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WHAT KINDS OF CREATURES ARE WE?

LECTURE I: WHAT IS LANGUAGE?

**T**he general question I would like to address in these lectures is an ancient one: What kind of creatures are we? I am not deluded enough to think I can provide a satisfactory answer, but it seems reasonable to believe that in some domains at least, particularly with regard to our cognitive nature, there are insights of some interest and significance, some new, and that it should be possible to clear away some of the obstacles that hamper further inquiry, including some widely accepted doctrines with foundations that are much less stable than often assumed.

I will consider three specific questions, increasingly obscure: What is language? What are the limits of human understanding (if any)? And what is the common good to which we should strive? I will begin today with the first, and will try to show how what may seem at first to be rather narrow and technical questions, if pursued carefully, can lead to some far-reaching conclusions that are significant in themselves, and differ sharply from what is generally believed—and often regarded as fundamental—in the relevant disciplines: cognitive science in a broad sense, including linguistics, and philosophy of language and mind.

Throughout, I will be discussing what seem to me virtual truisms, but of an odd kind. They are generally rejected. That poses a dilemma, for me at least. And perhaps you too will be interested in resolving it.

Turning to language, it has been studied intensively and productively for 2,500 years, but with no clear answer to the question of what language is. I will mention later some of the major proposals. We might ask just how important it is to fill this gap. For the study of any aspect of language the answer should be clear. Only to the extent that there is an answer to this question, at least tacit, is it

possible to proceed to investigate serious questions about language, among them acquisition and use, origin, language change, diversity and common properties, language in society, the internal mechanisms that implement the system, both the cognitive system itself and its various uses, distinct though related tasks. No biologist would propose an account of the development or evolution of the eye, for example, without telling us something fairly definite about what an eye is, and the same truisms hold of inquiries into language. Or should. Interestingly, that is not how the questions have generally been viewed, a matter to which I will return.

But there are much more fundamental reasons to try to determine clearly what language is, reasons that bear directly on the question of what kind of creatures we are. Darwin was not the first to conclude that “the lower animals differ from man solely in his almost infinitely larger power of associating together the most diversified sounds and ideas”;<sup>1</sup> “almost infinite” is a traditional phrase to be interpreted today as actually infinite. But Darwin was the first to have expressed this traditional concept within the framework of an incipient account of human evolution.

A contemporary version is given by one of the leading scientists who studies human evolution, Ian Tattersall. In a recent review of the currently available scientific evidence, he observes that it was once believed that the evolutionary record would yield “early harbingers of our later selves. The reality, however, is otherwise, for it is becoming increasingly clear that the acquisition of the uniquely modern [human] sensibility was instead an abrupt and recent event....And the expression of this new sensibility was almost certainly crucially abetted by the invention of what is perhaps the single most remarkable thing about our modern selves: language.”<sup>2</sup> If so, then an answer to the question “What is language?” matters greatly to anyone concerned with understanding our modern selves.

Tattersall dates the abrupt and sudden event as probably lying somewhere within the very narrow window of 50–100,000 years ago. The exact dates are unclear, and not relevant to our concerns here, but the abruptness of the emergence is. I will return to the vast and burgeoning literature of speculation on the topic, which generally adopts a very different stance.

If Tattersall’s account is basically accurate, as the very limited empirical evidence indicates, then what emerged in the narrow

<sup>1</sup> Charles Darwin, *The Descent of Man* (London: J. Murray, 1871), chapter 3.

<sup>2</sup> Ian Tattersall, *Masters of the Planet: The Search for Our Human Origins* (New York: Palgrave Macmillan, 2012), p. xi.

window was an infinite power of “associating the most diversified sound and ideas,” in Darwin’s words. That infinite power evidently resides in a finite brain. The concept of finite systems with infinite power was well understood by mid-twentieth century. That made it possible to provide a clear formulation of what I think we should recognize to be the most basic property of language, which I will refer to just as the Basic Property: each language provides an unbounded array of hierarchically structured expressions that receive interpretations at two interfaces, sensorimotor for externalization and conceptual-intentional for mental processes. That allows a substantive formulation of Darwin’s infinite power, or going back much farther, of Aristotle’s classic dictum that language is sound with meaning—though work of recent years shows that “sound” is too narrow, and there is good reason, to which I will return, to think that the classic formulation is misleading in important ways.

At the very least, then, each language incorporates a computational procedure satisfying the Basic Property. Therefore a theory of the language is by definition a generative grammar, and each language is what is called in technical terms an I-language—“I” standing for internal, individual, and intensional: we are interested in discovering the actual computational procedure, not some set of objects it enumerates, what it “strongly generates,” in technical terms, loosely analogous to the proofs generated by an axiom system.

There is also a notion “weak generation”—the set of expressions generated, analogous to the set of theorems generated. There is also a notion “E-language,” standing for external language, which many—not me—identify with a corpus of data, or with some infinite set that is weakly generated.<sup>3</sup> Philosophers, linguists, and cognitive and computer scientists have often understood language to be what is weakly generated. It is not clear that the notion weak generation is even definable for human language. At best, it is derivative from the more fundamental notion of I-language. These are matters extensively discussed in the 1950s, though not properly assimilated, I believe.<sup>4</sup>

I will restrict attention here to I-language, a biological property of humans, some subcomponent of (mostly) the brain, an organ of the mind/brain in the loose sense in which the term “organ” is used in

<sup>3</sup>The term is mine. See Noam Chomsky, *Knowledge of Language: Its Nature, Origin, and Use* (New York: Praeger, 1986). But I defined it almost vacuously, as any concept of language other than I-language.

<sup>4</sup>A source of misunderstanding may be that in early work, “language” is sometimes defined in introductory expository passages in terms of weak generation, though the usage was quickly qualified, for reasons explained.

biology. I take the mind here to be the brain viewed at a certain level of abstraction. The approach is sometimes called the bio-linguistic framework. It is regarded as controversial, but without grounds, in my opinion.

In earlier years, the Basic Property resisted clear formulation. Taking some of the classics, for de Saussure, language (in the relevant sense) is a storehouse of word images in the minds of members of a community, which “exists only by virtue of a sort of contract signed by the members of a community.” For Leonard Bloomfield, language is an array of habits to respond to situations with conventional speech sounds and to respond to these sounds with actions. Elsewhere, Bloomfield defined language as “The totality of utterances made in a speech community”—something like William Dwight Whitney’s earlier conception of language as “the body of uttered and audible signs by which in human society thought is principally expressed,” thus “audible signs for thought”—though this is a somewhat different conception in ways to which I will return. Edward Sapir defined language as “a purely human and non-instinctive method of communicating ideas, emotions, and desires by means of a system of voluntarily produced symbols.”<sup>5</sup>

With such conceptions it is not unnatural to follow what Martin Joos called the Boasian tradition, holding that languages can differ arbitrarily and that each new one must be studied without pre-conceptions.<sup>6</sup> Accordingly, linguistic theory consists of analytic procedures to reduce a corpus to organized form, basically techniques of segmentation and classification. The most sophisticated development of this conception was Zellig Harris’s *Methods*.<sup>7</sup> A contemporary version is that linguistic theory is a system of methods for processing expressions.<sup>8</sup>

In earlier years it was understandable that the question “What is language?” received only such indefinite answers as the ones

<sup>5</sup>Ferdinand de Saussure, *Course in General Linguistics* (1916; repr., New York: Philosophical Library, 1959), pp. 13–14. Leonard Bloomfield, “Philosophical Aspects of Language” (1942), in Charles F. Hockett, ed., *A Leonard Bloomfield Anthology* (Bloomington: Indiana, 1970), pp. 267–70; Bloomfield, *A Set of Postulates for the Science of Language* (Indianapolis: Bobbs-Merrill, 1926); Bloomfield, “A Set of Postulates for the Science of Language,” *Language*, II, 3 (September 1926): 153–64; William Dwight Whitney, *The Life and Growth of Language* (London: H. S. King, 1875); Edward Sapir, *Language* (New York: Harcourt, Brace, 1921), p. 8.

<sup>6</sup>Martin Joos, comments in Joos, ed., *Readings in Linguistics* (Washington: American Council of Learned Societies, 1957).

<sup>7</sup>Zellig Harris, *Methods in Structural Linguistics* (Chicago: University Press, 1951).

<sup>8</sup>A regression, I think, since it confuses the fundamentally different notions of competence and performance—roughly, what we know and what we do—unlike Harris’s system, which does not.

mentioned, ignoring the Basic Property. It is, however, surprising to find that similar answers remain current in contemporary cognitive science. Not untypical is a current study on evolution of language, where the authors open by writing that “we understand language as the full suite of abilities to map sound to meaning, including the infrastructure that supports it,”<sup>9</sup> basically a reiteration of Aristotle’s dictum, and too vague to ground further inquiry. Again, no biologist would study evolution of the visual system assuming no more about the phenotype than that it provides the full suite of abilities to map stimuli to percepts along with whatever supports it.

Much earlier, at the origins of modern science, there were hints at a picture somewhat similar to Darwin’s and Whitney’s. Galileo wondered at the “sublimity of mind” of the person who “dreamed of finding means to communicate his deepest thoughts to any other person...by the different arrangements of twenty characters upon a page,” an achievement “surpassing all stupendous inventions,” even those of “a Michelangelo, a Raphael, or a Titian.”<sup>10</sup> The same recognition, and the deeper concern for the creative character of the normal use of language, was soon to become a core element of Cartesian science-philosophy, in fact a primary criterion for the existence of mind as a separate substance. Quite reasonably, that led to efforts to devise tests to determine whether another creature has a mind like ours, notably by Géraud de Cordemoy.<sup>11</sup> These were somewhat similar to the “Turing test,” though quite differently conceived. De Cordemoy’s experiments were like a litmus test for acidity, an attempt to draw conclusions about the real world. Turing’s imitation game, as he made clear, had no such ambitions.

These important questions aside, there is no reason today to doubt the fundamental Cartesian insight that use of language has a creative character: it is typically innovative without bounds, appropriate to circumstances but not caused by them—a crucial distinction—and can engender thoughts in others that they recognize they could have expressed themselves. We may be “incited or inclined” by circumstances and internal conditions to speak in certain ways, not others, but we are not “compelled” to do so, as Descartes’s successors put it. We should also bear in mind that Wilhelm von Humboldt’s now

<sup>9</sup> Dan Dediu and Stephen C. Levinson, “On the Antiquity of Language: The Reinterpretation of Neandertal Linguistic Capacities and Its Consequences,” *Frontiers in Psychology*, iv, 397 (Jul. 5, 2013): 1–17, doi:10.3389/fpsyg.2013.00397.

<sup>10</sup> Galileo Galilei, *Dialogue Concerning the Two Chief World Systems* (1632), end of First Day.

<sup>11</sup> For references and discussion, see Chomsky, *Cartesian Linguistics*, 3<sup>rd</sup> ed. (New York: Cambridge, 2009), with extended (and improved) translations, and introduction by James McGilvray.

oft-quoted aphorism that language involves infinite use of finite means refers to *use*. More fully, he wrote that “language is quite peculiarly confronted by an unending and truly boundless domain, the essence of all that can be thought. It must therefore make infinite employment of finite means, and is able to do so through the power which produces identity of language and thought.”<sup>12</sup> He thus placed himself in the tradition of Galileo and others who associated language closely with thought, though going well beyond, while formulating one version of a traditional conception of language as “the single most remarkable thing about our modern selves,” in Tattersall’s recent phrase.

There has been great progress in understanding the finite means that make possible infinite use of language, but the latter remains largely a mystery despite significant progress in understanding conventions that guide appropriate use, a much narrower question. How deep a mystery is a good question, to which I will return in the next lecture.

A century ago Otto Jespersen raised the question of how the structures of language “come into existence in the mind of a speaker” on the basis of finite experience, yielding a “notion of structure” that is “definite enough to guide him in framing sentences of his own,” crucially “free expressions” that are typically new to speaker and hearer.<sup>13</sup> The task of the linguist, then, is to discover these mechanisms and how they arise in the mind, and to go beyond to unearth “the great principles underlying the grammars of all languages,” and by unearthing them to gain “a deeper insight into the innermost nature of human language and of human thought”—ideas that sound much less strange today than they did during the structuralist/behavioral science era that came to dominate much of the field, marginalizing Jespersen’s concerns and the tradition from which they derived.

Reformulating Jespersen’s program, the primary task is to investigate the true nature of the interfaces and the generative procedures that relate them in various I-languages, and to determine how they arise in the mind and are used, the primary focus of concern naturally being “free expressions.” And to go beyond to unearth the shared biological properties that determine the nature of I-languages accessible to humans, the topic of UG, universal grammar, in the contemporary version of Jespersen’s “great principles underlying the grammars of all languages,” now reframed as a question of the

<sup>12</sup> Wilhelm von Humboldt, *On Language* (1836; repr., New York: Cambridge, 1988), p. 91.

<sup>13</sup> Otto Jespersen, *The Philosophy of Grammar* (New York: H. Holt and Co., 1924).

genetic endowment that yields the unique human language capacity and its specific instantiations in I-languages.

The mid-twentieth-century shift of perspective to generative grammar within the biolinguistic framework opened the way to much more far-reaching inquiry into language itself and language-related topics. The range of empirical materials available from languages of the widest typological variety has enormously expanded, and they are studied at a level of depth that could not have been imagined sixty years ago. The shift also greatly enriched the variety of evidence that bears on the study of each individual language to include acquisition, neuroscience, dissociations, and much else, and also what is learned from the study of other languages, on the well-confirmed assumption that the capacity for language relies on shared biological endowment.

As soon as the earliest attempts were made to construct explicit generative grammars sixty years ago, many puzzling phenomena were discovered that had not been noticed as long as the Basic Property was not clearly formulated and addressed and syntax was just considered “use of words” determined by convention and analogy. This is somewhat reminiscent of the early stages of modern science. For millennia scientists had been satisfied with simple explanations for familiar phenomena: rocks fall and steam rises because they are seeking their natural place; objects interact because of sympathies and antipathies; we perceive a triangle because its shape flits through the air and implants itself in our brains; and so on. When Galileo and others allowed themselves to be puzzled about the phenomena of nature, modern science began—and it was quickly discovered that many of our beliefs are senseless and our intuitions often wrong. Willingness to be puzzled is a valuable trait to cultivate, from childhood to advanced inquiry.

One puzzle about language that came to light sixty years ago, and remains alive and I think highly significant in its import, has to do with a simple but curious fact. Consider the sentence “instinctively, eagles that fly swim.” The adverb “instinctively” is associated with a verb, but it is *swim*, not *fly*. There is no problem with the thought that eagles that instinctively fly swim, but it cannot be expressed this way. Similarly the question “can eagles that fly swim” is about ability to swim, not to fly.

