Tobias Scheer
scheer@unice.fr
www.unice.fr/dsl/tobias.htm

Graduiertenkolleg Leipzig
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NEO-BEHAVIOURIST RAIDS ON PHONOLOGY WHERE "NEO" MEANS SCHIZOPHRENIC

(1) old philosophical debate known as **empiricism** vs. **mentalism (nativism)**
empiricism is typically anglo-saxon: Hume, Locke, the "empty sheet"
mentalism is typically continental: von Humboldt, Descartes

empiricism claims that
- the human is nothing more than a highly skilled and perfectly working machine.
- there is no principled difference between how humans and machines work.
- if we make progress in understanding how machines work, we will understand what a human is, and we will be able to "build" one.
- machines do not know anything before they are put to use. The same holds true for humans: they are a blank sheet.
- the application of this view to learning theory is called behaviourism: nothing can ever be in the brain if it has not been in the senses before. Nothing is innate.

mentalism claims that
- the human is something else than just a highly skilled machine.
- there is a fundamental difference between a machine and a human.
- no progress in machine-understanding will ever allow to "build" a human.
- humans are not a blank sheet: they know some things before they are borne.

(2) applied to language:

a. the behaviourist view
language is a conventional, rather than a natural object. It owes nothing to any phonology- or language-specific genetic endowment in neither acquisition nor practice. It is an artefact created by mankind in the same way as, say, aeroplanes or tables, and its acquisition exclusively uses "more general cognitive capacities". Learning how to drive a car and how to speak a language involve exactly the same cognitive capacities and processes.

b. the generative view
language is a natural, non-artefactual object that has not been created by mankind nor depends on the shaping will of the species. Its acquisition and practice require the use of a genetically encoded set of principles that are not learned but pre-exist any exposure to linguistic input. This Universal Grammar is specific for 1) the species and 2) for language.
Putting those cognitive capacities at use that allow to learn how to drive a car will never allow for the acquisition of a natural language.

(3) the birth of generative grammar was achieved through emancipation from behaviourism: Chomsky (1959) opposes the idea of an innate and genetically endowed Universal Grammar to Skinner's "Verbal Behaviour".
Since then, the study of language and mind has always been a generative occupation, parallel to the study of more narrowly linguistic topics: Chomsky (1965,1966,1986,1993,2002 etc.), Kasher (1991), Jackendoff (1997) etc.
==> **There is absolutely no way to ever reconcile any brand of behaviourism with generative grammar: there is no generative grammar without UG, and there is no behaviourism with UG.**

(4) the (social and scientific) success of generative grammar in the late 60s and early 70s has discredited behaviourism in the realm of language, and this seems to be definitively settled.
[Although see the return of behaviourism on at least two occasions, i.e. Generative Semantics (Katz & Bever 1974) and Connexionism in the 80s].

(5) recent behaviourist raids on phonology
a submarine strategy (e.g. Carr 2000)
   a. behaviourists use a weak version of behaviourism: nothing can be in the brain that has not been in the senses before, but "before" can mean "in previous generations", i.e. phylogenetism. Carr (2000): "behaviourists need not be anti-nativists".
   that's ok.
   b. behaviourists claim to be generativists - acute schizophrenia
   c. they attack only phonology, leaving syntax and semantics alone
   d. they have auxiliary forces:
      - Laboratory Phonology
      - socio-linguists (variationists)
      - Declarative Phonology (?)
      - reflexes of Natural Generative Phonology, i.e. Joan Hooper / Bybee (2001)

