(s) closest to your own view in colour or bold type.

The Questions:

Question 1: Do you consider the study of animal communication to be a branch of any of the following academic disciplines? (please highlight as many as you feel relevant):

a) Biology X

b) Zoology X

c) Ecology

d) Ethology X

e) Behavioural science X

f) Cognitive science X

g) Psychology X

h) Linguistics

i) Other (please specify)

If you would like to expand on the above response, please do so here:

Question 2: Do you consider yourself to be any of the following? (please highlight as many as you feel relevant):

a) Biologist

b) Zoologist X

c) Ecologist

d) Ethologist X

e) Behavioural scientist X

f) Cognitive scientist

g) Psychologist X

h) Linguist

i) Other (please specify)

If you would like to expand on the above response, please do so here:

Question 3: Could you explain in simple terms which aspects of animal communication have primarily featured in any research you have undertaken:

The social functions of more complex forms (enhanced repertoire size) of communication

Question 4: Does the study of animal communication in general have its own specific methods which are distinct from other disciplines?

Acoustic data collection and playback experiments are relatively unique to animal communication. These methods overlap somewhat with the study of human speech.

Question 5: In your opinion, should human language fall within the scope of animal communication?

a) Yes, in principle, but due to its ubiquity and complexity, human language would still require a specific discipline of its own X

b) No, its inclusion would detract from the study of other animal species

c) Partially, the study of human language should be seen as a 'sister' but separate discipline

d) Other?

If you would like to expand on the above response, please do so here:

Question 6: In your opinion, is collaborative research between animal communication and linguistics:

a) Unnecessary

b) Desirable

c) Essential X

d) Other?

If you would like to expand on the above response, please do so here:

Question 7: Do you use methods from linguistics in your study of animal communication?

a) Regularly

b) Often

e) Sometimes X

d) Rarely

e) Only in very specific cases such as those related to the evolution of language

f) Never

g) Other

If you would like to expand on the above response, please do so here:

Question 8: Does any aspect of your specific personal research involve collaboration with linguists?

Yes some of my work has been in collaborative with researchers from quantitative linguistics

Question 9: Does the study of animal communication in general routinely involve collaboration with linguists?

No, not usually

Question 10: To the best of your knowledge, do linguists currently make use of findings from the field of animal communication?

a) Regularly

b) Often

e) Sometimes

d) Rarely

e) Only in very specific cases such as those related to the evolution of language X

f) Never

g) Other

If you would like to expand on the above response, please do so here:

Question 11: In your opinion, does the division of academic disciplines into natural sciences on the one hand and social sciences/humanities on the other:

a) Facilitate collaboration between animal communication and linguistics

b) Inhibit collaboration between animal communication and linguistics X

c) Neither facilitate nor inhibit collaboration between animal communication and linguistics

d) Other?

If you would like to expand on the above response, please do so here:

Question 12: To the best of your knowledge, does research in animal communication suggest that **similarities across different animal species** are primarily driven by: (please highlight as many as you feel relevant):

a) Shared evolutionary inheritance (taxonomic genus/class etc) X

b) Shared environmental factors (e.g. 'social' structures and living patterns) X

c) Geographical proximity X

d) Other?

If you would like to expand on the above response, please do so here: There is evidence for all of these options

Question 13: To the best of your knowledge, does research in animal communication suggest that **different 'dialects' or 'accents' found within the same individual species** are primarily: (please highlight as many as you feel relevant):

a) Inherited through the genes

b) The result of learned behaviour

c) The result of geographical separation

d) Other? X

If you would like to expand on the above response, please do so here: This is thought to depend on the species. For example, bird song dialect is often thought to be learned, whereas variation in primate vocalizations is typically thought to be innate.

Question 14: Would you be interested in participating in a brief semi-structured interview to expand on the subject matter raised in this questionnaire? (this would require permission to include your name)

a) Yes, of course

b) No, unfortunately not X

c) Possibly, if a convenient time can be arranged

If you would like to expand on the above response, please do so here:

Thank you very much for your time,

Andrew Currie

Questionnaire on links between evolutionary biology and historical linguistics QBLE1

Background information:

The purpose of this questionnaire is to gather information which will help shed further light on the shared terms and concepts used in (evolutionary) biology and (historical) linguistics. Given the enormous scope of the field, some of the questions may seem rather broad or not directly relevant to your personal area of expertise. However, your view on as many questions as you would care to answer would, nevertheless, be welcome. A box is provided under every question for you to give (or expand upon) an answer. In the case of multiple choice questions, I would be grateful if you could highlight the answer(s) closest to your own view in colour or bold type.

The Questions:

Question 1: The terms **'vulnerable'**, **'critically endangered'** and **'extinct'** are used to classify levels of endangerment not only of biological species (IUCN) but also of languages (UNESCO). Do you consider the application of the same terms for these different phenomena to be:

a) Of no consequence, both are easily understood and separated

b) Of use and of some significance, indicating the similar dangers facing both biodiversity and linguistic diversity

c) Unhelpful and misleading, giving the impression that languages are living organisms

d) Other?

If you would like to expand on the above response, please do so here:

Question 2: Terms such as **'living'**, **'dead'** and **'genetically related'** are frequently used to describe languages. Do you consider the application of such terms to languages to be:

a) Of no consequence, their meaning is easily understood

b) Of use and of some significance, indicating similarities in the ways that both biological species and languages come into being, cease to exist and relate to each other

c) Unhelpful and misleading, given that languages are neither living organisms nor related to each other by genes

d) Other?

If you would like to expand on the above response, please do so here:

Question 3: The term **'biocultural diversity'** has been defined as *"the diversity of life in all its manifestations: biological, cultural, and linguistic"*. All three types of diversity are often noted as facing similar threats. Do you consider these common threats to be:

a) Clearly linked, there is a knock-on effect between all three

b) Environmentally determined. Biological, cultural and linguistic diversity are similar in certain areas simply because they share the same kind of biome (e.g. dense rainforest versus arctic tundra)

c) Entirely coincidental, they are not interrelated

d) Other?

If you would like to expand on the above response, please do so here:
I am agnostic with respect to this question.

Question 4: **Binomial nomenclature** (e.g. *Canis lupus*) is applied to biological species, often alongside a common name (e.g. *wolf*). In your opinion, would the application of binomial nomenclature to the world's languages in similar fashion be:

a) Of no practical purpose

b) A useful means of distinguishing languages from each other, especially in the more linguistically diverse parts of the world

c) Another example of blurring the distinction between biological organisms and languages

d) Other?

If you would like to expand on the above response, please do so here:
We already have glottolog, so we do not need extra nomenclature.

Question 5: In your opinion, is collaborative research between evolutionary biology and historical linguistics:

a) Unnecessary

b) Desirable

c) Essential

d) Other?

If you would like to expand on the above response, please do so here:

Potentially useful (depending on the questions being asked, and on the degree to which collaboration is really interested in understanding each other discipline).

Question 6: Do you use methods from both evolutionary biology and historical linguistics in your personal research?

a) Regularly

b) Often

c) Sometimes

d) Rarely

e) Only in very specific cases

f) Never

g) Other

If you would like to expand on the above response, please do so here:

Question 7: To the best of your knowledge, do historical linguists in general make use of findings from the field of evolutionary biology?

a) Regularly

b) Often

c) Sometimes

d) Rarely

e) Only in very specific cases

f) Never

g) Other

If you would like to expand on the above response, please do so here: **It is often exaggerated, to which degree bioinformatics would have an influence on our methodology in linguistics. In some areas, we adapt methods, in others, we have our own techniques.**

Question 8: To the best of your knowledge, do evolutionary biologists in general make use of findings from the field of historical linguists?

a) Regularly

b) Often

c) Sometimes

d) Rarely

e) Only in very specific cases

f) Never

g) Other

If you would like to expand on the above response, please do so here:

Question 9: In your opinion, does the division of academic disciplines into natural sciences on the one hand and social sciences/humanities on the other:

a) Facilitate collaboration between evolutionary biology and historical linguistics

b) Inhibit collaboration between evolutionary biology and historical linguistics

c) Neither facilitate nor inhibit collaboration between evolutionary biology and historical linguistics

d) Other?

If you would like to expand on the above response, please do so here:
Making collaboration more difficult, as biologists rarely feel obliged to learn about linguistics, while linguists often learn at least something about biology.

Question 10: In your opinion, is the **'family tree'** model of indicating evolutionary relationships: (please highlight as many as you feel relevant)

a) An adequate model for all biological species

b) An adequate model for all languages

c) An adequate model for some biological species, but not all

d) An adequate model for some languages, but not all

e) An inadequate model for biological species

f) An inadequate model for languages

g) Other?

If you would like to expand on the above response, please do so here:
It is well known that the alternative to the tree model would be a network, but a network would also have one or more trees of which it would be constructed, so in this sense, our research best assumes all relations can be handled by a tree, but would then test if this really is the case.

Question 11: In your opinion, which of the following definitions best explains the term 'evolution' as applied to **languages** (i.e., language change from protolanguage to daughter languages or from early to middle to modern periods etc, as opposed to the evolution of the human capacity for language):

a) The evolution of languages is part of an exclusive process which applies to languages alone

b) The evolution of languages is part of the wider process of cultural evolution which includes other aspects of culture but is separate from biological evolution

c) The evolution of languages is part of the wider process of biological evolution, as are other forms of animal communication

c) Other?

If you would like to expand on the above response, please do so here:

It depends on the domain of language change. Some are similar to cultural evolution, some aspects not. Same for biology. Thus, the question seems ill-stated.

Question 12: Would you be interested in participating in a brief semi-structured interview to expand on the subject matter raised in this questionnaire? (this would require permission to include your name)

a) Yes, of course

b) No, unfortunately not

c) Possibly, if a convenient time can be arranged

If you would like to expand on the above response, please do so here:

Depending on my schedule, but in principle: yes

Thank you very much for your time

Andrew Currie

Questionnaire on links between evolutionary biology and historical linguistics QBLE2

Background information:

The purpose of this questionnaire is to gather information which will help shed further light on the shared terms and concepts used in (evolutionary) biology and (historical) linguistics. Given the enormous scope of the field, some of the questions may seem rather broad or not directly relevant to your personal area of expertise. However, your view on as many questions as you would care to answer would, nevertheless, be welcome. A box is provided under every question for you to give (or expand upon) an answer. In the case of multiple choice questions, I would be grateful if you could highlight the answer(s) closest to your own view in colour or bold type.

The Questions:

Question 1: The terms **'vulnerable'**, **'critically endangered'** and **'extinct'** are used to classify levels of endangerment not only of biological species (IUCN) but also of languages (UNESCO). Do you consider the application of the same terms for these different phenomena to be:

a) Of no consequence, both are easily understood and separated

b) Of use and of some significance, indicating the similar dangers facing both biodiversity and linguistic diversity

c) Unhelpful and misleading, giving the impression that languages are living organisms

d) Other?

If you would like to expand on the above response, please do so here:

Question 2: Terms such as **'living'**, **'dead'** and **'genetically related'** are frequently used to describe languages. Do you consider the application of such terms to languages to be:

a) Of no consequence, their meaning is easily understood

b) Of use and of some significance, indicating similarities in the ways that both biological species and languages come into being, cease to exist and relate to each other

c) Unhelpful and misleading, given that languages are neither living organisms nor related to each other by genes

d) Other?

If you would like to expand on the above response, please do so here:

Question 3: The term **'biocultural diversity'** has been defined as *"the diversity of life in all its manifestations: biological, cultural, and linguistic"*. All three types of diversity are often noted as facing similar threats. Do you consider these common threats to be:

a) Clearly linked, there is a knock-on effect between all three

b) Environmentally determined. Biological, cultural and linguistic diversity are similar in certain areas simply because they share the same kind of biome (e.g. dense rainforest versus arctic tundra)

c) Entirely coincidental, they are not interrelated

d) Other?

If you would like to expand on the above response, please do so here:

Question 4: **Binomial nomenclature** (e.g. *Canis lupus*) is applied to biological species, often alongside a common name (e.g. *wolf*). In your opinion, would the application of binomial nomenclature to the world's languages in similar fashion be:

a) Of no practical purpose

b) A useful means of distinguishing languages from each other, especially in the more linguistically diverse parts of the world

c) Another example of blurring the distinction between biological organisms and languages

d) Other?

If you would like to expand on the above response, please do so here:

Question 5: In your opinion, is collaborative research between evolutionary biology and historical linguistics:

a) Unnecessary

b) Desirable

c) Essential

d) Other?

If you would like to expand on the above response, please do so here:

Question 6: Do you use methods from both evolutionary biology and historical linguistics in your personal research?

a) Regularly

b) Often

c) Sometimes

d) Rarely

e) Only in very specific cases

f) Never

g) Other

If you would like to expand on the above response, please do so here:

Question 7: To the best of your knowledge, do historical linguists in general make use of findings from the field of evolutionary biology?

a) Regularly

b) Often

c) Sometimes

d) Rarely

e) Only in very specific cases

f) Never

g) Other

If you would like to expand on the above response, please do so here:

Question 8: To the best of your knowledge, do evolutionary biologists in general make use of findings from the field of historical linguists?

a) Regularly

b) Often

c) Sometimes

d) Rarely

e) Only in very specific cases

f) Never

g) Other

If you would like to expand on the above response, please do so here:

Question 9: In your opinion, does the division of academic disciplines into natural sciences on the one hand and social sciences/humanities on the other:

a) Facilitate collaboration between evolutionary biology and historical linguistics

b) Inhibit collaboration between evolutionary biology and historical linguistics

c) Neither facilitate nor inhibit collaboration between evolutionary biology and historical linguistics

d) Other?

If you would like to expand on the above response, please do so here:

Question 10: In your opinion, is the **'family tree'** model of indicating evolutionary relationships: (please highlight as many as you feel relevant)

a) An adequate model for all biological species

b) An adequate model for all languages

c) An adequate model for some biological species, but not all

d) An adequate model for some languages, but not all

e) An inadequate model for biological species

f) An inadequate model for languages

g) Other?

If you would like to expand on the above response, please do so here:
"Inadequate" is too strong, but equally I didn't want to say that it was adequate for specific languages or species. It's an OK approximation most of the time I'd say as long as we don't take it too seriously.

Question 11: In your opinion, which of the following definitions best explains the term 'evolution' as applied to **languages** (i.e., language change from protolanguage to daughter languages or from early to middle to modern periods etc, as opposed to the evolution of the human capacity for language):

a) The evolution of languages is part of an exclusive process which applies to languages alone

b) The evolution of languages is part of the wider process of cultural evolution which includes other aspects of culture but is separate from biological evolution

c) The evolution of languages is part of the wider process of biological evolution, as are other forms of animal communication

c) Other?

If you would like to expand on the above response, please do so here: B is closest, but not quite right. It's useful to think of cultural evolution and biological evolution separately, but really biological evolution is necessarily shaped by cultural evolution in those species that have culture (equally, the capacity for culture is itself the product of biological evolution).

Question 12: Would you be interested in participating in a brief semi-structured interview to expand on the subject matter raised in this questionnaire? (this would require permission to include your name)

a) Yes, of course

b) No, unfortunately not

c) Possibly, if a convenient time can be arranged

If you would like to expand on the above response, please do so here: Sorry – I'm super busy right now!

Thank you very much for your time

Andrew Currie

Questionnaire on links between evolutionary biology and historical linguistics QBLE3

Background information:

The purpose of this questionnaire is to gather information which will help shed further light on the shared terms and concepts used in (evolutionary) biology and (historical) linguistics. Given the enormous scope of the field, some of the questions may seem rather broad or not directly relevant to your personal area of expertise. However, your view on as many questions as you would care to answer would, nevertheless, be welcome. A box is provided under every question for you to give (or expand upon) an answer. In the case of multiple choice questions, I would be grateful if you could highlight the answer(s) closest to your own view in colour or bold type.

The Questions:

Question 1: The terms **'vulnerable'**, **'critically endangered'** and **'extinct'** are used to classify levels of endangerment not only of biological species (IUCN) but also of languages (UNESCO). Do you consider the application of the same terms for these different phenomena to be:

a) Of no consequence, both are easily understood and separated

b) Of use and of some significance, indicating the similar dangers facing both biodiversity and linguistic diversity

c) Unhelpful and misleading, giving the impression that languages are living organisms

d) Other?

If you would like to expand on the above response, please do so here:

Question 2: Terms such as **'living'**, **'dead'** and **'genetically related'** are frequently used to describe languages. Do you consider the application of such terms to languages to be:

a) Of no consequence, their meaning is easily understood

b) Of use and of some significance, indicating similarities in the ways that both biological species and languages come into being, cease to exist and relate to each other

c) Unhelpful and misleading, given that languages are neither living organisms nor related to each other by genes

d) Other?

If you would like to expand on the above response, please do so here: **(c) is perhaps too strong, but these terms can be misleading. Languages can be revived in a way that species can't (not yet, at least). The term 'genetically related' makes no sense in biology because biologists believe that all living things are 'genetically related'. In linguistics, 'genetically related' is pretty useless because if two languages are 'genetically related', what really matters is how closely related the**

language are, and if they are not 'genetically related', that just means 'we don't have enough information to decide where they belong in the phylogeny of languages'.

Question 3: The term **'biocultural diversity'** has been defined as *"the diversity of life in all its manifestations: biological, cultural, and linguistic"*. All three types of diversity are often noted as facing similar threats. Do you consider these common threats to be:

a) Clearly linked, there is a knock-on effect between all three

b) Environmentally determined. Biological, cultural and linguistic diversity are similar in certain areas simply because they share the same kind of biome (e.g. dense rainforest versus arctic tundra)

c) Entirely coincidental, they are not interrelated

d) Other?

If you would like to expand on the above response, please do so here: **They are clearly linked, though not identical; and also, the same factors threaten biological, cultural and linguistic diversity.**

Question 4: **Binomial nomenclature** (e.g. *Canis lupus*) is applied to biological species, often alongside a common name (e.g. *wolf*). In your opinion, would the application of binomial nomenclature to the world's languages in similar fashion be:

a) Of no practical purpose

b) A useful means of distinguishing languages from each other, especially in the more linguistically diverse parts of the world

c) Another example of blurring the distinction between biological organisms and languages

d) Other?

If you would like to expand on the above response, please do so here: **Of no practical purpose at the moment. Also, don't underestimate the controversies and debates about the right binomial nomenclature in biology; we would have the same problems in linguistics.**

Question 5: In your opinion, is collaborative research between evolutionary biology and historical linguistics:

a) Unnecessary

b) Desirable

c) Essential

d) Other?

If you would like to expand on the above response, please do so here: **What is most essential, in my opinion, is recognizing that there is an abstract theory of evolutionary change (change by**

replication) that subsumes biological evolution, cultural evolution and language change. There are differences in how it is instantiated in these domains, and these differences can cause (and have caused) misinterpretations and mis-adaptations of ideas. There has to be some recognition of these facts on the part of both the biologists and the linguists who are collaborating, for it to be productive.

Question 6: Do you use methods from both evolutionary biology and historical linguistics in your personal research?

- **a) Regularly**
- b) Often
- d) Sometimes
- d) Rarely
- e) Only in very specific cases
- f) Never
- g) Other

If you would like to expand on the above response, please do so here: **I've written a lot about this, which is presumably why you've asked me to respond to this questionnaire.**

Question 7: To the best of your knowledge, do historical linguists in general make use of findings from the field of evolutionary biology?

- a) Regularly
- b) Often
- d) Sometimes
- d) Rarely
- **e) Only in very specific cases**
- f) Never
- g) Other

If you would like to expand on the above response, please do so here: **Apart from a few historical linguists, it is mainly having an effect in the phylogenetic classification of languages; but even there it is rarely used by historical linguists.**

Question 8: To the best of your knowledge, do evolutionary biologists in general make use of findings from the field of historical linguists?

- a) Regularly
- b) Often

d) Sometimes

d) Rarely

e) Only in very specific cases

f) Never

g) Other

If you would like to expand on the above response, please do so here: **I am not aware of much if any influence in the direction from historical linguistics to evolutionary biology.**

Question 9: In your opinion, does the division of academic disciplines into natural sciences on the one hand and social sciences/humanities on the other:

a) Facilitate collaboration between evolutionary biology and historical linguistics

b) Inhibit collaboration between evolutionary biology and historical linguistics

c) Neither facilitate nor inhibit collaboration between evolutionary biology and historical linguistics

d) Other?