What is puzzling is that the association of the clause-initial elements “instinctively” or “can” to the verb is remote and based on structural properties, rather than proximal and based solely on linear properties, a far simpler computational operation and one that would be optimal for processing language. Language makes use of a property

of minimal structural distance, never using the much simpler operation of minimal linear distance; in this and numerous other cases, ease of processing is ignored in the design of language. In technical terms, the rules are invariably *structure-dependent*, ignoring linear order. The puzzle is why this should be so—not just for English but for every language, not just for these constructions but for all others as well, over a wide range.

There is a simple and plausible explanation for the fact that the child reflexively knows the right answer in such cases as these, even though evidence is slight or non-existent: linear order is simply not available to the language learner confronted with such examples, who is guided by a deep principle that restricts search to minimal structural distance, barring the far simpler operation of minimal linear distance. I know of no other explanation. And this proposal of course at once calls for further explanation: Why is this so? What is it about the genetically determined character of language—UG—that imposes this particular condition?

The principle of minimal distance is extensively employed in language design, presumably one case of a more general principle, call it Minimal Computation, which is in turn presumably an instance of a far more general property of the organic world or even beyond. There must however be some special property of language design that restricts Minimal Computation to structural rather than linear distance, despite the far greater simplicity of the latter for computation and processing.

There is independent evidence from other sources, including the neurosciences, supporting the same conclusion. A research group in Milan studied brain activity of subjects presented with two types of stimuli: invented languages satisfying UG and others not conforming to UG; in the latter case, for example, a rule for negation that places the negative element after the third word, a far simpler computational operation than the rules for negation in human language. They found that in the case of conformity to UG there is normal activation in the language areas, though not when linear order is used.<sup>14</sup> In that case the task is interpreted as a non-linguistic puzzle, so brain activity indicates. Work by Neil Smith and Ianthi-Maria Tsimpli with a cognitively impaired but linguistically gifted subject reached similar conclusions—but, interestingly, found that normals as well were unable to deal with the violations of UG

<sup>14</sup>Mariacristina Musso, Andrea Moro, et al., “Broca’s Area and the Language Instinct,” *Nature Neuroscience*, vi (Jun. 22, 2003): 774–81, doi:10.1038/nn1077.



using linear order. As Smith concludes: “the linguistic format of the experiment appeared to inhibit them from making the appropriate structure-independent generalization, even though they could work out comparable problems in a non-linguistic environment with ease.”<sup>15</sup>

There is a small industry in computational cognitive science attempting to show that these properties of language can be learned by statistical analysis of Big Data. This is, in fact, one of the very few significant properties of language that has been seriously addressed at all in these terms. Every attempt that is clear enough to be investigated has been shown to fail, irremediably.<sup>16</sup> But more significantly, the efforts are beside the point in the first place. If they were to succeed, which is a virtual impossibility, they would leave untouched the original and only serious question: *Why* does language invariably use the complex computational property of minimal structural distance in the relevant cases, while always disregarding the far simpler option of minimal linear distance? Failure to grasp this point is an illustration of the lack of willingness to be puzzled that I mentioned earlier, the first step in serious scientific inquiry, as recognized in the hard sciences at least since Galileo.

A broader thesis is that linear order is never available for computation in the core parts of language involving syntax-semantics. Linear order, then, is a peripheral part of language, a reflex of properties of the sensorimotor system, which requires it: we cannot speak in parallel, or produce structures, but only strings of words. The sensorimotor system is not specifically adapted to language in fundamental respects: the parts essential for externalization and perception appear to have been in place long before language emerged. There is evidence that the auditory system of chimpanzees might be fairly well adapted for human speech,<sup>17</sup> though apes cannot even take the first step in language acquisition, extracting language-relevant data from the “blooming, buzzing confusion” surrounding them, as human infants do at once, reflexively, not a slight achievement. And though capacity to control the vocal tract for speech appears to be human-specific, that fact cannot bear too much weight given that production of human language is modality-independent,

<sup>15</sup> Neil Smith, *Chomsky: Ideas and Ideals*, 2<sup>nd</sup> ed. (New York: Cambridge, 2004), p. 136. See also Neil Smith and Ianthi-Maria Tsimpli, *The Mind of a Savant: Language Learning and Modularity* (Cambridge: Blackwell, 1995).

<sup>16</sup> Robert C. Berwick, Paul Pietroski, Beracah Yankama, and Noam Chomsky, “Poverty of the Stimulus Revisited,” *Cognitive Science*, xxxv, 7 (September/October 2011): 1207–42, doi:10.1111/j.1551-6709.2011.01189.x.

<sup>17</sup> W. Tecumseh Fitch, “Speech Perception: A Language-Trained Chimpanzee Weighs In,” *Current Biology*, xxi, 14 (Jul. 26, 2011): R543–46, doi:10.1016/j.cub.2011.06.035.

as recent work on sign language has established, and there is little reason to doubt that apes have adequate gestural capacities. Evidently much deeper cognitive properties are involved in language acquisition and design.

Though the matter is not settled, there is considerable evidence that the broader thesis may in fact be correct: fundamental language design ignores order and other external arrangements. In particular, semantic interpretation in core cases depends on hierarchy, not the order found in the externalized forms. If so, then the Basic Property is not exactly as I formulated it before, and as it is formulated in recent literature—papers of mine too. Rather, the Basic Property is generation of an unbounded array of hierarchically structured expressions mapping to the conceptual-intentional interface, providing a kind of “language of thought”—and quite possibly the only such LOT, though interesting questions arise here. Interesting and important questions also arise about the status and character of this mapping, which I will put aside.

If this line of reasoning is generally correct, then there is good reason to return to a traditional conception of language as “an instrument of thought,” and to revise Aristotle’s dictum accordingly; language is not sound with meaning but meaning with sound—more generally, with some form of externalization, typically sound though other modalities are readily available: work of the past generation on sign language has shown remarkable similarities to spoken language in structure, acquisition, and neural representation, though of course the mode of externalization is quite different.

It is worth noting that externalization is rarely used. Most language use by far is never externalized. It is a kind of internal dialogue, and the limited research on the topic, going back to some observations of Vygotsky’s,<sup>18</sup> conforms to what introspection suggests—at least mine: what reaches consciousness is scattered fragments. Sometimes, full-formed expressions instantly appear internally, too quickly for articulators to be involved, and probably even instructions to them. This is an interesting topic that has been barely explored, but could be subjected to inquiry, and has many ramifications.

The latter issue aside, investigation of the design of language gives good reason to take seriously a traditional conception of language as essentially an instrument of thought. Externalization then would be an ancillary process, its properties a reflex of the largely or completely

<sup>18</sup> Charles Fernyhough, “The Voices Within: The Power of Talking to Yourself,” *New Scientist*, 2919 (Jun. 3, 2013): 32–35.

independent sensorimotor system. Further investigation supports this conclusion. It follows that processing is a peripheral aspect of language, and that particular uses of language that depend on externalization, among them communication, are even more peripheral, contrary to virtual dogma that has no serious support. It would also follow that the extensive speculation about language evolution in recent years is on the wrong track, with its focus on communication.

It is, indeed, virtual dogma that the function of language is communication. A typical formulation of the idea is the following: “It is important that in a community of language users that words be used with the same meaning. If this condition is met it facilitates the chief end of language which is communication. If one fails to use words with the meaning that most people attach to them, one will fail to communicate effectively with others. Thus one would defeat the main purpose of language.”<sup>19</sup>

It is, in the first place, odd to think that language has a purpose. Languages are not tools that humans design, but biological objects, like the visual or immune or digestive systems. Such organs are sometimes said to have functions, to be *for* some purpose. But that notion too is far from clear. Take the spine. Is its function to hold us up, to protect nerves, to produce blood cells, to store calcium, or all of the above? Similar questions arise when we ask about the function and design of language. Here evolutionary considerations are commonly introduced, but these are far from trivial; for the spine as well. For language, the various speculations about evolution typically turn to the kinds of communication systems found throughout the animal kingdom, but that it is just again a reflection of the modern dogma, and is likely to be a blind alley, for reasons already mentioned and to which I will return.

Furthermore, even insofar as language is used for communication, there is no need for meanings to be shared (or sounds, or structures). Communication is not a yes-or-no but rather a more-or-less affair. If similarities are not sufficient, communication fails to some degree, as in normal life.

Even if the term “communication” is largely deprived of substantive meaning and used as a cover term for social interaction of various kinds, it remains a minor part of actual language use, for whatever that observation is worth.

<sup>19</sup> William Uzgalis, “John Locke,” *The Stanford Encyclopedia of Philosophy* (Fall 2012 Edition), Edward N. Zalta, ed., URL = <<http://plato.stanford.edu/archives/fall2012/entries/locke/>>.

In brief, there is no basis for the standard dogma, and there is by now quite significant evidence that it is simply false. Doubtless language is sometimes used for communication, as is style of dress, facial expression and stance, and much else. But fundamental properties of language design indicate that a rich tradition is correct in regarding language as essentially an instrument of thought, even if we do not go as far as Humboldt in identifying the two.

The conclusion becomes even more solidly entrenched if we consider the Basic Property more closely. Naturally we seek the simplest account of the Basic Property, the theory with fewest arbitrary stipulations—each of which is, furthermore, a barrier to some eventual account of the origin of language. And we ask how far this resort to standard scientific method will carry us.

The simplest computational operation, embedded in some manner in every relevant computational procedure, takes objects  $X$  and  $Y$  already constructed and forms a new object  $Z$ . Call it *Merge*. The principle of Minimal Computation dictates that neither  $X$  nor  $Y$  is modified by *Merge*, and that they appear in  $Z$  unordered. Hence  $\text{Merge}(X, Y) = \{X, Y\}$ . That does not of course mean that the brain contains sets, as some current misinterpretations claim, but rather that whatever is going on in the brain has properties that can properly be characterized in these terms—just as we do not expect to find the Kekulé diagram for benzene in a test tube.

Note that if language really does conform to the principle of Minimal Computation in this respect, we have a far-reaching answer to the puzzle of why linear order is only an ancillary property of language, apparently not available for core syntactic and semantic computations: language design is perfect in this regard (and again we may ask why). Looking further, evidence mounts in support of this conclusion.

Suppose  $X$  and  $Y$  are merged, and neither is part of the other, as in combining *read* and *that book* to form the syntactic object corresponding to “read that book.” Call that case *External Merge*. Suppose that one is part of the other, as in combining  $Y = \textit{which book}$  and  $X = \textit{John read which book}$  to form *which book John read which book*, which surfaces as “which book did John read” by further operations to which I will return. That is an example of the ubiquitous phenomenon of displacement in natural language: phrases are heard in one place but interpreted both there and in another place, so that the sentence is understood as “for which book  $x$ , John read the book  $x$ .” In this case, the result of *Merge* of  $X$  and  $Y$  is again  $\{X, Y\}$ , but with two *copies* of  $Y$  (= *which book*), one the original one remaining in  $X$ , the other the displaced copy merged with  $X$ . Call that *Internal Merge*.

It is important to avoid a common misinterpretation, found in the professional literature as well. There is no operation *Copy* or *Remerge*. Internal Merge happens to generate two copies, but that is the outcome of Merge under the principle of Minimal Computation, which keeps Merge in its simplest form, not tampering with either of the elements Merged. New notions of Copy or Remerge are not only superfluous; they also cause considerable difficulties unless sharply constrained to apply under the highly specific conditions of Internal Merge, which are met automatically under the simplest notion of Merge.

External and Internal Merge are the only two possible cases of binary Merge. Both come free if we formulate Merge in the optimal way, applying to any two syntactic objects that have already been constructed, with no further conditions. It would require stipulation to bar either of the two cases of Merge, or to complicate either of them. That is an important fact. For many years it was assumed—by me too—that displacement is a kind of “imperfection” of language, a strange property that has to be explained away by some more complex devices and assumptions about UG. But that turns out to be incorrect. Displacement is what we should expect on the simplest assumptions. It would be an imperfection if it were lacking. It is sometimes suggested that External Merge is somehow simpler, and should have priority in design or evolution. There is no basis for that belief. If anything, one could argue that Internal Merge is simpler since it involves vastly less search of the workspace for computation—not that one should pay much attention to that.

Another important fact is that Internal Merge in its simplest form—satisfying the overarching principle of Minimal Computation—commonly yields the structure appropriate for semantic interpretation, as just illustrated in the simple case of “which book did John read.” However, these are the wrong structures for the sensorimotor system: universally in language, only the structurally most prominent copy is pronounced, as in this case; the lower copy is deleted. There is a revealing class of exceptions that in fact support the general thesis, but I will put that aside.<sup>20</sup>

Deletion of copies follows from another uncontroversial application of Minimal Computation: compute and articulate as little as possible. The result is that the articulated sentences have *gaps*. The

<sup>20</sup>Tue Trinh, “A Constraint on Copy Deletion,” *Theoretical Linguistics*, xxxv, 2–3 (October 2009): 183–227. I also put aside here several topics that raise a variety of further questions, among them “covert operations” in which only the first-merged copy is externalized.

hearer has to figure out where the missing element is. As is well known in the study of perception and parsing, that yields difficult problems for language processing, so called *filler-gap* problems. In this very broad class of cases too, language design favors minimal computation, disregarding the complications in the processing and use of language.

Notice that any linguistic theory that replaces Internal Merge by other mechanisms has a double burden of proof to meet: it is necessary to justify the stipulation barring Internal Merge and also the new mechanisms intended to account for displacement—in fact, displacement with copies, generally the right forms for semantic interpretation.

The same conclusions hold in more complex cases. Consider for example the sentence “[which of his pictures] did they persuade the museum that [[every painter] likes best]?” It is derived by Internal Merge from the underlying structure “[which of his pictures] did they persuade the museum that [[every painter] likes [which of his pictures] best]?” formed directly by Internal Merge, with displacement and two copies. The pronounced phrase “which of his pictures” is understood to be the object of “likes,” in the position of the gap, analogous to “one of his pictures” in “they persuaded the museum that [[every painter] likes [one of his pictures] best].” And that is just the interpretation that the underlying structure with the two copies provides.

Furthermore, the quantifier-variable relationship between *every* and *his* carries over in “[which of his pictures] did they persuade the museum that [[every painter] likes best]?” The answer can be “his first one”—different for every painter, as in one interpretation of “they persuaded the museum that [[every painter] likes [one of his pictures] best].” In contrast, no such answer is possible for the structurally similar expression “[which of his pictures] persuaded the museum that [[every painter] likes flowers]?” in which case “his pictures” does not fall within the scope of “every painter.” Evidently, it is the unpronounced copy that provides the structure required for quantifier-variable binding as well as for the verb-object interpretation. The results once again follow straightforwardly from Internal Merge and copy deletion under externalization. There are many similar examples—along with interesting problems as complexity mounts.

Just as in the simpler cases, like “instinctively, eagles that fly swim,” it is inconceivable that some form of data processing yields these outcomes. Relevant data are not available to the language learner. The results must therefore derive “from the original hand of nature,” in Hume’s phrase—in our terms, from genetic endowment, specifically

the architecture of language as determined by UG in interaction with such general principles as Minimal Computation. In ways like these we can derive quite far-reaching and firm conclusions about the nature of UG.

