

Small Model Languages and Beyond—A Reply to Comments

Paul Rastall^a

^a South Kelsey, Lincolnshire, UK, paul.rastall@googlemail.com.

Paper received: 10 January 2015

Published online: 16 February 2015

DOI: 10.31885/lud.1.1.252

Abstract. In response to comments on pedagogical, epistemological, and semiotic issues in the original paper, there is further discussion, some clarification, and further suggestions on refutationism, linguistic data, and “bottom-up” perspectives, especially in relation to micro-level anomalies and the integration of perspectives. Critical reflection and openness to alternative views are emphasised.

Keywords: data, refutationism, dogmas, anomalies, ontology

First of all, I would like to thank Karen Sullivan, Per-Aage Brandt, James Dickins, and Sergei Sandler for their perceptive and interesting responses to my paper. While Sullivan (2013) mainly took up the pedagogical and epistemological themes, Brandt (2013) focused more on the semiotic strand of the paper with particular reference to a “bottom-up” approach to human communication. Both agreed that models are constructs for our understanding of complex phenomena. Dickins (2014a) applied the small model approach to develop ideas in his approach and, in his web comments on my article (2014b) focused on the confrontation of models with linguistic data, and expressed concern that we should not impose ideas about the nature of the linguistic data, but have a healthy respect for linguistic diversity. Sandler (2013) considered the SML itself, and pointed out some potential dangers in *any* modelling approach (mine included).

Sullivan’s paper develops the idea that all practitioners in linguistics need to reflect on their assumptions and on the meaning of descriptive solutions. She gives the useful example of semantic feature analysis as a case in point. In fact, the idea of small model languages as tools for reflection came out of pedagogical practice. I have long felt that teaching is too much concerned with learning and applying approaches, and too little concerned with the critical analysis of ideas. Certain approaches—particularly those that lend themselves readily to

Language Under Discussion, Vol. 1, Issue 1 (December 2013), pp. 34–41

Published by the [Language Under Discussion Society](#)



This work is licensed under a [Creative Commons Attribution 4.0 License](#).

teaching—can become uncritically accepted dogmas, especially when a variety of views is not presented. One should not underestimate the desire for “certainty”. It is pleasing to hear that Sullivan’s students are critical thinkers.

Sullivan’s other example of developments in logical semantics is a clear case of improvements in understanding arising from critical thinking and the refutation of a model. As she suggests, “failure” is good. One of the great attractions of Popperian refutationism (e.g. Popper, 1972) for natural scientists has always been that the process of hypothesis and rigorous testing, with progress resulting from identifying empirical weaknesses in a theory, is that it is a realistic representation of what natural scientists do (e.g. Medawar, 1984; Dawkins, 2013). Linguistics is not a natural science and there are strong reasons for not committing *uncritically* to Popper’s epistemology (Rastall, 2011), but, as Sullivan shows, we need ways of identifying the limits of our models—ways of knowing when we are wrong. One of the interesting things about Sullivan’s example is that the refutation in question did not come solely from a failure to meet the necessary condition of correspondence with observations, but it was also the result of the introduction of different perspectives. This reminds us of the “theory-laden” nature of our constructs. Our phonemes, morphemes, sentences, etc. contain the theory and methods used to identify them (see also Harré, 1976: 25ff on this point). They are not naturally occurring observables. However, it also reminds us that there are multiple perspectives on the same linguistic phenomenon—a point made clearly by Sandler. As discussed in my paper, for example, a grammatical view of interrogatives must be supplemented by an account of their role in interaction and the potential responses to interrogatives, as well as by an account of the aesthetic values of different interrogatives and responses for (broadly) the same central meaning: *Would you like a sandwich? Do you want a sandwich? How about a sandwich? A sandwich? – I would; Yes, please; Yeah...*

It is worth bearing in mind that Popper (1972: 30ff) also warned against the “immunisation” of theories against refutation, i.e. building in components of a theory that prevent refutation. This is an aspect of that excessive commitment to a model—defending it at all costs—that Sullivan refers to. One might think of the stratagems of “level-skipping” and “back-looping” in scale-and-category grammars (and their endless exceptions), which would—in any hard-headed analysis—simply be refutations of the model. One could suggest that unobservable transformations of unobservable “kernel” sentences serve a similar purpose, where particular transformations might be rejected but the theory of relating kernel sentences to “surface structures” is not empirically refutable.