(6) diagnostic
   a. the field that has been chosen for the application of the new behaviourist vigor is phonology. As within the theory itself, there is a growing and fatal continental drift that estranges phonology from serious linguistic endeavour: no syntactician would pay attention to eventually emerging behaviourist sirens.
   [e.g. Pullum & Scholz 2002 and the reaction by Legate & Yang 2002]
   b. Phonology is more and more dominated by behaviourist approaches, while hardly anybody supposes that a child acquires syntax in exclusively recurring to mimicry and induction.
   c. why phonology is singled out for attack
      - it is the weakest point in the generative argumentation: the number of well-formed phonological expressions is only finite.
      - support from the acquisitional scene and the continental drift between phonology and syntax.
      - the fact that the entire classical generative argumentation against behaviourism rests on syntax (Chomsky is a syntactician…)

d. who they are who they want people to make believe they are: the generative coat needs to be removed
behaviourists and laboratory phonologists claim that they stand inside of the generative paradigm. They propose an improvement of the generative foundations, rather than their abrogation. As was mentioned before, being generative and behaviourist is only possible in a schizophrenic state of mind.
Therefore, the neo-behaviourist raid on phonology needs to be identified as such, and the alternative clearly posed: anyone who buys into neo-behaviourist argumentation invalidates the generative approach as a whole, including syntax and semantics.

(7) behaviourists and acquisition: "more general cognitive capacities"
a. there is no issue in adult grammar: behaviourists align on the existence of exactly the grammar that generativists will assume to control adult expression.
The only issue lies in the question of how this grammar comes into being.
b. if of the phylogenetic brand, behaviourists do not challenge the fact that the infant uses genetically encoded tools in order to acquire language. Only are these innate capacities said to be either not specifically linguistic, or not specific to the human species, or both. This is what "more general" means: the tools that are used for the purpose of language acquisition also assure the exercise of other activities that are unrelated to speech. Importantly, there must be nothing left in the acquisition of language that is used only for this purpose: the behaviourist stance is that every single tool that is used in the acquisitional process also serves for non-linguistic purposes.

(8) the behaviourist programme: "more general cognitive capacities" are
a. perceptual capacities
i.e. audition.
b. capacity to categorize
the ability to understand that X is different from Y, and that X_1 is like X_2, while Y_1 is unlike both X_1 and X_2, but like Y_2. For example, the ability to understand that cats, dogs, frogs etc. belong to a category (animate) that is different from those that trees and bushes belong to (non-animate).
c. capacity to idealize
the ability to neglect irrelevant information that is available. For example, the fact that some carnivore plants are able to perform oriented movements does not challenge the animate vs. non-animate distinction. In linguistics, the typical example would be the Chomskian ideal speaker-hearer.
d. capacity to normalize
cognate of the capacity to idealize. The ability to filter out variation that obscures the relevant portion of the signal. For example, the size of a dog, which may vary considerably, must not enter the calculus that allows to classify a candidate individual as a dog. Applied to phonology, this comes along as the ability to filter out variation in the characteristic pitch of the voices of males and females.
e. capacity of induction
cognate of the capacity to idealize. The ability to make conclusions on the basis of converging evidence. For example, the conclusion that there will be no object ever that goes up or zig-zags around when it is released, on the basis of the recurrent observation that everything falls down when it is released.
f. capacity for internalization from the environment

g. capacity for mimicry
the ability to imitate a gesture that has been perceived, and to get closer to the original when performing and being exposed long enough, when trying hard enough and when being awarded in case of success. The basic behaviourist stance: stimulus and response.
h. capacity to vocalize
i. capacity for recognition of internalized images
the ability to store a sensory (idealized) input or an induction based on sensory input, and to match this stored item with new sensory input that occurs later on (perception), or to retrieve it (production). Images can be acoustic, visual, tactile, olfactive etc.
j. capacity for recognition of acoustic phenomena produced by conspecifics
the ability to discriminate between an acoustic signal that has been produced by another human vs. by a non-human. A more specific version of that is the ability to tell a human linguistic production from 1) a human non-linguistic production and 2) a non-human production.

(9) behaviourist conclusions
a. behaviourists always haste to point out that none of these capacities is specific to either linguistics nor even to humans. All abilities mentioned under (8) are also needed in the non-linguistic part of human activity, and they are even owned by non-humans.
b. these capacities are necessary *and sufficient* in order to acquire language. Hence, there is no such thing as a UG, because "G" is meaningless.
c. question: why are animals unable to acquire natural language?