One commonly reads claims in the literature that UG has been refuted, or does not exist. But this must be a misunderstanding. To deny the existence of UG—that is, of a biological endowment underlying the capacity for language—would be to hold that it is a miracle that humans have language but other organisms do not. The reference in these claims is presumably not to UG, however; rather, to descriptive generalizations—Joseph Greenberg’s very important proposals on language universals, for example. For example, in a foreword to the new edition of Quine’s *Word and Object*,<sup>21</sup> Patricia Churchland, with an irrelevant citation, writes that “linguistic universals, long the darlings of theorists, took a drubbing as one by one they fell to the disconfirming data of field linguists.” Presumably she takes this to be confirmation of Quine’s view that “Timely reflection on method and evidence should tend to stifle much of the talk of linguistic universals,” meaning generalizations about language. In reality, it is field linguists who have discovered and confirmed not only the generally valid and quite important generalizations, but also the invariant properties of UG. The term “field linguists” means linguists concerned with data, whether they are working in the Amazon jungle, or in their offices in Belem, or in New York.

The fragment of truth in such observations is that generalizations are likely to have exceptions, which can be quite valuable as a stimulus to inquiry: for example, the exceptions to deletion of copies, which I just mentioned. That is a common experience in the sciences. The discovery of perturbations in the orbit of Uranus did not lead to the abandonment of Newton’s principles and Kepler’s laws, or to the broader conclusion that there are no physical laws, but to the postulation—later discovery—of another planet, Neptune. Exceptions to largely valid descriptive generalizations play a similar role quite generally in the sciences, and have done so repeatedly in the study of language.

There is, then, persuasive and quite far-reaching evidence that if language is optimally designed, it will provide structures appropriate for semantic interpretation but that yield difficulties for perception and language processing (hence communication). There are many

<sup>21</sup> Patricia S. Churchland, foreword, W. V. O. Quine, *Word and Object* (1960; repr., Cambridge: MIT, 2013), p. xiii.



other illustrations. Take, say, passivization. It has been argued that passivization supports the belief that language is well-designed for communication. Thus in the sentence “the boys took the books,” if we wish to foreground “the books,” the passive operation allows us to do so by saying “the books were taken by the boys.” In fact, the conclusion is the opposite. The design of language, following from Minimal Computation, regularly bars this option. Suppose in the sentence “the boys took the books from the library” we wish to foreground “the library,” yielding “the library was taken the books from by the boys.” That is barred by language design, yet another barrier to communication.

The interesting cases are those in which there is a direct conflict between computational and communicative efficiency. In every known case, the former prevails; ease of communication is sacrificed. Many such cases are familiar, among them structural ambiguities and “garden path sentences” such as “the horse raced past the barn fell,” interpreted as ungrammatical on first presentation. Another case of particular interest is so-called *islands*—constructions in which extraction (Internal Merge) is barred—insofar as these can be given principled explanations invoking computational efficiency. An illustration is the questions associated with the expression: “they asked if the mechanics fixed the cars.” We can ask “how many cars,” yielding “how many cars did they ask if the mechanics fixed?” Or we can ask “how many mechanics,” yielding “how many mechanics did they ask if fixed the cars?” The two interrogatives differ sharply in status: asking “how many mechanics” is a fine thought, but it has to be expressed by some circumlocution, again impeding communication; technically an ECP violation. Here too there appear to be counterexamples, in Italian for example. Recognition of these led to discoveries about the nature of null subject languages by Luigi Rizzi,<sup>22</sup> reinforcing the ECP principle, again illustrating the value of proposed generalizations and apparent exceptions.

There are many similar cases. Insofar as they are understood, the structures result from free functioning of the simplest rules, yielding difficulties for perception and language processing. Again, where ease of processing and communicative efficiency conflict with computational efficiency in language design, in every known case the former are sacrificed. That lends further support to the view of language as an instrument of thought, in interesting respects perfectly designed, with externalization an ancillary process, hence a fortiori communication and other uses of externalized language. As is often

<sup>22</sup> Luigi Rizzi, *Issues in Italian Syntax* (Dordrecht: Foris, 1982).



the case, what is actually observed gives quite a misleading picture of the principles that underlie it. The essential art of science is reduction of “complex visibles to simple invisibles,” as Nobel laureate in chemistry Jean Baptiste Perrin put the matter.

To bring out more clearly just what is at stake, let us reverse the argument outlined here, putting it in a more principled way. We begin with the Basic Property of language, and ask what the optimal computational system would be that captures it, adopting normal scientific method. The answer is *Merge* in its simplest form, with its two variants, External and Internal Merge, the latter yielding the “copy theory of movement.” In a wide and important range of cases, that yields forms appropriate for semantic interpretation at the conceptual-intentional interface, forms which lack order or other arrangements. An ancillary process of externalization then converts the internally generated objects to a form adapted to the sensorimotor system, with arrangements that vary depending on the sensory modality for externalization. Externalization too is subject to Minimal Computation, so that copies are erased, yielding difficulties for language processing and use (including the special case of communication). A fallout of the optimal assumptions is that rules are invariably structure-dependent, resolving the puzzle discussed at the outset and others like it.

A broader research project—in recent years called *the minimalist program*—is to begin with the optimal assumption—the so-called *strong minimalist thesis* (SMT)—and to ask how far it can be sustained in the face of the observed complexities and variety of the languages of the world. Where a gap is found, the task will be to see whether the data can be reinterpreted, or principles of optimal computation can be revised, so as to solve the puzzles within the framework of SMT, thus producing some support, in an interesting and unexpected domain, for Galileo’s precept that nature is simple, and it is the task of the scientist to prove it. The task is of course a challenging one. It is fair to say, I think, that it seems a good deal more realistic today than it did only a few years ago, though enormous problems of course remain.

All of this raises at once a further question: Why should language be optimally designed, insofar as the SMT holds? This question leads us to consideration of the origin of language. The SMT hypothesis fits well with the very limited evidence we have about the emergence of language, apparently quite recently and suddenly in the evolutionary time scale, as Tattersall discussed. A fair guess today—and one that opens rich avenues of research and inquiry—is that some slight rewiring of the brain yielded Merge, naturally in its

simplest form, providing the basis for unbounded and creative thought, the “great leap forward” revealed in the archaeological record, and the remarkable differences separating modern humans from their predecessors and the rest of the animal kingdom. Insofar as the surmise is sustainable, we would have an answer to questions about apparent optimal design of language: that is what would be expected under the postulated circumstances, with no selectional or other pressures operating, so the emerging system should just follow laws of nature, in this case the principles of Minimal Computation—rather the way a snowflake forms.

These remarks only scratch the surface. Perhaps they can serve to illustrate why the answer to the question “What is language?” matters a lot, and also to illustrate how close attention to this fundamental question can yield conclusions with many ramifications for the study of what kind of creatures humans are.

## LECTURE II: WHAT CAN WE UNDERSTAND?

Yesterday I discussed the question “What is language?,” and considered what we can learn about the kind of creatures we are from close inquiry into this distinctive human possession. Quite a lot, I believe and tried to suggest and illustrate. Today I would like to move on to questions about our cognitive capacities more generally, and specifically, how they enter into the scope and limits of our understanding.

There is a concept called “the new mysterianism,” coined by Owen Flanagan, who defined it as a postmodern position designed “to drive a railroad spike through the heart of scientism” by holding that consciousness may never be completely explained.<sup>1</sup> The term has been extended to broader questions about the scope and nature of explanations accessible to human intelligence. Below I will use the term in the broader sense, which seems to me the more significant one.

I am cited as one of the culprits responsible for this strange postmodern heresy, though I would prefer a different name: truism. That is what I thought forty years ago in proposing a distinction between *problems*, which fall within our cognitive capacities, and *mysteries*, which do not.<sup>2</sup> In terms I borrowed from Charles Sanders Peirce’s account of abduction, the human mind is a biological system that provides it with a limited array of “admissible hypotheses” that are the foundations of human scientific inquiry—and by the same reasoning, of cognitive attainments generally. As a matter of simple logic, the system must exclude other hypotheses and ideas as inaccessible to us altogether, or too remote in some accessibility hierarchy to be accessible in fact, though they might be so for a differently structured mind—perhaps not Peirce’s view. UG plays something of the same role for language, and the basic observation carries over for all biological capacities.

Peirce’s concept of abduction is sometimes glossed as inference to the best explanation, but though undeveloped, the concept goes well beyond that. Crucially, Peirce insisted on *limits* of “admissible hypotheses,” which he took to be quite narrow, a prerequisite for “imagining correct theories.” He was concerned with growth of

<sup>1</sup> Owen Flanagan, *The Science of the Mind*, 2<sup>nd</sup> ed. (Cambridge: MIT, 1991), p. 313. Also: [http://en.wikipedia.org/wiki/New\\_Mysterianism](http://en.wikipedia.org/wiki/New_Mysterianism).

<sup>2</sup> Noam Chomsky, “Problems and Mysteries in the Study of Human Language,” in Asa Kasher, ed., *Language in Focus: Foundations, Methods and Systems: Essays in Memory of Yehoshua Bar-Hillel* (Boston: D. Reidel, 1976), pp. 281–358. Extended version in Chomsky, *Reflections on Language* (New York: Pantheon, 1975), chapter 4.

scientific knowledge, but the same holds for acquisition of common-sense understanding, of language acquisition in particular.<sup>3</sup>

The same should be expected to be true even of the questions that we can formulate; innate structure provides a rich variety of formulable questions, while barring others that some different mind might recognize to be the right ones to ask. I also cited the somewhat similar ideas of Hume, who recognized that just as for “beasts,” so “the greater part of human knowledge” depends on “a species of natural instincts,” which “derive from the original hand of nature”—in our terms, genetic endowment. The same conclusions follow.

All of this does seem to me close to truism, if perhaps not for reasons that have led many distinguished figures to somewhat similar conclusions. If we are biological organisms, not angels, then our cognitive faculties are similar to those called “physical capacities” and should be studied much as other systems of the body are.

Take, for example, the digestive system. Vertebrates have “a second brain,” the “gut brain,” the enteric nervous system, “an independent site of neural integration and processing.” Its structure and component cells are “more akin to those of the brain than to those of any other peripheral organ.” There are more nerve cells in the bowel than in the spine, in fact more “than in the entire remainder of our peripheral nervous system,” 100 million in the small intestine alone. The gut brain is also a “vast chemical warehouse within which is represented every one of the classes of neurotransmitter found in the brain,” with internal communication that is “rich and brainlike in its complexity.” The gut is “the only organ that contains an intrinsic nervous system that is able to mediate reflexes in the complete absence of input from the brain or spinal cord.” “The brain in the bowel has evolved in pace with the brain in the head.” It has become “a vibrant, modern data-processing center that enables us to accomplish some very important and unpleasant tasks with no mental effort,” and when we are lucky, to do so “efficiently and outside our consciousness.” It is possible that it “may also have its own psycho-neuroses,” and some researchers today report that it is susceptible to such diseases of the brain as Alzheimer’s, Parkinson’s, and autism. It has its own sensory transducers and regulatory apparatus, which equip it to deal with specific tasks imposed by the organs with which it interacts, excluding others.<sup>4</sup>

<sup>3</sup>See Chomsky, *Language and Mind* (New York: Harcourt, Brace and World, 1968), p. 78f.

<sup>4</sup>Michael D. Gershon, *The Second Brain* (New York: HarperCollins, 1998).

Uncontroversially, “the original hand of nature” determines what the gut brain can and cannot do—the “problems” it can solve and the “mysteries” that are beyond its reach. Uncontroversially, scope and limits are related: the structural properties that provide scope also set limits. In the case of the gut brain, there are no debates about some obscure “innateness hypothesis”—which is often condemned in the case of language but never defended, because there is no such hypothesis apart from various ideas about what the genetic component is. There are no complaints that after all these years the genetic component of the gut brain is not fully understood—just as in other domains. The study of the gut brain is internalist. There is no philosophical critique based on the fact that what goes on in the digestive system crucially depends on matters external to it, elsewhere in the organism or outside the skin. One studies the nature of the internal system, and its external interactions, with no philosophical quandaries.

Comparable concerns are considered to pose serious dilemmas for the study of the first brain and its capacities, human language specifically. This seems to me one instance of a curious tendency to treat mental aspects of the human organism differently from so-called “physical” aspects, a kind of methodological dualism, which is more pernicious than Cartesian metaphysical dualism. The latter was a respectable scientific hypothesis, proven wrong when Newton undermined the mechanical philosophy of early modern science by demonstrating that one of the Cartesian substances—body—does not exist, thereby eliminating the mind-body problem, at least in its Cartesian form, and leaving open the question what the “physical” or “material” is supposed to be.<sup>5</sup> Methodological dualism in contrast seems to have nothing to recommend it. If we abandon it, then it is hard to see why the first brain, in particular its cognitive aspects, should be studied in some way that is fundamentally different from how one investigates the gut brain, or any other component of the body. If so, then mysterianism is just a variety of truism, along with internalism—contrary to views widely held.

For different and varying reasons, many distinguished figures have been guilty of accepting the truism of mysterianism. I suppose one should include Bertrand Russell, ninety years ago, when he adopted the Humean view that “the highest grade [of certainty] belongs to my own percepts,” and we can then think of the constructions of

<sup>5</sup>For more on this topic, and some of the other matters discussed below, see Chomsky, “The Mysteries of Nature: How Deeply Hidden?,” this JOURNAL, CVI, 4 (April 2009): 167–200.

the mind as efforts to make sense of what we perceive, whether the reflexive constructions of common-sense understanding or the more considered and disciplined efforts of the sciences—which show us that what is “given” in perception is a construct from external data and mental structure, matters discussed interestingly by C. I. Lewis shortly after.<sup>6</sup>

As Hume put the matter, we must keep to the “Newtonian philosophy,” with a “modest skepticism to a certain degree, and a fair confession of ignorance in subjects, that exceed all human capacity”—which for Hume includes virtually everything beyond appearances. We must “refrain from disquisitions concerning their real nature and operations.” It is the imagination, “a kind of magical faculty in the soul, which...is inexplicable by the utmost efforts of human understanding,” that leads us to believe that we experience external continuing objects, including a mind or self.<sup>7</sup> Contrary to Dr. Johnson, G. E. Moore, and other estimable figures, his reasoning seems to me to merit respect.

In a careful and informative study of Hume’s Appendix to the *Treatise*, Galen Strawson argues, convincingly I think, that Hume finally came to realize that the difficulties he faces are far deeper. “It is evident,” Hume concluded, “that there is a principle of connection between the different thoughts or ideas in the mind,” a real connection, not one feigned by the imagination. But there is no place for such a really existing entity in his philosophy/psychology, so at the end his “hopes vanished.” His fundamental principles collapsed, irretrievably. One of the more poignant moments in the history of philosophy.<sup>8</sup>

For Russell it followed that physics can only hope to discover “the causal skeleton of the world, [while studying] percepts only in their cognitive aspect; their other aspects lie outside its purview”—though we recognize their existence, at the highest grade of certainty in fact, whether or not we can find satisfactory explanations in our scientific endeavors.

