Innate and Social Characteristics of Language Capacity

(Chomsky, Searle and beyond)*

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A main concern and widespread source of mutual misunderstanding [that has not been resolved in the exchange between Searle, Bromberger, Pinker and Chomsky in the New York Review of Books in 2002]¹ are the innate vs. social characteristics of language capacity and its constitutive rules. Hence, whether we approach the foundations of mind in the manner of natural sciences (as Chomsky prefers)² or whether they belong to the Humanities, specifically – are matters for the social sciences (as Searle insists).³ This dichotomy follows the tradition of C. P. Snow’s “two cultures”.⁴ Hence the topic expressed in the title line has two dimensions: firstly the fields of study that one may consider appropriate to explore the subject; it is this matter that then often substitutes for a second more fundamental question concerning differences between social and genetic modes of determination.

My arguments are guided by the ideas raised in this exchange and do not claim to exhaust the subject of language capacity. Specifically, particulars of Chomsky’s transformational grammar and the unifying aspects of language are beyond my scope. Instead I shall introduce some medical terminology that is new to the field of linguistics. A tripartite scheme will be presented which illustrates that a binary dichotomy of innate vs. social falls short of reality. Before doing so, however, let me review the agenda.

Chomsky equates the term “innate” with “genetically-determined element” and argues that such innate determinants do exist in language capacity but that language capacity cannot be reduced to them. Searle then appropriated the term innate for the sake of the argument to characterize Chomsky’s position in language debate, but Chomsky himself rejected the detailed position ascribed to him. Not everything that we consider innate is truly rooted in a genetic base, however. Furthermore our notions of genetics emerged recently (during the past 50 years) – earlier authors could not have held such notions. Thus the term innate capacities probably means different things to different people, and this depends in part on the particular notions attached to the constitutive terms of debates on matter-and-mind or nature-and-culture (sic!), and on the limitations of such binary oppositions.

For the Marxist view of social determination (“humans are the totality of their social relations”) the word innate refers to the non-social realm that is amenable to mechanical interpretation and later on became identified with molecular biology.⁵ If, in this frame, social language acquisition refers to imitation and practice then the non-social realm is epitomized by the sphere of instinct. There is a social character of ‘mind’ on one side and the res extensa of body and matter on the other. But what is matter: we often speak of matters that matter (sic!). This is not how Searle uses the term but it is quite an intelligent use.

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Often but quite erroneously molecular biology then is further reduced to genetics – not because of Marxism but for being a widespread research paradigm. Hence it comes at no surprise that a number of contemporary authors in the field of language actually do reduce innate characteristics to genetic determinism – e.g. Aitchison; Pinker and Bloom with their particular genes-first evolution of the mind that is genuinely disliked by Chomsky; even Deacon for whom language is not an instinct and who is critical of the former’s genetic model but cannot do without his own genetic assimilation hypothesis (namely that socially acquired innovations of the brain, i.e. cultural inventions, turn into genetically determined brain structures). While indeed there may have been some co-evolution, such as neurotransmitter pathways, it is only the molecules that are genetically encrypted and not the timing and performance of such regulatory processes. No grammar gene has been identified thus far, as Pinker conceded some years ago. The preferable alternative to genetic encryption obviously is that mental activity of the brain itself shapes and maintains the connective structure of the brain.

Conversely, Latin Christianity has never reduced nature to biology. Scholastic theology rather considered the civilizational realm of man-made social relations a fictio imitatur naturam, but obviously not an imitation of the biological and genetic. Evidence for this position is varied, one instance is the Council of Lyon of 1245 when pope Innocent IV declared that societies – being social institutions created by man – cannot be excommunicated, and that the act of excommunication is limited to natural persons: legal persons in this document are referred to as fictions that imitate nature. A binary opposition of social and genetic thus excludes essential aspects of a Christian concept of nature. Instead we are often left with an equally problematic opposition of nature vs. culture.