If you would like to expand on the above response, please do so here: **This is tricky to answer. Natural sciences and social sciences/humanities are different, although they are not as different as some think. So somehow "merging" them will cause problems even if it also might facilitate collaboration. Changing the academic reward system to genuinely encourage interdisciplinary collaboration would be more helpful.**

Question 10: In your opinion, is the **'family tree'** model of indicating evolutionary relationships: (please highlight as many as you feel relevant)

a) An adequate model for all biological species

b) An adequate model for all languages

c) An adequate model for some biological species, but not all

d) An adequate model for some languages, but not all

e) An inadequate model for biological species

f) An inadequate model for languages

g) Other?

If you would like to expand on the above response, please do so here: **In both biology and language, some patterns of diversification are tree-like but some aren't, and the "partly true" aspect applies to all languages and species, not just a subset as implied by (c)-(d).**

Question 11: In your opinion, which of the following definitions best explains the term 'evolution' as applied to **languages** (i.e., language change from protolanguage to daughter languages or from early to middle to modern periods etc, as opposed to the evolution of the human capacity for language):

a) The evolution of languages is part of an exclusive process which applies to languages alone

b) The evolution of languages is part of the wider process of cultural evolution which includes other aspects of culture but is separate from biological evolution

c) The evolution of languages is part of the wider process of biological evolution, as are other forms of animal communication

c) Other?

If you would like to expand on the above response, please do so here: **See my answer to (5), and my publications, for details about this.**

Question 12: Would you be interested in participating in a brief semi-structured interview to expand on the subject matter raised in this questionnaire? (this would require permission to include your name)

a) Yes, of course

b) No, unfortunately not

c) Possibly, if a convenient time can be arranged

If you would like to expand on the above response, please do so here: **I'm quite busy despite just having retired from teaching, but maybe something can be arranged if you're interested.**

Thank you very much for your time

Andrew Currie

Questionnaire on links between evolutionary biology and historical linguistics QBLE4

Background information:

The purpose of this questionnaire is to gather information which will help shed further light on the shared terms and concepts used in (evolutionary) biology and (historical) linguistics. Given the enormous scope of the field, some of the questions may seem rather broad or not directly relevant to your personal area of expertise. However, your view on as many questions as you would care to answer would, nevertheless, be welcome. A box is provided under every question for you to give (or expand upon) an answer. In the case of multiple choice questions, I would be grateful if you could highlight the answer(s) closest to your own view in colour or bold type.

The Questions:

Question 1: The terms **'vulnerable'**, **'critically endangered'** and **'extinct'** are used to classify levels of endangerment not only of biological species (IUCN) but also of languages (UNESCO). Do you consider the application of the same terms for these different phenomena to be:

a) Of no consequence, both are easily understood and separated

b) Of use and of some significance, indicating the similar dangers facing both biodiversity and linguistic diversity

c) Unhelpful and misleading, giving the impression that languages are living organisms

d) Other?

Don't know the historical roots of these, eg who wrote the acts? But I also think your c in itself is interesting, quite some work done on transitions from languages as organisms to languages as species. See eg On constructing a research model for historical cognitive linguistics (HCL): Some theoretical considerations

Question 2: Terms such as **'living'**, **'dead'** and **'genetically related'** are frequently used to describe languages. Do you consider the application of such terms to languages to be:

a) Of no consequence, their meaning is easily understood

b) Of use and of some significance, indicating similarities in the ways that both biological species and languages come into being, cease to exist and relate to each other

c) Unhelpful and misleading, given that languages are neither living organisms nor related to each other by genes

d) Other?

If you would like to expand on the above response, please do so here:

The speakers of similar languages are often genetically related (eg Cavalli Sforza)

Also, genetics is not necessarily a biological word, look into the etymology and history of the term

Question 3: The term **'biocultural diversity'** has been defined as *"the diversity of life in all its manifestations: biological, cultural, and linguistic"*. All three types of diversity are often noted as facing similar threats. Do you consider these common threats to be:

a) Clearly linked, there is a knock-on effect between all three

b) Environmentally determined. Biological, cultural and linguistic diversity are similar in certain areas simply because they share the same kind of biome (e.g. dense rainforest versus arctic tundra)

c) Entirely coincidental, they are not interrelated

d) Other?

If you would like to expand on the above response, please do so here:

I think these are consequences of complex phenomena that cannot be captured by the choices here provided

Question 4: **Binomial nomenclature** (e.g. *Canis lupus*) is applied to biological species, often alongside a common name (e.g. *wolf*). In your opinion, would the application of binomial nomenclature to the world's languages in similar fashion be:

a) Of no practical purpose

b) A useful means of distinguishing languages from each other, especially in the more linguistically diverse parts of the world

c) Another example of blurring the distinction between biological organisms and languages

d) Other?

If you would like to expand on the above response, please do so here:

Question 5: In your opinion, is collaborative research between evolutionary biology and historical linguistics:

a) Unnecessary

b) Desirable

c) Essential

d) Other?

If you would like to expand on the above response, please do so here:

Question 6: Do you use methods from both evolutionary biology and historical linguistics in your personal research?

a) Regularly

b) Often

e) Sometimes

d) Rarely

e) Only in very specific cases

f) Never

g) Other

If you would like to expand on the above response, please do so here:

Question 7: To the best of your knowledge, do historical linguists in general make use of findings from the field of evolutionary biology?

a) Regularly

b) Often

e) Sometimes

d) Rarely

e) Only in very specific cases

f) Never

g) Other

If you would like to expand on the above response, please do so here:

Question 8: To the best of your knowledge, do evolutionary biologists in general make use of findings from the field of historical linguists?

a) Regularly

b) Often

e) Sometimes

d) Rarely

e) Only in very specific cases

f) Never

g) Other

If you would like to expand on the above response, please do so here:

Question 9: In your opinion, does the division of academic disciplines into natural sciences on the one hand and social sciences/humanities on the other:

a) Facilitate collaboration between evolutionary biology and historical linguistics

b) Inhibit collaboration between evolutionary biology and historical linguistics

c) Neither facilitate nor inhibit collaboration between evolutionary biology and historical linguistics

d) Other?

If you would like to expand on the above response, please do so here:

Question 10: In your opinion, is the **'family tree'** model of indicating evolutionary relationships: (please highlight as many as you feel relevant)

a) An adequate model for all biological species

b) An adequate model for all languages

c) An adequate model for some biological species, but not all

d) An adequate model for some languages, but not all

e) An inadequate model for biological species

f) An inadequate model for languages

g) Other?

If you would like to expand on the above response, please do so here:

Question 11: In your opinion, which of the following definitions best explains the term 'evolution' as applied to **languages** (i.e., language change from protolanguage to daughter languages or from early to middle to modern periods etc, as opposed to the evolution of the human capacity for language):

a) The evolution of languages is part of an exclusive process which applies to languages alone

b) The evolution of languages is part of the wider process of cultural evolution which includes other aspects of culture but is separate from biological evolution

c) The evolution of languages is part of the wider process of biological evolution, as are other forms of animal communication

c) Other?

If you would like to expand on the above response, please do so here:

The evolution of language is part of the wide phenomenon of evolution

Question 12: Would you be interested in participating in a brief semi-structured interview to expand on the subject matter raised in this questionnaire? (this would require permission to include your name)

a) Yes, of course

b) No, unfortunately not

c) Possibly, if a convenient time can be arranged

If you would like to expand on the above response, please do so here:

These publications might interest you

Pattern similarity in biologial, linguistic, and sociocultural evolution

What are the levels and mechanisms/processes of language evolution

What are the Units of Language Evolution?

Guest-Editorial Introduction: Converging Evolutionary Patterns in Life and Culture

Applied Evolutionary Epistemology: A new method to enhance interdisciplinary research between the life and human sciences.

Introducing Universal Symbiogenesis

Depicting the Tree of Life: the Philosophical and Historical Roots of Evolutionary Tree Diagrams

Thank you very much for your time

Andrew Currie

Questionnaire on links between evolutionary biology and historical linguistics QBLE5

Background information:

The purpose of this questionnaire is to gather information which will help shed further light on the shared terms and concepts used in (evolutionary) biology and (historical) linguistics. Given the enormous scope of the field, some of the questions may seem rather broad or not directly relevant to your personal area of expertise. However, your view on as many questions as you would care to answer would, nevertheless, be welcome. A box is provided under every question for you to give (or expand upon) an answer. In the case of multiple choice questions, I would be grateful if you could highlight the answer(s) closest to your own view in colour or bold type.

The Questions:

Question 1: The terms **'vulnerable'**, **'critically endangered'** and **'extinct'** are used to classify levels of endangerment not only of biological species (IUCN) but also of languages (UNESCO). Do you consider the application of the same terms for these different phenomena to be:

X a) Of no consequence, both are easily understood and separated

b) Of use and of some significance, indicating the similar dangers facing both biodiversity and linguistic diversity

c) Unhelpful and misleading, giving the impression that languages are living organisms

d) Other?

If you would like to expand on the above response, please do so here:

Question 2: Terms such as **'living'**, **'dead'** and **'genetically related'** are frequently used to describe languages. Do you consider the application of such terms to languages to be:

X a) Of no consequence, their meaning is easily understood

b) Of use and of some significance, indicating similarities in the ways that both biological species and languages come into being, cease to exist and relate to each other

c) Unhelpful and misleading, given that languages are neither living organisms nor related to each other by genes

d) Other?

If you would like to expand on the above response, please do so here:

Question 3: The term **'biocultural diversity'** has been defined as *"the diversity of life in all its manifestations: biological, cultural, and linguistic"*. All three types of diversity are often noted as facing similar threats. Do you consider these common threats to be:

a) Clearly linked, there is a knock-on effect between all three

X b) Environmentally determined. Biological, cultural and linguistic diversity are similar in certain areas simply because they share the same kind of biome (e.g. dense rainforest versus arctic tundra)

c) Entirely coincidental, they are not interrelated

d) Other?

If you would like to expand on the above response, please do so here:

Question 4: **Binomial nomenclature** (e.g. *Canis lupus*) is applied to biological species, often alongside a common name (e.g. *wolf*). In your opinion, would the application of binomial nomenclature to the world's languages in similar fashion be:

a) Of no practical purpose

X b) A useful means of distinguishing languages from each other, especially in the more linguistically diverse parts of the world

c) Another example of blurring the distinction between biological organisms and languages

d) Other?

If you would like to expand on the above response, please do so here:

Question 5: In your opinion, is collaborative research between evolutionary biology and historical linguistics:

a) Unnecessary

X b) Desirable

c) Essential

d) Other?

If you would like to expand on the above response, please do so here:

Question 6: Do you use methods from both evolutionary biology and historical linguistics in your personal research?

a) Regularly

b) Often

X c) Sometimes

d) Rarely

e) Only in very specific cases

f) Never

g) Other

If you would like to expand on the above response, please do so here:

Question 7: To the best of your knowledge, do historical linguists in general make use of findings from the field of evolutionary biology?

a) Regularly

b) Often

X c) Sometimes

d) Rarely

e) Only in very specific cases

f) Never

g) Other

If you would like to expand on the above response, please do so here:

Question 8: To the best of your knowledge, do evolutionary biologists in general make use of findings from the field of historical linguists?

a) Regularly

b) Often

f) Sometimes

d) Rarely

X e) Only in very specific cases

f) Never

g) Other

If you would like to expand on the above response, please do so here:

Question 9: In your opinion, does the division of academic disciplines into natural sciences on the one hand and social sciences/humanities on the other:

a) Facilitate collaboration between evolutionary biology and historical linguistics

b) Inhibit collaboration between evolutionary biology and historical linguistics

X c) Neither facilitate nor inhibit collaboration between evolutionary biology and historical linguistics

d) Other?

If you would like to expand on the above response, please do so here:

Question 10: In your opinion, is the **'family tree'** model of indicating evolutionary relationships: (please highlight as many as you feel relevant)

X a) An adequate model for all biological species

X b) An adequate model for all languages

c) An adequate model for some biological species, but not all

d) An adequate model for some languages, but not all

e) An inadequate model for biological species

f) An inadequate model for languages

g) Other?

If you would like to expand on the above response, please do so here:

Question 11: In your opinion, which of the following definitions best explains the term 'evolution' as applied to **languages** (i.e., language change from protolanguage to daughter languages or from early to middle to modern periods etc, as opposed to the evolution of the human capacity for language):

a) The evolution of languages is part of an exclusive process which applies to languages alone

b) The evolution of languages is part of the wider process of cultural evolution which includes other aspects of culture but is separate from biological evolution

X c) The evolution of languages is part of the wider process of biological evolution, as are other forms of animal communication

c) Other?

If you would like to expand on the above response, please do so here:

Question 12: Would you be interested in participating in a brief semi-structured interview to expand on the subject matter raised in this questionnaire? (this would require permission to include your name)

a) Yes, of course

b) No, unfortunately not

X c) Possibly, if a convenient time can be arranged

If you would like to expand on the above response, please do so here:

Thank you very much for your time

Andrew Currie

Questionnaire on links between evolutionary biology and historical linguistics QBLE6

Background information:

The purpose of this questionnaire is to gather information which will help shed further light on the shared terms and concepts used in (evolutionary) biology and (historical) linguistics. Given the enormous scope of the field, some of the questions may seem rather broad or not directly relevant to your personal area of expertise. However, your view on as many questions as you would care to answer would, nevertheless, be welcome. A box is provided under every question for you to give (or expand upon) an answer. In the case of multiple choice questions, I would be grateful if you could highlight the answer(s) closest to your own view in colour or bold type.

The Questions:

Question 1: The terms **'vulnerable'**, **'critically endangered'** and **'extinct'** are used to classify levels of endangerment not only of biological species (IUCN) but also of languages (UNESCO). Do you consider the application of the same terms for these different phenomena to be:

a) Of no consequence, both are easily understood and separated

b) Of use and of some significance, indicating the similar dangers facing both biodiversity and linguistic diversity

c) Unhelpful and misleading, giving the impression that languages are living organisms

d) Other?

If you would like to expand on the above response, please do so here:

Question 2: Terms such as **'living'**, **'dead'** and **'genetically related'** are frequently used to describe languages. Do you consider the application of such terms to languages to be:

a) Of no consequence, their meaning is easily understood

b) Of use and of some significance, indicating similarities in the ways that both biological species and languages come into being, cease to exist and relate to each other

c) Unhelpful and misleading, given that languages are neither living organisms nor related to each other by genes

d) Other?

If you would like to expand on the above response, please do so here:
Sometimes it is important to make a distinction between human genetics and linguistic shared ancestry, as it may be confusing

Question 3: The term **'biocultural diversity'** has been defined as *"the diversity of life in all its manifestations: biological, cultural, and linguistic"*. All three types of diversity are often noted as facing similar threats. Do you consider these common threats to be:

a) Clearly linked, there is a knock-on effect between all three

b) Environmentally determined. Biological, cultural and linguistic diversity are similar in certain areas simply because they share the same kind of biome (e.g. dense rainforest versus arctic tundra)

c) Entirely coincidental, they are not interrelated

d) Other?

If you would like to expand on the above response, please do so here: **I personally think they are linked (so that excludes c for me) but I do not think that we understand these connections well enough to support b or a.**

Question 4: **Binomial nomenclature** (e.g. *Canis lupus*) is applied to biological species, often alongside a common name (e.g. *wolf*). In your opinion, would the application of binomial nomenclature to the world's languages in similar fashion be:

a) Of no practical purpose

b) A useful means of distinguishing languages from each other, especially in the more linguistically diverse parts of the world

c) Another example of blurring the distinction between biological organisms and languages

d) Other?

If you would like to expand on the above response, please do so here: **I think that mentioning the language family and/or area when needed should be enough to dispel potential confusions, but I personally recommend always adding ISO or Glottolog codes for clarity**

Question 5: In your opinion, is collaborative research between evolutionary biology and historical linguistics:

a) Unnecessary

b) Desirable

c) Essential

d) Other?

If you would like to expand on the above response, please do so here: **There's too much to discuss here, but, briefly, the processes are similar enough to warrant a shared understanding**

Question 6: Do you use methods from both evolutionary biology and historical linguistics in your personal research?

a) Regularly

b) Often

f) Sometimes
d) Rarely

e) Only in very specific cases

f) Never

g) Other

If you would like to expand on the above response, please do so here:

Methods from phylogenetics and population genetics but, most importantly, concepts, theories and paradigms

Question 7: To the best of your knowledge, do historical linguists in general make use of findings from the field of evolutionary biology?

a) Regularly

b) Often

f) Sometimes
d) Rarely

e) Only in very specific cases

f) Never

g) Other

If you would like to expand on the above response, please do so here:

It is still not part of the basic training, but it is changing relatively fast

Question 8: To the best of your knowledge, do evolutionary biologists in general make use of findings from the field of historical linguists?

a) Regularly

b) Often

g) Sometimes
d) Rarely

e) Only in very specific cases

f) Never

g) Other

If you would like to expand on the above response, please do so here:

Normally, I don't think they're very much aware of that and may use them when they deal with languages/communities/demographic processes, or, if they study aspects of the "extended synthesis" that touch on culture/cultural niche construction and things like that. Overall, a minority…

Question 9: In your opinion, does the division of academic disciplines into natural sciences on the one hand and social sciences/humanities on the other:

a) Facilitate collaboration between evolutionary biology and historical linguistics

b) Inhibit collaboration between evolutionary biology and historical linguistics

c) Neither facilitate nor inhibit collaboration between evolutionary biology and historical linguistics

d) Other?

If you would like to expand on the above response, please do so here:

I find this distinction rooted in historical accident and presently positively misleading

Question 10: In your opinion, is the **'family tree'** model of indicating evolutionary relationships: (please highlight as many as you feel relevant)

a) An adequate model for all biological species

b) An adequate model for all languages

c) An adequate model for some biological species, but not all

d) An adequate model for some languages, but not all

e) An inadequate model for biological species

f) An inadequate model for languages

g) Other?

If you would like to expand on the above response, please do so here:

I think it is much more appropriate for biology ("horizontal" processes play a more limited role) than for language (large horizontal influence and lack of a "universal" tree – not that the TOL is doing particularly well these days ☺ but still seems to point to something at least partly real)

Question 11: In your opinion, which of the following definitions best explains the term 'evolution' as applied to **languages** (i.e., language change from protolanguage to daughter languages or from early to middle to modern periods etc, as opposed to the evolution of the human capacity for language):

a) The evolution of languages is part of an exclusive process which applies to languages alone

b) The evolution of languages is part of the wider process of cultural evolution which includes other aspects of culture but is separate from biological evolution

c) The evolution of languages is part of the wider process of biological evolution, as are other forms of animal communication

c) Other?

If you would like to expand on the above response, please do so here: **My preference goes something like 80%b + 20%c – so there's many things shared across these domains but there are also specificities**

Question 12: Would you be interested in participating in a brief semi-structured interview to expand on the subject matter raised in this questionnaire? (this would require permission to include your name)

a) Yes, of course

b) No, unfortunately not

c) Possibly, if a convenient time can be arranged

If you would like to expand on the above response, please do so here:

Thank you very much for your time

Andrew Currie

Questionnaire on links between linguistic and biological ecology QEL1

Background information:

The purpose of this questionnaire is to gather information which will help shed further light on the shared terms and concepts used in linguistic and biological ecology. Given the enormous scope of these fields, some of the questions may seem rather broad or not directly relevant to your personal area of expertise. However, your view on as many questions as you would care to answer would nevertheless be welcome. A box is provided under every question for you to give (or expand upon) an answer. In the case of multiple choice questions, I would be grateful if you could highlight the answer(s) closest to your own view in colour or bold type.

The Questions:

Question 1: The term **'ecology'** is often used to describe interactions between not only biological organisms but also languages in their respective environments. Do you consider the application of the same term for these different phenomena to be:

a) Of no consequence, both concepts are easily understood and separated

b) Useful and of some significance, indicating the similar processes affecting both biodiversity and linguistic diversity

c) Unhelpful and misleading, giving the impression that languages are living organisms

d) Other?