All of this seems to be thoroughgoing mysterianism, or perhaps modifies it by taking consciousness to be at the highest grade of certainty while everything else falls under problems, in part perhaps

<sup>6</sup> Bertrand Russell, *The Analysis of Matter* (New York: Harcourt, Brace and Co., 1927), chapter 37. C. I. Lewis, *Mind and the World-Order: Outline of a Theory of Knowledge* (New York: C. Scribner’s Sons, 1929).

<sup>7</sup> Galen Strawson, *The Evident Connexion: Hume on Personal Identity* (New York: Oxford, 2011), p. 56.

<sup>8</sup> *Ibid.*, Part 3.

even mysteries-for-humans. That would include the quandaries regarded as the “hard problems” in the early days of modern science and philosophy, in the seventeenth and eighteenth centuries. The most troublesome of the hard problems in that era had to do with the nature of motion, of attraction and repulsion. The “hard problems” were never solved. Rather, they were abandoned, and regarded by the more perceptive observers, like Locke and Hume, as permanent mysteries—at least mysteries-for-humans, we might add.

That was well understood at the time. Locke wrote that while we remain in “incurable ignorance of what we desire to know” about matter and its effects, and no “science of bodies [that provides true explanations is] within our reach,” nevertheless, he was “convinced by the judicious Mr. Newton’s incomparable book, that it is too bold a presumption to limit God’s power, in this point, by my narrow conceptions.” Though gravitation of matter to matter is “inconceivable to me,” nevertheless, as Newton demonstrated, we must recognize that it is within God’s power “to put into bodies, powers and ways of operations, above what can be derived from our idea of body, or can be explained by what we know of matter.” And thanks to Newton’s work, we know that “he has done so.”<sup>9</sup>

Given mysterian truisms, what is inconceivable to me is no criterion for what can exist. Dropping the theology, we can reformulate Locke’s thoughts as holding that the natural world has properties that are mysteries-for-humans.

Newton did not disagree. In his constant search for some way to avoid the “absurd” conclusion that objects interact at a distance, he speculated that God, who is everywhere, might be the “immaterial agent” underlying gravitational interactions. But he could go no further, since he refused to “feign hypotheses” beyond what can be experimentally established. Newton agreed with his most eminent critic Leibniz that interaction without contact is “inconceivable,” though he did not agree that it was an “unreasonable occult property,” in Leibniz’s words.<sup>10</sup> Newton held that his principles were not occult: “their causes only are occult.” These causes might, he hoped, be accounted for in physical terms, meaning the terms of the mechanical philosophy or something like them. In the absence of that achievement, to derive general principles inductively from phenomena, Newton argued, and “to tell us how the properties of actions of all corporeal things follow from those manifest principles,

<sup>9</sup>John Locke, second reply to Stillingfleet, in *The Works of John Locke*, vol. 3; discussed in Andrew Janiak, *Newton as Philosopher* (New York: Cambridge, 2008), p. 121.

<sup>10</sup>Janiak, *op. cit.*, pp. 9f., 39.

would be a very great step in philosophy, though the causes of these principles were not yet discovered.”

In his penetrating study of Newton as a philosopher, Andrew Janiak argues that Newton had independent reasons for rejecting interaction without contact. Newton’s “understanding of God’s place within the physical world,” Janiak observes, “forms a metaphysical framework for his thinking in precisely the sense that it is not subject to revision through reflection on experience or through the development of physical science.” And “if divine distant action is possible,” yielding action at a distance, “then God’s omnipotence need not be construed as Newton always construes it, in terms of divine omnipresence.”

Later Newtonians rejected the metaphysics, hence accepting action at a distance within theoretical constructions while disregarding the “inconceivability” of the conclusions about the world that troubled Newton’s great contemporaries, and also Newton himself.

Accordingly, the goals of scientific inquiry were implicitly restricted: from the kind of conceivability that was a criterion for true understanding in early modern science to something much narrower: intelligibility of theories about the world. This seems to me a step of considerable significance in the history of human thought and inquiry, more so than is generally recognized. It bears directly on the scope of mysterianism in the broad sense.

Locke went on to conclude that just as God added to matter such inconceivable properties as gravitational attraction, he might also have “superadded” to matter the capacity of thought. Replacing “God” by “nature” opens the topic to inquiry, a path that was pursued extensively in the years that followed, leading to the conclusion that thought is a property of certain forms of organized matter.<sup>11</sup> As Darwin restated the fairly common understanding, there is no need to regard thought, “a secretion of brain,” as “more wonderful than gravity a property of matter”<sup>12</sup>—inconceivable to us, but that is not a fact about the external world but about our cognitive limitations.

Some of the early modern understanding of these matters has been rediscovered in recent years, sometimes with a sense of

<sup>11</sup> On “Locke’s suggestion” and its development through the next century, culminating in Priestley’s important work, see John W. Yolton, *Thinking Matter: Materialism in Eighteenth-Century Britain* (Minneapolis: Minnesota UP, 1983); and some further elaboration in Chomsky, “The Mysteries of Nature.”

<sup>12</sup> Charles Darwin, 1838. Notebook C166, in *Charles Darwin’s Notebooks, 1836–1844: Geology, Transmutation of Species, Metaphysical Enquiries*, ed. Paul H. Barrett et al. (Cambridge, UK: University Press, 1987), p. 291. <http://darwin-online.org.uk/content/frameset?viewtype=image&itemID=CUL-DAR122.-&keywords=brain+the+of+secretion&pageseq=148>.



wonderment, as when Frances Crick formulated his “astonishing hypothesis” that our mental and emotional states are “in fact no more than the behavior of a vast assembly of nerve cells and their associated molecules.” In the philosophical literature, this rediscovery has sometimes been regarded as a radical new idea in the study of mind. As Paul Churchland puts it, citing John Searle, the new idea is “the bold assertion that mental phenomena are entirely natural and caused by the neurophysiological activities of the brain.” These proposals reiterate, in virtually the same words, formulations of centuries ago, after the traditional mind-body problem became unformulable with Newton’s demolition of the only coherent notion of body (or physical, material, and so on): for example Joseph Priestley’s conclusion that properties “termed mental” reduce to “the organical structure of the brain,” stated in different words by Locke, Darwin, and many others, and almost inescapable, it would seem, after the collapse of the mechanical philosophy that provided the foundations for early modern science.<sup>13</sup>

The last decade of the twentieth century was designated “the Decade of the Brain.” In introducing a collection of essays reviewing its results, neuroscientist Vernon Mountcastle formulated the guiding theme as the thesis of the new biology that “Things mental, indeed minds, are emergent properties of brains[, though these] emergences are...produced by principles that...we do not yet understand”—again reiterating eighteenth-century insights in virtually the same words.<sup>14</sup>

The phrase “we do not *yet* understand,” however, should strike a note of caution. We might recall Bertrand Russell’s observation in 1927 that chemical laws “cannot at present be reduced to physical laws,” a fact that led eminent scientists to regard chemistry as no more than a mode of computation that could predict experimental results, but not real science. As soon discovered, Russell’s observation, though correct, was understated. Chemical laws were not in fact reducible to physical laws as physics was then understood, though after physics underwent radical changes, with the quantum-theoretic revolution, it was unified with a virtually unchanged chemistry.

There may well be lessons here for neuroscience and philosophy of mind. Contemporary neuroscience is hardly as well-established as

<sup>13</sup> Paul Churchland, “Betty Crocker’s Theory,” review of John Searle, *The Rediscovery of the Mind*, *London Review of Books*, xvi, 9 (May 12, 1994): 13–14. Churchland associates Searle’s views with Descartes’s in ways that are not entirely clear, in part because of a misinterpretation of the mechanical philosophy and its fate. On Priestley and others, see references of note 11.

<sup>14</sup> Vernon B. Mountcastle, “Brain Science at the Century’s Ebb,” in “The Brain,” *Dædalus*, 2 (Spring 1998): 1–36, at p. 1.

physics was a century ago. In fact, there are what seem to me to be cogent critiques of its foundational assumptions.<sup>15</sup> The common slogan that study of mind is *neuroscience* at an abstract level might turn out to be just as misleading as comparable statements about chemistry ninety years ago—if, that is, we have in mind today's neuroscience.

Note that questions that arise concerning this matter have no bearing on taking the mind to be the brain viewed at a certain level of abstraction, as in the discussion here.

Thomas Nagel, in recent work that has been highly controversial, writes that “Mind, I suspect, is not an inexplicable accident or a divine and anomalous gift but a basic aspect of nature that we will not understand until we transcend the built-in limits of contemporary scientific orthodoxy.”<sup>16</sup> If that turns out to be true, it would not be much of a departure from the history of science, though his invocation of “incredulity” and “common sense” should, I think, go the way of similar concerns that were abandoned from the late seventeenth century, as the import of Newton's discoveries were assimilated and the goals of scientific inquiry implicitly and significantly restricted, as discussed earlier.

In the light of these discoveries, and their implications, Hume wrote that Newton's greatest achievement was “to draw the veil from some of the mysteries of nature,” while also having “restored [Nature's] ultimate secrets to that obscurity, in which they ever did and ever will remain.”<sup>17</sup> For humans at least. All a form of dedicated mysterianism, for substantial reasons.

As for consciousness, it entered modern philosophical discourse at about the same time. In his recent comprehensive scholarly study of this range of topics, Udo Thiel finds that the first English philosopher to make extensive use of the noun *consciousness*, with a philosophical meaning, was Ralph Cudworth, in the 1670s, though it was not until fifty years later that consciousness became an object of inquiry in its own right.<sup>18</sup> Subsequently consciousness was identified with thought, as it already had been by Descartes, according to some interpretations. And for some, like von Humboldt, thought was further identified with language, which provides the language of thought, ideas

<sup>15</sup> C. R. Gallistel and Adam Philip King, *Memory and the Computational Brain: Why Cognitive Science Will Transform Neuroscience* (Malden, MA: Wiley-Blackwell, 2009).

<sup>16</sup> Thomas Nagel, “The Core of ‘Mind and Cosmos,’” *New York Times Opinionator*, Aug. 18, 2013. Nagel, *Mind and Cosmos: Why the Materialist Neo-Darwinian Conception of Nature Is Almost Certainly False* (New York: Oxford, 2012).

<sup>17</sup> David Hume, *The History of England*, vol. 6, chapter LXXI.

<sup>18</sup> Udo Thiel, *The Early Modern Subject: Self-Consciousness and Personal Identity from Descartes to Hume* (New York: Oxford, 2011).

that can partially be reconstructed in contemporary terms, as I discussed yesterday.

In the modern period, identification of thought with consciousness reappears in various way, for example, in Quine's thesis that rule-following reduces either to "fitting," as the planets fit Kepler's laws, or "guiding" by conscious thought. Or in Searle's "connection principle," holding that operations of the mind must be somehow accessible to conscious experience, an idea that is not easy to formulate coherently. Whether taken to be empirical claims or terminological stipulations, these doctrines rule out much of what has been discovered about rule-following in language or perception, for example the rule of structure-dependence for language that I discussed yesterday, and more importantly its basis, or what Donald Hoffman in his study of visual intelligence calls "the rigidity rule," the rule that image projections are interpreted "as projections of rigid motions in three dimensions," even with highly impoverished stimuli.<sup>19</sup>

There is reason to believe that what reaches consciousness, even potentially, may well be just a scattered reflection of inaccessible mental processes, which interact intimately with the fragments that do sometimes reach consciousness. The now famous Libet experiments on decision-making provide some independent evidence about this matter—though it is a mistake, I think, to regard them as having some bearing on freedom of will. The same issues largely remain, including considerations of personal responsibility, if decisions are made without conscious awareness or deliberation, including issues of possible cognitive limitations, to which I will return.

If it is true that fragments of mental processes that reach consciousness interact intimately with those that are inaccessible, as seems fairly clearly to be the case at least for use of language, then restriction of focus to conscious awareness, or accessibility to consciousness, may severely impede the development of a science of mind. These are topics of considerable interest, but there is no time to pursue them here.

Instead, let us return to mysterianism in the broad sense, not restricted to consciousness, taking it to be truism, as I think we should. We can consider various kinds of mysteries. Some are quite far-reaching, such as those I mentioned: perhaps permanent mysteries-for-humans. But before returning to these, it is worth considering others that are narrower: cases that might fall within our cognitive capacities and where there might in principle be relevant empirical

<sup>19</sup> Donald D. Hoffman, *Visual Intelligence: How We Create What We See* (New York: W. W. Norton, 1998), p. 159.

evidence, though we cannot obtain it. Or cases where ethical considerations bar experiments that might answer questions we can sensibly pose. Thus a lot is known about the neurology of the human visual system thanks to invasive experiments on cats and monkeys, but we cannot learn about language this way. There is nothing homologous known in the animal world, and relevant human experiments are barred, though perhaps some barriers might erode with new technology.

One example might be evolution of cognition—in particular, what is called “evolution of language,” meaning evolution of the capacity for language, the language faculty; languages change but do not evolve. Evolutionary biologist Richard Lewontin argued extensively years ago that we will learn virtually nothing about these matters: “It might be interesting to know how cognition (whatever that is) arose and spread and changed,” he concluded, “but we cannot know. Tough luck.”<sup>20</sup> Relevant evidence is not available to us. The editors of the MIT *Invitation to Cognitive Science* in which he published these conclusions found them persuasive, as I do, though his analysis, largely ignored, has not impeded the growth of a huge literature of what Lewontin calls “storytelling,” particularly in the case of language.

The storytelling typically proceeds without even spelling out the essential nature of the phenotype, a prerequisite to any serious evolutionary inquiry. And it also typically constructs stories about communication, a different though perhaps more appealing topic, because one can at least imagine continuities and small changes in accord with conceptions of evolution that are conventional though dubious at best. A recent technical paper reviews what has been done since Lewontin’s strictures, pretty much reaffirming them—plausibly I think, but then I am one of the authors.<sup>21</sup>

With regard to language origins, we know of one fact with considerable confidence, and have another plausible surmise. The fact is that there has been no detectable evolution since our ancestors left Africa, perhaps 50–80,000 years ago. The same appears to be true of cognitive capacity more generally. The plausible surmise is Tattersall’s, which I quoted yesterday: roughly 50–100,000 years before that, there is little reason to suppose that language existed at all.

<sup>20</sup> Richard Lewontin, “The Evolution of Cognition: Questions We Will Never Answer,” in Daniel N. Osherson, Don Scarborough, and Saul Sternberg, eds., *An Invitation to Cognitive Science, Volume 4: Methods, Models, and Conceptual Issues*, 2<sup>nd</sup> ed. (Cambridge: MIT, 1998), pp. 108–32.