In this vein and indebted to Rousseau’s idealization of nature Oswald Spengler’s very concept of Zivilisation is a networking which he calls “humanities self inflicted social ills”. More realistic in comparison is Thomas Hobbes who contends that the relations human beings create in order to escape the misery of their natural condition are subject to nothing but the laws that produced this misery in the first place; the Law of Nature and the Law of Nations share the same precepts. Indeed, the qualitative difference between “civilizational” and “natural” and hence of sociology proper and a psychology guided by theology remains to be explained.

Not surprisingly then there is a third view besides social science approaches and a preference for natural science. According to papal perspective mind is a subject of philosophical interpretation guided by theology and not a subject of scientific inquiry – neither of material nor of social sciences. Only the future will tell if the wording of the quoted text was inspired enough to stand up to the times and its intellectual progress. Quite ironically indeed, the statement dates from a speech that intended to overcome the church antagonism towards Darwin. But there can be no doubt that language capacity cannot be reduced to social and genetic categories alone.

Aristotle provides a different perspective about the difference between science and the Humanities. He distinguished poiesis (the instrumental production of facts by manual labor based on empirical analysis – téchnē) vs. praxis (the result of actions, genitum non factum, and methodologically subject to historic-hermeneutic communication and introspection). Habermas criticizes Marx for having reduced both poiesis and praxis to the category of labor, and hence the Humanities (the historic-hermeneutic interests) to (natural) science (and its analytic-technical interests). The Aristotelian difference thus includes an ethical critique of technocratic reason (namely the commodification of linguistic knowledge and of manipulating the human psyche). The logic of business oriented research (the zeal for products that sell, e.g. language translators, human-computer interfaces, expert systems, artificial intelligence) reminds of the dangers that not only Heidegger perceived in modern technology. Searle may have had this in mind, but it remains unaddressed.
Searle, who presents three criteria (observer-dependence, the role of forces, and the status of laws) that supposedly distinguish science from the Humanities, never spells out what really matters. Indeed he goes through pains to talk about something he does not really want to mention and which the exchange left between the lines in perfect dialectical opaqueness.

What Searle talks about are criteria supposed to define natural science and distinguish it from social sciences and the Humanities. His criterion of distinction for one is rooted in observer-dependence: matter is what it is, everything else depends on the mind… This is poor terminology considering 20th century physics with its debate over the observer-dependent nature of quantum events. Besides terminology, some of his detailed arguments are epistemologically questionable as well. Indeed, speech acts don’t exist by themselves but only qua interlocutor (as Searle points out), but he overlooks that this is also true of neurotransmitter substances and protein function in general. Their message depends on a co-evolutionary network of chemical species that provides a normative standard of interpretation (a criterion Searle reserves to the mind). Furthermore the chemistry of a cell not only observes its environment but “computes” its response to multiple external stimuli according to its chemical circuitry, sometimes graduated but often yielding state-transitions. This chemical “language” is not only studied by contemporary biological sciences, but doing so scientists largely ignore any underlying forces (supposedly a key paradigm of natural sciences).

In his attempted classification, Searle altogether ignores recent postmodern theory and its turn to textualization. Everything nowadays is being treated as text and methods formerly limited to philological disciplines hence become universally applied. An increasing number of phenomena in biology and physics no longer are reduced to forces but are treated like semiotic relations.

Searle’s third criterion (besides observer-dependence and forces) is the quality of laws in science and Humanities. Hempel for one distinguishes nomothetic laws from statistical laws. However, all of modern molecular physics only provides statistical statements and as such is not different from social sciences or the Humanities (only classical physics is nomothetic – or rather applies nomothetic methods – in the Hempelian sense). To distinguish nomothetic science from idiography, like human history, won’t do either. The supramolecular organization of the brain is the idiosyncratic product of natural history and not uniquely determined by the underlying forces of physics. Similarly there is a vast combinatorial potential in the design of the immune system, but the actual kinds of molecules (an incredibly small fraction of all possible ones) are realized in response to life events. In other words: the impact of initial and boundary conditions by far exceeds the impact of the laws themselves.