Popper was clearly predominantly concerned with physical sciences. Consequently, the phenomena which constitute “refutation classes” in his two-level hypothetico-deductivism are measurable quantities. One of the ways in which linguistics differs from physical sciences is that its phenomena are qualitatively determined, and are themselves constructs. That should be obvious in the case of the recognition of “words” or other entities in a text. What we classify as a “word” depends on our theory for analysis. Linguistic phenomena are a selection from many possible aspects of speech events and may be *comparisons* of observables (as in commutation or permutation). Phonetic phenomena, such as [h] in English (which is a generalisation of contextually determined “voiceless” vowels), are themselves constructs and they can be considered as entities with communicative roles or as entities with social or

aesthetic value depending on how we choose to look at them. The distribution of [h] in the community and the communicative value of [h] involve different qualitative ways of looking at the phenomena. This raises the question of the nature of evidence from observables in linguistic arguments, and their role in empirical testing.¹

Small Model Languages are intended to be as independent as possible of particular linguistic theories. Dickins points out that I have been associated with axiomatic functionalism. While axiomatic functionalism is certainly very concerned with its own presuppositions and attempts to make them explicit, the SML approach is not an outcome of axiomatic functionalism and it raises questions for that theory as for others, in particular, questions about the integration of language systems with social functions of communication, and the relation between linguistic systems with no “existence postulate” and real-world communicative behaviour. However, as Dickins (2014b) says, it is important not to have preconceived ideas about how languages express given functions or to presuppose that there is a universal set of messages which are conveyed in all languages. Examples of this Whorfian point include the different perspectives on actions and states in the Russian aspectual system compared with, say, the English verbal system, or the many different ways of addressing the interlocutor in a range of languages. SMLs can be used as thought experiments, as suggested in my original paper, and as Dickins did in his paper on language levels (2014a), but we need to know the limitations of our modelling. This is, of course, why SMLs must be confronted with the diversity of (real) linguistic phenomena (“reality checks”, as Sandler calls them).

One cannot set up any model, however, without making some assumptions. One of the chief purposes of SMLs is to identify those assumptions. One of the assumptions of an SML is that one must specify a communicative function for modelling (such as the assertion of existence or address to an interlocutor)—and this is inevitably to some degree heuristic. Since SMLs are tools for reflection, they invite us to question our ideas about verbal communication, including any initial guesses. As Sullivan suggests, creating awareness of limitations is one of the functions of models.

While Sandler is generally sympathetic to the approach, he reminds us of Wittgenstein’s point that we can be “held captive” by a picture, i.e. that the models we build can blind us to alternative perspectives and other ideas. This point is in line with those of Sullivan and Dickins. We should therefore “handle with care” when using models. That is entirely correct. SMLs are deliberately concerned with very limited functions. The particular SML given as an example does not consider expressions asserting existence in their wider communicational context, and it is focused on the syntax of those expressions—as Sandler says. It is further right to suggest that syntactic issues should not be divorced from pragmatic perspectives (as in the case of interrogatives in my paper). I think it is not unreasonable to say that a lot of linguistics has been too narrowly concerned with phonological and grammatical systems divorced from those wider perspectives, despite frequently expressed calls for the integration of different points of view).

¹ Another difference was pointed out by Mulder (1975). Whereas hypothetico-deductivism in natural sciences involves a distinction between empirical theories and phenomena, in Linguistics a third “level” of non-empirical constructs is needed (phonemes, grammatical relations, etc.) which can be defined, applied, and tested for consistency but not for empirical validity.