<sup>21</sup> Marc Hauser, Charles Yang, et al., “The Mystery of Language Evolution,” unpublished manuscript, 2013.

An account of the origin of human language will have to respect the fact, and at least attend to the surmise. It will have to provide some credible proposal as to the origin of what I called the Basic Property. There is none, to my knowledge, apart from what I mentioned yesterday, generally regarded as heretical, or worse.

There are also further tasks. One is to account for the variety of languages, for the range of options permitted by the evolved language faculty. Particularly in the past 30 years, that has become a rich and illuminating study of permissible parameters of variation—which themselves pose evolutionary problems.

A still more challenging problem is to account for the origins of the atoms of computation for the Basic Property. Here too there is extensive literature, but of questionable value, since it also rarely attends to the phenotype, the nature of meaning in human language. Investigation I think undermines some conventional doctrines, and raises serious questions about evolution and acquisition.

The atoms of computation—call them “atomic concepts”—are word-like objects, but not words. Words are constructed by the ancillary process of externalization, which does not feed the systems of thought, if the account I discussed yesterday is correct. The atoms are sometimes called “lexical items,” but that is not quite right either. The atoms of the syntactic computations that reach the conceptual-intentional interface do not have phonological properties, as lexical items do. These are assigned as an early step of externalization, and are arbitrary, in the familiar Saussurean sense. Furthermore, as is now known, sound is only one possible modality for externalization.

More significantly, the “atomic concepts” for human language and thought seem to be quite different from anything found in systems of animal communication. The latter, it appears, are linked directly to entities that are extra-mental and can be identified independently of any consideration of the symbolic system itself. A vervet monkey, for example, has a number of calls. One is associated with fluttering of leaves, taken as a sign that a predator may be coming. Another might be associated with some hormonal change: “I’m hungry.” This appears to be general, and is quite different from human language, where even the simplest elements lack this property, contrary to a conventional *referentialist* doctrine holding that there is a direct relation between words and extra-mental entities, as illustrated in the titles of such standard works as Quine’s *Word and Object* or Roger Brown’s *Words and Things*, and an extensive literature.

Returning to Cartesian reflections on mind, animal signaling appears to be *caused* by circumstances, internal and external, while

for humans, appropriate production of words and more complex expressions is at most *incited or inclined*.

Furthermore, the associations for animal symbol systems are of a kind quite different from anything in human language. In this respect, Darwin's characterization of the uniqueness of human language, which I quoted yesterday, has to be modified beyond what he could have anticipated. One of the leading specialists on the topic, Laura-Ann Petitto, who was the primary investigator in the NIM project, writes that "Chimps, unlike humans, use such labels in a way that seems to rely heavily on some global notion of *association*. A chimp will use the same label *apple* to refer to the action of eating apples, the location where apples are kept, events and locations of objects other than apples that happened to be stored with an apple (the knife used to cut it), and so on and so forth—all simultaneously, and without apparent recognition of the relevant differences or the advantages of being able to distinguish among them. Even the first words of the young human baby are used in a kind-concept constrained way....But the usage of chimps, even after years of training and communication with humans, never displays this sensitivity to differences among natural kinds. Surprisingly, then, chimps do not really have 'names for things' at all. They have only a hodge-podge of loose associations."<sup>22</sup>

Human language is radically different, except in one respect: it also does not have names for things, though for different reasons. The atomic concepts of human language do not pick out entities of the extra-mental world. There is apparently no notion "reference" or "denotation" for human language, though there are of course actions of referring and denoting—an observation that has not been ignored in the philosophical literature: Peter Strawson's paper on reference and referring sixty years ago is one well-known example, or Julius Moravcsik's *antitentional* semantics 20 years later, or Akeel Bilgrami's discussion of the "radically local or contextual" notion of content 20 years after that. One can posit a circumstance-dependent relation of reference deriving from acts of referring; thus the name *Jones* refers to the person Jones (far from an innocent notion of course) insofar as we refer to him by using the name in some way in some particular circumstances. But the act of referring is the fundamental notion.

In this respect, atomic concepts are rather like the elements of phonetic representation. We can think of these as instructions to

<sup>22</sup> Laura-Ann Petitto, "How the Brain Begets Language," in James McGilvray, ed., *The Cambridge Companion to Chomsky* (New York: Cambridge, 2005), pp. 84–101, at p. 86.

articulators (and comparably, the perceptual apparatus). The act of pronunciation yields a specific event in the mind-independent world, but it would be idle to seek some mind-independent entity or category to which the phonetic unit corresponds even for a single individual, let alone a community of users. Acoustic and articulatory phonetics seek to discover how internal symbols enter into the production and interpretation of sounds, no simple task; after sixty years of intensive study with high-tech instrumentation, a great deal remains unknown. There is no reason to suspect that it would be an easier task to discover how internal systems are used to talk or think about aspects of the world. Quite the contrary, as becomes clear when we actually investigate the atomic concepts of linguistic and cognitive computation, and the ways they are used to refer.

That much was already clear to Aristotle. He concluded that we can “define a house as stones, bricks, and timbers,” in terms of material constitution, but also as “a receptacle to shelter chattels and living beings,” in terms of function and design; and we should combine both parts of the definition, integrating matter and form, since the “essence of a house” involves the “purpose and end” of the material constitution.<sup>23</sup> Hence a house is not a mind-independent object. That becomes still clearer when we investigate further, and discover that the concept *house* has much more intricate properties, an observation that generalizes far beyond. Inquiry reveals that even the simplest expressions have quite intricate meanings.<sup>24</sup>

In other domains, the referentialist doctrine does have a valuable role. In metamathematics, for example. And in the sciences, where the doctrine is taken to be a guiding norm. In devising technical notions like *electron* or *phoneme*, researchers hope to be identifying entities that exist in the world. But none of this should be confused with human language. Further confusions can arise if these different systems are intermingled. Thus chemists freely use the term “water” in informal discourse, but not in the sense of the word of natural language, which also violates the referentialist doctrine.

Note that Aristotle was defining the entity *house*, not the word “house.” For him it was a matter of metaphysics: the entity is a combination of matter and form. In the course of the cognitive revolution of the seventeenth century, the general point of view shifted towards seeking the “innate cognoscitive powers” that enter into our

<sup>23</sup> Aristotle, *Metaphysics*, Book VIII.3; *De Anima*, Book I.1.

<sup>24</sup> See Chomsky, “Notes on Denotation and Denoting,” in Ivano Caponigro and Carlo Cecchetto, eds., *From Grammar to Meaning: The Spontaneous Logicity of Language* (New York: Cambridge, 2013), pp. 38–45, and sources cited there.



understanding of experience. Summarizing many years of discussion of such topics, Hume concluded that “the identity we ascribe” to minds, vegetables, animal bodies, and other entities is “only a fictitious one” established by the imagination “upon like objects,” not a “peculiar nature belonging to this form.”<sup>25</sup>

One illustration of the deficiencies of the referentialist doctrine is the concept *person*, intensively studied since the classical era, particularly since the seventeenth century. Thus when one says that the name *Jones* denotes its bearer, what exactly is the bearer? It cannot simply be the material body. As Locke observes, there is no absurdity in thinking that the same person might have two different bodies: if the same consciousness “can be transferred from one thinking substance to another, it will be possible that two thinking substances may make up one person.” And there are many other complications. Personal identity thus consists (at least) in some kind of “identity of consciousness,” in psychic continuity. Locke adds that the term *person* (or *self*, or *soul*) is, furthermore, “a forensic term, appropriating actions and their merit; and so belongs only to intelligent agents, capable of a law, and happiness, and misery.”<sup>26</sup>

There is no time here to discuss the rich and perceptive inquiries on the topic, reviewed recently in the work by Udo Thiel that I mentioned earlier. It may however be useful to add a few reminders on the interesting legal history of personhood as a “forensic” concept.

The Fifth Amendment to the American Constitution guarantees the rights of “persons”: crucially, that they shall not be “deprived of life, liberty, or property, without due process of law,” provisions that trace back to Magna Carta. But the concept of *person* was sharply circumscribed. It plainly did not include Native Americans or slaves. Or women. Under British common law, taken over by the colonies, women were basically property: of their father, handed over to their husbands. The prevailing concept was expressed by Kant a few years later: women have no “civil personality” because they depend for their living “on the offices of others,” like apprentices and servants, who also lack “civil personality.”

The Fourteenth Amendment extended personhood to freed slaves, at least in principle. In reality, a few years later a North-South compact permitted the slave-owning states to reinstitute a form of slavery by effectively criminalizing black life, providing a cheap and disciplined labor force for much of the industrial revolution, a system that

<sup>25</sup> Cited by Ben Lazare Mijuskovic, *The Achilles of Rationalist Arguments* (The Hague: Martinus Nijhoff, 1974).

<sup>26</sup> Locke, *An Essay Concerning Human Understanding*, Book II, chapter XXVII.



persisted until World War II created the need for free labor. The ugly history is being re-enacted under the vicious “drug war” of the past generation, since Reagan.

As for women, it was not until 1975 that the Supreme Court recognized women to be “peers,” with the right to serve on federal juries—hence advancing to the category of full personhood. Recent Court decisions extend the right of personhood that had already been granted to corporations, while excluding undocumented aliens from the category.<sup>27</sup> It would be no great surprise if chimpanzees are granted the rights of persons before undocumented immigrants are.

In brief, understanding “person” to be a forensic term has many complex and troublesome human consequences.

Returning to language and atomic concepts, recent studies of acquisition, particularly by Lila Gleitman and her associates, have shown that meanings of even the most elementary linguistic expressions are acquired from very restricted evidence, and very rapidly during the early years of life, even under severe sensory constraints. It is difficult to see how one can avoid the conclusion that these intricate structures depend on “innate cognoscitive powers” of the kinds explored in interesting ways in the “first cognitive revolution” of the seventeenth century. Intricacies mount rapidly when we proceed beyond the simple elements used to refer, reinforcing the conclusion that innate properties of the mind play a critical role in their acquisition and use. Such considerations seem impossible to reconcile with familiar views of language acquisition as based on ostension, instruction, and habit formation; or with what Dagfinn Føllesdal in his penetrating study of Quine’s theory of meaning calls the “MMM thesis: *The meaning of a linguistic expression is the joint product of all the evidence that helps learners and users of the language determine that meaning.*”<sup>28</sup> In an appreciative comment, Quine endorses Føllesdal’s interpretation, but with a crucial modification, stating that “What

<sup>27</sup> Women: Linda K. Kerber, “Why Diamonds Really Are a Girl’s Best Friend: Another American Narrative,” in “On the American Narrative,” *Daedalus*, CXXI, 1 (Winter 2012): 89–100; David Ellerman, “Workplace Democracy and Human Development: The Example of the Postsocialist Transition Debate,” *Journal of Speculative Philosophy*, xxiv, 4 (2010): 333–53; Taylor v. Louisiana, 419 U.S. 522 (1975). African-Americans: Douglas Blackmon, *Slavery by Another Name: The Re-Enslavement of Black Americans from the Civil War to World War II* (New York: Doubleday, 2008); Michelle L. Alexander, *The New Jim Crow: Mass Incarceration in the Age of Colorblindness*, rev. ed. (New York: New Press, 2012). Aliens: Rasul v. Myers, Jan. 2008, Court of Appeals, District of Columbia Circuit, Jan. 2008, April 2009. Corporations: see sources in Chomsky, *Hopes and Prospects* (Chicago: Haymarket, 2010), p. 30f.

<sup>28</sup> Dagfinn Føllesdal, “Indeterminacy and Mental States,” in Robert Barrett and Roger Gibson, eds., *Perspectives on Quine* (Cambridge: Blackwell, 1990), pp. 98–109.

matters is just that linguistic meaning is a function of observable behavior in observable circumstances.” The qualification, however, leaves a very weak thesis, one that would be true no matter how rich the crucial innate endowment and how impoverished the data, as long as at least some stimuli are necessary, just as the mature visual system is a function of visual input.

If conclusions of the kind just mentioned do indeed generalize, as appears to be the case, then it would follow that natural language has no referential semantics in the sense of relations between symbols and mind-independent entities. Rather, it has syntax (internal symbol manipulation) and pragmatics (modes of use of language). Formal semantics, including model-theoretic semantics, falls under syntax in this categorization. It is motivated by external world considerations just as phonology is, but relates to the world only in the context of theories of action, so it appears.

Considerations of this nature pose very serious problems for any potential theory of the origin of language. As I mentioned, it appears to be the case that animal communication systems are based on a one-one relation between mind/brain processes and “an aspect of the environment to which these processes adapt the animal’s behavior.”<sup>29</sup> If so, the gap between human language and animal communication is as dramatic in this domain as in the domains of language structure, acquisition, and use, and inquiry into origins will have to look elsewhere.

Let us turn briefly to the objects to which a speaker refers. We have to ask what qualifies. Quine was concerned with this topic. He observed that in some cases a noun phrase may not be “a compelling candidate—on the surface, anyway—for thinghood,” as Daniel Dennett put the matter recently in discussing the issues Quine raised. We say “for Pete’s sake” or “for the sake of,” but do not expect to answer thing-related questions about sakes or about Pete, for example, “how many sakes are there?” or “how tall is Pete?” Similarly, Dennett observes, “Paris and London plainly exist, but do the *miles* that separate them also exist?” Quine’s answer, Dennett writes, is that a noun phrase of this kind is “*defective*, and its putative reference need not be taken seriously from an ontological point of view.”<sup>30</sup>

Often there is direct linguistic evidence of deficiency of “thinghood.” Consider the nouns *flaw* and *fly*. In some constructions they function in similar ways: *there is a fly in the bottle/a flaw in the argument*;

<sup>29</sup> Gallistel, “Representations in Animal Cognition: An Introduction,” *Cognition*, xxxvii, 1–2 (November 1990): 1–22.

<sup>30</sup> Daniel C. Dennett, “Sakes and Dints,” *Times Literary Supplement*, March 2, 2012.

*there is believed to be a fly in the bottle/a flaw in the argument.* In others not: *there is a fly believed to be in the bottle/\*a flaw believed to be in the argument; a fly is in the bottle/\*a flaw is in the argument* (\* indicating deviance). Some constructions carry a kind of existential import that is lacking in others, even those with explicit existential expressions, a matter that falls within an explanatory framework with a variety of consequences, discussed elsewhere.<sup>31</sup>

There do seem to be distinctions among “candidates for thinghood,” but questions soon arise. Presumably at least the word *thing* should be a compelling candidate for thinghood. But what are the identity conditions for things, and how many are there? Suppose we see some branches strewn on the ground. If they fell from a tree after a storm, they are not a thing. But if they were carefully placed there by an artist as a work of conceptual art, perhaps given a name, then the construction is a thing (and might win an award). A little thought will show that many complex factors determine whether some part of the world constitutes a thing, including human intention and design—Aristotelian *form*—which are not properties that can be detected by study of the mind-independent world. If *thing* does not qualify for *thinghood* independently of mind-dependent circumstances, then what does?