The same is true of genetic information. The number of actually realized codes is negligible compared to all combinatorial possibilities. Genetic evolution is the idiographical history of how information emerges from an ever coincidental set of materialized codes. Innate capacities, though universal in character, are highly individual in actual circumstances. We are facing idiographic facts, but so does the human genome project that sequences the DNA.

Moreover, in natural evolution genes are generated from other genes but never made (genitum non factum) – a case of Aristotelian prãxis that supposedly requires hermeneutic methods. This has not prevented human technical reason to invent molecular biology, a scientific methodology and technique (Aristotelian poãesis). Life, historically a subject of the Humanities, today is an accepted topos of natural science. What prevents humans to do the same with language – except perhaps moral reasons that suggest we better refrain? Why not expand a natural bottom up approach of evolution to include top down activities of the mind. All done with methods drawn from both science and the Humanities. There is no reason why both, linguistics and genetics, can not be made a subject of scientific methodology. And to do so does not necessarily mean to reduce one to the other.

What if linguistic capacities are neither social nor genetic but something else, not even philosophy but for example software code? Chomsky distinguishes a minimum of two
language generating modules that interact, a conceptual system with aitiational structures (typified by a “telegraphic style” found already in higher animals and small children) and a linguistic system with computational rules (grammatical competence). Searle rejects this possibility based on a very narrow concept of computability (Turing machine). He concedes that there may be several roots to language, possibly with different brain locations. His focus is on two: an older purely associative and empirical mode (connectionist computing; parallel distributed processing), and a rational axiomatic mode (algorithmic akin to serial computing). This is the core idea of Steven Pinker and is reviewed by Searle (see ref.1). It has been claimed that Chomsky’s transformational grammars (a system of unifying principles with parameters fixed by experiencing actually spoken language) are equivalent to automata theory, and this aspect seems to worry Searle. Chomsky himself considers the assertion to be completely false and claims on his part that Searle only follows his personal concept of “rule”, unrelated to the study of language to which he is referring. It is legitimate to have second thoughts about strong AI (Artificial Intelligence). This, however, is not a matter of science vs. Humanities, but one of addressing very particular research paradigms.

Searle concludes that human minds are different from computer programs. Even if performance of a human being and a computer program were indistinguishable, there is something essentially human missing (causal powers, consciousness, intentions and possibly more). He argues that software lacks semantic competence and indeed most software does not comprehend what it formally does, it would need to be programmed to do so. But this might be achieved, hence eventually some computer programs may qualify while most don’t. The argument also involves the epistemologic separability of form and content, taken for granted by Searle; a controversial subject that remains an issue on its own. Searle further argues that the mind does not operate algorithmically, such a determinism supposedly violates the principle of free will. This alone does not rule out that language be put into some mathematical terms, but other arguments already mentioned may. Is algebra indeed fundamentally incompatible with semantics? Then there is a fundamental critique of the computer metaphor itself: the hardware - software analogue simply may not hold up to the features of the mind. For one, minds are embodied and cannot be reduced to a software that exchangeably runs on any hardware. But again, rejecting the software analogue is not itself evidence in favor of genetics or sociology. There still may be a tertium of kinds?

Yet for Searle there are apparently only two sets of methodologies, one for matter, the other for everything else. Such criteria of classification are bound to fail times of increasing methodological pluralism and transdisciplinary paradigms. To start with, there is more than one manner in which natural science can be conducted. Just think of behaviorism (Skinner) and its inductive leaning-by-conditioning that was the target of Chomsky’s revolution in the 1960ies. Chomsky’s psycholinguistics marks the rationalist turn against Machian empiricism and shaped modern cognitive science and its hypothetico-deductive method of learning. The differences between Skinner and Chomsky could not be greater but both are versions of natural science. Sociology is just as complex. Talking of sociology Searle obviously tries to assert a social dimension of language capacity. But in putting it in an opposition to science he considers sociology a part of the Humanities, which it is not. With all its emphasis on statistical methods sociology has turned science in the course of the 20th century. Mathematics, after all, is the benchmark for science. And if lately there is renewed talk of qualitative methods, this very paradigm shift also affected particle physics and the sciences in general. The transdisciplinary impact of postmodernism and its textual turn has already been mentioned. A transdisciplinary information science could well be a “third culture” that bridges the gap between science and the Humanities. But – are there unique scientific methodologies at all or are methods rather global: when a new idea comes around it is simply tested in any conceivable application and retained if it brings benefit.