If you would like to expand on the above response, please do so here: I think it is a bit trendy, it's a way of thinking about language that would never occur to me..so far in my reading of Ecolinguistics I have yet to come across a convincing paper on the topic, so I have yet to understand what 'ecology' applied to a language could mean..but I don't go as far as c)

Question 2: The terms **'vulnerable'**, **'critically endangered'** and **'extinct'** are used to classify levels of endangerment not only of biological species (IUCN) but also of languages (UNESCO). Do you consider the application of the same terms for these different phenomena to be:

a) Of no consequence, both are easily understood and separated

b) Of use and of some significance, indicating the similar dangers facing both biodiversity and linguistic diversity

c) Unhelpful and misleading, giving the impression that languages are living organisms

d) Other?

If you would like to expand on the above response, please do so here:

Question 3: Terms such as **'living'**, **'dead'** and **'genetically related'** are frequently used to describe languages. Do you consider the application of such terms to languages to be:

a) Of no consequence, their meaning is easily understood

b) Of use and of some significance, indicating similarities in the ways that both biological species and languages come into being, cease to exist and relate to each other

c) Unhelpful and misleading, given that languages are neither living organisms nor related to each other by genes

d) Other?

If you would like to expand on the above response, please do so here: not sure about 'genetically related' applied to languages

Question 4: The term **'biocultural diversity'** has been defined as *"the diversity of life in all its manifestations: biological, cultural, and linguistic"*. All three types of diversity are often noted as facing similar threats. Do you consider these common threats to be:

a) Clearly linked, there is a knock-on effect between all three

b) Environmentally determined. Biological, cultural and linguistic diversity are similar in certain areas simply because they share the same kind of biome (e.g. dense rainforest versus arctic tundra)

c) Entirely coincidental, they are not interrelated

d) Other?

If you would like to expand on the above response, please do so here: more a) than the others,

Question 5: In your opinion, which of the following definitions best explains the term 'ecology' as applied to **languages**:

a) Linguistic ecology refers to the interaction of languages within their wider linguistic environment, and is an exclusive process which applies to languages alone

b) Linguistic ecology is part of the wider process of cultural ecology which includes other aspects of culture, but is separate from biological ecology

c) Linguistic ecology is part of the wider process of biological ecology, as are all other aspects of human culture

c) Other?

If you would like to expand on the above response, please do so here:

Question 6: **Binomial nomenclature** (e.g. *Canis lupus*) is applied to biological species, often alongside a common name (e.g. *wolf*). In your opinion, would the application of binomial nomenclature to the world's languages in similar fashion be:

a) Of no practical purpose

b) A useful means of distinguishing languages from each other, especially in the more linguistically diverse parts of the world

c) Another example of blurring the distinction between biological organisms and languages

d) Other?

If you would like to expand on the above response, please do so here:

Question 7: In your opinion, is collaborative research between biological and linguistic ecologists:

a) Unnecessary

b) Desirable

c) Essential

d) Other?

If you would like to expand on the above response, please do so here: I think from a strategic perspective, in terms of producing research that might influence opinion outside academia..at a social or political level..

Question 8: Do you use methods from both biological and linguistic ecology in your personal research?

a) Regularly

b) Often

f) Sometimes

d) Rarely

e) Only in very specific cases

f) **Never**

g) Other

If you would like to expand on the above response, please do so here:

Question 9: To the best of your knowledge, do linguistic ecologists in general make use of findings from the field of biological ecology?

a) Regularly

b) Often

g) Sometimes

d) Rarely

e) Only in very specific cases

f) Never

g) Other

If you would like to expand on the above response, please do so here:

Question 10: To the best of your knowledge, do biological ecologists in general make use of findings from the field of linguistic ecology?

a) Regularly

b) Often

h) Sometimes

d) Rarely

e) Only in very specific cases

f) Never

g) **Other**

If you would like to expand on the above response, please do so here: no idea

Question 11: In your opinion, does the division of academic disciplines into natural sciences on the one hand and social sciences/humanities on the other:

a) Facilitate collaboration between biological and linguistic ecology

b) Inhibit collaboration between evolutionary biological and linguistic ecology

c) Neither facilitate nor inhibit collaboration between biological and linguistic ecology

d) Other?

If you would like to expand on the above response, please do so here: there are no interdisciplinary journals that I know of so there is a strict separation between fields

Question 12: Would you be interested in participating in a brief semi-structured interview to expand on the subject matter raised in this questionnaire? (this would require permission to include your name)

a) Yes, of course

b) No, unfortunately not

c) Possibly, if a convenient time can be arranged

If you would like to expand on the above response, please do so here:

Thank you very much for your time

Andrew Currie

Questionnaire on links between linguistic and biological ecology QEL2

Background information:

The purpose of this questionnaire is to gather information which will help shed further light on the shared terms and concepts used in linguistic and biological ecology. Given the enormous scope of these fields, some of the questions may seem rather broad or not directly relevant to your personal area of expertise. However, your view on as many questions as you would care to answer would nevertheless be welcome. A box is provided under every question for you to give (or expand upon) an answer. In the case of multiple choice questions, I would be grateful if you could highlight the answer(s) closest to your own view in colour or bold type.

The Questions:

Question 1: The term **'ecology'** is often used to describe interactions between not only biological organisms but also languages in their respective environments. Do you consider the application of the same term for these different phenomena to be:

a) Of no consequence, both concepts are easily understood and separated

b) Useful and of some significance, indicating the similar processes affecting both biodiversity and linguistic diversity

c) Unhelpful and misleading, giving the impression that languages are living organisms

d) Other?

If you would like to expand on the above response, please do so here:

The way that languages interact with each other is different from how biological organisms interact. Forcing the metaphor onto languages could potentially distort observations – we should just look at languages and describe how they interact without *a priori* deciding that it's obviously the same as how species interact with each other. My main objection, however, is that it is anthropocentric to use the term 'ecology' in a way that excludes animals, plants, forests, rivers and trees at a time in history that we most need to focus on them. So I would much prefer it if 'language ecology' was instead referred to as 'language interaction'.

Question 2: The terms **'vulnerable'**, **'critically endangered'** and **'extinct'** are used to classify levels of endangerment not only of biological species (IUCN) but also of languages (UNESCO). Do you consider the application of the same terms for these different phenomena to be:

a) Of no consequence, both are easily understood and separated

b) Of use and of some significance, indicating the similar dangers facing both biodiversity and linguistic diversity

c) Unhelpful and misleading, giving the impression that languages are living organisms

d) Other?

If you would like to expand on the above response, please do so here: These terms generally make sense and don't imply that languages behave like species in general (in the way that 'language ecology' does).

Question 3: Terms such as **'living'**, **'dead'** and **'genetically related'** are frequently used to describe languages. Do you consider the application of such terms to languages to be:

a) Of no consequence, their meaning is easily understood

b) Of use and of some significance, indicating similarities in the ways that both biological species and languages come into being, cease to exist and relate to each other

c) Unhelpful and misleading, given that languages are neither living organisms nor related to each other by genes

d) Other?

If you would like to expand on the above response, please do so here: 'genetically related' may be misleading since it implies too strongly that languages behave in the same way as species, which might blind researchers to ways that they might be different. Living and dead could be misleading since sometimes 'dead' languages are brought to life (e.g., Hebrew), but it's not a big issue.

Question 4: The term **'biocultural diversity'** has been defined as *"the diversity of life in all its manifestations: biological, cultural, and linguistic"*. All three types of diversity are often noted as facing similar threats. Do you consider these common threats to be:

a) Clearly linked, there is a knock-on effect between all three

b) Environmentally determined. Biological, cultural and linguistic diversity are similar in certain areas simply because they share the same kind of biome (e.g. dense rainforest versus arctic tundra)

c) Entirely coincidental, they are not interrelated

d) Other?

If you would like to expand on the above response, please do so here: I am happy with this because it does not erase animals, plants, forests rivers etc.

Question 5: In your opinion, which of the following definitions best explains the term 'ecology' as applied to **languages**:

a) Linguistic ecology refers to the interaction of languages within their wider linguistic environment, and is an exclusive process which applies to languages alone

b) Linguistic ecology is part of the wider process of cultural ecology which includes other aspects of culture, but is separate from biological ecology

c) Linguistic ecology is part of the wider process of biological ecology, as are all other aspects of human culture

c) Other? Ecology is the interaction of humans with other humans, other species and the physical environment. Language use plays a role within ecology since it is one of the ways that humans interact with each other.

If you would like to expand on the above response, please do so here:

Question 6: **Binomial nomenclature** (e.g. *Canis lupus*) is applied to biological species, often alongside a common name (e.g. *wolf*). In your opinion, would the application of binomial nomenclature to the world's languages in similar fashion be:

a) Of no practical purpose

b) A useful means of distinguishing languages from each other, especially in the more linguistically diverse parts of the world

c) Another example of blurring the distinction between biological organisms and languages

d) Other? It could potentially be useful, and I don't think it blurs the boundary.

If you would like to expand on the above response, please do so here:

Question 7: In your opinion, is collaborative research between biological and linguistic ecologists:

a) Unnecessary

b) Desirable

c) Essential

d) Other?

If you would like to expand on the above response, please do so here: If a "linguistic ecologist" only considers relationships of languages with other languages without considering the biological and physical world then it would be useless – the linguist could offer nothing to the ecologist. It would be much better for ecologists to meet ecolinguists.

Question 8: Do you use methods from both biological and linguistic ecology in your personal research?

a) Regularly

b) Often

i) Sometimes

d) Rarely

e) Only in very specific cases

f) Never

g) Other

If you would like to expand on the above response, please do so here:

Question 9: To the best of your knowledge, do linguistic ecologists in general make use of findings from the field of biological ecology?

a) Regularly

b) Often

j) Sometimes

d) Rarely

e) Only in very specific cases

f) Never

g) Other

If you would like to expand on the above response, please do so here: I think that they may borrow terminology from biological ecology (e.g., semantic niche) and then (in an often forced way) try to apply it to language.

Question 10: To the best of your knowledge, do biological ecologists in general make use of findings from the field of linguistic ecology?

a) Regularly

b) Often

k) Sometimes

d) Rarely

e) Only in very specific cases

f) Never

g) Other

If you would like to expand on the above response, please do so here: I think that they may make use of research into language contact, language interaction etc, but probably not works which are specifically labelled 'linguistic ecology'

Question 11: In your opinion, does the division of academic disciplines into natural sciences on the one hand and social sciences/humanities on the other:

a) Facilitate collaboration between biological and linguistic ecology

b) Inhibit collaboration between evolutionary biological and linguistic ecology

c) Neither facilitate nor inhibit collaboration between biological and linguistic ecology

d) Other?

If you would like to expand on the above response, please do so here:

Question 12: Would you be interested in participating in a brief semi-structured interview to expand on the subject matter raised in this questionnaire? (this would require permission to include your name)

a) Yes, of course

b) No, unfortunately not

c) Possibly, if a convenient time can be arranged

If you would like to expand on the above response, please do so here:

Thank you very much for your time

Andrew Currie

Questionnaire on links between linguistic and biological ecology QEL3

Background information:

The purpose of this questionnaire is to gather information which will help shed further light on the shared terms and concepts used in linguistic and biological ecology. Given the enormous scope of these fields, some of the questions may seem rather broad or not directly relevant to your personal area of expertise. However, your view on as many questions as you would care to answer would nevertheless be welcome. A box is provided under every question for you to give (or expand upon) an answer. In the case of multiple choice questions, I would be grateful if you could highlight the answer(s) closest to your own view in colour or bold type.

The Questions:

Question 1: The term **'ecology'** is often used to describe interactions between not only biological organisms but also languages in their respective environments. Do you consider the application of the same term for these different phenomena to be:

a) Of no consequence, both concepts are easily understood and separated

b) Useful and of some significance, indicating the similar processes affecting both biodiversity and linguistic diversity

c) Unhelpful and misleading, giving the impression that languages are living organisms

d) Other?

If you would like to expand on the above response, please do so here:
The notion of "ecology" is used in reference to the environment that influences the evolution of (a) language. It helps articulate factors outside (a) language ("external ecology") and also within (a) language ("internal ecology") that influence the behaviors of speakers, which bear on language evolution. The invocations make it possible to deal with the actuation of change, including structural changes, language speciation, and language endangerment and loss.

Question 2: The terms **'vulnerable'**, **'critically endangered'** and **'extinct'** are used to classify levels of endangerment not only of biological species (IUCN) but also of languages (UNESCO). Do you consider the application of the same terms for these different phenomena to be:

a) Of no consequence, both are easily understood and separated

b) Of use and of some significance, indicating the similar dangers facing both biodiversity and linguistic diversity

c) Unhelpful and misleading, giving the impression that languages are living organisms

d) Other?

If you would like to expand on the above response, please do so here: The terms are useful to the extent that they highlight similarities between languages and biological species and, from my point of view, how changes in their ecologies affect their vitality.

Question 3: Terms such as **'living'**, **'dead'** and **'genetically related'** are frequently used to describe languages. Do you consider the application of such terms to languages to be:

a) Of no consequence, their meaning is easily understood

b) Of use and of some significance, indicating similarities in the ways that both biological species and languages come into being, cease to exist and relate to each other

c) Unhelpful and misleading, given that languages are neither living organisms nor related to each other by genes

d) Other?

If you would like to expand on the above response, please do so here: Linguists have been interested in classifying languages genetically since the 19th century. Apparently, August Schleicher produced the Stammbaum for languages before Charles Darwin produced cladograms. Since the 19th century, linguists have often analogized languages with either organisms or (in my work) species in biology. It makes a lot of sense to speak of "living" and "dead" languages. The analogy is useful, especially if languages are conceived of as populations of idiolects (like species are populations of organisms) sharing a common ancestry and "inter-breeding" (albeit communicating successfully) with each other. This puts pressure on practitioners of evolutionary linguistics (on the model of evolutionary biology) to ponder on how languages die (just like evolutionary biologists can explain how species die).

Question 4: The term **'biocultural diversity'** has been defined as *"the diversity of life in all its manifestations: biological, cultural, and linguistic"*. All three types of diversity are often noted as facing similar threats. Do you consider these common threats to be:

a) Clearly linked, there is a knock-on effect between all three

b) Environmentally determined. Biological, cultural and linguistic diversity are similar in certain areas simply because they share the same kind of biome (e.g. dense rainforest versus arctic tundra)

c) Entirely coincidental, they are not interrelated

d) Other?

If you would like to expand on the above response, please do so here: This is where I disagree with fellow linguists. Languages are themselves cultural artefacts. So, I don't like the phrase "language and culture." A language may die or survive while other aspects of the same culture survive or die. A population shifting to another population's language usually influences the prevailing language's culture. Things are more complicated that the literature on "biocultural diversity" discusses them.

Question 5: In your opinion, which of the following definitions best explains the term 'ecology' as applied to **languages**:

a) Linguistic ecology refers to the interaction of languages within their wider linguistic environment, and is an exclusive process which applies to languages alone

b) Linguistic ecology is part of the wider process of cultural ecology which includes other aspects of culture, but is separate from biological ecology

c) Linguistic ecology is part of the wider process of biological ecology, as are all other aspects of human culture

c) Other?

If you would like to expand on the above response, please do so here: If "ecology" is interpreted as 'environment', it cannot be a process or activities. Interactions between a language and its ecology are existential relations. The ecology of a language is not limited to the other languages that it coexists and may compete with. It includes a host of socioeconomic and natural ecology pressures that affect the behaviors of speakers. I say this in my book *The Ecology of Language Evolution* (CUP, 2001). In the history of languages, we hardly ever have to refer to the biological ecology of language(s). However, when we discuss the phylogenetic emergence of language, then we have invoke the human brain/mind and buccopharyngeal structures (for spoken languages) or hands (for signed languages) as primary ecologies.

Question 6: **Binomial nomenclature** (e.g. *Canis lupus*) is applied to biological species, often alongside a common name (e.g. *wolf*). In your opinion, would the application of binomial nomenclature to the world's languages in similar fashion be:

a) Of no practical purpose

b) A useful means of distinguishing languages from each other, especially in the more linguistically diverse parts of the world

c) Another example of blurring the distinction between biological organisms and languages

d) Other?

If you would like to expand on the above response, please do so here: The answers a), b) and c) are not mutually exclusive. They all apply.

Question 7: In your opinion, is collaborative research between biological and linguistic ecologists:

a) Unnecessary

b) Desirable

c) Essential

d) Other?

If you would like to expand on the above response, please do so here: It is desirable. Because biologists have made more progress in ecology than linguists have, it should help the latter to read the literature produced in macroecology and by environmentalists. I published an article in *Language* in December 2017, in which I highlight this scholarly connection. One does not know what biologists may learn in return from linguists. If they can, collaborative research may be said to be essential.

Question 8: Do you use methods from both biological and linguistic ecology in your personal research?

a) Regularly

b) Often

l) Sometimes

d) Rarely

e) Only in very specific cases

f) Never

g) Other

If you would like to expand on the above response, please do so here: I claim my work in evolutionary linguistics to be informed by genetic linguistics and macroecology. However, I'm self-trained in these fields and have discussed my work with people that understand these fields better than I do. Linguists complain that I am too biologically oriented, while some biologists like what I do. But I really don't know whether I should say I use "methods from biological … ecology."

Question 9: To the best of your knowledge, do linguistic ecologists in general make use of findings from the field of biological ecology?

a) Regularly

b) Often

m) Sometimes

d) Rarely

e) Only in very specific cases

f) Never

g) Other

If you would like to expand on the above response, please do so here: I think most "ecolinguists" as they call themselves (and I hate the term *ecolinguistics*!) are much influenced by environmentalists but have expressed little interest in macroecology. So their discourse is more moralizing than it can explain what is happening from an evolutionary perspective.

Question 10: To the best of your knowledge, do biological ecologists in general make use of findings from the field of linguistic ecology?

a) Regularly

b) Often

n) Sometimes

d) Rarely

e) Only in very specific cases

f) Never

g) Other

If you would like to expand on the above response, please do so here: I'm not sure that biologists really know about ecolinguistics or the ecology of language.

Question 11: In your opinion, does the division of academic disciplines into natural sciences on the one hand and social sciences/humanities on the other:

a) Facilitate collaboration between biological and linguistic ecology

b) Inhibit collaboration between evolutionary biological and linguistic ecology

c) Neither facilitate nor inhibit collaboration between biological and linguistic ecology

d) Other?

If you would like to expand on the above response, please do so here: My position of c). I think, however, that linguists have done little interest biologists in what they do.

Question 12: Would you be interested in participating in a brief semi-structured interview to expand on the subject matter raised in this questionnaire? (this would require permission to include your name)

a) Yes, of course

b) No, unfortunately not

c) Possibly, if a convenient time can be arranged

If you would like to expand on the above response, please do so here: Yes, if a convenient time can be arranged.

Thank you very much for your time

Andrew Currie

Questionnaire on links between linguistic and biological ecology QEL4

Background information:

The purpose of this questionnaire is to gather information which will help shed further light on the shared terms and concepts used in linguistic and biological ecology. Given the enormous scope of these fields, some of the questions may seem rather broad or not directly relevant to your personal area of expertise. However, your view on as many questions as you would care to answer would nevertheless be welcome. A box is provided under every question for you to give (or expand upon) an answer. In the case of multiple choice questions, I would be grateful if you could highlight the answer(s) closest to your own view in colour or bold type.

The Questions:

Question 1: The term **'ecology'** is often used to describe interactions between not only biological organisms but also languages in their respective environments. Do you consider the application of the same term for these different phenomena to be:

c) Unhelpful and misleading, giving the impression that languages are living organisms

I find it unhelpful, but not for the reason stated above. Although I have used and continue to be interested in a language ecology approach, the term itself seems to be applied to mean two very different things: 1) the relationship between languages within a given social/ political context, and 2) the relationship between languages and the physical environment. There is basically disagreement about what constitutes the environment – is it social/political or physical/biological? As someone interested in language politics, the first approach is helpful, the second one isn't.