(10) Auxiliary behaviourists I: Laboratory Phonology (Pierrehumbert et al. 2000)
a. there is no difference between Langue and Parole (Saussure) or I- and E-language (Chomsky). Social and biological systems are equally natural.
b. phonological categories are just as continuous as their phonetic peers (discreteness is a particular equilibrium state of the phonological continuum).
c. grammaticality judgments are unrevealing and should be replaced by the more reliable testimony of statistical evidence.
d. implementational success is an acceptable critereon in order to evaluate linguistic theories: if a machine can be constructed that is able to, say, synthesize speech, the theory that this machine relies on must be superior to other theories. The fact that successful machines can (and most often do) use a technology that 1) is not intended to and 2) does not remotely resemble any cognitive mechanism goes entirely unnoticed. There is a difference between building successful machines and uncovering cognitive properties.
e. the acquisition of language is achieved "through interactions with the physical environment" (p. 291) whereby statistical learning methods play a prominent role, while children may or may not rely on specifically linguistic innate endowments (this is under debate).
f. opposition to dualism: there is no difference in kind between the functioning of a human brain and the way other natural systems such as the solar system or the weather work.

g. the last sentence of Pierrehumbert et al. (2000) hints at the superiority of phonology over syntax, thanks to the availability and use of serious and scientific laboratory methods in the former field:
"it may turn out that, thanks to its restricted physical domain and advanced instrumentation, phonology is simply in the lead in an enterprise in which syntax will eventually catch up. If the relationship of syntax to the 'world understanding' is eventually proven to resemble that of phonology (as we have described here), then the Minimalist Program will have been carried through to its logical - truly 'minimalist' - conclusion." Pierrehumbert et al. (2000:294)
==> the old belief that instruments tell us the truth. Do you know a linguist who seriously believes that phonology is more advanced than syntax these days…?

(11) Auxiliary behaviourists II: socio-linguists

a. behaviourists and socio-linguists deny the existence of the fundamental opposition Langue (competence, I-language) vs. Parole (performance, E-language) and hence stand outside the Saussurian foundations of 20th linguistics.
"La Langue, distincte de la Parole, est un objet qu'on peut étudier séparément. […] Non seulement la science de la Langue peut se passer des autres éléments du langage, mais elle n'est possible que si ces autres éléments n'y sont pas mêlés." Saussure (1915:31)
[The Language is distinct from the Parole. It is an object that can be studied in its own right. […] Not only can the science of Langue ignore the other elements that are constitutive of speech; the study of Language is indeed impossible in case these other elements are taken into account.]

b. socio-linguists have always wanted to be "first class linguists" just as syntacticians, phonologists etc. They could never really swallow the fact that they are "only" doing linguistique externe.

c. Laboratory Phonology explicitly jumps on this train, see (10)a.

d. various attempts from different origins have recently tried to discredit judgments of grammaticality because of their alleged unreliability.
"well-formedness judgments are opinions. They are high-level meta linguistic performances that are highly malleable. They do not represent any kind of direct tap into competence, but are rather prone to many types of artefacts, such as social expectations, experimenter bias, response bias, and undersampling. Hence, well-formedness judgements are just one type of evidence among many, and not a particularly good type of evidence as currently used" (Pierrehumbert et al. 2000:289s).

e. ==> if statistics are not taken into account, the linguist's activity cannot really count as scientific. The reader may compare this understanding of the word "scientific" to Einstein's view on the matter. He appreciates the equation "emiricism/ statistics = scientific" and, for the matter, "absence of statistics = non-scientific", as follows:
"Science cannot grow out of empiricism alone... in the construction of science we need to use free invention which only *a posteriori* can be confronted with experience as to its usefulness. This fact could elude earlier generations, to whom theoretical creation seemed to grow inductively out of empiricism without the creative influence of free construction of concepts. The more primitive the status of a science is, the more readily can the scientist live under the illusion that he is a pure empiricist." quote from Pais (1982:14)