None of Searle’s criteria adequately differentiate topics and methods as either belonging to science or the Humanities. And neither are such criteria expected to exist. The disciplinary
canon emerged historically from coincidental developments of research schools, and it is the historical evolution of research schools that is responsible for disciplinary jurisdictions and not unique and selective paradigms.

Reading the exchange in the New York Review of Books, however, gives the impression that ultimately none of what has been debated (which mostly concerns the first part of the title subject) is the real issue. There may be a purpose behind it in that the subject proper (the second part of the title subject) escapes precise language and may only be treated in dialectic allusions. This, though, reminds me of Wittgenstein who claimed that everything that can be said at all, can be said so in simple terms.23 Freud’s foundational paradigm of Sprachkur points in the same direction. On the other hand I don’t want to fall pray to John Salisbury’s illusion concerning manualized wisdom, which he pursued with his Polycraticus-project – a text written to shortcut the education of Thomas Becket and replace more time consuming conventional methods of training.24 Let me therefore limit my present scope to better focusing the controversy and provide common ground, if not resolving mere terminological misunderstanding.

To this end let me differentiate the possible roots of language capacity by means of a tripartite scheme based on organic, endogenous and social modes of inheritance. Incidentally, this resembles a fundamental taxonomic distinction of mental disorders included in the Center for Disease Control’s manual of medical diagnosis,25 which refers to organic (anatomical, hence chemical and sometimes specifically genetic in origin), endogenous (variably called non-organic or of unknown or unspecified aetiology, without obvious external cause), inductive (e.g. “folie a deux”) and reactive (e.g. “shell shock”) causation. It is, after all, the same brain that psychiatrists and linguists look at, and intend to decipher.

What are the notions attached to the term endogenous? We may presume that “endogenous” refers to a psychic substrate, to the subject of psychoanalysis proper. It refers to intrinsic processes and structures distinct from extrinsic environment and experience yet not genetic or biological in kind. Such endowments are dispositions established before birth though developed in part later (hence they may be called innate), but they represent a kind of inheritance different from the genetic.

We may also speculate that these structures, or certain aspects of it, relate to a complex considered by Christian faith to be immediately created by God and not inherited from ones parents.26 This idea is prominently expressed in the dogma of original sin. It is an inheritance that propagates in a manner different from imitation (propagatione, non imitatione transfusum omnibus) and against which the act of baptism can intervene.27 In Asia this idea has been specified as dependent origination (pratīyasamutpāda) from a continuity of mind (cittasantana), which is shaped by karman, the actions taken during life (a Lamarckian inheritance).28 This path and continuity of rebirth again is superadded to the inheritance from the biological parents and is independent from them. The same idea is what Sigmund Freud has in mind when he talks about an ID from which an EGO resurrects earlier accumulated ego-formations.29

The concept most often comes by the label anima – spiritual soul – and unfortunately means different things to different people besides of being ideologically charged; unqualified usage of such mentalist terms only has added to the prevailing confusion. The most prominent critique of the concept of soul comes, of course, from Buddhism. Its teachings consider soul to be a mere reification of a deconstructable complex of features.30 For Ryle soul is not something materially existing but a conceptual construct from which certain properties may be deduced. Thus Ryle criticizes Cartesian dualism31 whereas Chomsky32 defends Descartes’ concept of soul, ingenium, supposed to be a uniquely human quality that sets itself apart from the “mechanical” instinct of the animal (this binary opposition again is rather debatable). The mechanical machine paradigm of La Mettrie33 since has been replaced by modern system theory that better accommodates the “organic” twist. Chomsky’s critique of Ryle is one of many indications that he is not the “organic” reductionist that Searle wants to make of him. It
is true, however, that Chomsky studies the Geist of language also with methods of natural science, and that he does not reduce it to “social” relations alone.