What about Dennett’s examples Paris and London? We can refer to them, as if I were to say that that I visited London the year before it was destroyed by a great fire and then rebuilt with entirely different materials and design 50 miles up the Thames, where I intend to revisit it next year. Evidently, the extra-mental world does not contain an entity with such properties, an entity that a physicist could in principle discover. We can however refer to London, either by using the expression *London* or a pronoun linked to it, or by some more complex phrase, say, “my favorite city.” In my I-language there is an internal entity *London*—not necessarily matching yours exactly—constituted of elements that provide perspectives for referring to aspects of the world, much as the features of the internal phonetic entity [ta] provide means for me to pronounce and interpret certain events in the world. In these terms, many classical paradoxes become difficult or impossible to formulate, from Plutarch’s Ship of Theseus to Kripke’s puzzles, all stated in terms of referentialist assumptions.

As Norbert Hornstein suggests, we might reframe the observation, taking the problematic features of the paradoxes to be

<sup>31</sup> Chomsky, “Derivation by Phase,” in Michael J. Kenstowicz, ed., *Ken Hale: A Life in Language* (Cambridge: MIT, 2001), pp. 1–52.

another argument against the referentialist assumptions that lead to them.

Early investigation of these topics was concerned primarily with individuation: what makes an individual distinct from others? With the rise of corpuscular theories in the seventeenth century, the focus of investigation shifted from individuation to the prior question of identity: what makes an individual the same through time despite partial changes? For a corpuscularian, an individual just is what it is—a “distinct portion of matter which a number of (corpuscles)...make up” (Robert Boyle). Study of identity through time led to a cognitive treatment of the issue. As Thiel puts it, “as substantial forms are denied and no ‘principle’ of identity could be discovered in the things themselves, it is recognized that their identity must depend on what we regard as their essential constituents”—“on what we regard,” that is, on our criteria for judging, on our concepts of things. This “subjectivist revolution” was carried forward particularly by Locke, for whom existence is preserved “under the same denomination,” in terms of the abstract ideas under which we consider the world.

Hume interprets our tendency to assign identity through time as a “natural propension,” a kind of instinct, which constructs experience to conform to our modes of cognition—and in ways that seem sharply different from anything in the animal world. The “propension” to ascribe identity where evidence shows diversity “is so great,” Hume writes, that imagination creates concepts that bind a succession of related objects together, leading us “to imagine something unknown and mysterious, connecting the parts.” Hence ascription of identity is a construction of the imagination, and the factors that enter into constructing these fictions become a topic of cognitive science, though Hume might have demurred if the imagination is indeed, as he thought, “a kind of magical faculty...[which]...is inexplicable by the utmost efforts of human understanding,”<sup>32</sup> hence yet another mystery-for-humans.

In these terms, it should also be possible to reinterpret the rich and illuminating record of thinking about the nature of the soul, though now divorced of the theological conditions, like resurrection, and from the metaphysical framework of earlier years.

These are all matters that seem to me to deserve considerably more attention and concern than they have received. In particular, they pose very serious problems for the study of acquisition and origin of language, perhaps unsolvable ones in the latter case, for Lewontin’s reasons.

<sup>32</sup> Thiel, *op. cit.*

These early modern reflections on the origins of knowledge led to a much more fundamental form of mysterianism, the kind I have been sampling briefly. For Locke and Hume, it follows from epistemological considerations that the limits of our understanding are very narrow. Janiak observes that Newton regarded such global skepticism as “irrelevant—he takes the possibility of our knowledge of nature for granted.” Hence “the primary epistemic questions confronting us are raised by physical theory itself.” That would include the skeptical stance of Locke and Hume. They, however, took quite seriously the new science-based mysterianism that arose from Newton’s demolition of the mechanical philosophy, which had provided the very criterion of intelligibility for the scientific revolution of the seventeenth century, based on the conception of the world as an elaborate machine. Galileo insisted that theories are intelligible only under a very restrictive condition: only if we can “duplicate [their posits] by means of appropriate artificial devices,” a conception that was maintained by Descartes, Leibniz, Huygens, Newton, and other great figures of the scientific revolution.

Accordingly, Newton’s discoveries left the world unintelligible, when his theological assumptions were dismissed. The solution reached, as mentioned earlier, was to lower the goals of science, abandoning the search for intelligibility of the world in favor of something much weaker: theories that are intelligible to us whether or not what they posit is intelligible. It was then quite natural for Bertrand Russell to dismiss the very idea of an intelligible world as “absurd,” no longer a reasonable goal for scientific inquiry.

There is no contradiction in supposing that we might be able to probe the limits of human understanding and try to sharpen the boundary between problems and mysteries (for humans).<sup>33</sup> Experimental inquiry might be able to determine the “limits on admissible hypotheses” that Peirce discussed, both those that enter into common-sense understanding and those that constitute what might be called our “science-forming capacity,” Peirce’s specific interest, which might well have different properties (a matter that is contested in cognitive psychology<sup>34</sup>). One approach would be to take seriously the concerns of the great figures of the early scientific revolution and the Enlightenment: what they found “inconceivable,” and particularly their reasons. The “mechanical philosophy” itself has a claim to be an approximation to common-sense understanding of

<sup>33</sup> An inquiry that Colin McGinn has undertaken in several books and papers, among them *Basic Structures of Reality: Essays in Meta-Physics* (New York: Oxford, 2011).

<sup>34</sup> Susan Carey, *The Origin of Concepts* (New York: Oxford, 2011).

the world. Despite much sophisticated commentary, it is also hard to escape the force of Descartes's conviction that free will is "the noblest thing" we have, that "there is nothing we comprehend more evidently and more perfectly" and that "it would be absurd" to doubt something that "we comprehend intimately, and experience within ourselves" merely because it is "by its nature incomprehensible to us," if indeed we do not "have intelligence enough" to understand the workings of mind, as he speculated.<sup>35</sup> Concepts of determinacy and randomness fall within our intellectual grasp, but if "free actions of men" that are "undetermined" cannot be accommodated in these terms, that could turn out to be a matter of cognitive limitations—which would not preclude an intelligible theory of such actions, far as this is from today's scientific understanding.

While the list of mysterians is long and distinguished, their stance appears to contrast with the exuberant thesis that the early scientific revolution and the Enlightenment provided humans with limitless explanatory power, exhibited in the rapid development of modern science. One outstanding figure who espoused this view was David Hilbert. In his final lecture in 1930, not long before the Nazi plague destroyed the Hilbert Circle in Göttingen, he recalled "the magnificent manner of thinking and of the world-view that shines forth" in the words of the great mathematician Jacobi, who admonished Fourier for holding that the goal of mathematics was to explain natural phenomena. Rather, Hilbert urged, "the sole aim of all science is the honor of the human spirit," and so "a problem of pure number theory is every bit as valuable as a problem with practical applications." Whoever grasps this manner of thinking, Hilbert continued, will realize that "there is no *ignorabimus*," either in mathematics or natural science. "There are absolutely no unsolvable problems. Instead of the foolish *ignorabimus* our answer is on the contrary: We must know, We shall know"—words that were engraved on Hilbert's tombstone.<sup>36</sup>

The prediction did not fare too well in mathematics, as Kurt Gödel soon demonstrated to the shock of the mathematical world. And despite the nobility of the thought, the argument has little force for the natural sciences.

Recently physicist David Deutsch wrote that potential progress is "unbounded," as a result of the great achievement of the

<sup>35</sup> See Chomsky, "The Mysteries of Nature," for sources.

<sup>36</sup> David Hilbert, "Logic and the Knowledge of Nature" (1930), in William B. Ewald, ed., *From Kant to Hilbert: A Source Book in the Foundations of Mathematics*, vol. 2 (New York: Oxford, 2005), pp. 1157–65. I am indebted to Richard Larson for this reference.

Enlightenment and early modern science: directing inquiry to the quest for good explanations, along Popperian lines. As David Albert expounds his thesis, “with the introduction of that particular habit of concocting and evaluating new hypotheses, there was a sense in which we could do anything. The capacities of a community that has mastered that method to survive, and to learn, and to remake the world according to its inclinations, are (in the long run) literally, mathematically, infinite.”<sup>37</sup>

The quest for better explanations may well indeed be infinite, but infinite is of course not the same as limitless. English is infinite, but does not include Greek. The integers are an infinite set, but do not include the reals. I cannot discern an argument that addresses the range of mysterious concerns and conclusions.

The basic assumptions trace back at least to Peirce, who did however offer an argument, one related to Albert’s observation about mastering the method to survive. Peirce proposed that the abductive instinct that establishes admissible hypotheses and allows us to choose among them developed through natural selection: variants that yielded truths about the world provided a selectional advantage and were retained during descent with modification, while others fell away. That belief however is completely unsustainable. On the contrary, the theory of evolution places humans firmly within the natural world, taking humans to be biological organisms, much like others, hence with capacities that have scope and limits, including the cognitive domain. Those who accept modern biology should therefore be mysterians.<sup>38</sup>

Dropping the untenable recourse to natural selection, we are left with a serious and challenging scientific inquiry: to determine the innate components of our cognitive nature in language, perception, concept formation, theory construction, artistic creation, and all other domains of life. A further task is to determine the scope and limits of human understanding, while recognizing that some differently structured intelligence might regard human mysteries as simple problems and wonder that we cannot find the answers, much as we can observe the inability of rats to run prime number mazes because of the very design of their cognitive nature.

Far from bewailing the existence of mysteries-for-humans, we should be extremely grateful for it. With no limits to abduction, our

<sup>37</sup> David Deutsch, *The Beginning of Infinity: Explanations That Transform the World* (New York: Viking, 2011). David Albert, “Explaining it All: How We Became the Center of the Universe,” *New York Times*, Aug. 12, 2011.

<sup>38</sup> See Chomsky, *Language and Mind*.

cognitive capacities would also have no scope, just as if the genetic endowment imposed no constraints on growth and development of an organism it could become only a shapeless amoeboid creature, reflecting accidents of an unanalyzed environment. The conditions that prevent a human embryo from becoming an insect play a critical role in determining that it can become a human, and the same holds in the cognitive domain. Classical aesthetic theory recognized the same relation between scope and limits. Without rules, there can be no genuinely creative activity, even when creative work challenges and revises prevailing rules.

Honesty should lead us to concede, I think, that we understand little more about creativity than the Spanish physician-philosopher Juan Huarte did in the sixteenth century, when he distinguished the kind of intelligence humans shared with animals from the higher grade that humans alone possess and is illustrated in the creative use of language, and proceeding beyond that, from the still higher grade illustrated in true artistic and scientific creativity.<sup>39</sup> Nor do we even know whether these are questions that fall within the scope of human understanding, or whether they are among what Hume took to be Nature's ultimate secrets, consigned to "that obscurity in which they ever did and ever will remain."

<sup>39</sup> Juan Huarte de San Juan, *Examen de ingenios para las ciencias* (The Examination of Men's Wits), 1575–1594. See Chomsky, *Cartesian Linguistics*, 3<sup>rd</sup> ed. (New York: Cambridge, 2009); Javier Virués Ortega, "Juan Huarte de San Juan in Cartesian and Modern Psycholinguistics: An Encounter with Noam Chomsky," *Psicothema*, xvii, 3 (2005): 436–40, <http://www.psicothema.com/pdf/3125.pdf>.



## LECTURE III: WHAT IS THE COMMON GOOD?

In the past two lectures, I have been looking at the closely related topics of language and thought. Close inquiry reveals, I think, that they have many striking properties, for the most part hidden from direct observation and in important respects not accessible to consciousness. Among these are the basic structure and design of the underlying computational system of the “language of thought” provided by the internal language, the I-language, that each person has mastered, with rich but bounded scope determined by our essential nature. Furthermore, the atoms of computation, the atomic concepts of language and thought, appear to be unique to humans in fundamental respects, raising difficult problems about their origins, problems that cannot be productively investigated unless the properties of the phenotype are carefully taken into account. Inquiry reveals as well, I think, that the reach of human thought is itself bounded by the “limits on admissible hypotheses” that yield its richness and depth, leaving mysteries that will resist the kind of understanding to which creators of the early modern scientific revolution aspired, as was recognized in various ways by the great figures of seventeenth- and eighteenth- century thought; and also opening possibilities for research into intriguing questions that have been too little explored.

I have so far been keeping to certain cognitive aspects of human nature, and thinking of people as individuals. But of course humans are social beings, and the kind of creatures we become depends crucially on the social, cultural, and institutional circumstances of our lives. We are therefore led to inquire into the social arrangements that are conducive to the rights and welfare of people, to fulfilling their just aspirations—in brief, the common good.

I have also been keeping largely to what seem to me virtual truisms, though of an odd kind, since they are generally rejected. I would like to suggest some more of these today, with the same odd features. And with the broader scope of the concerns I will try to address, these alleged truisms relate to an interesting category of ethical principles: those that are not only universal, in that they are virtually always professed, but doubly universal, in that at the same time they are almost universally rejected in practice. These range from very general principles, such as the truism that we should apply to ourselves the same standards we do to others, if not harsher ones, to more specific doctrines, such as dedication to promoting justice and human rights, proclaimed almost universally, even by the worst monsters, though the actual record is grim, across the spectrum.

A good place to start is with Mill's classic *On Liberty*. Its epigraph formulates "The grand, leading principle, towards which every argument unfolded in these pages directly converges: the absolute and essential importance of human development in its richest diversity." The words are quoted from Wilhelm von Humboldt, one of the founders of classical liberalism among many other accomplishments. It follows that institutions that constrain such human development are illegitimate, unless they can somehow justify themselves.

Humboldt was expressing views that were familiar during the Enlightenment. Another illustration is Adam Smith's sharp critique of division of labor, and particularly his reasons.<sup>1</sup> In his words, "The understandings of the greater part of men are necessarily formed by their ordinary employments," and that being so, "the man whose life is spent in performing a few simple operations, of which the effects too are, perhaps, always the same, or very nearly the same, has no occasion to exert his understanding...and generally becomes as stupid and ignorant as it is possible for a human creature to be....But in every improved and civilized society this is the state into which the labouring poor, that is, the great body of the people, must necessarily fall, unless government takes some pains to prevent it." Concern for the common good should impel us to find ways to overcome the devilish impact of these disastrous policies, from the educational system to the conditions of work, providing opportunities to exert the understanding and cultivate human development in its richest diversity.

Smith's sharp critique of division of labor is not as well known as his fulsome praise for its great benefits. In fact, in the Chicago University scholarly bicentennial edition, it is not even listed in the index. But it is an instructive illustration of Enlightenment ideals that are founding principles of classical liberalism.