The main function of SMLs is to promote critical reflection and they are deliberately kept simple for the purpose, but they need not be restricted to purely formal issues. Thus, one could envisage models consisting of sets of sentences with textual relations defined in the set (e.g. explaining or signposting), or sets of utterances correlated with sets of social/contextual features (e.g. generational factors or negotiating interactions). This could lead to an analysis of the presuppositions involved.

Sandler's point and the further questions he raises about the wider context of why, when, and where statements about existence are made can be seen as precisely the kind of critical reflection on assumptions and provocation of alternative thinking (and questions) that SMLs are intended to generate.² (They also link up with Sullivan's example of refutation in logical semantics arising from a wider set of perspectives.) One might add that the introduction of wider perspectives brings with it the need for analysing the presuppositions of the wider context and the definitions of terms involved. Of course, one must make *some* proposal in order that it can be discussed, and it is a fact about the development of models that, at every point, there are many alternative routes to explore. The important things are to be explicit about one's choices and not to exclude other valid perspectives³. The resulting SML is bound to include some things and exclude others, but that is where light can dispel darkness.

Nevertheless, the point is well taken that models should not restrict thinking and that the questioning and conjecturing can never be considered at an end.

The issue of whether existence expressions are predominantly of the actualiser type can—as Sandler says—be left to typological classification, although here again, as is well known, typological results depend heavily on the methodological assumptions behind them; it is easy to end up lumping apples with oranges, where different theories are used for different languages in the typology (different phoneme or morpheme concepts, for example). Whatever the outcome of such a classification, the more interesting questions are about the nature and comparison of the observed communicational solutions, and what they might imply for the understanding of human behaviour.

Brandt's paper presents an interesting way of building up an understanding of complex human semiosis from small-scale functions, which is certainly consistent with my proposal for an “overlap-accretion” view of language. Brandt's model allows for variety and overlap of small-scale communicational means for specific functions. The “accretion” of such structures and the accumulation of wider perspectives on semiosis ultimately builds up a construct which models language as a kind of virtual reality. Productions in the verbal world can be compared with other information—perceptual, logical, remembered—and tested for

² As noted in the original paper, there are other ways of focusing on, or questioning assumptions and, as Sandler says, Wittgenstein certainly offered one of them. In my opinion, Wittgenstein and most other philosophers never really considered that linguistic units and relations were products of analysis and, hence, dependent on the theories and methods used to identify them. They simply assume that they know what the words and syntactic structures of a language are (an exception is Max Black, 1968).

³ An interesting example might be the many attempts to analyse the sign as a relation—from *voces significant res mediantibus conceptis*, or *aliquid stat pro aliquo* to Ogden and Richards' “symbol stands for referent” (1972: 11) or Mulder and Hervey's “index denotes information” (1972: 56). The Saussurean view that the signifier and signified are not two separate entities connected by a relation (1972: 155ff), but are the same thing from different points of view is a clear example of adopting a different perspective, which at least avoids the problems that arise if “*a* denotes *b*” implies there is an *a* and there is a *b* connected by an unclear relation of “denoting”.

truth or a range of other factors: social or aesthetic, for example. It can serve as a vehicle or model for a significant part of conscious awareness and our interaction with the environment. Roy Harris' "integrationist" approach (1982), which links verbal to non-verbal communication, is also in this line of thought, as is the conception presented by Hagège (1980) of a hierarchy of functional analyses. A key point for Brandt and Hagège, in line with my paper, is that structures should not be dissociated from social/pragmatic issues. Thus, structures serving the purpose of asking questions or making requests must be seen in the context of interpersonal relations in the situation of verbal interaction.