Question 2: The terms **'vulnerable'**, **'critically endangered'** and **'extinct'** are used to classify levels of endangerment not only of biological species (IUCN) but also of languages (UNESCO). Do you consider the application of the same terms for these different phenomena to be:

b) Of use and of some significance, indicating the similar dangers facing both biodiversity and linguistic diversity

Again my answer differs from the reasons given above. I think the labels are fine, and useful. However, I've increasingly come to think that they are inadequate for a number of reasons. One is that they assess proximity to 'extinction' rather than 'shift', so they are of limited practical value to communities when the language is still healthy – what they require are tools that will help them forecast the near to distant future of the language. And secondly, I think these labels are misleading because endangerment isn't a property of a language. It's the product of a political context – we should be rating that. Labelling languages 'endangered' etc verges on victim blaming.

Question 3: Terms such as **'living'**, **'dead'** and **'genetically related'** are frequently used to describe languages. Do you consider the application of such terms to languages to be:

c) Unhelpful and misleading, given that languages are neither living organisms nor related to each other by genes

d) Other?

Unhelpful, given that languages can be revitalized, and the ways in which discourses of death, etc impact the community and demotivate revitalization.

Question 4: The term **'biocultural diversity'** has been defined as *"the diversity of life in all its manifestations: biological, cultural, and linguistic"*. All three types of diversity are often noted as facing similar threats. Do you consider these common threats to be:

d) Other?

I think that from the perspective of communities, the idea that these forms of diversity are linked is of little practical value. It doesn't provide very much useful information to help communities mobilize in defence of their languages. A view that centres the destructive forces which erode all varieties of diversity might be more productive in this sense.

Question 5: In your opinion, which of the following definitions best explains the term 'ecology' as applied to **languages**:

a) Linguistic ecology refers to the interaction of languages within their wider linguistic environment, and is an exclusive process which applies to languages alone

c) Other?

NA

Question 6: **Binomial nomenclature** (e.g. *Canis lupus*) is applied to biological species, often alongside a common name (e.g. *wolf*). In your opinion, would the application of binomial nomenclature to the world's languages in similar fashion be:

a) Of no practical purpose

Question 7: In your opinion, is collaborative research between biological and linguistic ecologists:

b) Desirable

If you would like to expand on the above response, please do so here:

Question 8: Do you use methods from both biological and linguistic ecology in your personal research?

d) Rarely

If you would like to expand on the above response, please do so here:

Question 9: To the best of your knowledge, do linguistic ecologists in general make use of findings from the field of biological ecology?

c) Sometimes

I have a degree in ecology and am surprised by how little use is actually made of ecological theory in ecological linguistics. There are so many concepts that could be deployed productively. But increasingly I think that developing this sort of theory has limited practical implications for speakers of endangered languages.

Question 10: To the best of your knowledge, do biological ecologists in general make use of findings from the field of linguistic ecology?

f) Never

I'm not aware of any examples.

Question 11: In your opinion, does the division of academic disciplines into natural sciences on the one hand and social sciences/humanities on the other:

c) Neither facilitate nor inhibit collaboration between biological and linguistic ecology

If you would like to expand on the above response, please do so here:

Question 12: Would you be interested in participating in a brief semi-structured interview to expand on the subject matter raised in this questionnaire? (this would require permission to include your name)

a) Yes, of course

If you would like to expand on the above response, please do so here:

Thank you very much for your time

Andrew Currie

Questionnaire on links between linguistic and biological ecology QEL5

Background information:

The purpose of this questionnaire is to gather information which will help shed further light on the shared terms and concepts used in linguistic and biological ecology. Given the enormous scope of these fields, some of the questions may seem rather broad or not directly relevant to your personal area of expertise. However, your view on as many questions as you would care to answer would nevertheless be welcome. A box is provided under every question for you to give (or expand upon) an answer. In the case of multiple choice questions, I would be grateful if you could highlight the answer(s) closest to your own view in colour or bold type.

The Questions:

Question 1: The term **'ecology'** is often used to describe interactions between not only biological organisms but also languages in their respective environments. Do you consider the application of the same term for these different phenomena to be:

a) Of no consequence, both concepts are easily understood and separated

b) Useful and of some significance, indicating the similar processes affecting both biodiversity and linguistic diversity

c) Unhelpful and misleading, giving the impression that languages are living organisms

d) Other? Very useful.

If you would like to expand on the above response, please do so here: "My particular approach to to Ecolinguistics is called Ecosystemic Linguistics because it departs from Ecology's central concept, *ecosystem*, inside which what matters is not the living organisms or their environment, but interactions (organism-organism interaction → communication; organism-environment inreractio → reference). Ecosystemic Linguistics does not borrow ecological concepts and use them as metaphors in language studies. EL is part of Macroecology. Therefore, it departs from within Ecology in order to study language phenomena. In the *Routledge handbook of Ecolinguistics*, edited by Alwin Fill & Hermine Penz there is a paper of main in which you can find more information, in case you want to.

There is also some material on the internet: Ecosystemic Linguistics.

https://ecosystemic-linguistics.blogspot.com.br

Question 2: The terms **'vulnerable'**, **'critically endangered'** and **'extinct'** are used to classify levels of endangerment not only of biological species (IUCN) but also of languages (UNESCO). Do you consider the application of the same terms for these different phenomena to be:

a) Of no consequence, both are easily understood and separated

b) Of use and of some significance, indicating the similar dangers facing both biodiversity and linguistic diversity

c) Unhelpful and misleading, giving the impression that languages are living organisms

d) Other?

If you would like to expand on the above response, please do so here:

Question 3: Terms such as **'living'**, **'dead'** and **'genetically related'** are frequently used to describe languages. Do you consider the application of such terms to languages to be:

a) Of no consequence, their meaning is easily understood

b) Of use and of some significance, indicating similarities in the ways that both biological species and languages come into being, cease to exist and relate to each other

c) Unhelpful and misleading, given that languages are neither living organisms nor related to each other by genes

d) Other? In this case it is useful as metaphor because languages do not have muscles, blood, bones; It does not breathe etc. But as a metaphor these concepts may be useful.

If you would like to expand on the above response, please do so here:

Question 4: The term **'biocultural diversity'** has been defined as *"the diversity of life in all its manifestations: biological, cultural, and linguistic"*. All three types of diversity are often noted as facing similar threats. Do you consider these common threats to be:

a) Clearly linked, there is a knock-on effect between all three

b) Environmentally determined. Biological, cultural and linguistic diversity are similar in certain areas simply because they share the same kind of biome (e.g. dense rainforest versus arctic tundra)

c) Entirely coincidental, they are not interrelated

d) Other?

If you would like to expand on the above response, please do so here:

Question 5: In your opinion, which of the following definitions best explains the term 'ecology' as applied to **languages**:

a) Linguistic ecology refers to the interaction of languages within their wider linguistic environment, and is an exclusive process which applies to languages alone

b) Linguistic ecology is part of the wider process of cultural ecology which includes other aspects of culture, but is separate from biological ecology

c) Linguistic ecology is part of the wider process of biological ecology, as are all other aspects of human culture

c) Other?

If you would like to expand on the above response, please do so here:

Question 6: **Binomial nomenclature** (e.g. *Canis lupus*) is applied to biological species, often alongside a common name (e.g. *wolf*). In your opinion, would the application of binomial nomenclature to the world's languages in similar fashion be:

a) Of no practical purpose

b) A useful means of distinguishing languages from each other, especially in the more linguistically diverse parts of the world

c) Another example of blurring the distinction between biological organisms and languages

d) Other? See box!

If you would like to expand on the above response, please do so here: "Language is not a thing. Nor is it an instrument of communication; it is communication, or communicative interaction. In this case, we could say that a good way of naming languages would be as is done in southern Africa, where, for instance, **Se**sotho is the language of the **Ba**sotho people, which live in the **Le**sotho country. For these people, and for many other around the world, "language" means something like "the way of speaking of people x". In Latin, you cannot translate direcly "I speak Latin". The Romans said, instead, "latine loqui", i.e., to talk like the Latins.

Question 7: In your opinion, is collaborative research between biological and linguistic ecologists:

a) Unnecessary

b) Desirable

c) Essential

d) Other?

If you would like to expand on the above response, please do so here:

Question 8: Do you use methods from both biological and linguistic ecology in your personal research?

a) Regularly

b) Often

o) Sometimes

d) Rarely

e) Only in very specific cases

f) Never

g) Other

If you would like to expand on the above response, please do so here:

Question 9: To the best of your knowledge, do linguistic ecologists in general make use of findings from the field of biological ecology?

a) Regularly

b) Often

p) Sometimes

d) Rarely

e) Only in very specific cases

f) Never

g) Other

If you would like to expand on the above response, please do so here:

Question 10: To the best of your knowledge, do biological ecologists in general make use of findings from the field of linguistic ecology?

a) Regularly

b) Often

q) Sometimes

d) Rarely

e) Only in very specific cases

f) Never

g) Other

If you would like to expand on the above response, please do so here:

Question 11: In your opinion, does the division of academic disciplines into natural sciences on the one hand and social sciences/humanities on the other:

a) Facilitate collaboration between biological and linguistic ecology

b) Inhibit collaboration between evolutionary biological and linguistic ecology

c) Neither facilitate nor inhibit collaboration between biological and linguistic ecology

d) Other?

If you would like to expand on the above response, please do so here:

Question 12: Would you be interested in participating in a brief semi-structured interview to expand on the subject matter raised in this questionnaire? (this would require permission to include your name)

a) Yes, of course

b) No, unfortunately not

c) Possibly, if a convenient time can be arranged

If you would like to expand on the above response, please do so here:

Thank you very much for your time

Andrew Currie

Questionnaire on links between linguistic and biological ecology QEL6

Background information:

The purpose of this questionnaire is to gather information which will help shed further light on the shared terms and concepts used in linguistic and biological ecology. Given the enormous scope of these fields, some of the questions may seem rather broad or not directly relevant to your personal area of expertise. However, your view on as many questions as you would care to answer would nevertheless be welcome. A box is provided under every question for you to give (or expand upon) an answer. In the case of multiple choice questions, I would be grateful if you could highlight the answer(s) closest to your own view in colour or bold type.

The Questions:

Question 1: The term **'ecology'** is often used to describe interactions between not only biological organisms but also languages in their respective environments. Do you consider the application of the same term for these different phenomena to be:

a) Of no consequence, both concepts are easily understood and separated

b) Useful and of some significance, indicating the similar processes affecting both biodiversity and linguistic diversity

c) Unhelpful and misleading, giving the impression that languages are living organisms

d) Other?

One has to consider that we are dealing with a metaphor, in both cases! Consider the original meaning of ecology in Greek: the *logos* of the *oikos*, i.e. the considerations concerning the or the rationale of the household. Haeckel adopted the term – metaphorically – to biological "households", and later Haugen – again metaphorically – to linguistic "households". I think the question should not be whether biology and linguistics can be kept apart but whether researchers in biology and linguistics alike are aware of the metaphorical nature of the term and the consequences of using it. I.e., there is no "household" neither among biological entities nor among linguistic structures, but we find this metaphor useful as it provides us with a theory of how things among biological entities and linguistic structures work.

Question 2: The terms **'vulnerable'**, **'critically endangered'** and **'extinct'** are used to classify levels of endangerment not only of biological species (IUCN) but also of languages (UNESCO). Do you consider the application of the same terms for these different phenomena to be:

a) Of no consequence, both are easily understood and separated

b) Of use and of some significance, indicating the similar dangers facing both biodiversity and linguistic diversity

c) Unhelpful and misleading, giving the impression that languages are living organisms

d) Other?

Same as above. It is of significance and also of (some) use. But there is a theory behind it, equalling some aspects of languages with some aspects of living beings. This theory makes sense from one point of view, but is terribly misleading from another. Taking your example: the use of the ecology/life-metaphor highlights the danger of mankind losing most of its linguistic resources. If you want to preserve that diversity, it's a helpful illustration and a good theory. But you could also say that language is a social institution (that's a different theory!), meaning that if linguistic resources "die out", then it is because they are of no social or cultural use anymore, so preserving them would be a purely academic or archaeological issue.

Question 3: Terms such as **'living'**, **'dead'** and **'genetically related'** are frequently used to describe languages. Do you consider the application of such terms to languages to be:

a) Of no consequence, their meaning is easily understood

b) Of use and of some significance, indicating similarities in the ways that both biological species and languages come into being, cease to exist and relate to each other

c) Unhelpful and misleading, given that languages are neither living organisms nor related to each other by genes

d) Other?

Here I would opt stronger against the use of these terms, precisely for the reason given in (c). But, again, a term like "genetically related" is of some use in describing the similarities we find among certain linguistic resources ('languages', 'dialects'). It is, again, a metaphor, as practically all things in linguistics are – and must be, because 'language' is an essentially abstract phenomenon, and we can deal with abstract things linguistically only by making use of metaphors and similar techniques (consider other abstract terms like 'freedom', 'peace', 'love' etc.).

Question 4: The term **'biocultural diversity'** has been defined as *"the diversity of life in all its manifestations: biological, cultural, and linguistic"*. All three types of diversity are often noted as facing similar threats. Do you consider these common threats to be:

a) Clearly linked, there is a knock-on effect between all three

b) Environmentally determined. Biological, cultural and linguistic diversity are similar in certain areas simply because they share the same kind of biome (e.g. dense rainforest versus arctic tundra)

c) Entirely coincidental, they are not interrelated

d) Other?

They are linked not so much environmentally, but metaphorically. Some things happening in biological environments have *some parallels* in social and cultural environments. But other than that: there is no direct link between the two fields: people adopt the linguistic habits of other people, they invent new ones and sort out others. All of this has (almost) no consequence on their *biological* life. In turn, the 'well-being' (meaning nothing else but a relative *stasis*) of biological diversity is of huge concern to all cultural and social issues, it is their prerequisite!

Question 5: In your opinion, which of the following definitions best explains the term 'ecology' as applied to **languages**:

a) Linguistic ecology refers to the interaction of languages within their wider linguistic environment, and is an exclusive process which applies to languages alone

b) Linguistic ecology is part of the wider process of cultural ecology which includes other aspects of culture, but is separate from biological ecology

c) Linguistic ecology is part of the wider process of biological ecology, as are all other aspects of human culture

c) Other?

If you would like to expand on the above response, please do so here:

Question 6: **Binomial nomenclature** (e.g. *Canis lupus*) is applied to biological species, often alongside a common name (e.g. *wolf*). In your opinion, would the application of binomial nomenclature to the world's languages in similar fashion be:

a) Of no practical purpose

b) A useful means of distinguishing languages from each other, especially in the more linguistically diverse parts of the world

c) Another example of blurring the distinction between biological organisms and languages

d) Other?

If you would like to expand on the above response, please do so here:

Question 7: In your opinion, is collaborative research between biological and linguistic ecologists:

a) Unnecessary

b) Desirable

c) Essential

d) Other?

It depends on the (linguistic) theory behind this collaboration. If this theory maintains a clear distinction between linguistic resources (as social products) and biological (i.e. non-social) entities and searches for the correspondences between the realms of the social and the biological, it can be very desirably. But if this theory sees a clear link between entity-like languages and biological entities, as it has been done so often since the 19th century, it is, I think, of no use, because there is, in my opinion, so much convincing evidence that the social and the biological do not work along the same lines.

Question 8: Do you use methods from both biological and linguistic ecology in your personal research?

a) Regularly

b) Often

r) Sometimes

d) Rarely

e) Only in very specific cases

f) Never

g) Other

If you would like to expand on the above response, please do so here:

Question 9: To the best of your knowledge, do linguistic ecologists in general make use of findings from the field of biological ecology?

a) Regularly

b) Often

s) Sometimes

d) Rarely

e) Only in very specific cases

f) Never

g) Other

I have a problem with the term “in general” here, and I don’t know who counts as a “linguistic ecologist”. But “sometimes” is equally vague, so I chose this answer.

Question 10: To the best of your knowledge, do biological ecologists in general make use of findings from the field of linguistic ecology?

a) Regularly

b) Often

t) Sometimes

d) Rarely

e) Only in very specific cases

f) Never

g) Other

As far as I know, the form of illustrating genealogical trees in biology was adopted from illustrations from linguistics; Haeckel saw them in the work of A. Schleicher, who was a colleague of his at Jena University and already a famous man when Haeckel began his career.

Question 11: In your opinion, does the division of academic disciplines into natural sciences on the one hand and social sciences/humanities on the other:

a) Facilitate collaboration between biological and linguistic ecology

b) Inhibit collaboration between evolutionary biological and linguistic ecology

c) Neither facilitate nor inhibit collaboration between biological and linguistic ecology

d) Other?

If you would like to expand on the above response, please do so here:

Question 12: Would you be interested in participating in a brief semi-structured interview to expand on the subject matter raised in this questionnaire? (this would require permission to include your name)

a) Yes, of course

b) No, unfortunately not

c) Possibly, if a convenient time can be arranged

If you would like to expand on the above response, please do so here:

Thank you very much for your time

Andrew Currie

Questionnaire on links between linguistic and biological ecology QEL7

Background information:

The purpose of this questionnaire is to gather information which will help shed further light on the shared terms and concepts used in linguistic and biological ecology. Given the enormous scope of these fields, some of the questions may seem rather broad or not directly relevant to your personal area of expertise. However, your view on as many questions as you would care to answer would nevertheless be welcome. A box is provided under every question for you to give (or expand upon) an answer. In the case of multiple choice questions, I would be grateful if you could highlight the answer(s) closest to your own view in colour or bold type.

The Questions:

Question 1: The term **'ecology'** is often used to describe interactions between not only biological organisms but also languages in their respective environments. Do you consider the application of the same term for these different phenomena to be:

a) Of no consequence, both concepts are easily understood and separated

b) Useful and of some significance, indicating the similar processes affecting both biodiversity and linguistic diversity

c) Unhelpful and misleading, giving the impression that languages are living organisms

d) Other?

If you would like to expand on the above response, please do so here: Like most terms that are applied to different phenomena—particularly those applied to different phenomena in different "disciplines"—it can be confusing when you are first encountering "ecology" used to describe biological and lingual phenomena. However, I believe the potential confusion is a site of productive struggle. Language may not be living the way a biological organism is, but language is *of* a biological organism—humans—and how we make the world through our words has consequence far beyond our species.

Question 2: The terms **'vulnerable'**, **'critically endangered'** and **'extinct'** are used to classify levels of endangerment not only of biological species (IUCN) but also of languages (UNESCO). Do you consider the application of the same terms for these different phenomena to be:

a) Of no consequence, both are easily understood and separated

b) Of use and of some significance, indicating the similar dangers facing both biodiversity and linguistic diversity

c) Unhelpful and misleading, giving the impression that languages are living organisms

d) Other?

If you would like to expand on the above response, please do so here:

Much research has been done on cognitive benefits of being multilingual. We broaden our thoughts when we have new words, new concepts to "label" phenomena. The United States has 165 languages registered with the Endangered Languages Project. These are the languages of the indigenous people of what-we-now-call America. What are we losing as we lose those languages, those thoughts, those stories, those ways of constructing and understanding the world? Just as we do not know all of the consequences of the loss of a species in area, we do not know all the ramifications of losing alternative constructions of the world.

Question 3: Terms such as **'living'**, **'dead'** and **'genetically related'** are frequently used to describe languages. Do you consider the application of such terms to languages to be:

a) Of no consequence, their meaning is easily understood

b) Of use and of some significance, indicating similarities in the ways that both biological species and languages come into being, cease to exist and relate to each other

c) Unhelpful and misleading, given that languages are neither living organisms nor related to each other by genes

d) Other?

If you would like to expand on the above response, please do so here:

"Genetically related" is a hard one. Of course, language does not possess sequences of nucleotides. However, there is a genealogy to language, and words have "roots" and "stems." They grow; they modify; they die.

Question 4: The term **'biocultural diversity'** has been defined as *"the diversity of life in all its manifestations: biological, cultural, and linguistic"*. All three types of diversity are often noted as facing similar threats. Do you consider these common threats to be:

a) Clearly linked, there is a knock-on effect between all three

b) Environmentally determined. Biological, cultural and linguistic diversity are similar in certain areas simply because they share the same kind of biome (e.g. dense rainforest versus arctic tundra)

c) Entirely coincidental, they are not interrelated

d) Other?