Smith perhaps felt that it should not be too difficult to institute such humane policies as these. He opens his *Moral Sentiments* by observing that "However selfish soever man may be supposed, there are evidently some principles in his nature, which interest him in the fortune of others, and render their happiness necessary to him, though he derives nothing from it, except the pleasure of seeing it." Despite the power of the "vile maxim of the masters of mankind"—"All for ourselves, and nothing for other people"—the more benign "original passions of human nature" might compensate for that pathology.<sup>2</sup>

<sup>1</sup> Adam Smith, *An Inquiry into the Nature and Causes of the Wealth of Nations*, ed. Edwin Cannan (1776; repr., Chicago: University Press, 1976), Bk. V, Ch. I, Pt. III, Art. II (ii, 302–03).

<sup>2</sup> Smith, *The Theory of Moral Sentiments* (1759; repr., New York: Penguin, 2009). "Vile maxim": *Wealth of Nations*, Bk. III, Ch. IV (i, 437).

Classical liberalism was wrecked on the shoals of capitalism, but its humanistic commitments and aspirations did not die. In the modern period, similar ideas are reiterated, for example, by an important political thinker who described what he called “a definite trend in the historic development of mankind,” which strives for “the free unhindered unfolding of all the individual and social forces in life.” The author was Rudolf Rocker, a leading twentieth-century anarchist thinker and activist.<sup>3</sup> He was outlining an anarchist tradition culminating in his view in anarcho-syndicalism—in European terms, a variety of “libertarian socialism.” These ideas, he held, do not depict “a fixed, self-enclosed social system” with a definite answer to all the multifarious questions and problems of human life, but rather a trend in human development that strives to attain Enlightenment ideals.

The terms of political discourse are hardly models of precision. Considering the way the terms are used, it is next to impossible to give meaningful answers to such questions as “What is socialism?” Or capitalism, or free markets, or others in common usage. That is even more true of the term “anarchism.” It has been subject to widely varied use, and outright abuse both by bitter enemies and those who hold its banner high, so much so that it resists any straightforward characterization. But I think Rocker’s formulation captures leading ideas that animate at least some major currents of the rich and complex and often contradictory traditions of anarchist thought and action.

So understood, anarchism is the inheritor of the classical liberal ideas that emerged from the Enlightenment. It is part of a broader range of libertarian socialist thought and action that ranges from the left anti-Bolshevik Marxism of Anton Pannekoek, Karl Korsch, Paul Mattick, and others, to the anarcho-syndicalism that crucially includes the practical achievements of revolutionary Spain in 1936, reaching further to worker-owned enterprises spreading today in the U.S. rust belt, in northern Mexico, in Egypt, and many other countries, most extensively in the Basque country in Spain, also encompassing the many cooperative movements around the world and a good part of feminist and civil and human rights initiatives.

This broad tendency in human development seeks to identify structures of hierarchy, authority, and domination that constrain human development, and then to subject them to a very reasonable challenge: Justify yourself. Demonstrate that you are legitimate,

<sup>3</sup>Rudolf Rocker, *Anarcho-Syndicalism: Theory and Practice* (London: Secker and Warburg, 1938).

either in some special circumstances at a particular stage of society, or in principle. And if they cannot meet that challenge, they should be dismantled. And not just dismantled, but also reconstructed, and for anarchists, “refashioned from below,” as Nathan Schneider observes in a recent commentary on anarchism.<sup>4</sup>

In part this sounds like truism: Why should anyone defend illegitimate structures and institutions? The perception is correct; the principle should be regarded as truism. But truisms at least have the merit of being true, which distinguishes them from a good deal of political discourse. And I think these truisms provide some useful stepping stones to finding the common good.

These particular truisms belong to the interesting category of moral principles that I mentioned earlier: those that are doubly universal. Among these is the truism that we should challenge coercive institutions and reject those that cannot demonstrate their legitimacy, dismantling them and reconstructing them from below. It is hard to see how it can plausibly be rejected in principle, though as usual to act on the principle is not as easy as to enunciate it grandly.

Proceeding with the same thoughts, again quoting Rocker, anarchism “seeks to free labor from economic exploitation” and to free society from “ecclesiastical or political guardianship,” thereby opening the way to “an alliance of free groups of men and women based on cooperative labor and a planned administration of things in the interest of the community.” As an anarchist *activist*, Rocker goes on to call on popular organizations to create “not only the ideas but also the facts of the future itself” within the present society, following Bakunin’s injunction.

A traditional anarchist slogan is “Ni Dieu, Ni Maître”—No God, No Master—a phrase that Daniel Guerin took as the title of his valuable collection of anarchist classics. I think it is fair to understand the slogan “No God” in Rocker’s terms: opposition to ecclesiastical *guardianship*. Individual beliefs are a different matter. That leaves open the door to the lively and impressive tradition of Christian anarchism, for example Dorothy Day’s Catholic Workers Movement. And to many achievements of the liberation theology that was initiated half a century ago in Vatican II, igniting a vicious U.S. war against the Church to destroy the heresy of a return to the radical pacifist message of the Gospels. The war was a success, according to the School of the Americas (since renamed), which trains Latin

<sup>4</sup>Nathan Schneider, “Introduction: Anarcho-Curious? or, Anarchist America,” in Noam Chomsky, *On Anarchism* (New York: New Press, 2013), pp. vii–xvi, at p. xi.

American killers and torturers, and boasts triumphantly that the U.S. Army helped defeat liberation theology.<sup>5</sup> So it did, leaving a trail of religious martyrs, part of a hideous plague of repression that consumed the hemisphere.

Most of this is out of conventional history, because of the fallacy of wrong agency. We would know the details very well if the crimes could be attributed to an official enemy, another illustration of those interesting doubly universal ethical principles.

Genuine scholarship of course is well aware that from 1960 until “the Soviet collapse in 1990, the numbers of political prisoners, torture victims, and executions of nonviolent political dissenters in Latin America vastly exceeded those in the Soviet Union and its East European satellites. In other words, from 1960 to 1990, the Soviet bloc as a whole was less repressive, measured in terms of human victims, than many individual Latin American countries....an unprecedented humanitarian catastrophe” in Central America alone, particularly during the Reagan years.<sup>6</sup>

Among those executed were many religious martyrs, and there were mass slaughters as well, consistently supported or initiated by Washington. The reasons for the plague of repression had little to do with the Cold War, as we discover when we look beyond the standard rhetorical framework; rather, it was a reaction to the fact that subjects were daring to raise their heads, inspired in part by the return of the Church to the “preferential option of the poor” of the Gospels.

Dostoyevsky’s parable of the Grand Inquisitor comes at once to mind.

The phrase “No Master” is different: it refers not to individual belief, but to a social relation, a relation of subordination and dominance that anarchism seeks to dismantle and rebuild from below, unless it can somehow meet the harsh burden of establishing its legitimacy.

By now we have departed from truism to ample controversy. In particular, at this point the American brand of libertarianism departs sharply from the libertarian tradition, accepting and indeed advocating the subordination of working people to the masters of the

<sup>5</sup> United States Army, School of the Americas, May 1999, cited in Adam Isacson and Joy Olson, *Just the Facts: A Civilian’s Guide to U.S. Defense and Security Assistance to Latin America and the Caribbean* (Washington, D.C.: Latin America Working Group, 1999).

<sup>6</sup> John H. Coatsworth, “The Cold War in Central America, 1975–1991,” in Melvyn P. Leffler and Odd Arne Westad, eds., *The Cambridge History of the Cold War, Volume III: Endings* (New York: Cambridge, 2010), pp. 201–21, at p. 221.

economy, and the subjection of everyone to the restrictive discipline and destructive features of markets. These are topics worth pursuing but I will put them aside here, while at the same time noting that there may be ways to bring together the energies of libertarian left and right—as is sometimes done, for example in the valuable theoretical and practical work of economist David Ellerman.<sup>7</sup>

Anarchism is, famously, opposed to the state, while advocating “planned administration of things in the interest of the community,” in Rocker’s words; and beyond that, wide-ranging federations of self-governing communities and workplaces. In the real world of today, anarchists dedicated to these goals often support state power to protect people, society, and the earth itself from the ravages of concentrated private capital. Take, say, a venerable anarchist journal like *Freedom*, established as a journal of anarchist socialism by followers of Kropotkin in 1886. Opening its pages we find that many are devoted to defending these rights, often by invoking state power, like regulation of safety and health and environmental protection.

There is no contradiction here. People live and suffer and endure in the real world of existing society, and any decent person should favor employing what means are available to safeguard and benefit them, even if a long-term goal is to displace these devices and construct preferable alternatives. In discussing such concerns, I have sometimes borrowed an image used by the Brazilian rural workers movement.<sup>8</sup> They speak of widening the floors of the cage, the cage of existing coercive institutions that can be widened by popular struggle, as has happened effectively over many years. And we can extend the image to think of the cage of coercive state institutions as a protection from savage beasts roaming outside, the predatory state-supported capitalist institutions that are dedicated in principle to the vile maxim of the masters, to private gain, power, and domination, with the interest of the community and its members at most a footnote, perhaps revered in rhetoric but dismissed in practice as a matter of principle and even law.

It is also worth remembering that the states that anarchists condemned were actually existing states, not visions of unrealized democratic dreams, such as government of, by, and for the people. They bitterly opposed the rule of what Bakunin called “the red bureaucracy,” which he predicted, all too accurately, would be among the

<sup>7</sup> David Ellerman, *Property and Contract in Economics: The Case for Economic Democracy* (Cambridge: Blackwell, 1992).

<sup>8</sup> Biorn Maybury-Lewis, *The Politics of the Possible: The Brazilian Rural Workers’ Trade Union Movement, 1964–1985* (Philadelphia: Temple, 1994).

most savage of human creations. And they also opposed parliamentary systems that are instruments of class rule: the contemporary United States, for example. Some of the most respected work in academic political science compares attitudes and policy, the latter evident, the former accessible in careful polling that yields fairly consistent results. The most detailed current work reveals that the majority of the population is effectively disenfranchised.<sup>9</sup> About seventy percent, at the lower end of the wealth/income scale, have no influence on policy. As we move up the scale influence slowly increases, and at the very top we reach those who pretty much determine policy, by means that are not obscure. The resulting system is not democracy but plutocracy.

Recognition of the fact is so deeply internalized that it becomes virtually invisible, sometimes in remarkable ways. Consider health care, which for years has ranked high among concerns of Americans. And for good reasons. The health care system is a scandal. It has about twice the per capita costs of OECD countries along with relatively poor outcomes, and is a tremendous drain on the economy. It is also the only system that is largely privatized and unregulated.

The facts are noted in instructive ways. A review of the health care fiasco in the *New York Times* observes that the U.S. “is fundamentally handicapped in its quest for cheaper health care: All other developed countries rely on a large degree of direct government intervention, negotiation or rate-setting to achieve lower-priced medical treatment for all citizens. That is not politically acceptable here.” An expert is quoted as tracing the complexity of the Affordable Care Act to “the political need in the U.S. to rely on the private market to provide health care access.” One consequence is “Kafkaesque” bills because “Even Medicare is not allowed to negotiate drug prices for its tens of millions of beneficiaries.”

The problem of “political impossibility” has been noted before. Thus in the 2004 presidential campaign, the *New York Times* reported, candidate John Kerry “took pains...to say that his plan for expanding access to health insurance would not create a new government program,” because “there is so little political support for government intervention in the health care market in the United States.”<sup>10</sup>

<sup>9</sup> Martin Gilens, *Affluence and Influence: Economic Inequality and Political Power in America* (Princeton: University Press, 2012); Larry M. Bartels, *Unequal Democracy: The Political Economy of the New Gilded Age* (Princeton: University Press, 2010).

<sup>10</sup> Elizabeth Rosenthal, “Health Care’s Road to Ruin,” *New York Times*, Dec. 21, 2013. Gardiner Harris, “In American Health Care, Drug Shortages Are Chronic,” *New York Times*, Oct. 31, 2004.



Why is government intervention, even negotiation to set drug prices, “not politically acceptable here”? Why does it have “so little political support”? As polls have made clear for years, that is not because of public opinion. Quite the contrary. Thus 85% of the public favor “allowing the federal government to negotiate with drug companies to try to get lower drug prices for seniors.” When Obama abandoned a public option it had about 2/3 popular support. In past years there has been very high public support for a national health plan of the kind familiar in developed countries, sometimes poorer ones as well. Support has been so high that in the late Reagan years, more than 70% of the public “thought health care should be a constitutional guarantee,” while 40% “thought it already was.”<sup>11</sup>

The tacit understanding is that “political support” means support by the pharmaceutical corporations and financial institutions. They determine what is “politically acceptable.” In short, plutocracy, rising to the level of virtual necessary truth.

Or perhaps, a little more kindly, it is what British legal scholar Conor Gearty calls “neo-democracy,” a partner of neo-liberalism, a system in which liberty is enjoyed by the few and security in its fullest sense is available only to the elite, but within a system of more general formal rights.<sup>12</sup> It is a society that is free in the Hobbesian sense that a person “is not hindered to do what he has a will to do,” and “If I choose not to do something merely because I dread the consequences, this does not mean that I am not free to do it; it merely means that I do not want to, that is, I am still free,” so Hobbes explains. If the choice is starvation or servitude, and nothing hinders the choice, then we are free; it is merely that we do not choose starvation, dreading the consequences.

In contrast, a truly democratic system would seek to achieve the Humboldtian ideal. It might well have the character of “an alliance of free groups of men and women based on cooperative labor and a planned administration of things in the interest of the community,” quoting Rucker again. In fact, that is not so remote from at least one version of the democratic ideal. One version. I will return to others.

Take for example John Dewey, whose major social and political concerns were democracy and education. No one took Dewey to be

<sup>11</sup> Kaiser Health Tracking Poll, April 2009. Polls: see Chomsky, *Failed States: The Abuse of Power and the Assault on Democracy* (New York: Metropolitan Books/Henry Holt, 2006), chapter 6.

<sup>12</sup> Conor Gearty, *Liberty and Security* (Malden, MA: Polity, 2013).



an anarchist. But consider his ideas.<sup>13</sup> In his conception of democracy, illegitimate structures of coercion must be dismantled. That includes, crucially, domination by “business for private profit through private control of banking, land, industry, reinforced by command of the press, press agents and other means of publicity and propaganda.” He recognized that “Power today resides in control of the means of production, exchange, publicity, transportation and communication. Whoever owns them rules the life of the country,” even if democratic forms remain. Until those institutions are in the hands of the public, politics will remain “the shadow cast on society by big business,” much as we see today.

But Dewey went well beyond calling for some form of public control. In a free and democratic society, he wrote, workers should be “the masters of their own industrial fate,” not tools rented by employers, nor directed by state authorities. That position traces back to leading ideas of classical liberalism articulated by von Humboldt and Smith, among others, and extended in the anarchist tradition.