One of the purposes of my paper was to encourage colleagues and students to question dogmas (see also Rastall 2013). This is inevitably somewhat subversive, as fundamental assumptions are challenged or, at least, one is required to state them. As Brandt suggests, one of the dogmas of linguistics is the idea that language is a system. "La langue est un système qui ne connaît que son ordre propre" (Saussure, 1972: 43)⁴: "la langue est un système rigoureusement agencé, où tout se tient" (Meillet, 1921: 11)⁵. He is right to point out that others have asserted the polysystemic nature of languages (the glossematicians, Firth, 1957: 121, Mulder and Hervey, 1975: 2–22). It is certainly true that the establishment of linguistic systems has considerable explanatory power and deters one from atomistic approaches—Hjelmslev (1953: ch. 1) spoke of *disiecta membra* in 19th Century comparativism—but the focus on systems also takes attention away from the many anomalies and multiplicity of small-scale systems in languages. One must avoid turning systems into "procrustean beds".

Most versions of "neo-Prague" functionalism, as also Brandt's approach, easily avoid those problems because systems (or structures) are generalisations (macro-structures) which emerge from micro-level functional analysis (Mulder, 1968, Hagège, 1980), or, from the opposite direction, macro-level structures are used to account for micro-level features in explanatory arguments. Thus, anomalies, "marginal" features, or diversity of structure can be accommodated. "Impersonal" structures as in Russian (for example) occur side-by-side with subject-predicate structures. The two types of structure are used for different functions and in different contexts. In a "bottom-up" approach, there is no reason to assume that they arise from a common "underlying" structure or to assume that one must derive from the other. Similarly, there is no reason to see German as either a "case language" or a "subject-predicate" language. "Case" structures serve specific purposes such as "direction" or "location" indication (*ins Haus, im Hause*) or fulfil contrastive roles in signal identification alongside subject-predicate relations for sentence-level functions. The different ways of expressing existence in Russian (mentioned in my paper) or in Arabic (raised by Dickins) invite explanations for the differences of usage in relation to more refined models.

In a "bottom-up" approach, anomalies can be handled from the perspective of the unit rather than the overall structure. For example, the signs in the "article" position in English (i.e. those commuting with *the* and *a*) are mutually exclusive- *the, a, this, that, any, each, my,...* and possessive constructions such as *Fred's*), but *every* is mutually exclusive only with a subset of the signs in this position (non-possessives) and may combine with possessives- **the every move*, but *his every move, Fred's every move*). *Every* has its own set of paradigmatic and

⁴ "Language [*langue*, not *langage*] is a system which has only its own arrangement/order" (PR).

⁵ "Language [*langue*, not *langage*] is a strictly organised system in which everything is mutually connected/supportive" (PR).

syntagmatic possibilities which are anomalous from the point of view of the overall system. One might note that we can have *all of them*, *some of them*, *each of them*, *any of them*, *none of them*, but not **every of them*. Also, from the point of view of the phonological system of English, the phoneme /z/ easily fits in as /voiced, hissing/ with its unvoiced counterpart /s/, and it occupies a pre-vocalic position with no other consonantal combinations (/zip/ etc.) and occurs post-vocalically alone (/geiz/ "gaze") or in combination with nasals (/prizm/, /prizn/ "prism", "prison", etc.). Thus, from a macro-level perspective, one can account for the identity, structure, and distribution of /z/. However, from the perspective of the phoneme (as it were), one can see that:

- a. The number of phonotactic combinations entered by /z/ is very limited (and they can be easily listed, unlike the phoneme /p/ for instance)
- b. The limited occurrence of /z/ in allomorphs means that it has a contrastive function in identifying the limits of meaningful units
- c. /z/ frequently occurs in signs with expressive (or "echoic") connotations (*zap*, *buzz*)
 - Post-vocalically, it is frequently associated with verbs—*gaze*, *daze*, *amaze* (and de-verbal nouns)—and thus helps in the grammatical identification of the unit of which it is a part
- d. And, most significantly of all, /z/ is the exponent of the "genitive 's", 3rd person present singular, and plural. It acts as a contrastive feature showing the role and limits of the component of which it is a part. (Ontologically from a top-down point of view, of course, the phoneme /z/ should be distinguished from the allomorph "/z/-plural" whose exponent is the phoneme /z/, but here we are thinking bottom-up of the associations of /z/).