Last, not least, it needs to mention Rupert Sheldrake. Sheldrake presents his theory of morphic resonance, besides other reasons, to explain language capacity as a phylogenetic endowment that is not genetic in origin. This does not mean that his concept of morphic fields and the endogenous order as described here are one and the same, but both descriptions at least share a common interest and attempt to describe similar matters.

“Endogenous” disturbances of the mind leave traces among organic matter, like changing neurotransmitter levels, and pharmaceutical intervention may or may not facilitate actual treatment, but their causes are not chemical (i.e. organic) in the first place. Conversely the endogenous realm is set apart not only from social action but also from social induction. To the extent that the endogenous realm is supra-individual, it depends on a definition of terms whether we still refer to its systemic dimension as something social (differently social); scholastic theology would rather call it natural. Instead of splitting hairs one may simply accept that binary distinctions fall short of real phenomenology and that the terms of debate are poorly defined.

Innate capacities then – to my mind – are endogenous endowments, and are neither genetically determined nor socially transmitted. They do, however, evolve in the environment of social processes and organs that are genetically co-engineered. Performing language is more than an interplay of genetically determined principles and a course of (social) experiences. It crucially depends on endogenous functions and non-genetic inheritance as well.

Innate capacities include what is called inner speech, a term used summarily to describe a plethora of processes, some related to a stream of semantic complexes, others more verbose and language specific (“telegraphic style”), but elementary in grammar and vocabulary. They actively monitor external speech production, and in one of their functions even duplicate external speech (so well that it is usually difficult to discern it behind the external vocalization). There is great variation from person to person (in part different transformations of common root functions), and details often are poorly described in the literature.

Innate capacities are a faculty available to the infant child yet not a mere product of ongoing socialization. Did this faculty evolve contingent to certain properties of neuronal architecture, idiographically so to speak? Possibly. Is there an interplay with the “environment” in social acts? Yes, certainly. Does it store actual concepts? Likely some of those that have emerged during cultural phylogensis.

Does it perform algebraically? Well, algebra is more than number crunching. And while algebraic manipulation of symbols is entirely formal, it may not be bare of semantic specifications. Indeed, mathematicians, too, become increasingly concerned about the epistemological separability of form and content.

For the larger part science is an endeavor to find suitable and differentiated terms of debate. Hence, if my comments do not satisfy the varied concerns of both Chomsky and Searle, they at least introduce some language to further discussion.

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33 La Mettrie, Julien Offray de [1748] L’homme machine, Paris: Denuël 1999; Der Mensch eine Maschine, Leipzig: Dürr 1909; Man a machine, La Salle, Ill.: Open Court 1912.
Searle basically proclaims that Chomsky has been forced to abandon the core tenets of his earlier work in linguistics. That is simply not the case. The Chomskian revolution rested on three fundamental conjectures. None of these revolutionary conjectures have been abandoned by Chomsky or by those who work within the framework that he created. Searle may think them wrongheaded, he may be right (though not for any reasons found in his article), but that is his view, not a view explicitly or implicitly stated in the book by Chomsky whose title decorates the head of the article, or by anything else written by Chomsky. Sylvain Bromberger Professor of Philosophy, Emeritus Massachusetts Institute of Technology Cambridge, Massachusetts.

John Searle replies

Innateness/Nativism theory/ Noam Chomsky. Nativism theory claims children are born with an innate capacity for language development i.e human brains are already ‘wired up’ to acquire language and that this linguistic capacity is separate from other mental abilities. This natural set up of the brain allows children to actively construct the rule systems of their native language. Noam Chomsky suggests that the human brain has a language acquisition device which enables children to use the language around them to work out what is and what is not linguistically acceptable. This device a