If you would like to expand on the above response, please do so here:

Question 5: In your opinion, which of the following definitions best explains the term 'ecology' as applied to **languages**:

a) Linguistic ecology refers to the interaction of languages within their wider linguistic environment, and is an exclusive process which applies to languages alone

b) Linguistic ecology is part of the wider process of cultural ecology which includes other aspects of culture, but is separate from biological ecology

c) Linguistic ecology is part of the wider process of biological ecology, as are all other aspects of human culture

c) Other?

If you would like to expand on the above response, please do so here:

Question 6: **Binomial nomenclature** (e.g. *Canis lupus*) is applied to biological species, often alongside a common name (e.g. *wolf*). In your opinion, would the application of binomial nomenclature to the world's languages in similar fashion be:

a) Of no practical purpose

b) A useful means of distinguishing languages from each other, especially in the more linguistically diverse parts of the world

c) Another example of blurring the distinction between biological organisms and languages

d) Other?

If you would like to expand on the above response, please do so here:
I have mused for this for a couple of weeks now, and I still do not know how I feel about applying binomial nomenclature on languages. It is not that I think it is wrong, per se; I am simply unsure what it would add. That is, I am not sure that the "common names" of languages need "scientific names" to be successfully distinguished. That being said, I think there is an interesting possibility here, as well. Applying binomial nomenclature would get that the idea that languages are alive and would apply levels of grouping and differentia that could be productive.

Question 7: In your opinion, is collaborative research between biological and linguistic ecologists:

a) Unnecessary

b) Desirable

c) Essential

d) Other?

If you would like to expand on the above response, please do so here:

Question 8: Do you use methods from both biological and linguistic ecology in your personal research?

a) Regularly

b) Often

u) Sometimes
d) Rarely

e) Only in very specific cases

f) Never

g) Other

If you would like to expand on the above response, please do so here:

Question 9: To the best of your knowledge, do linguistic ecologists in general make use of findings from the field of biological ecology?

a) Regularly

b) Often

v) Sometimes
d) Rarely

e) Only in very specific cases

f) Never

g) Other

If you would like to expand on the above response, please do so here:

Question 10: To the best of your knowledge, do biological ecologists in general make use of findings from the field of linguistic ecology?

a) Regularly

b) Often

w) Sometimes
d) Rarely

e) Only in very specific cases

f) Never

g) Other

If you would like to expand on the above response, please do so here:

Question 11: In your opinion, does the division of academic disciplines into natural sciences on the one hand and social sciences/humanities on the other:

a) Facilitate collaboration between biological and linguistic ecology

b) Inhibit collaboration between evolutionary biological and linguistic ecology

c) Neither facilitate nor inhibit collaboration between biological and linguistic ecology

d) Other?

If you would like to expand on the above response, please do so here:

Question 12: Would you be interested in participating in a brief semi-structured interview to expand on the subject matter raised in this questionnaire? (this would require permission to include your name)

a) Yes, of course

b) No, unfortunately not

c) Possibly, if a convenient time can be arranged

If you would like to expand on the above response, please do so here:

Thank you very much for your time

Andrew Currie

Questionnaire on links between linguistic and biological ecology QEL8

Background information:

The purpose of this questionnaire is to gather information which will help shed further light on the shared terms and concepts used in linguistic and biological ecology. Given the enormous scope of these fields, some of the questions may seem rather broad or not directly relevant to your personal area of expertise. However, your view on as many questions as you would care to answer would nevertheless be welcome. A box is provided under every question for you to give (or expand upon) an answer. In the case of multiple choice questions, I would be grateful if you could highlight the answer(s) closest to your own view in colour or bold type.

The Questions:

Question 1: The term **'ecology'** is often used to describe interactions between not only biological organisms but also languages in their respective environments. Do you consider the application of the same term for these different phenomena to be:

a) Of no consequence, both concepts are easily understood and separated

b) Useful and of some significance, indicating the similar processes affecting both biodiversity and linguistic diversity

c) Unhelpful and misleading, giving the impression that languages are living organisms

d) Other?

If you would like to expand on the above response, please do so here: First of all, we tend to forget that there are different kinds of "ecologies." From the standpoint of human and other-than-human communication, semiosis occurs within given ecologies or *Umwelten*. Moreover, as researchers like Todd Freeberg demonstrate, linguistic diversity is analogous to social diversity. In this regard, the "social complexity hypothesis" represents an important theoretical framework for broaching this subject.

Question 2: The terms **'vulnerable'**, **'critically endangered'** and **'extinct'** are used to classify levels of endangerment not only of biological species (IUCN) but also of languages (UNESCO). Do you consider the application of the same terms for these different phenomena to be:

a) Of no consequence, both are easily understood and separated

b) Of use and of some significance, indicating the similar dangers facing both biodiversity and linguistic diversity

c) Unhelpful and misleading, giving the impression that languages are living organisms

d) Other?

If you would like to expand on the above response, please do so here:

In addition to preserving the cultural heritage of humanity, I find these terms to be useful because they serve as a stern reminder. In the Anthropocene, life itself is on the brink of collapse owing to our myopic, parasitic rapport with the remainder of the biosphere. Given that diversity in general is quickly disappearing at an alarming rate, I would contend that this kind of terminology is quite appropriate.

Question 3: Terms such as **'living'**, **'dead'** and **'genetically related'** are frequently used to describe languages. Do you consider the application of such terms to languages to be:

a) Of no consequence, their meaning is easily understood

b) **Of use and of some significance**, indicating similarities in the ways that both biological species and languages come into being, cease to exist and relate to each other

c) Unhelpful and misleading, given that languages are neither living organisms nor related to each other by genes

d) Other?

If you would like to expand on the above response, please do so here:

I also find these terms to be useful because they represent a biocentric worldview. Additionally, these sorts of metaphors remind us that communication is emblematic of life itself. From the most basic unicellular organism all the way up, species communicate with each other in meaningful and purposeful ways. Although some people might object to the usage of these biological metaphors in the linguistic domain, this terminology reminds us that communication is ubiquitous throughout the universe at all biological levels of organization.

Question 4: The term **'biocultural diversity'** has been defined as *"the diversity of life in all its manifestations: biological, cultural, and linguistic"*. All three types of diversity are often noted as facing similar threats. Do you consider these common threats to be:

a) Clearly linked, there is a knock-on effect between all three

b) Environmentally determined. Biological, cultural and linguistic diversity are similar in certain areas simply because they share the same kind of biome (e.g. dense rainforest versus arctic tundra)

c) Entirely coincidental, they are not interrelated

d) Other?

If you would like to expand on the above response, please do so here:

The term "biocultural diversity" deconstructs the anthropocentric fallacy that we are the only species that possesses certain faculties including language. In *Les origines animales de la culture*, the French philosopher and ethologist persuasively posits that other organisms have rich cultures

as well. Moreover, this term contests the binary logic that lies at the heart of the nature-culture split in Western civilization.

Question 5: In your opinion, which of the following definitions best explains the term 'ecology' as applied to **languages**:

a) Linguistic ecology refers to the interaction of languages within their wider linguistic environment, and is an exclusive process which applies to languages alone

b) Linguistic ecology is part of the wider process of cultural ecology which includes other aspects of culture, but is separate from biological ecology

c) Linguistic ecology is part of the wider process of biological ecology, as are all other aspects of human culture

c) Other?

If you would like to expand on the above response, please do so here:

On an interconnected and interdependent planet, nothing exists in a vacuum including various forms of semiosis. As I mention above, the nature-culture split is a by-product of the fragmented human imagination stemming from anthropocentric delusions of grandeur.

Question 6: **Binomial nomenclature** (e.g. *Canis lupus*) is applied to biological species, often alongside a common name (e.g. *wolf*). In your opinion, would the application of binomial nomenclature to the world's languages in similar fashion be:

a) Of no practical purpose

b) A useful means of distinguishing languages from each other, especially in the more linguistically diverse parts of the world

c) Another example of blurring the distinction between biological organisms and languages

d) Other?

If you would like to expand on the above response, please do so here:

I am very intrigued by the concept of binominal nomenclature and what it has to offer both linguists and environmental humanists. The evident downside is that this sort of terminology is only useful to researchers. In other words, it would not resonate with the general public at all. In this same vein, phonetic transcription is only utilized by academicians.

Question 7: In your opinion, is collaborative research between biological and linguistic ecologists:

a) Unnecessary

b) Desirable

c) Essential

d) Other?

If you would like to expand on the above response, please do so here:

In an academic landscape epitomized by insularity and overspecialization, collaboration between the hard sciences and other disciplines is vital. Specifically, the hard sciences help us to understand the varying complexity of the types of semiosis that occur throughout the planet. Moreover, researchers within the humanities should be collaborating with each other on a regular basis as well.

Question 8: Do you use methods from both biological and linguistic ecology in your personal research?

a) **Regularly**

b) Often

x) Sometimes

d) Rarely

e) Only in very specific cases

f) Never

g) Other

If you would like to expand on the above response, please do so here:

I have published quite a bit of material related to Ecolinguistics and Biosemiotics the last few years. I am currently teaching a graduate seminar dedicated to Ecolinguistics for the first time.

Question 9: To the best of your knowledge, do linguistic ecologists in general make use of findings from the field of biological ecology?

a) Regularly

b) Often

y) Sometimes

d) Rarely

e) Only in very specific cases

f) Never

g) Other

If you would like to expand on the above response, please do so here:

This is a difficult and tricky question, because it depends on the researcher. There are some extremely innovative scholars who take advantage of many different ways of knowing. On the other end of the spectrum, many professors adhere strictly to traditional research methods from their field.

Question 10: To the best of your knowledge, do biological ecologists in general make use of findings from the field of linguistic ecology?

a) Regularly

b) Often

z) Sometimes

d) Rarely

e) Only in very specific cases

f) Never

g) Other

If you would like to expand on the above response, please do so here:

This is the same problem that I underscore above. Although some academicians stay in their tiny epistemological box throughout their entire career, other researchers are more innovative in the ways in which they try to weave connections between different kinds of epistemological discourses.

Question 11: In your opinion, does the division of academic disciplines into natural sciences on the one hand and social sciences/humanities on the other:

a) Facilitate collaboration between biological and linguistic ecology

b) Inhibit collaboration between evolutionary biological and linguistic ecology

c) Neither facilitate nor inhibit collaboration between biological and linguistic ecology

d) Other?

If you would like to expand on the above response, please do so here:

This is one of the most pervasive problems within the academic institution. I have spent much of my career acting as if this division does not exist at all. This is a form of reductionistic thinking that reduces knowledge to a little box. Knowledge is like water; it flows in all different directions. It cannot be compartmentalized into pre-existing mental categories that are useful but misleading cognitive structures. The first law of ecology applies to knowledge as well. Given that "everything

is connected to everything else," I wish that more countries would imitate Finland by adopting phenomenon-based learning.

Question 12: Would you be interested in participating in a brief semi-structured interview to expand on the subject matter raised in this questionnaire? (this would require permission to include your name)

a) Yes, of course

b) No, unfortunately not

c) Possibly, if a convenient time can be arranged

If you would like to expand on the above response, please do so here:

Owing to the time difference and my rather heavy teaching load (the result of a growing, successful program) this semester, it would probably be easier for me to answer written questions via email. If my perspectives contribute something meaningful to your research, I would be willing to help. Regardless, your research has a tremendous amount of potential.

Thank you very much for your time

Andrew Currie

Questionnaire on links between linguistic and biological ecology QEL9

Background information:

The purpose of this questionnaire is to gather information which will help shed further light on the shared terms and concepts used in linguistic and biological ecology. Given the enormous scope of these fields, some of the questions may seem rather broad or not directly relevant to your personal area of expertise. However, your view on as many questions as you would care to answer would nevertheless be welcome. A box is provided under every question for you to give (or expand upon) an answer. In the case of multiple choice questions, I would be grateful if you could highlight the answer(s) closest to your own view in colour or bold type.

The Questions:

Question 1: The term **'ecology'** is often used to describe interactions between not only biological organisms but also languages in their respective environments. Do you consider the application of the same term for these different phenomena to be:

a) Of no consequence, both concepts are easily understood and separated
b) Useful and of some significance, indicating the similar processes affecting both biodiversity and linguistic diversity
c) Unhelpful and misleading, giving the impression that languages are living organisms
d) Other?

If you would like to expand on the above response, please do so here: The term 'language ecology' is confusing to biologists, natural scientists in general and laymen informed about biology. I would have preferred a different, distinct term for the matters pursued in linguistics. (Some of my reservations can be discerned in my articles on Haugen's conception of language 'ecology'.)

Question 2: The terms **'vulnerable'**, **'critically endangered'** and **'extinct'** are used to classify levels of endangerment not only of biological species (IUCN) but also of languages (UNESCO). Do you consider the application of the same terms for these different phenomena to be:

a) Of no consequence, both are easily understood and separated
b) Of use and of some significance, indicating the similar dangers facing both biodiversity and linguistic diversity
c) Unhelpful and misleading, giving the impression that languages are living organisms
d) Other?

If you would like to expand on the above response, please do so here: I view the terms 'vulnerable', 'critically endangered' and 'extinct' as more neutral than the term 'language ecology'. The former terms do not necessarily make you think of biological organisms.

Question 3: Terms such as **'living'**, **'dead'** and **'genetically related'** are frequently used to describe languages. Do you consider the application of such terms to languages to be:

a) Of no consequence, their meaning is easily understood
b) Of use and of some significance, indicating similarities in the ways that both biological species and languages come into being, cease to exist and relate to each other
c) Unhelpful and misleading, given that languages are neither living organisms nor related to each other by genes
d) Other?

If you would like to expand on the above response, please do so here: Especially the term 'genetically related' is gravely misleading and should be replaced. The other two terms are, however, less innocuous and so well entrenched that they will have to be kept.

Question 4: The term **'biocultural diversity'** has been defined as *"the diversity of life in all its manifestations: biological, cultural, and linguistic"*. All three types of diversity are often noted as facing similar threats. Do you consider these common threats to be:

a) Clearly linked, there is a knock-on effect between all three
b) Environmentally determined. Biological, cultural and linguistic diversity are similar in certain areas simply because they share the same kind of biome (e.g. dense rainforest versus arctic tundra)
c) Entirely coincidental, they are not interrelated
d) Other?

If you would like to expand on the above response, please do so here: I think the notions 'biological diversity' and 'cultural and/or linguistic diversity' should be kept apart. For instance, 'biological diversity' could in principle be maintained, while 'linguistic diversity' totally disappears.

Question 5: In your opinion, which of the following definitions best explains the term 'ecology' as applied to **languages**:

a) Linguistic ecology refers to the interaction of languages within their wider linguistic environment, and is an exclusive process which applies to languages alone
b) Linguistic ecology is part of the wider process of cultural ecology which includes other aspects of culture, but is separate from biological ecology
c) Linguistic ecology is part of the wider process of biological ecology, as are all other aspects of human culture
c) Other?

If you would like to expand on the above response, please do so here:

Question 6: **Binomial nomenclature** (e.g. *Canis lupus*) is applied to biological species, often alongside a common name (e.g. *wolf*). In your opinion, would the application of binomial nomenclature to the world's languages in similar fashion be:

a) Of no practical purpose
b) A useful means of distinguishing languages from each other, especially in the more linguistically diverse parts of the world
c) Another example of blurring the distinction between biological organisms and languages
d) Other?

If you would like to expand on the above response, please do so here:

Question 7: In your opinion, is collaborative research between biological and linguistic ecologists:

a) Unnecessary
b) Desirable
c) Essential
d) Other?

If you would like to expand on the above response, please do so here: Collaboration at the level of the theory of science (theory formation, model construction, etc.) might be interesting to linguists.

Question 8: Do you use methods from both biological and linguistic ecology in your personal research?

a) Regularly
b) Often
a) Sometimes
d) Rarely
e) Only in very specific cases
f) Never
g) Other

If you would like to expand on the above response, please do so here: The uncritical adoption of biological models in linguistics may sometimes lead to questionable research results (cf., e.g., Pereltsvaig & Lewis, *The Indo-European controversy: Facts and fallacies in historical linguistics*, 2015).

Question 9: To the best of your knowledge, do linguistic ecologists in general make use of findings from the field of biological ecology?

a) Regularly
b) Often
b) Sometimes
d) Rarely
e) Only in very specific cases
f) Never
g) Other

If you would like to expand on the above response, please do so here: The answer will depend on how you define 'linguistic ecologists'.

Question 10: To the best of your knowledge, do biological ecologists in general make use of findings from the field of linguistic ecology?

a) Regularly
b) Often
c) Sometimes
d) Rarely
e) Only in very specific cases
f) Never
g) Other

If you would like to expand on the above response, please do so here: Hardly ever. Biologists are usually quite puzzled over the linguistic term 'language ecology'.

Question 11: In your opinion, does the division of academic disciplines into natural sciences on the one hand and social sciences/humanities on the other:

a) Facilitate collaboration between biological and linguistic ecology
b) Inhibit collaboration between evolutionary biological and linguistic ecology
c) Neither facilitate nor inhibit collaboration between biological and linguistic ecology
d) Other?

If you would like to expand on the above response, please do so here:

Question 12: Would you be interested in participating in a brief semi-structured interview to expand on the subject matter raised in this questionnaire? (this would require permission to include your name)

a) Yes, of course
b) No, unfortunately not
c) Possibly, if a convenient time can be arranged

If you would like to expand on the above response, please do so here:

Thank you very much for your time

Andrew Currie

Semi-structured interview with Johann-Mattis List

At the time of interview, Johann-Mattis List was Senior Scientist in the Department of Linguistic and Cultural Evolution at the Max Planck Institute for the Science of Human History in Jena. This interview is a continuation of questionnaire QBLE1.

Semi-Structured Interview Questions

SSIQ1JL:
In your response to Question 5 you note that collaborative research between evolutionary biology and historical linguistics is "potentially useful (depending on the questions being asked, and on the degree to which collaboration is really interested in understanding each other discipline)". You have personally contributed to numerous collaborative ventures leading to academic papers such as 'Networks of lexical borrowing and lateral gene transfer in language and genome evolution' (2014) and 'Unity and disunity in evolutionary sciences: process-based analogies open common research avenues for biology and linguistics' (2016).

Could you elaborate on any examples of interdisciplinary progress which have taken place as a result of your collaboration in work of this kind?

SSIQ1JL Response:
My work on sequence comparison in historical linguistics (List 2014: 'Sequence comparison in historical linguistics') can be seen as an example of research that starts from biology, where sequence comparison methods have long since been used, and then successively adjusts these methods to the realm of linguistics. A more recent example is work on the tree model and metaphors. While we already mentioned incomplete lineages sorting as an important concept useful for linguistics in the 'unity' paper, a follow-up paper on trees in linguistics (to appear: Jacques and List, 'Save the trees'), elaborates more in this, and the response of the authors we challenged with this paper (Kalyan and François to appear) suggests that this "hit a nerve", given that they fully acknowledge ILS as an important aspect of linguistics data (or processes), so I would say: this is a good example for biology providing useful insights into linguistics. But note also that we took great care in identifying the potential analogies and that we do not say that the same processes lead to ILS in linguistics as in biology.

SSIQ2JL:
In your response to Question 7 you note that "it is often exaggerated, to which degree bioinformatics would have an influence on our methodology in linguistics. In some areas, we adapt methods, in others, we have our own techniques." This agrees with the following quote from your article 'Beyond cognacy: historical relations between words and their implication for phylogenetic reconstruction' (2016):

"Scholars justify the use of bioinformatics software in linguistics by drawing analogies between historical relations in the two disciplines. Unfortunately, these analogies often ignore the peculiarities of biological evolution and language history. Instead, they offer a

simplified mapping between terms in both disciplines and disregard the underlying processes." (p. 120)
In your opinion, have the process-based analogies which you and your co-authors recommended in 'Unity and Disunity' had a positive influence in reducing simplified mapping of this kind?