Similar points can be made about other, relatively infrequent phonemes, such as /v/ and /ð/. That is, a bottom-up view of the phoneme and its functions is a very different picture of the role and combinations of the entity than from the point of view of the phoneme table and distributional unit in phonology. In such a view, the phoneme is a node in associations with multiple functions. Similarly from a "bottom-up" perspective, as Twadell (1935) and Mulder (1968, 1978) pointed out, the overall functional identity of a feature is a set of micro-identities. A "macro-phoneme" for Twadell is a generalisation of many micro-phonemes with different identities in fixed contexts. English /r/ in the context of /-ib/ commutes with /f, d, n, dž/, but in the context of /-aŋ/ with /p, b, f, t, g/. To arrive at an identity for /r/ in relation to all phonemes, we need a technique to generalise from all particular functions (as in Mulder, 1968). Mulder's other point (1978) is that even distinctive features are generalisations of non-different functions. Thus, in English, /occlusive/ is opposed to /fricative/ and /nasal/ in the context of /labial/ and /apical/, but not in the context of /velar/, as there are no velar fricatives in standard English- in the overall system /occlusive/ is what he calls a "hyper-feature"- a set of functionally non-different identities.

The view that our models are "constructs for the understanding" is justified from a number of points of view. It starts from the idea that all of our knowledge of the world comes through the medium of our understanding and that we cannot directly know what Kant calls the *Ding an sich*. Even our linguistic phenomena and observables (including comparison of phenomena as in commutation) have some element of theoretical selection and our models,

as noted above, are theory-laden, and hence cannot be assumed to be direct reflections of some supposed reality. The fact that we can have different perspectives on the same phenomena and arrive at different constructs reinforces the argument (different concepts of the morpheme, for example). However, in Householder's deliberately polarised terms (in Joos, 1957), the rejection of "God's truth" linguistics does not imply a wholesale acceptance of "hocus-pocus" linguistics. Clearly, we do want to understand communicational reality, as Brandt says, and so must address the epistemological problem of the relation between models and our experience of verbal communication. Part of this is determining our level of "ontological commitment" (in Quine's (1963) terminology), since most linguistic constructs are classes or classes of classes. Another part of the issue is determining what linguistics can say about cognition and the verbal contribution to conscious awareness. Scepticism that linguistic models can be directly attributed to cognition need not be a problem (as Sullivan indicates), but that does not preclude a more modest collaboration with biological approaches to the understanding of verbal behaviour—for example, in the hypothetical mode, i.e. that if our models can describe some aspect of reality then we may search for some neurological correlate. We must, obviously, ensure that our models are *consistent with* the findings of other sciences (not determined by them). More generally, we need to consider what sort of understanding our models provide, but that in turn implies knowing what we mean by "understanding" and takes us back to that complex linguistic virtual reality that our constructs model. However, as Dickins rightly says (and this was a point made earlier by the glossematicians), SMLs (or any other model) are themselves semiotic systems from the point of view of attempting to understand their structure and content. This is an aspect of the truism that we need language to talk about language. More deeply, this "loop of language" (Rastall, 2000: ch.9), or the inability to escape from that virtual reality, is one of the limitations on our understanding. It raises the question of how we relate our verbal "world" to our perceptual world.