Turning to education, Dewey held that it is “illiberal and immoral” to train children to work “not freely and intelligently, but for the sake of the work earned”—to achieve test scores for example—in which case their activity is “not free because not freely participated in.” To use imagery dating from the Enlightenment, education should not be a matter of pouring water into a vessel—and a very leaky vessel as we have all experienced—but rather, to borrow from von Humboldt again, it should be conceived as laying out a string along which learners proceed in their own ways, exercising and improving their creative capacities and imaginations, and experiencing the joy of discovery.

Under these conceptions, in Dewey’s words, industry must be changed “from a feudalistic to a democratic social order,” and educational practice should be designed to encourage creativity, exploration, independence, cooperative work—much the opposite of what is happening today.

These ideas lead very naturally to a vision of society based on workers’ control of productive institutions, as envisioned by nineteenth-century thinkers, notably Marx but also—less familiarly—John Stuart Mill, who held that “The form of association, however, which if mankind continue to improve, must be expected to pre-dominate is...the association of the labourers themselves on terms

<sup>13</sup> Quotations from Robert B. Westbrook, *John Dewey and American Democracy* (Ithaca: Cornell, 1991).

of equality, collectively owning the capital with which they carry on their operations, and working under managers electable and removable by themselves.”<sup>14</sup> These should further be linked to community control within a framework of free association and federal organization, in the general style of a range of thought that includes, along with many anarchists, G. D. H. Cole’s guild socialism and left anti-Bolshevik Marxism, and such current developments as the participatory economics and politics of Michael Albert, Robin Hahnel, Steven Shalom, and others, along with important work in theory and practice by the late Seymour Melman and his associates, and Gar Alperovitz’s valuable recent contributions on the growth of worker-owned enterprise and cooperatives in the U.S. rust belt and elsewhere.

Dewey was a figure of the American mainstream. And in fact such ideas are deeply rooted in the American tradition. Pursuing them we enter into the terrain of inspiring and often bitter struggle since the dawn of the industrial revolution in the mid-nineteenth century. The first serious scholarly study of the industrial worker in those years was by Norman Ware ninety years ago, still very much worth reading.<sup>15</sup> He reviews the hideous working conditions imposed on formerly independent craftsmen and farmers, as well as the “factory girls,” young women from the farms working in the textile mills around Boston. But he focuses attention primarily on “the degradation suffered by the industrial worker,” the loss “of status and independence,” which could not be canceled even when there was material improvement. And on the radical capitalist “social revolution in which sovereignty in economic affairs passed from the community as a whole into the keeping of a special class” of masters, often remote from production, a group “alien to the producers.” Ware shows that “for every protest against machine industry, there can be found a hundred against the new power of capitalist production and its discipline.”

Workers were striking not just for bread, but for roses, for dignity and independence, for their rights as free men and women. In their journals, they condemned “the blasting influence of monarchical principles on democratic soil,” which will not be overcome until “they who work in the mills [will] own them,” and sovereignty will return to free producers. Then they will no longer be “menials or

<sup>14</sup>For more on Mill’s and related views, see Ellerman, “Workplace Democracy and Human Development: The Example of the Postsocialist Transition Debate,” *Journal of Speculative Philosophy*, xxiv, 4 (2010): 333–53.

<sup>15</sup>Norman Ware, *The Industrial Worker, 1840–1860: The Reaction of the American Industrial Society to the Advance of the Industrial Revolution* (1924; repr., Chicago: Quadrangle Books, 1964).

the humble subjects of a foreign despot, [the absentee owners], slaves in the strictest sense of the word [who] toil...for their masters.” Rather, they will regain their status as “free American citizens.”

The capitalist revolution instituted a crucial change from price to wage. When the producer sold his product for a price, Ware writes, “he retained his person. But when he came to sell his labor, he sold himself,” and lost his dignity as a person as he became a slave—a “wage slave,” the term commonly used. 170 years ago a group of skilled workers in New York repeated the common view that a daily wage is a form of slavery and warned, perceptively, that a day might come when wage slaves “will so far forget what is due to manhood as to glory in a system forced on them by their necessity and in opposition to their feelings of independence and self-respect”—a day they hoped would be “far distant.”

Labor activists warned of the new “spirit of the age: gain wealth, forgetting all but self.” In sharp reaction to this demeaning spirit, the rising movements of working people and radical farmers, the most significant democratic popular movements in American history, were dedicated to solidarity and mutual aid<sup>16</sup>—a battle that is far from over, despite setbacks, often violent repression.

Apologists for the radical revolution of wage slavery argue that the worker should indeed glory in a system of free contracts, voluntarily undertaken. To them, Shelley had a response two centuries ago, in his great poem *Masque of Anarchy*, written after the Peterloo Massacre, when British cavalry brutally attacked a peaceful gathering of tens of thousands calling for parliamentary reform.

We know what slavery is, Shelley wrote:

“Tis to work and have such pay  
As just keeps life from day to day  
In your limbs, as in a cell  
For the tyrants’ use to dwell,  
...

“Tis to be a slave in soul  
And to hold no strong control  
Over your own wills, but be  
All that others make of ye.’

The artisans and factory girls who struggled for dignity and independence and freedom might well have known Shelley’s words. Observers

<sup>16</sup>See among others Lawrence Goodwyn, *The Populist Moment: A Short History of the Agrarian Revolt in America* (New York: Oxford, 1978).

noted that they had good libraries and were acquainted with standard works of English literature. Before mechanization and the wage system undermined independence and culture, Ware writes, a workshop would be a *lyceum*. Journeymen would hire boys to read to them while they worked. Their workplaces were “social businesses,” with many opportunities for reading, discussion, and mutual improvement. Along with the factory girls, they bitterly complained of the attack on their culture. The same was true in England, a matter discussed in Jonathan Rose’s monumental study of the reading habits of the working class of the day.<sup>17</sup> He contrasts “the passionate pursuit of knowledge by proletarian autodidacts” with the “pervasive philistinism of the British aristocracy.” I am old enough to remember residues among working people in New York, who were immersed in the high culture of the day during the depths of the Great Depression.

I mentioned that Dewey and American workers held one version of democracy, with strong libertarian elements. But the dominant version has been a very different one. Its most instructive expression is at the progressive end of the mainstream intellectual spectrum, among good Wilson-FDR-Kennedy liberal intellectuals. Here are a few representative quotes.

The public are “ignorant and meddling outsiders [who] must be put in their place.” Decisions must be in hands of the “intelligent minority [of] responsible men,” who must be protected “from the trampling and roar of the bewildered herd.” The herd does have a *function*. Their task is to lend their weight every few years to a choice among the responsible men, but apart from that their function is to be “spectators, not participants in action.” All for their own good. We should not succumb to “democratic dogmatism about men being the best judges of their own interests.” They are not. We are: we, the responsible men. Therefore attitudes and opinions must be shaped and controlled. We must “regiment the minds of men the way an army regiments their bodies.” In particular, we must introduce better discipline into the institutions responsible for “the indoctrination of the young.” If that is achieved, then it will be possible to avoid such dangerous periods as the 1960s, “the time of troubles,” in conventional elite discourse. We will be able to achieve more “moderation in democracy” and return to better days as when “Truman had been able to govern the country with the cooperation of a relatively small number of Wall Street lawyers and bankers.”

<sup>17</sup>Jonathan Rose, *The Intellectual Life of the British Working Classes* (New Haven: Yale, 2002).

These are quotes from icons of the liberal establishment: Walter Lippmann, Edward Bernays, Harold Lasswell, Samuel Huntington and the Trilateral Commission, which largely staffed the Carter administration.<sup>18</sup>

This shriveled conception of democracy has solid roots. The founding fathers were much concerned about the hazards of democracy. In the debates of the Constitutional Convention, the main framer, James Madison, warned of these hazards. Naturally taking England as his model, he observed that “In England, at this day, if elections were open to all classes of people, the property of landed proprietors would be insecure. An agrarian law would soon take place,” undermining the right to property. To ward off such injustice, “our government ought to secure the permanent interests of the country against innovation,” arranging voting patterns and checks and balances so as “to protect the minority of the opulent against the majority,” a prime task of decent government.<sup>19</sup>

The threat of democracy took on still larger proportions because of the likely increase in “the proportion of those who will labor under all the hardships of life, and secretly sigh for a more equal distribution of its blessings,” as Madison anticipated. Perhaps influenced by Shays’ Rebellion, he warned that “the equal laws of suffrage” might in time shift power into their hands. “No agrarian attempts have yet been made in this Country,” he continued, “but symptoms of a levelling spirit...have sufficiently appeared in a [*si*] certain quarters to give warning of the future danger.” For such reasons, Madison held that the Senate, the main seat of power in the constitutional system, “ought to come from and represent the wealth of the nation,” the “more capable sett of men,” and that other constraints on democratic rule should be instituted.

Madison’s conundrum has continued to trouble statesmen. In 1958, for example, Secretary of State John Foster Dulles pondered the difficulties the United States was facing in Latin America. He expressed his anxiety over the ability of domestic Communists “to get control

<sup>18</sup> Walter Lippmann, in Clinton Rossiter and James Lare, eds., *The Essential Lippmann: A Political Philosophy for Liberal Democracy* (Cambridge: Harvard, 1982), p. 91f.; Edward Bernays, *Propaganda* (New York: H. Liveright, 1928); Harold Lasswell, “Propaganda,” in Edwin Seligman, ed., *Encyclopedia of the Social Sciences* (New York: Macmillan, 1937); M. J. Crozier, S. P. Huntington, and J. Watanuki, *The Crisis of Democracy: Report on the Governability of Democracies to the Trilateral Commission* (New York: University Press, 1975).

<sup>19</sup> Jonathan Elliot, ed., *The Debates in the Several State Conventions on the Adoption of the Federal Constitution, 1787*. Further Madison references and sources, see Chomsky, “Consent without Consent: Reflections on the Theory and Practice of Democracy,” *Cleveland State Law Review*, XLIV, 4 (1996): 415–37.

of mass movements,” which we “have no capacity to duplicate.” Their advantage is that “the poor people are the ones they appeal to and they have always wanted to plunder the rich.”<sup>20</sup> We somehow cannot rally them to the understanding that government must “protect the minority of the opulent from the majority.” That inability to get our message across regularly compels us to resort to violence, contrary to our noblest principles and much to our sincere regret.

To succeed in “framing a system which we wish to last for ages,” Madison held, it would be necessary to ensure that rulers will be drawn from the opulent minority. It would then be possible “to secure the rights of property agst. the danger from an equality of universality of suffrage, vesting compleate power over property in hands without a share in it.” The phrase “rights of property” was regularly used to mean rights *to* property; that is, the rights of property owners. Many years later, in 1829, Madison reflected that those “without property, or the hope of acquiring it, cannot be expected to sympathize sufficiently with its rights, to be safe depositories of power over them.” The solution was to ensure that society be fragmented, with limited public participation in the political arena, which is to be effectively in the hands of the wealthy and their agents. Scholarship generally agrees that “The Constitution was intrinsically an aristocratic document designed to check the democratic tendencies of the period,” delivering power to a “better sort” of people and excluding “those who were not rich, well born, or prominent from exercising political power.”<sup>21</sup>

In Madison’s defense we should remember that he “was—to depths that we today are barely able to imagine—an eighteenth-century gentleman of honor.”<sup>22</sup> It was the “enlightened Statesman” and “benevolent philosopher” who, he anticipated, would hold the reins of power. Ideally “pure and noble,” these “men of intelligence, patriotism, property and independent circumstances” would be a “chosen body of citizens, whose wisdom may best discern the true interests of their country, and whose patriotism and love of justice will be least likely to sacrifice it to temporary or partial considerations.” They would thus “refine” and “enlarge” the “public views,” guarding the public interest against the “mischiefs” of democratic majorities.

<sup>20</sup> John Foster Dulles, telephone call to Allen Dulles, June 19, 1958, “Minutes of Telephone Conversations of John Foster Dulles and Christian Herter,” Eisenhower Presidential Library, Museum, and Boyhood Home, Abilene, KS.

<sup>21</sup> Lance Banning, *The Sacred Fire of Liberty: James Madison and the Founding of the Federal Republic* (Ithaca: Cornell, 1995), p. 245, citing Gordon S. Wood, *The Creation of the American Republic, 1776–1787* (Chapel Hill: North Carolina UP, 1969).

<sup>22</sup> Banning, *Sacred Fire*, p. 333.

Not exactly the way it turned out.

The problem with democracy that Madison perceived had been recognized long before by Aristotle, in the first major work of political science, his *Politics*. Reviewing a variety of political systems, he concluded that democracy was the best—or perhaps the least bad—but he recognized a flaw: the great mass of the poor could use their voting power to take the property of the rich, which would be unfair. Madison and Aristotle faced the same problem, but selected opposite solutions: Aristotle advised reducing inequality, by what we would regard as welfare state measures. Madison felt that the answer was to reduce democracy.

The conflict between these conceptions of democracy goes back to the earliest modern democratic revolution, in seventeenth-century England, when a war raged between supporters of the King and of Parliament. The gentry, the “men of best quality” as they called themselves, were appalled by the rabble who did not want to be ruled by King or Parliament, but rather “by countrymen like ourselves, that know our wants.” Their pamphlets explained that “It will never be a good world while knights and gentlemen make us laws, that are chosen for fear and do but oppress us, and do not know the people’s sores.”<sup>23</sup>

The essential nature of the conflict, which has far from ended, was captured simply by Jefferson in his last years, when he had serious concerns about the quality and fate of the democratic experiment. He distinguished between “aristocrats and democrats.” The aristocrats are “those who fear and distrust the people, and wish to draw all powers from them into the hands of the higher classes.” The democrats, in contrast, “identify...with the people, have confidence in them, cherish and consider them as the honest & safe, altho’ not the most wise depository of the public interests.”<sup>24</sup>

The modern progressive intellectuals who seek to “put the public in its place” and are free of “democratic dogmatisms” about the capacity of the “ignorant and meddling outsiders” to enter the political arena are Jefferson’s “aristocrats.” Their basic views are widely held, though there are disputes about who should play the guiding role: “the technocratic and policy-oriented intellectuals” of the progressive “knowledge society,” or bankers and corporate executives. Or in other versions, the Central Committee, or the Guardian Council of

<sup>23</sup> Christopher Hill, *The World Turned Upside Down: Radical Ideas during the English Revolution* (New York: Penguin, 1975), p. 60.

<sup>24</sup> Thomas Jefferson, cited by Charles Sellers, *The Market Revolution: Jacksonian America, 1815–1846* (New York: Oxford, 1991), pp. 269–70.

clerics. All are instances of the “political guardianship” that the genuine libertarian tradition seeks to dismantle and reconstruct from below, while also changing industry “from a feudalistic to a democratic social order” based on workers’ control, respecting the dignity of the producer as a genuine person, not a tool in the hands of others, in accordance with a libertarian tradition that has deep roots—and like Marx’s Old Mole, is always burrowing close to the surface, always ready to peek through, sometimes in surprising and unexpected ways, seeking to bring about what seems to me at least to be a reasonable approximation to the common good.

NOAM CHOMSKY

Massachusetts Institute of Technology