SSIQ2JL Response:
Yes and no. For the yes, see my answer on ILS above. For the no, I have to admit that we still have a hard time to find a good way to take inspiration of evolutionary biology. By now, I would say that I am sceptical whether it is only the "processes" that help to draw our analogies. I would critically say that our paper lists some potentially interesting aspects, but that we have not fully explored the possibilities, so I would be careful in saying that it is only processes that should drive our analogies, while I would still insist that analogies should be in some way "different" from the type of mainstream analogies that are most prominently discussed in the research in historical linguistics and evolutionary biology. I would love to find an easy solution, but my current opinion is: concentrating on processes was productive in our paper from 2016, but I am less sure now that it would be the only way.

SSIQ3JL:
In your response to Question 9 you note that "biologists rarely feel obliged to learn about linguistics, while linguists often learn at least something about biology."

Does this imply that as far as collaboration in the evolutionary sciences is concerned, biology is of more use to linguistics than linguistics is to biology?

SSIQ3JL Response:
Yes and no. Biology guarantees practically our funding by now, as it allows us now to give our field a more scientific scent. It also gives us inspiration, as my research probably shows, but we probably profit even more from media outreach than from the concrete benefits we receive from work that seriously tried to get inspiration from biological algorithms. I expect that biology could at some point also profit from linguistics, but we are not there yet, and may never be there, since there are many more biologists doing research than linguists. But the current situation is that linguists make a lot of use of algorithms proposed first for biology, and there is no precedence of which I knew – apart from approaches in NLP being used for protein domains (as you can see in our 'unity' paper), where methods developed for studying languages would have been useful for biology. Note also that these examples of proteins do not touch language evolution: they are based on highly sophisticated methods used to study languages from an engineering perspective, which is not what the traditional historical/evolutionary linguist would take into account. So the transfer is not from linguistics to biology, but from statistical language engineering to biology, which I consider two different kinds of shoes.

SSIQ4JL:
In your response to Question 10 you note that the "family tree" model of indicating evolutionary relationships is an adequate model for all biological species and all languages, and that "all relations can be handled by a tree". However, in the article 'Do languages grow on trees? The tree metaphor in the history of linguistics' (2013) you note that:

- "the family tree is not sufficient to model language history in all its complexity" (p. 122) and

- "given the complexity of language history, combined networks of horizontal and vertical language relations seem to offer a promising alternative to both trees and waves in historical linguistics." (ibid)

Could you summarise your current position with regard to the use of trees and/or networks?

SSIQ4JL Response:
I think, the answer is best given in our forthcoming paper by Jacques and List 'Save the trees', where we emphasize both the importance of the tree, and the fact that it is in part insufficient.

SSIQ5JL:
The article 'Networks of lexical borrowing and lateral gene transfer in language and genome evolution' makes the following claim:
"….it seems obvious that language history shows a much closer resemblance to prokaryotic evolution than to eukaryotic evolution." (p. 145)

The article then goes on to conclude that:
"Applying network approaches in historical linguistics can provide new insights into both the vertical and the lateral components of language history, and help to bring traditional and more quantitative research closer together." (p. 148)

Given the significance of lateral transfer to both linguistic and prokaryotic evolution, have the methods promoted in this article proven to be beneficial in the time since this article was written?

SSIQ5JL Response:
No, unfortunately, we see this much differently now! In an article by Jäger and List (2018), we can see that the methods we used then are outperformed by Maximum Likelihood approaches, but that even these methods do not really provide a promising analysis of language history. My conviction now is that biological aspects of LGT and linguistic aspects are far too different to allow for a direct comparison. I would even say that the current approaches in biology suffer heavily from the fact that scholars just don't know what is transferred and what is inherited. We can do better in linguistics, but we'll need to embrace our own, classical methods, and try to operationalize them more, in order to get a better picture on the degree to which lateral transfer can counteract inheritance. Biology might in the end learn from that, but linguists need to do their homework first (see my draft paper on borrowing detection on this topic, List 2018, preprint).

SSIQ6JL:
In the article 'Do languages grow on trees? The tree metaphor in the history of linguistics' you note that:
"Among biologist as well as linguists, it is now widely accepted that there are many striking parallels between the evolution of life forms and the history of languages." (p. 111)
Are you aware of any other disciplines which share as many "curious parallels" with biological evolution as language change?

SSIQ6JL Response:
One might think of manuscript evolution (stemmatics), but the processes are even more different here. So in general: no.

SSIQ7JL:
The influence of Karl Popper's "three worlds" can be seen both in the article 'Do languages grow on trees? The tree metaphor in the history of linguistics' and again in 'Unity and disunity in evolutionary sciences: process-based analogies open common research avenues for biology and linguistics.'

In these, you note that biological organisms belong to World 1, part of "the world that consists of physical bodies" whereas languages belong to World 3, "the world of the products of the human mind", as "intellectual objects" which are realized physically when spoken or written down.

On the assumption that these different worlds do in fact exist, do you think it conceivable that the direction of travel is from World 1 (the physical world of speech) to World 3 (the human mind) rather than the other way around?

SSIQ7JL Response:
Popper seems (if I remember this properly) to try to make the point that World 3 can also influence World 1. Think of humans resurrecting dinosaurs in Jurassic park, or humans leading to the extinction of species, based on stupid beliefs in some books, etc. I would have to think about this more closely, and I may just fail to see it correctly, so do not take me seriously here, but while one would think that in general the way goes from 1 to 3, as far as I understand Popper, he'd specifically think that at least in part it can also go from 3 to 1 (which is also why he would think that 3 is a part of reality, as, for example, things written down in books could change World 1, if enough people believe them and act accordingly).

SSIQ8JL:
In the article 'Unity and disunity in evolutionary sciences: process-based analogies open common research avenues for biology and linguistics' you note that "general evolution cannot be studied from within one discipline alone." (p. 10)

As far as the subject matter of this dissertation is concerned, attempts at obtaining "a full picture of evolution" (p.1) covering not only biological evolution but also linguistic and cultural evolution in general, are of central importance.

Following the ground-breaking work carried out by yourself, and the likes of Mesoudi, Mufwene, Croft, Richerson and Boyd amongst others, do you believe that we have now reached a stage where a full picture of evolution does, or soon will, exist?

SSIQ8JL Response:
I am myself skeptical, but I am sure many colleagues would subscribe to this. I have lots of discussions with colleagues from CultEvo, specifically, who believe they are working in unifying frameworks, but I feel that they often ignore the specifics of evolution in the different fields, specifically linguistic phenomena like regular sound change, which could be summarized as part of a general pattern of evolution, but where I find it strikingly interesting that colleagues have a hard time to actually find parallels in other evolving

systems than language. So I would say: we're not there yet. And I would also say that the wish to unify everything is at times leading to annoyingly simplifying accounts.

SSIQ9JL:
The ability to quantify species and languages (even if only by a rough approximation) implies that they can be counted and therefore, by extension, identified. On the other hand, there seem to be few attempts at identifying how many "cultures" there are in the world that do not use the number of languages as a proxy. However, "languages" and "cultures" are not synonymous.

Why, in your opinion, are we unable to quantify how many "cultures" exist in the world?

SSIQ9JL Response:
I honestly do not know, and I never asked myself the question, probably also, because of the long tail of debates that accompanies this question, given that this may look like we want to favor one culture above another.

SSIQ10JL:
In their book *Not by Genes Alone*, Richerson and Boyd make the claim that "culture is part of biology".

Do you agree with this assertion, and if so, do you think it possible that, rather than being *analogous* to biological evolution, language evolution is actually *part and parcel of it* (albeit a small part)?

SSIQ10JL Response:
Depends on the perspective. I prefer to keep things distinct, especially for practical purposes. If there's one unifying process underlying all evolution, fine, but this would also mean that not all evolution is biological, but that this process is overarching both biological and linguistic evolution.

Semi-structured interview with William Croft

At the time of interview, William Croft was Professor in the Department of Linguistics at the University of New Mexico, Albuquerque, a position he has held since 2006. This interview is a continuation of questionnaire QBLE3.

Semi-structured Interview Questions

SSIQ1WC:
Could you expand a little on why you chose Option C in response to Question 2 (which emphasises differences between languages and biological organisms) but Option B in response to Questions 1 and 3 (which emphasise similarities between languages and biological organisms)?

SSIQ1WC Response:
One reason is that I argue in my work that a language is a population, that is, a population of utterances, like a species is a population of organisms. A population is a set of entities defined by the way they interact with each other, and do not interact with entities outside of the population (most of the time). The relevant interaction is interbreeding for organisms, and conversation for languages. (Well more precisely, there are multiple related populations: organisms, their genomes and the gene pool for biological entities, and speakers, their utterances and the lingueme pool for languages. See my book, in particular the revised chapter 2 on my website.)
So terms like "living" and "dead" are used for individual organisms in biology, but the population of utterances in linguistics -- but they are not analogous. (Sometimes the terms are loosely used for species in biology, but 'extant' and particularly 'extinct' are more accurate terms.)
The story behind "genetically related'" is different, but I explained that in my initial answer to Question 2.
So back to SSIQ1: the reason my answer is different for 2 vs. 1 and 3 is that I believe there is a common evolutionary model behind both biological and linguistic entities, but one must be careful as to the parallel instantiations of the elements of the common evolutionary model (Hull's General Analysis of Selection). Question 2 presupposes what I considered to be a wrong parallelism between the two domains.

SSIQ2WC:
In your response to Question 5, you state that "there is an abstract theory of evolutionary change (change by replication) that subsumes biological evolution, cultural evolution and language change." Here, you have included culture and language separately. Was this done because they were separate in the original question (which as you will know comes from a quote by Luisa Maffi) or are you of the opinion that language change has its own specific characteristics which distinguish it from cultural evolution more generally?

SSIQ2WC Response:
I consider language change to be a type of cultural transmission. This does not preclude the possibility that there are aspects of language that make linguistic transmission different from transmission of other cultural traits. See the comparison of music and language in the

revised chapter 2 on my website. But they are similar in that the interactors are persons qua social beings, and that they have artifact and behavior replicators.

SSIQ3WC:
The ability to quantify species and languages (even if only by a rough approximation) implies that they can be counted and therefore, by extension, identified. On the other hand, there seem to be few attempts at identifying how many "cultures" there are in the world that do not use the number of languages as a proxy. However, "languages" and "cultures" are not synonymous. Why, in your opinion, are we unable to quantify how many "cultures" exist in the world?

SSIQ3WC Response:
I think that the critical factor is that the population of interactors -- the community -- determines the population of replicators – "language" or "culture". And in particular a particular population of interactors are never completely socially isolated from other populations. So it is always going to be difficult to quantify languages and cultures. It is possible that the population that defines the divergence of one cultural trait (say, language) is different from the population that defines the divergence of another cultural trait (say, religion). One problem is that "culture" is quite a bit vaguer than "language". What set of transmissible human social traits constitutes "culture"? Does "culture" include technology, e.g. hunting or farming technology? Does "culture" include "language"? (If so, then using language as a proxy is not unreasonable.) Some of the difficulty in quantifying "cultures" is due to the difficulty of defining the set of traits that constitutes a "culture". Even so, the number of cultures has been quantified, for better or worse (e.g. the Murdock classification and its revisions).

SSIQ4WC:
In your response to Question 9, you note that "natural sciences and social sciences/humanities are different, although they are not as different as some think."
Do you think this view can be reconciled with your above response to Question 5 that "there is an abstract theory of evolutionary change (change by replication) that subsumes biological evolution, cultural evolution and language change."? For example, is it feasible that the natural science of evolutionary biology has just as much in common with the social science of historical linguistics as it does with, say, the natural science of astrophysics? It would be worth knowing here if you have an opinion as to what marks the line of demarcation between the one group and the other.

SSIQ4WC Response:
There are similarities and differences between all domains of scientific inquiry. What matters of course is which similarities and differences you think are more important. So there are commonalities between evolutionary biology and historical linguistics which are valuable at least to practitioners of the latter (although as I noted in my initial answer, one must be careful), and I am not aware of valuable commonalities between astrophysics and linguistics.
The usual distinguishing feature between natural sciences and social sciences and humanities is that the latter has as its domain of inquiry human social interaction and its products (language, music, political institutions, etc.), and the former does not. I think that is also a useful distinguishing feature. But there are cross-cutting similarities like those between evolutionary biology and historical linguistics that are also useful.

SSIQ5WC:

Are you aware of any other phenomena which share as many 'curious parallels' with biological evolution as language change?

SSIQ5WC Response:

Pretty much all of the social sciences/humanities share as many "curious parallels" with biological evolution. This is because they all involve human interactors that replicate social/cultural traits and form populations. That's not all there is to the social sciences/humanities (including linguistics), but it's a very important aspect of all of those domains.

The remaining questions are all based on your revised Chapter 2: 'An evolutionary model of language change and language structure' (Draft, February 2013, PDF) from *Explaining language change: an evolutionary approach* located at http://www.unm.edu/~wcroft/WACpubs.html. Given that this chapter is considerably more recent than the one in the original book, and also particularly relevant to the topic under discussion in the dissertation, it seemed appropriate to concentrate on the specifics of this chapter. Even so, it was difficult to restrict the questions to a reasonable number.

SSIQ6WC:
In 2.2 you note that "linguistic diversity is so great that it is impossible to establish any but the most general exceptionless, unrestricted universals of language". Is this not also the case (if not even more so) with biodiversity?

SSIQ6WC Response:
Yes. David Hull said to me, and maybe also said it in print, that what you find in nature in terms of bizarre organism structure and behavior exceeds what fantasists have imagined. Others have told me that what we know of biology is so dependent on a handful of species, such as fruit flies, nematodes and E. coli, that there is so much we don't know. As a typologist, I would say the same: much of what we know about language is dependent on European languages and the major East Asian languages. There is so much we need to learn (or have learned through language documentation and typological research based on it, but needs to be disseminated to a wider audience of students and theoreticians).

SSIQ7WC:
Still in 2.2, you note that evolutionary theory when applied to language "provides a model of change that is not the result of the intentional behaviour of individual persons." This seems to fit well with an "evolutionary" model. However, the examples of "cultural replicators" given later (2.3.1), namely "artefacts" (e.g. stiletto heels) "behaviours" (pots) and "concepts" (Jewish religious laws) appear to be possible only with prior planning and intent (or perhaps more controversially, an act of 'creation'). In your opinion, is lack of intent a prerequisite for evolution?

SSIQ7WC Response:
I think that in the first edition of the book, I distinguish different types of intentional behavior in the process of replication, following a remark by Ohala. It depends on what you're intending to achieve with the (altered, or for that matter unaltered) replication. Intentions related to communicative success in interpersonal interaction are OK; intentions based on making the linguistic system "simpler" or more "elegant" are not.

SSIQ8WC:
This next question may be the result of misinterpretation on my part, but some of the different aspects of defining what makes something a species (or language) seem difficult to reconcile (2.4.2). For example, if "only actual interbreeding ultimately matters for the definition of a species/language" rather than the "absence of the potential to interbreed" then would two individuals with the potential to interbreed, but which were highly unlikely to do so, such as a male puma from British Columbia and a female puma from Patagonia, both be considered part of the same population? Given that "not every organism interbreeds with every other organism in the species, and not every speaker talks to every other speaker in a speech community" then what are the common factors that bind them together as "species" or "speech communities" in the first place if not the *potential* to interbreed or hold an intelligible conversation?

SSIQ8WC Response:
I think this is an issue in the definition of a population in biology as well. You have chains of biological populations just like you have dialect chains, which makes it hard to draw lines distinguishing populations. But what matters is presence of interbreeding vs. absence of interbreeding. The result is a network. It is not a fully connected network, of course. So the question is, how weak do the links need to be before we decide that there are two separate populations? Also problematic are the cases of individuals who for whatever reason do not end up successfully interbreeding, but otherwise live with and interact behaviorally with its neighboring conspecifics. They would be fully isolated nodes, but we wouldn't call each node a population, since there is no interaction.

SSIQ9WC:
"Each speaker will have a slightly different grammar" (2.5) - is this the same thing as an idiolect?

SSIQ9WC Response:
Yes and no. Structuralist linguistics, where the idiolect concept was developed, doesn't really accommodate variation. A lot of interindividual variation involves variation in frequency and range of use of the same forms. More important, 'idiolect' tends to imply a grammar, but for me a grammar is a property of the utterance pool produced by a population of speakers, not individual speakers. I should probably be more careful in distinguishing knowledge about their language of an individual, and the language itself. I say 'knowledge about their language' to emphasize that an individual's knowledge is not a self-contained system, as implied by the term 'idiolect', but fragmentary knowledge of the community's behavior based on the part of the population of utterances the speaker is exposed to. So I generally avoid the term 'idiolect'.

SSIQ10WC:
The correspondence of variant linguemes to alleles is clear to see as a concept. However, the claim that "this parallelism is probably not an accident" (2.5) is particularly relevant in

this case. Could you expand on any specific parallel in this context that could be considered “not an accident”?

SSIQ10WC Response:
It follows from the basic properties of the replication process. Replication preserves most of the structure of the replicator, but not necessarily all of it. So variation is generated. Replication is also an iterative process. So different variants may be replicated. That is what are called alleles in biology and variants in linguistics.

And finally:

SSIQ11WC:
The prospect of “a general framework for evolutionary change” (2.3) covering not only biological evolution but also linguistic and cultural evolution in general, is central to the subject matter of this dissertation. Following the ground-breaking work carried out by yourself, and the likes of Mesoudi, Mufwene, Richerson and Boyd amongst others, do you believe that we have now reached a stage where such a framework does, or soon will, exist?

SSIQ11WC Response:
I think that such a framework exists. Obviously, the scholars you refer to don't fully agree on the structure of the framework (see for example my review of one of Mufwene's books). And of course, I would defend my framework where it differs from that of the other scholars. But that is just the usual scholarly debate. Which of course is also modeled by the General Analysis of Selection -- indeed that is what Hull's book is about, namely scientific change.

Semi-structured interview with Nathalie Gontier

At the time of interview, Nathalie Gontier was Director of the Applied Evolutionary Epistemology Lab in the Centre for Philosophy of Science at the Faculty of Science of the University of Lisbon. This interview is a continuation of questionnaire QBLE4.

Semi-structured Interview Questions

SSIQ1NG:
The dissertation of which this questionnaire forms a part will contain a section considering possible "false dichotomies" such as "human/animal" "mind/body" and "culture/nature". Your 2017 article 'What are the Units of Language Evolution?' notes that: "…definitions remain based upon classic dichotomies including the innate-acquired or biological–cultural, animal–human or continuity–discontinuity, or historical diffusion–biological evolution divides." (p. 236)
Do you think these dichotomies play a part in the division of the academic world into natural sciences and social sciences/humanities referred to in Question 9 of the earlier questionnaire?

SSIQ1NG Response:
Yes they do although note that when natural history research took flight in the 19th century, scholars saw continuity between biological and cultural or linguistic evolution. It is only with the emancipation of synchronic linguistics, social and cultural anthropology, and sociology that divides are drawn between these and evolutionary sciences (the diachronic versus synchronic divides).
Animal/human and mind/body divides are older and have religious foundations.

SSIQ2NG:
In your response to Question 9, you note that this division of academic disciplines "inhibits collaboration between evolutionary biology and historical linguistics." Also, in your 2011 article 'Depicting the Tree of Life: the Philosophical and Historical Roots of Evolutionary Tree Diagrams', you refer to "the rise of different scientific methods that would eventually result in the division of the sciences in the nineteenth century" (p. 527)

Do you see any link between the concept of "academic boundaries" in established disciplines on the one hand, and "political boundaries" between nation-states on the other, i.e. do academic disciplines stake a similar claim to "sovereignty" over their own turf?

SSIQ2NG Response:
There is indeed a clash between different scientific cultures with a tendency to claim superiority over one's own field. Science politics also determines funding: the humanities in many countries are funded based upon a percentage of money acquired by scientists. Do you know about the Sokal Bricmont affair? Or read Foucault on power. Or google science wars.

In general, physics and mathematics are considered true sciences that follow hypothetical deductive reasoning. Natural or evolutionary sciences, because they are empirical, were considered lesser sciences but now, due to genetics, bioinformatics, statistics (eg Bayesian inferences etc), the subject area is becoming quantified and mathematicised.
The same is now also happening within the social and human sciences and a divide is arising between those that model and quantify social sciences, linguistics and anthropology and those that do not. Funding agencies are always on the side of quantification.