(12) behaviourists must (and do) deny the existence of a phonology in sign language

a. Carr (2000:88) firmly excludes that sign language possesses a phonology. One obvious reason is that if he accepted that the same technology commands the vocal and the signed interface, he would have to admit that phonology is part of UG. This is simply because there have been numerous cases reported where a natural signed language has emerged among a community at least two deaf infants without any linguistic stimulus. That is, deaf children were (and often still are in many places) thought to be intellectually disabled, and left on their own without any specific instruction. In case two deaf infants were in contact, people surprisingly observed after a while that they developed a form of communication which relies on manual gestures. When linguists examined this form of communication, they found that it possesses every single characteristic of vocal speech, except vocality. For example, the three Binding Principles were active, movement was subjected to the same conditions as in vocal natural language etc. Here, behaviourists have lost once forever: it is obvious that the deaf learners at hand were deprived of any linguistic input since 1) they cannot hear and 2) nobody told them to use signs or provided instruction how to use them. Hence, nobody could possibly pretend that this natural signed language has been acquired thanks to imitation, perception, induction etc. The only possible solution is that the deaf infants knew how a human language looks like before acquiring it.

b. there is one important difference between vocal and signed natural language: as far as I know, the austere conditions of acquisition that have been described for the deaf children are unprecedented for vocal language. That is, there is no reported case where at least two infants that are not deaf have grown up in absence of any exposition to a vocal natural language.

(13) Auxiliary behaviourists I again: Laboratory Phonology

a. phonology is a continuum which accidentally has reached an equilibrium state. Nothing sets apart the emergence of a discrete equilibrium state in language from the emergence of a discrete number of planets from an initial amorphous cloud of dust as witnessed by our solar system. This stance relies on the explicit rejection of dualism, i.e. the view that human and non-human properties are different in kind.

(14) Auxiliary behaviourists III: Hooper/ Bybee and reflexes from NGP

a. anything is a possible structure in natural language
"phonology as procedure, structure as emergent", Bybee (2001:14ss) explains that the only thing that makes a noun and a determiner cohabitate within the same constituent is the fact that they frequently occur one next to the other: "grammatical and phonological structure emerge from the facts of co-occurrence in language use. Words that commonly occur together - for instance, nouns and their determiners, or verbs and their objects - begin to behave as constituents" (p.15s). That is, if tomorrow a new fashion made people adverbs before nouns but deteminers after verbs, native speakers would change their syntactic structure and build constituents that dominate adverbs and nouns on one hand, and verbs and determiners on the other. The resulting object would then be a natural language in exactly the same way as French, Russian and Japanese.

b. in phonology:
Bybee seriously contends that anything is possible in natural language. In her view indeed, the only instance that defines which structures (syntactic, phonological etc.) exist is the stimulus: language use. She overtly identifies this concept as a brand of behaviourism: "usage-based functionalism emphasizes language as a conventionalized, cultural object. In order to understand the nature of language, we need to understand what it means for behavior to be conventionalized. Haiman (1994, 1998) discusses grammar as ritualised behavior and points to various properties of both ritual and grammar that are the result of repetition" (p.8). Since a ritual, as a special case of social conventions, can be anything and its reverse, so can language as well.

c. this is a particularly interesting statement coming from the most prominent figure of NGP, which has set out in the early 70s in order to reduce the overgeneration of SPE, i.e. what is "natural" and occurrent, and what is not.

d. Bybee (2001) has kept from her NGP times a deeply rooted aversion against all forms of abstraction. But her modern implementation of this feeling is even more radical than before: she denies the existence of underlying structure and phonological processes altogether (sic).
The only synchronically active motion in grammar is analogical: "generalizations over forms are expressed as relations among forms based on phonetic and/ or semantic similarities. New forms can be produced by reference to existing forms, but most multimorphemic words are stored whole in the lexicon" (p.4). Consequently, she denies the independent existence of a computational device in the brain. The traditional separation of the lexicon and the grammar is unwarranted, and this is what she calls "the rule/ list fallacy".

e. on acquisition:
phonology is nothing more than "a highly practiced behaviour, associated with the vocal tract of human beings" (p.14), and therefore it is "useful to compare speaking to other fairly complex but repetitive neuromotor activities, such as playing the piano". Learning how to play the piano uses the same cognitive resources as the acquisition of a natural language. And more generally, "the acquisition of phonology comes about through the gradual acquisition of more and more accurate phonetic detail in the production of the words and phrases of the language. Processes come to be automatic because they are highly practiced" (p.66).