References

- Black, M. 1968. *The Labyrinth of Language*. Harmondsworth: Pelican.
- Brandt, P-A. 2013. "Language as Semiosis—A Short Reflection on Paul Rastall's Paper". *Language Under Discussion* 1(1): 24–26 <<http://ludjournal.org/index.php?journal=LUD&page=article&op=view&path%5B%5D=13>>.
- Dawkins, R. 2013. *An Appetite for Wonder*. London: Transworld.
- Dickins, J. 2014a. "On the Non-Necessity of Levels in Phonology, Grammar and 'Abstract Semantics'". *Linguistica Online* 16_ <www.phil.muni.cz/linguistica/art/dickins/dic-002.pdf>.
- Dickins, J. 2014b. Web Comment on "Small Model Languages as Tools for Reflection", <<http://ludjournal.org/index.php?journal=LUD&page=comment&op=view&path%5B%5D=2&path%5B%5D=0&path%5B%5D=18>>.
- Firth, R. 1957. *Papers in Linguistics*. London: Oxford University Press.
- Hagège, C. 1980. "The Concept of function in phonology". *Phonologica, Akten der vierten internationalen Phonologie-Tagung* (eds. Dressler, Wolfgang U. et al.), 187–93. Innsbruck: Institut für Sprachwissenschaft der Universität Innsbruck.
- Harré, R. 1976. *The Philosophies of Science*. Oxford: Oxford University Press.
- Harris, R. 1982. *The Language Myth*. London: Duckworth.

- Hjelmslev, L. 1953. *Prolegomena to a Theory of Language* (trans. F. Whitfield). Madison: University of Wisconsin.
- Joos, M. (ed.). 1957. *Readings in Linguistics; the development of descriptive linguistics in America since 1925*. New York: American Council of Learned Societies.
- Medawar, P. 1984. *The Limits of Science*. Oxford: Oxford University Press.
- Meillet, A. 1921. *Linguistique historique et linguistique générale*. Paris: Champion.
- Mulder, J.W.F. 1968. *Sets and Relations in Phonology*. Oxford: Oxford University Press.
- Mulder, J.W.F. 1975. "Linguistic Theory, Linguistic Descriptions, and the Speech Phenomena", *La linguistique* 11(1), 87–104.
- Mulder, J.W.F. 1976. "Phoneme Tables and the Functional Principle". *La linguistique* 14/1, 3–27.
- Mulder, J.W.F. and Hervey, S.G.J. 1972. *Theory of the Linguistic Sign*. The Hague: Mouton.
- Mulder, J.W.F. and Hervey S.G.J. 1975 "Language as a System of Systems". *La linguistique* 11, 2–22.
- Ogden, C.K. and Richards, I. 1972. *The Meaning of Meaning* (10th ed.). London: Routledge and Kegan Paul.
- Popper, K. 1972. *Objective Knowledge*. Oxford: Clarendon Press.
- Quine, W.v.O. 1963. *From a Logical Point of View*. (first published 1953). New York: Harper Row.
- Rastall, P. 2000. *A Linguistic Philosophy of Language*. Lewiston and Lampeter: Mellen.
- Rastall, P. 2011. "In What Sense Can Statements about Languages be True?". *Organon F* 18/1. 14–25.
- Rastall, P. 2013. "Four Dogmas of Linguisticism—Some Philosophical Problems for Linguists". *Jazykovědné aktuality* 50(3/4): 96–115.
- Saussure, F. De. 1972. *Cours de linguistique générale* (édition critique de T. de Mauro). Paris: Payot.
- Sandler, S. 2013. "The Dark Side of the Model". *Language Under Discussion* 1(1): 30–33 <<http://ludjournal.org/index.php?journal=LUD&page=article&op=view&path%5B%5D=23>>.
- Sullivan, K. 2013. "It's Only a Model: Discussion Note on 'Small Model Languages as Tools for Reflection'". *Language Under Discussion* 1(1): 27–29 <<http://ludjournal.org/index.php?journal=LUD&page=article&op=view&path%5B%5D=15>>.
- Twadell, W.F. 1935. *On Defining the Phoneme* (=Language Monographs 16). Baltimore: Linguistics Society of America.