SSIQ3NG:
In your response to Question 10, you note that the family tree method is inadequate for both languages and biological species, and in your 2016 article 'Converging Evolutionary Patterns in Life and Culture' you state that "networks….enable depictions of the dispersal and diffusion of languages and the biodiversity and biogeography of life".
Do you believe networks to be a more efficient method of indicating shared relationships between languages and/or biological species, especially when considering lateral transfer and convergence?

SSIQ3NG Response:
Trees are very good at demonstrating common descent over long periods of time but they are not good in demonstrating horizontal transfer. Networks are very good at demonstrating horizontal transfer and backcrossing. Both demonstrate different aspects of evolution and it is best to try and use both models when interpreting data.

SSIQ4NG:
In your 2016 article 'Converging Evolutionary Patterns in Life and Culture' you refer to Mesoudi's assertion that "culture can demonstrate forms of ''directed selection'' and not all cultural behavior can be causally explained by genes" (p. 434).
Could you expand on "directed selection" and explain how this process differs in principle from "artificial selection" as used, for example, in the selective breeding of domesticated animals and plants?

SSIQ4NG Response:
For Darwin, selection is artificial if induced by humans and not the environment. That in itself when you think about it is a form of culture versus nature premise, natural selection is "natural" because the environment does the selecting.
Artificial selection such as selective breeding is a form of directed selection. But directed selection can be "natural" as well. In that case, it is synonymous with positive selection https://en.wikipedia.org/wiki/Directional_selection, the natural favouring of a trait gives a direction to the further course of evolution. It can happen at different levels of an evolutionary hierarchy.

SSIQ5NG:
Promoting "Applied Evolutionary Epistemology" is clearly an important aspect of your work, and in your 2012 article 'Applied Evolutionary Epistemology: A new methodology to enhance interdisciplinary research between the life and human sciences' you note that: "the only alternative to something not having evolved is that it has been created. There is no natural proof of the latter, so AEE does not endorse this view." (p. 36)
Evolution has often been defined as "descent with modification" and attempts have recently been made (by, for example, Mesoudi and others) at treating technological and

sociocultural changes as examples of descent with modification (as implied in the previous question).
In your opinion, are complex items of human technology which have clearly been intentionally produced for a specific purpose (such as, to use a familiar example, a watch) the result of evolution or creation?

SSIQ5NG Response:
The quote you give was against creationism, a movement within religious circles that denies evolution in favour of the idea that the world is created by a deity.
Of course, humans and other primates and many other species have developed technologies and they have thereby actively "(re-)created" their surroundings, either intentionally or unintentionally. These phenomena are known as niche construction. 90 percent of the oxygen in the atmosphere is made by photosynthesizing microorganisms. Beavers build dams, we construct houses, and so on. These are acts of creation or niche construction and they often require creativity, ingenuity, imagination, etc. The capacity to be all that is also the result of evolution and evolutionary theory can be applied to demonstrate the natural history and evolutionary change of artefacts. Look at the "natural history" or "evolution" of cars. They are examples of what I have called symbionts: they combine the invention of rubber (the wheels) with metal with glass, with electricity, with aerodynamics, etc. They also evolve from prototypes and today know many variations. We can apply the same mathematics and modelling techniques to track changes over time. And we can call that evolution.
For me there is no distinction between natural history and evolution. The reason ppl make the distinction is due to science politics. But there is no justification. All is the outcome of evolution. If we are able to be creative it is because we evolved these capacities. We did not evolve to make a specific car, but we evolved capacities such as memory, goal oriented behaviour, learning, etc that enables us to be creative.
So in sum, I think everything is the result of evolution, including our capacity to create technologies. And technologies are the result of biological and sociocultural evolution and they can be shown to evolve as well.

SSIQ6NG:
On page 36 of your article 'Applied Evolutionary Epistemology: A new methodology to enhance interdisciplinary research between the life and human sciences' you note that: "everything in the universe is the outcome of evolution" and that "everything evolves, and evolution occurs everywhere".
You also, on the same page, paraphrase Dobzhansky's 1973 paper, claiming that "…nothing makes sense except in light of evolution." However, the full title of Dobzhansky's article is "…nothing **in biology** makes sense except in the light of evolution" which, although comprehensive, still falls short of "everything in the universe".
The above quotes imply that inorganic matter evolves. Could you give an example of the evolution of inorganic matter which is in keeping with the methodology of Applied Evolutionary Epistemology?

SSIQ6NG Response:
Yes, I think everything evolves.
Evolution traditionally associates with the science of life, biology: the logos of life.
We just saw that it can be demonstrated that languages, science, cultures, technologies etc also evolve: they undergo change, they have a natural history.

In the beginning, when evolutionary thought was introduced, ppl had problems with understanding what language/s and culture/s are. Ppl made a distinction between the capacity to have language (a biological capability or faculty) and the actual language spoken, signed and most of all learned in the community (and here is the idea of a psychic unity). But then what were those when they were proven to change or evolve over time? Is a language an organism, a species, is it similar, the same? In the beginning, and so to speak, ppl were looking for the life in these phenomena, under the assumption that if something evolves it must be alive.
Today, being alive is not necessary to be recognized to be the subject of evolution. DNA is a dead structure, it is not alive but it evolves: it undergoes changes such as mutations, over time. Viruses are in between dead and living organisms.
With the rise of micro and macroevolutionary schools, what evolves has been expanding on the micro side to include molecules, genes, etc, and on the macro-side, to include species and higher taxa.
And with the recognition that not only organisms but also their behaviour and language and culture and technologies evolve, evolution has been applied to these phenomena as well. All of these are considered "dead" structures but they nonetheless evolve.

SSIQ7NG:
In your 2017 article 'What are the Units of Language Evolution?' you note that:
"…beyond the external biotic or abiotic environment, organisms also have an inner environment that is heterogeneous…., simply because organisms are compositional structures made up of different body parts. A gene, for example, may be active in the heart but not the lungs, and this implies the presence of a selection process of the unit at certain but not other levels." (p. 239)
On the face of it, an "inner environment" seems to be a contradiction in terms. Rather than seeing compositional structures as the inner environment of an organism, should we perhaps instead consider them to be the actual (external) environment of the gene or other unit in question?

SSIQ7NG Response:
It is all about perspective taking.
For the gene, it is an external environment, for the organism it is internal.
Before, the modern synthesis only focussed on the relation between organism and environment. That organism was viewed as a homogenous entity, and focus was on the phenotype, the visible organism.
Later, Lewontin introduced the concept of "internalizing selection" and Dawkins introduced the selfish gene theory to demonstrate that external selection can target genes rather than organisms, and to demonstrate that selection can also occur inside an organism (organs can for example compete over resources such as blood flow).
Such units and levels of evolution debates raise questions on the nature of evolutionary hierarchies. An organism is inside an environment, but the organism is a composite structure where genes in one part of the body act in unity and in another they compete. Describing and explaining inner/outer aspects of the environment depends upon the perspective taken.

SSIQ8NG:
The ability to quantify species and languages (even if only by a rough approximation) implies that they can be counted, and therefore, by extension, identified. On the other hand, there seem to be few attempts at identifying how many "cultures" there are in the world

that do not use the number of languages as a proxy. However, “languages” and “cultures” are not synonymous.
Why, in your opinion, are we unable to quantify how many “cultures” exist in the world?

SSIQ8NG Response:
Because ppl do not agree upon how to define culture on the one hand, and on the other, because there are numerous variations. Basically, every kind of hobby practised with more than 2 ppl can be understood as a culture. One can be part of a cyberculture on the internet where ppl make wiki pages, of a dance culture where ppl gather to dance salsa, of a youth culture, etc.
Age, gender, location, ethnic background, social stratification, jobs, hobbies, educational background can all function as a means to differentiate cultures. Yet, these distinctions can occur in a group where everyone speaks English.

SSIQ9NG:
In your 2017 article ‘What are the levels and mechanisms/processes of language evolution?’ you note that:
“Given that evolutionary mechanisms are on the expansion, and given the complex and heterogeneous nature of language, there is no reason to at present restrict us to mere biological mechanisms of evolution. Gene-culture coevolutionary theorists have long been engaged in finding mechanisms peculiar to cultural evolution, and it is highly likely that language evolution will prove to have some peculiar mechanisms too.” (p. 40)
In the above quote (and many others by numerous authors), *“cultural evolution”* has been listed separately to “language evolution”. In your opinion, should language evolution and cultural evolution be treated as distinct?

SSIQ9NG Response:
Yes, language evolution, beyond the specific languages spoken or signed which correlate to cultures, also has to do with biological evolutions in what regards the form and function of the vocal tract, the palate, the tongue, breathing, gesturing, etc. Both depend upon the evolution of specific cognitive skills and they share many traits but they are sufficiently distinct to look into their evolution separately.

SSIQ10NG: And finally:
Are you aware of any other disciplines which share as many “curious parallels” with biological evolution as historical linguistics?

SSIQ10NG Response:
Cultural evolution and technological evolution.

Semi-structured interview with Salikoko Mufwene

At the time of interview, Salikoko Mufwene was Frank J. McLoraine Distinguished Service Professor in the Department of Linguistics at the University of Chicago. This interview is a continuation of questionnaire QEL3.

Semi-structured Interview Questions

SSIQ1SM: In your response to question 3 you note that "linguists have often analogized languages with either organisms or (in my work) species in biology." Of the two, the analogy with species, where a language is seen as a collection of individual idiolects in the same way that a species is a collection of individual organisms, clearly appears to be the more appropriate analogy.
To the best of your knowledge, were you the first linguist to analogize languages with species?

SSIQ1SM Response: I thought I was, when I was writing *The Ecology of Language Evolution* (2001). Afterwards, I realized that Herman Paul (1891) had advocated comparing languages with "groups" as collective phenomena.

In your response to Question 4 you note that you do not like the phrase "language and culture". The relationship between these two is, as it happens, of great importance to this dissertation and so the next three questions are all based upon it.

SSIQ2SM:
It is difficult, if not impossible, to disagree with your comment in response to Question 4 that "languages are themselves cultural artefacts". That said, in your article 'Language vitality: the weak theoretical underpinnings of what can be an exciting research area' which appeared in *Language:* Vol 93, Issue 4 (December 2017) you make several references to the relationship between the two, such as:

- "These show that language and culture shifts do not go hand in hand, nor are they coextensive with assimilation to the economically or politically dominant population." (p. 205)
- "other cultural artifacts such as religion and dress traditions index social identity, and the specific way in which those who have shifted languages speak the new one can also mark a particular social identity. So a population can lose their language without ipso facto losing their cultural singularity." (p. 206)
- "…the relationship between language and culture, viz., whether language is separate from culture or is rather one of the many facets of the latter." (p. 220)

These imply that even if language is one aspect of culture, it is one of many.
Do you believe that, despite its falling under the overall category of culture, it is nevertheless possible for language to be a discrete component of it, with its own distinct characteristics?

SSIQ2SM Response:
The first quotation may be interpreted to be inconsistent with the position I advocate, but I had no simpler, idiomatic way of expressing myself. I could have said "language shift and other cases of culture shift." My fundamental position is that languages as technologies for communication (produced by the mind co-opting/exapting the buccopharyngeal anatomy) are instances of ways of doing things. And see cultures as ways in which particular populations do things, behave, and interact with one another and with their natural environments. Cultures can thus be talked about more concretely in reference to specific practices, such as language/communication, religion, music, dancing, cooking (processing food), building dwellings, clothing, etc. The answer to your question is "yes," though language also shares some characteristics with other cultural domains, for instance, with music in being compositional and being learnable. As a matter of fact, like for other cultural domains, the perpetuation of languages from one generation to another (albeit with modification) is enabled by learning. I should email you another paper (now in press) along with this questionnaire. If I forget, please remind me.

SSIQ3SM: In your ground-breaking book *The Ecology of Language Evolution* (CUP) you make numerous references to the ways in which language evolution proceeds (the locations shown below are taken from the Kindle edition of the book), for example:

- "Clearly, individual speakers are critical unwitting agents of language evolution." (394).
- "…the unplanned result of producing a new language variety." (1267-1268).
- "Linguistic evolution proceeds by natural selection from among the competing alternatives made available by the idiolects of individual speakers." (2235-2236).
- "I should reiterate that evolution has no purpose or defined goals. It should not be interpreted as progress…." (2238).
- "Such adaptations do not necessarily improve the system and they are not necessarily conscious in the first place. Linguistic evolution is therefore not planned, at least not in the most natural form of the process." (2241-2242).

These linguistic evolutionary processes appear to be of a completely different nature to the majority of cultural artefacts, such as, for example, clothing, tools, housing, transport infrastructure, laws, rituals and various other aspects of social organisation, which, it could be argued, have quite clearly been intentionally designed for planned and defined goals. Do you believe that 'design' and 'evolution' are mutually exclusive?

SSIQ3SM Response:
No, not at all. If one pays attention, practitioners innovate constantly and introduce changes in architecture, in music, in dance styles, in clothing fashion, in tool making, in the implementation and stipulation of laws, etc. They are also consciously adapted to new socioeconomic ecologies. Even rituals, prayers, incantations, and the like, which are rigidly codified are adapted every now and then to respond to needs of the practitioners, especially if they relocated or are colonized. Scientific practices, which are also forms of culture, are super-adaptive. How scholars come up with new hypotheses is often accidental, although, by hindsight, one can say that a hypothesis was a natural evolution from earlier activities.

SSIQ4SM:
The ability to quantify species and languages (even if only by a rough approximation) implies that they can be counted and therefore, by extension, identified. On the other hand, there seem to be few attempts at identifying how many "cultures" there are in the world

that do not use the number of languages as a proxy. However, "languages" and "cultures" are not synonymous.
Why, in your opinion, is it so difficult to quantify how many "cultures" exist in the world?

SSIQ4SM Response:
What should be quantified is not how many cultures there are but rather how many music styles there are, how many cooking/food processing styles there are, how many legal systems there are, how many religions or belief systems there are, etc. "Culture" cannot be seen as a counterpart of "language," because it is all inclusive. Note also that two populations practicing different language may share the same non-linguistic culture (more or less) and two populations practicing the same language may practice different non-linguistic cultures. A fundamental issue with the phrase "language and culture" is that it disenfranchises language as a domain of culture too. The phrase is not like "language in society," because cultures are shaped by and practiced in societies. How many of these one can count is a political question.

SSIQ5SM:
In *The Ecology of Language Evolution* you make several references to languages as parasitic species, for example:

- "I submit that a language is a Lamarckian species, whose genetic makeup can change several times in its lifetime. It is also a parasitic species, whose life and vitality depend on (the acts and dispositions of) its hosts, i.e., its speakers, on the society they form, and on the culture in which they live." (363-364).
- "…the speed of language change is similar to that of evolution in the parasitic species, where generation is not an important factor, unlike in the animal species." (378-379).
- "A language is more like a bacterial, Lamarckian species than like an organism. A subset of innovations/deviations in the communicative acts of individual speakers cumulate into the "invisible ecological hand" that produces evolution." (3037-3038).

However, in your more recent article 'Language Evolution: The Population Genetics Way' the terminology has shifted somewhat from "parasitic" to "viral", for example:

- "the biological evolution model that linguists should consider for inspiration appears to lie in virology and/or epidemiology but not in animal biology. (p. 47)

Does the change from "parasitic" to "viral" represent a change in emphasis or are viruses being used here as examples of parasites?

SSIQ5SM Response:
A colleague observed several times that "parasite" was less palatable that "virus." It may also be that it is easier to discuss viruses dynamically than parasites. That explains the change. It also seems that a population aspect of viruses is easier to articulate than that of parasites. The basic idea is that their vitality depends on the activities of their hosts.

SSIQ6SM:
In your article 'Language vitality: the weak theoretical underpinnings of what can be an exciting research area' you state that:

- "Ecolinguistics as articulated by, for instance, Mühlhäusler (2003) is more an advocacy movement than something that sheds light on the dynamics that sustain or erode language vitality." (p. 204).

Also, in your answer to Question 9 of this questionnaire you note that you "hate the term *ecolinguistics"*.

Could you expand on your reason for this hatred? Is it, for example, because you do not approve of the "advocacy movement" aspects, or do you think a different term such as "language ecology" is a more fitting label for the scope of the field?

SSIQ6SM Response:
I think that advocacy does not explain how things happen or evolve. Advocacy (as performed by, for instance, environmentalists) derives knowledge from more fundamental research about the subject matter. I have found ecolinguistics lacking in explanations while very strong in moralizing people about saving languages from endangerment and loss. Moreover the solutions proposed are not what a real language ecologist would recommend, such as restoring the "habitat" in which an endangered language can thrive. Nobody is talking about returning the Americas and Australia to Native Americans and Aborigines, for instance. Nobody is speaking about how Iberians reclaimed their cultures and their neo-Latin varieties through the Reconquista (a form of ethnic cleansing). So many dangerous things would have to be done, instead of writing grammars and compiling dictionaries, which have no bearing on the vitality of languages. Ecolinguistics is in fact myopic, because it overlooks the fact throughout the history of mankind several populations have shifted cultural practices to survive, for one reason or another. What we need the most is stopping injustices and marginalization of some groups while the world is evolving. Ecolinguists are dealing with epiphenomena. There are many people around the world who have maintained their politically and economically powerless languages and are suffering as much as some (but not all) populations whose languages are endangered or have been lost recently.

SSIQ7SM:
In *The Ecology of Language Evolution* (quoted below) and more recently, you have placed much emphasis on creoles:

- "The structural differences between creoles and their noncreole kin which have misled linguists into attributing different genetic statuses to them do not amount to differences in the evolutionary processes that produced them. Yet the evolutionary processes are what account and should matter for language speciation." (416-418).
- "…speakers are more concerned with communicating, by any of the means available to them, than with language or dialect boundaries." (421-422).
- "Code-mixing or, more generally, language or dialect contact, is probably more central to normal language evolution than has been recognized in historical and genetic linguistics." (422-423).

In your opinion, is the development of creoles living evidence of language evolution in action before our very eyes (and ears)?

SSIQ7SM Response:
Definitely. Creoles are prompting us loud and clear to reopen the books about language evolution, showing what central a role contact of languages or dialects (reducible to contact of idiolects) under particular ecological conditions has played as an actuator of change and sometimes speciation.

SSIQ8SM:
Choice is often invoked by linguists as a factor in the fate of particular languages. In *The Ecology of Language Evolution*, for example, you note the following:

- "Languages do not die suddenly nor on their own; they typically die because their speakers choose to speak other languages." (2919-2920).

That choice, however, is invariably made for us, not by us, to such an extent that, as far as mother tongues are concerned at least, none of us actually chooses the languages we come to speak.
Given this, is it perhaps time to re-evaluate the concept of choice in language acquisition?

SSIQ8SM Response:
"Choose" is a poor choice of terms, although in some cases this is true. In other work (such as an encyclopaedia article to appear soon), I have also spoken of speakers finding themselves in situations where they have fewer and fewer opportunities to speak the relevant languages**.**

SSIQ9SM:
Many linguists, including Einar Haugen, have referred to language as existing "in the minds of its speakers". Indeed, in your article, 'Language Evolution: The Population Genetics Way' you note:

- "the real locus of language contact is the minds of individual speakers" (p. 36)

In *The Ecology of Language Evolution* however, you emphasise the following:

- "The reality of languages lies in speech, which has physical properties. The action lies there, while the abstract system, the I-language which the theoretical linguist endeavors to explain, is really the interpretation that an individual makes of speech." (2841-2842).

In your opinion, is it possible to reconcile the physical aspects of speech with the mental?

SSIQ9SM Response:
Yes, although the question is which has precedence over which. If one thinks of languages as emergent phenomena, what I say in *The Ecology…* is accurate. However, there is a tradition in linguistics that suggests that people speak by executing internal systems. Noam Chomsky makes a distinction between I-language and E-language, which I think is the current way of speaking about competence and performance. However, if one conceives of languages as emergent and complex adaptive systems, then what I say in *The Ecology*… is really the right way. The system, as a set of emergent patterns, is an organized internalization of communicative practices.