(15) If phonology is conventional, why are there impossible systems and processes ?

a. the prediction that anything and its reverse could be acquired by a human infant is in line with the bahaviourist motto according to which language (phonology) is not a natural, but a conventional object. Humans can learn how to ride a bicycle although this is not part of their genetic programmation. It takes a little experience, advice, will and energy before the learner can keep the balance, but it works. The more difficult the task, the more time, addiction, will etc. will be needed for success: playing the violin, another learned activity that is not genetically programmed, is of the more difficult kind. Since on the behaviourist account the bicylcle, the violin and language are conventional objects that are created by mankind, the acquisition of the respective skills follows the same pattern.
   Hence, there is absolutely no reason why a language could not be acquired where pronouns must be co-referential with the subject, but anaphors must not. Under the effect of the relevant exposure, the learner will abstract the correct generalization by induction, and the corresponding language with the reverse Binding parameters could exist.

b. they cannot sneak out in saying that there is no relevant stimulus
   The fact there is not one single language with Martian Binding Principles on earth is highly alarming for behaviourists. They could answer that such a language does not exist because no infant ever experiences the relevant input. However, this is an obviously incorrect statement since cross-linguistic and typological variation arises through diachronic diversification. In this process of dialectal division, acquisition plays a fundamental role (or perhaps the only role). As for other evolutionary processes, the micro-variation that is at the origin of the evolution of the species is due to random mutations. Therefore, the random generator should have produced, since the thousands of years of linguistic evolution, this or that pattern which generativists hold to be non-human.

(16) Why is the acquisition of language not painstaking, more or less successful and unavoidable ?

a. another question that could be addressed to behaviourists is why humans learn more or less well, or not at all, to ride a bicycle and to play the violin, while the success of language learning is one hundred percent for each and every physically and mentally unimpaired human being. The role of "free will" is also interesting: it takes a lot of will and energy to learn to play the violin, and if the learner is not enduring and motivated, he or she will have no or poor command of the instrument. Moreover, every human can decide not to learn to play the violin. All this is different with language: little humans do not need any special motivation in order to acquire their mother tongue, and no infant has ever been reported to sweat because of the hard learning effort. Also, there is no decision to be made by anybody whether a normally gifted human being should or should not acquire a natural language. Even if somebody decided to refuse to acquire his or her mother tongue, he or she would fail miserably.

(17) neo-behaviourists are doing a good job: they make behaviourism falsifiable

a. since the early Chomskian statements on language and mind, the debate between behaviourists and generativists has remained largely sterile:
generativists say
"there is absolutely no way to get all that into a human's head only by induction and mimicry"
behaviourists say
"there is absolutely no problem of getting all that into a human's head only by induction and mimicry"
40 years of psycholinguistic studies have not been able to provide significant or decisive evidence in favour / disfavour of one or the other view.
Not even the conditions of falsification of one or the other opinion have been defined.

b. neo-behaviourists bring in new juice:
- neo-behaviourism is falsified if it can be shown that syntax and phonology share some principles: recall that syntax is supposed to have a UG, but phonology does not.
- neo-behaviourism is falsified if it can be shown that sign language has a phonology. There is an enormous amount of literature on the phonology of sign language, and virtually nobody who has ever studied the subject doubts that sign language possesses a phonology.
[some literature: Wilbur (1987,1990,1993), Hulst(1993,1995a,b,1996a,b), Hulst (1996), Sandler (1986,1989,1993a,b) and Perlmutter (1992)]

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