SSIQ10SM:
In *The Ecology of Language Evolution* you stress the importance of identifying language change as an evolutionary process, while at the same time noting that this process may differ in some respects from the evolution of biological species:

- "What we need is a common approach to similar structural and evolutionary patterns in both the biological and the linguistic species, while resorting to species-specific accounts of their respective peculiarities." (376-377)

In their book *Not by Genes Alone*, Richerson and Boyd make the claim that "culture is part of biology".

Do you agree with this assertion, and if so, do you think it possible that, rather than being *analogous* to biological evolution, language evolution is actually *part and parcel of it* (albeit a small part)?

SSIQ10SM Response:
I don't think culture is part of biology. I think of it as a consequence of biological evolution, a topic that I also discuss in the paper I promised to email you.

Semi-structured interview with Cynthia Rosenfeld

At the time of interview, Cynthia (Cindy) Rosenfeld was a doctoral student at North Carolina State University. This interview is a continuation of questionnaire QEL7.

Semi-structured Interview Questions

SSIQ1CR:
Could you provide some details of your academic background and experience. I have read your papers 'The Great Divide: What Dr Moreau Tells Us About Posthumanism and the Anthropocene' and 'From Prometheus to Gaea: A Case for Earth-Centered Language' and have some questions on their content below. However, I would welcome any additional information on your future plans, the specific fields that you would like to specialise in, and so on.

SSIQ1CR Response:
Thank you for asking. I am increasingly interested in the "masking" and "erasure" of the natural world from human-created environments, both from an ecolinguistic (discursive/symbolic/ideational) and a visual rhetoric (material) perspective. Although I believe that much of the human experience is mediated by language, and therefore I tend to focus on narratives and texts, I am increasingly interested in how bodies-meeting-bodies (e.g., an urban dweller encountering the nightly exodus of the bats from Bracken Cave) and digital representations (e.g., the virtual reality representation of Bracken Cave) might afford new, different, and embodied meanings.

SSIQ2CR:
In your response to Question 1 you note that "language may not be living the way a biological organism is, but language is of a biological organism". This point is central to this dissertation with regard to "living" languages. Do you see the products of living organisms as extensions of them in much the same way as Richard Dawkins in *The Extended Phenotype*?

SSIQ2CR Response:
The short answer is "yes."
I do not mourn the death of a word the way I would mourn the loss of a life. However, I do regret the loss of what that word made possible. Similarly, it is a common human experience to celebrate the birth of a new word that helps us to make sense of our experience.
I am amazed by the creative and destructive processes made possible by the organizing potential of language. Language, for me, is the most beautiful and dangerous of the mundane, everyday acts in which humans engage. On the one hand, we have worked together to develop a complex system for sharing ideas, feelings, and asking for help. On the other hand, we can forget that words are abstract and symbolic, and problematic situations can sometimes spiral from this amnesia. In semiotic terms, words do not have an iconic or indexical relationship to their referent, and this disconnect can cause problems. When I say language is living, I do not wish to "fix" language and to in anyway connote that words have natural, given meanings. However, I do wish to acknowledge that

language is as natural and as evolving a process for humans as building bowers are for Vogelkops.

SSIQ3CR:
With reference to your response to Question 2, could you expand on the reasons why there are 165 languages registered with the Endangered Languages Project and whether biodiversity is similarly endangered in the same geographical areas?

SSIQ3CR Response:
This is a great question. Many of the 165 languages that are endangered in the United States are of indigenous peoples. For example, in the Charlotte area (a large metropolitan area), there have not been native speakers of the Catawba language since 1959. Like many places, the pressure to speak English to be able to participate in English-bound institutions and practices is high. However, there are also revitalization efforts, and the Catawba language is being taught to both children and adult learners. At the same time, Charlotte is a massive, concrete, human landscape that has displaced many creatures who would have called that land home. Yet, on the outskirts of Charlotte exists a lovely sanctuary devoted to rescuing and rehabilitating raptors.
I am not sure how often the cases of linguistic endangerment/extinction and species endangerment/extinction coincide, but I can imagine that a neoliberal value of progress often enters an area and affects both.

SSIQ4CR: In your response to Question 6 you note that you are unsure what binomial nomenclature could add. One possible use would be for linguists to base the naming of languages on solely linguistic criteria, irrespective of any political or populist agendas, such as, for example, promoting the use of the name "Moldovan" in Moldova for the language that is known in Romania (and generally in the rest of the world) as Romanian. (The linguistic nomenclature might well not choose 'Romanian' either of course). Do you think that such usages would be of any benefit?

SSIQ4CR Response: My primary concern about binomial nomenclature goes back to my concern about "masking." Many general audiences tend to regard binomial nomenclature as a "higher" understanding of something's nature, and it can obscure the abstract relationship and have a tendency to *fix* the name to that it represents. Thus, the politics of who gets to name the language and what process(es) exist for changing a binomial name if needed (as we do with living organisms) become central concerns.
My favourite recent example of the obfuscation of binomial nomenclature and the creature being represented is *Cenaspis aenigma*, or the recently discovered-by-humans "mystery dinner snake." It is a fun name, but to whom was the snake a mystery? Surely not to the snake nor its ecological associates, such as the snake whose belly *Cenaspis aenigma* was found it. I have a concern about the colonization of languages through binomial nomenclature and worry about reducing the polyvocal labels of selfhood to one recognized name. That being said, I can understand where giving a language a name that makes it "locatable" to everyone can serve to make it to salient, understood, recognized. In this case, I can see some benefits.

SSIQ5CR: With reference to your response to Question 11, do you have any personal experience of interdisciplinary work behind inhibited as a result of the division of academic subjects into sciences and humanities?

SSIQ5CR Response: Yes. I was in graduate school before I ever had to contend with physics. In high school, I had to take two sections of biology, one chemistry, and one "Earth science" (mainly it was geology, climatology, and meteorology). In college, as a humanities' major, I took two sections of geography and one astronomy. The only time I encountered "quantum mechanics" was as a punchline about, "It's not like I'm trying to explain quantum physics or anything."
Once I started doing work in environmental communication, all of the sudden, I am reading people who use Heisenberg's Uncertainty Principle, the particle-wave duality, quantum tunnelling, and the laws of thermodynamics in their *communication* research. I fell in love with science through communication, and I am still desperately trying to catch-up but it can be challenging. Recently, a mentor suggested I take a specific class in the veterinary school, to further my nonhuman animal studies work. I went to look at their schedule and could not view the schedule, as you had to have an approved login just to view the course listings. We have been specialized and siloed, and it can be hard to break out.

Questions on 'The Great Divide: What Dr Moreau Tells Us About Posthumanism and the Anthropocene'.

SSIQ6CR: The dissertation of which this questionnaire forms a part will contain a section on several "false dichotomies" such as "human/animal" "mind/body" and "culture/nature". The subject matter of your paper above is therefore very relevant to these aspects. Do you think these dichotomies play a part in the "two cultures" of the academic world (i.e. the sciences and the humanities) referred to in the earlier questionnaire?

SSIQ6CR Response:
Yes! There is a great book by John Durham Peters, "The Marvelous Clouds," that I think does a nice job explaining how humanities came to fear nature. There have been scientific turns that have been quite harmful to living beings, for example: phrenology. And accepting something as "natural" or "given"—such as a shape and size of head being a "natural" indicator of intelligence or criminality—is dangerous.
However, we are also creatures, and we can forget that when we study the humanities *or* the sciences. I have to quote Roberto Marchesini here, when he describes how human exceptionalism lead to the rise of humanities, "The non-human becomes a solid and consistent category. . . .so that the human finds itself belonging to a different realm, which requires disciplines and approaches opposed to natural science" (Marchesini, 2017, *Over the Human*, p. 2).

SSIQ7CR: The article makes reference (p. 48) to language, rather than technology, as *'the great divide an insurmountable boundary – between humans and other animals.'*
Which, in your opinion, has caused the greater damage to nonhuman animals, human language or human technology?

SSIQ7CR Response: I think language is a human technology. I conceptualize technologies as arts and tools one uses for living. I think language is a powerful technology that begets many other technologies, which have had profound material impact. For example, I do not believe we would have cars emitting CO2 without the organizing ability of language (to communicate needs, to order supplies, to describe plans, to problem solve design issues, etc.) as the substrate on which cars could be built.

Questions on 'From Prometheus to Gaea: A Case for Earth-Centered Language'.

SSIQ8CR: Do you believe that adopting Earth-centered language would ultimately benefit, not only the world's animals and plants, but also its linguistic diversity?

SSIQ8CR Response: It's a good question. If Earth-centered language were adopted mindlessly, which I will define in a moment, it could actually hurt linguistic diversity. Now, let me define "mindlessly." In this case, I use the word "mindlessly" to refer to an arbitrary selection of words, a move to universal certain terms as "Earth-centered" and discount/disfavour new and other words, and an impulse toward political correctness. However, when I call for Earth-centered language, I am not arguing for the generation of an approved list of words in *any* language. Rather, I am asking that we explore our words and how they make the world. For me, Earth-centered language is absolutely an invitation to explore the rich lingual diversity on this planet and learn how different words can lead to new understandings. Words that are new to us can open new possibilities, open ourselves to finding richness in the Earth we may otherwise not have noticed. It may sound silly, but it is not unlike trying a cuisine that is new to your palette.

SSIQ9CR: To the best of your knowledge, is *'Promethean discourse'* solely a product of the Western Judaeo-Christian world, or does it have counterparts elsewhere amongst the world's indigenous peoples?

SSIQ9CR Response: This is a question, I, too, want answered. I did speak with a friend of mine from Bombay who read the paper and said it invited her to think if she ever encountered a word like "dirt" (which in the United States, we use to mean both soil and filth) growing up in India. She could not think of any. I would love to speak with other scholars fluent in languages and articulate in cultures from around the world to learn how Promethean discourse (does not) exists elsewhere.

And finally:

SSIQ10CR: The labels "language ecology" or "linguistic ecology" on the one hand, and 'ecolinguistics' on the other, are often presented as sub-disciplines with rather different methods and objectives. How would you define these terms and do you have a personal view on their use?

SSIQ10CR Response: Personally, I like reserving "ecolinguisitics" for work done that focuses on how language represents ecology and ecological philosophy. I use "language ecology" to refer to how language is impacted by the environment. Again, I do not think they should be siloed, and I think the research you are doing sounds like an important bridge to greater a better conceptualization of how these sub-disciplines work together

Semi-structured interview with Keith Moser

At the time of interview, Keith Moser was Professor in Classical and Modern Languages and Literature at Mississippi State University, where he has held various roles since 2007. This interview is a continuation of questionnaire QEL8.

Semi-structured Interview Questions:

SSIQ1KM: Based on your response to Question 11 of the original questionnaire above, could you please expand on the phenomenon-based learning methods utilised in Finland?

SSIQ1KM Response: First of all, I have to admit that I am not an expert in this area. However, it seems like the phenomenon-based learning approach is working quite well in Finland based on preliminary data. Given that this curricular framework was adopted rather recently in 2016-2017 in Finland, it will be interesting to see what kind of insights emerge from this radically different approach to pedagogy. Owing to the aforementioned insularity and overspecialization that are emblematic of much of the Western university paradigm, it is time to explore potential solutions to this quandary. On a more positive note, more American universities are starting to become serious about "interdisciplinary studies." Since we have seen the catastrophic effects of fractured thinking in Morinian terms first hand, it is vital that we continue to transcend the rhetoric of transdisciplinary finding ways to reconnect the disciplines.

Questions on: 'An Ecolinguistic, Scientific, and Serresian Interpretation of Communication: The Importance of (Re)-Conceptualizing Language From a More Ecocentric Perspective'.

SSIQ2KM: On page 1 of the above paper you note that it will *'unapologetically transcend traditional disciplinary boundaries.'* Do you see any link between the concept of "academic boundaries" in established disciplines on the one hand, and "political boundaries" between nation-states on the other, i.e. do academic disciplines stake a similar claim to 'sovereignty' over their own turf?

SSIQ2KM Response: This is an excellent question. As I mentioned earlier, some American universities are starting to make tremendous strides in terms of implementing genuine forms of transdisciplinarity. However, one of the obstacles standing in the way of more sweeping structural changes is turf wars. The curricular process through which new courses and programs are created in American institutions is more bureaucratic than it has ever been. For instance, at many universities including my own, it often takes 2-3 years to add a course to a catalogue, or to make other curricular changes. Not only does this excessive and utterly pointless bureaucracy stifle innovation, but it also creates an ideal breeding ground for turf wars. It is sometimes difficult to create legitimate classes that correspond to one's research and teaching interests, because some colleagues defend what they consider to be their sacred, sovereign territory tooth and nail. It is deeply disquieting that many American universities are erecting more bureaucratic roadblocks instead of

dismantling such systems entirely. In simple terms, the curriculum police is a big part of the problem.

SSIQ3KM: With regard to "social complexity hypothesis", the paper goes on to note (p.5) that *'complexity in communication can be defined analogously to complexity in society'*. In your experience, does this imply that species which live in complex societies have greater cognitive abilities than similar species which live solitary lives (e.g. lions as opposed to tigers)?

SSIQ3KM Response: Yes, there does appear to be a correlation between social complexity and cognitive ability. From an evolutionary standpoint, this is not surprising. Organisms that live in complex communities epitomized by the incessant exchange of information and cooperation have found ways to hone their cognitive and linguistic faculties over time. The situation appears to be quite different for solitary creatures.

SSIQ4KM: Do *'the primordial sounds of the earth'* (p. 10) extend to inorganic matter?

SSIQ4KM Response: This is another excellent question. In the article to which you refer, I use this expression in a general sense. When I evoke the "primordial" sounds of the biosphere in this publication and others, I am underscoring the importance of becoming attuned or reconnecting ourselves to the most essential sounds of the planet that we often dismiss as insignificant background noise. In biosemiotics terms, these sound systems are laden with meaning. To be honest, the question of inorganic matter is one that I need to develop more fully in future studies.

SSIQ5KM: Given that *'the disappearance of any non-human language is a potentially lethal catastrophe'* (p.20), do you believe that non-human languages should fall within the remit of ecolinguistics?

SSIQ5KM Response: Yes, I firmly contend that ecolinguistics must engage with other-than-human languages directly. In addition to critical discourse analysis, I argue that the veritable sophistication of other-than-human languages is a branch of ecolinguistics that must be more fully developed in the coming years. In this regard, I invite other ecolinguists representing many different backgrounds to collaborate in these efforts. As I demonstrate in my research, there are many ecolinguistic insights that can be gleaned from the study of other-than-human languages. For instance, Con Slobodchikoff's discovery of syntax in prairie dog semiosis should be of interest to every ecolinguist. In my opinion, ecolinguistics has a major role to play in the deconstruction of the last form of human exceptionalism in the shape of language that has created a myopic and deadly sharp ontological gap between *Homo sapiens* and other species.

Questions on: 'Is Preserving Indigenous Languages and Cultures the Key to Avoiding the Impending Eco-Apocalypse?: An Ecolinguistic Reading of Le Clézio's *Le Rêve Mexicain'*

SSIQ6KM: With regard to *'non-anthropocentric thought systems'* (p. 2), to the best of your knowledge, are "anthropocentric thought systems" characteristic of any indigenous populations outside of "the West"?

SSIQ6KM Response: I cannot claim whatsoever to be an expert on all of the rich indigenous cultures throughout the world. Nonetheless, in respect to the ones that I have studied, there are striking commonalities. Autochthonous civilizations whose existence still revolves around a direct, sensorial connection to the earth tend to view the world and their small place in it from a biocentric lens. Many other researchers have noted these similarities to which I allude.

SSIQ7KM: Page 3 of the above article notes that *'the budding and promising discipline of ecolinguistics is extremely diverse comprised of numerous subfields'.* Could you define the scope of ecolinguistics as you see it, and in particular its relationship with "language ecology" (i.e. where languages are treated as analogous to biological species) which is considered by some to be a different discipline

SSIQ7KM Response: As I highlight earlier, I think that it is essential for more ecolinguists to engage with other-than-human forms of semiosis or language. As someone who is staunchly against the compartmentalization of knowledge, I do not think that it is in the best interest of ecolinguists to try to define the parameters of the emerging field of ecolinguistics in a narrow way. In this vein, it is nearly impossible to create a clear distinction between biosemiotics and ecolinguistics. In my estimation, the greatest strength of ecolinguistics lies in the ability of researchers from this interdiscipline to break down porous, disciplinary demarcations instead of attempting to erect new ones. Of course, I realize that many people may disagree with my vision of the scope of ecolinguistics that practically knows no bounds. In many ways, I have to admit that I have deep epistemological tendencies. An epistemologist who is charged with the impossible task of attempting to know everything is able to conceive a more complete global picture of a given phenomenon, in spite of her or his inherent limitations. Owing to the fact that every ecolinguist derives inspiration from a particular ecosophy that is grounded in knowledge obtained from numerous fields, ecolinguists and epistemologists are not that dissimilar in my opinion.

SSIQ8KM: Page 4 notes that '*In stark contrast to many dominant world languages that laud unbridled consumption, narcissism, and extreme opulence, the linguistic codes that are embedded in the environmental discourse of minority civilizations emphasize cosmic humility and the importance of stewardship*. Do you believe that the languages themselves are responsible for these differing attitudes, e.g. do indigenous peoples' attitudes change upon changing language, or are their traditional values maintained but expressed through a different medium?

SSIQ8KM Response: Although debates revolving around the Sapir-Whorf hypothesis will continue to rage, I maintain that the language we speak on a regular basis without a passing thought influences how we think and act in the world. It would be interesting to study if the attitudes of indigenous peoples begin to evolve upon changing language. To the best of my knowledge, this phenomenon has not been systematically investigated. Although I am merely speculating, it is possible that the internalization of anthropocentric codes predicated upon faulty, anthropocentric, dichotomous logic such as "human and animal" and "man and nature" would erode the very foundation of autochthonous philosophical and spiritual paradigms.

SSIQ9KM: In similar vein, with regard to Amerindian worldviews, page 6 of the above article notes that *'by embedding these constructive discourses in a dominant world*

language, the author hopes that these traces could one day nuance Western ideas of progress and growth'. This implies that these nuances will ultimately be expressed through the medium of Western languages. If such discourses can be expressed in dominant languages, do you nevertheless believe that the preservation of linguistic diversity is a worthwhile end in itself for its own sake?

SSIQ9KM Response: I steadfastly assert that we have to find a way to nuance the anthropocentric master narrative by embedding the more beneficial and sustainable environmental discourses of Amerindian civilizations into dominant Western languages. To answer the second portion of your question, the answer is an emphatic "yes." I think that the 2008 Nobel Laureate in Literature J.M.G. Le Clézio answers this question perfectly in his "Eloge de la langue française" in which he affirms, "Every time that a language dies, it's a tragedy that affects the entire world." When a language vanishes entirely, an invaluable vantage point for perceiving the world and our place in it is forever lost as well.

SSIQ10KM: The dissertation of which this questionnaire forms a part will contain a section on several 'false dichotomies' such as 'human/animal' 'mind/body' and 'culture/nature'. The subject matter of the above paper is therefore very relevant to these aspects. Do you think that these dichotomies and other examples of *'wishful thinking'* have led to a corresponding dichotomy in the "two cultures" of the academic world (i.e. the sciences and the humanities)?

SSIQ10KM Response: First of all, I look forward to reading your dissertation in due course. The influence of dichotomous thinking is both pervasive and deadly in Western society. Yes, the problem is that our obsolete thought systems have yet to evolve to reflect the discoveries of modern science. Owing to the schism between the hard sciences and the humanities, it is only recently that humanists have started to reengage with scientific erudition. The insularity that I often decry is truly the root of this problem. Otherwise, our outmoded anthropocentric thought paradigms would have been challenged a long time ago. The lingering binaries that you intend to highlight in your dissertation do not stand up to any kind of critical scrutiny whatsoever. When placed in the light of modern science, the faulty logic undergirding these dichotomies collapses entirely.

And finally:

SSIQ11KM: If you feel that there are any relevant aspects of your research that have not been included in the previous questions, please feel free to expand on them here:

SSIQ11KM Response: I think that we have covered all of the basics. Good luck with your research project!