

Journal of Philosophy, Inc.

The Emperor's New Intutions

Author(s): Jaakko Hintikka

Source: *The Journal of Philosophy*, Vol. 96, No. 3 (Mar., 1999), pp. 127-147

Published by: Journal of Philosophy, Inc.

Stable URL: <http://www.jstor.org/stable/2564660>

Accessed: 24/08/2009 12:46

Your use of the JSTOR archive indicates your acceptance of JSTOR's Terms and Conditions of Use, available at <http://www.jstor.org/page/info/about/policies/terms.jsp>. JSTOR's Terms and Conditions of Use provides, in part, that unless you have obtained prior permission, you may not download an entire issue of a journal or multiple copies of articles, and you may use content in the JSTOR archive only for your personal, non-commercial use.

Please contact the publisher regarding any further use of this work. Publisher contact information may be obtained at <http://www.jstor.org/action/showPublisher?publisherCode=jphil>.

Each copy of any part of a JSTOR transmission must contain the same copyright notice that appears on the screen or printed page of such transmission.

JSTOR is a not-for-profit organization founded in 1995 to build trusted digital archives for scholarship. We work with the scholarly community to preserve their work and the materials they rely upon, and to build a common research platform that promotes the discovery and use of these resources. For more information about JSTOR, please contact support@jstor.org.



Journal of Philosophy, Inc. is collaborating with JSTOR to digitize, preserve and extend access to *The Journal of Philosophy*.

<http://www.jstor.org>

THE EMPEROR'S NEW INTUITIONS

One of the favorite argumentative methods of present-day analytic philosophers is to appeal to intuitions. I argue here that such appeals are usually without any respectable theoretical foundation. Moreover, the best way of justifying the use of intuitions in philosophical argumentation entails radical changes in our ways of thinking about intuitions.

Where does the current popularity of appeals to intuition come from? The timing of the great revival of intuitionist methodology gives us a clue to its causes. Before the early 1960s, you could scarcely find any overt references, let alone appeals, to intuitions in the pages of philosophical journals and books in the analytical tradition. After the mid-1960s, you will find intuitions playing a major role in the philosophical argumentation of virtually every article or book. Why the contrast?

The answer is simple. Intuitions came into fashion in philosophy as a consequence of the popularity of Noam Chomsky's linguistics and its methodology. According to a widespread conception, generative linguists like Chomsky were accounting for competent speakers' intuitions of grammaticality by devising a grammar, that is, a set of generative rules that produces all and only such strings that are intuitively accepted by these speakers. This kind of methodology was made attractive by the tremendous perceived success of Chomsky's theories in the 1960s and 1970s. Not only was transformational grammar the *demier cri* in linguistics, it was seen as a major revolution in the study of language. What is more, it was taken to provide a methodological paradigm of what can be done in those fields where the subject matter involves the tools of human thought and cognition. The use of intuitions in philosophical argumentation thus originated from philosophers' attempt to get on the bandwagon of transformational grammar.

This bandwagon effect was amplified by the example of some well-known philosophers. An influential case in point was Saul Kripke.¹ As early as 1963-1964, he was led by his "natural intuition" to the view "that the names of ordinary language are rigid designators" (*ibid.*, p. 5). Furthermore, he acknowledges himself that his argumentation for this view rests on intuition: "In these lectures, I will argue, intuitively, that proper names are rigid designators..." (*ibid.*, p.

¹ *Naming and Necessity* (Cambridge: Harvard, 1980), p. 5.

49). Kripke also argues as if his main problem were the correct interpretation of these intuitions; for instance, whether they can be explicated so as to pertain to the relative scopes of different logically active notions (*ibid.*, p. 10), or whether Michael Dummett or Kripke himself has the right view on “linguistic intuitions.” Quite obviously, Kripke helped to give the intuitionist bandwagon a mighty push. Unfortunately, his reliance on intuitions in defending his idea of rigid reference is apt to give intuitions a bad name. I shall return to his use of intuitions later.

In reality, the linguistic parentage of contemporary philosophers’ intuitionist methodology nevertheless constitutes a strong reason to be wary of it. Ironically, the attribution of such a mode of argumentation to Chomsky is at best a half-truth. Speakers’ intuitions first entered into his thinking as an antidote to oversimplified views concerning the ways in which a grammar could, in principle, be constructed for a previously unstudied language from a corpus of observed utterances. One of the goals of some of his linguistic predecessors had been what Chomsky called *decision procedure*, that is, a systematic method of choosing among different grammars, each of which purports to account for a given corpus of utterances. He argues against the feasibility of such a method and, among other things, adduces intuitions as alternative grounds of comparisons among different grammars. According to John Lyons:²

In *Syntactic Structures*³ he [Chomsky] says that the sentences generated by the grammar should be “acceptable to the native speaker,” and he considers that it is a point in favor of the kind of grammar he develops that it also accounts for the “intuitions” of native speakers with respect to the way certain sentences are recognized as equivalent or ambiguous (*op. cit.*, pp. 32-33).

Indeed, the first explicit proposal of an intuition-based grammar is not found in Chomsky but in the famous (or notorious) review of *Syntactic Structures* by Robert B. Lees,⁴ who elevates one’s “feeling for language”—or at least feeling for the syntax of language—to the status of “the empirical basis of grammatical analysis”:

...as we see from the practice of linguists, though unfortunately not from their own descriptions of linguistic methodology, the criterion actually used in all crucial cases is either the informant’s response in carefully designed...elicitation techniques, or else the linguist’s own

² *Noam Chomsky* (New York: Penguin, 1977, revised edition).

³ Mouton: The Hague, 1957; see pp. 49-50.

⁴ *Language*, xxxiii (1957): 375-407.

Sprachgefühl is called upon to provide correct analysis, after which any ad-hoc rule may be devised to designate the results (*ibid.*, p. 309).

Lees spells this out further in a footnote:

It is precisely this Sprachgefühl, this *intuitive* notion about linguistic structure, which together with the sentences of a language, *forms the empirical basis of grammatical analysis*; and it is precisely the purpose of linguistic science to render explicit and rigorous what ever is vague about these linguistic feelings (*ibid.*, p. 309, fn. 40; emphases added).

Any linguist or any philosopher who is familiar with the subsequent argumentative practice in her field can only have here a feeling of *déjà vu* all over again. What is going on is obviously that Lees was trying to align Chomsky's methodology with that of empirical sciences (such as Lees's own first *métier*, chemistry), with intuitions playing roughly the same role as empirical observations.

Chomsky's willingness to countenance Lees's construal of his methodology amounted to a significant change of mind on his part; for Chomsky's original strategy did not involve appeals to intuition. In *The Logical Structure of Linguistic Theory*,⁵ he writes that a linguistic

...theory is significant just to the extent that we can demonstrate that the data do have the prescribed form, that is, to the extent that we have unambiguous, cross-culturally valid tests for applying the undefined notions to data. Thus if one of the basic undefined terms of linguistic theory is "intuition," and if we define phonemes in this theory as elements which our intuition perceives in a language, than the notion of phoneme is as clear and precise as is "intuition." ...It should be clear, then, why the linguist interested in constructing a general theory of linguistic structure, in justifying given grammars or (to put the matter in its more usual form) in constructing procedures of analysis should try to avoid such notions as "intuition" (*ibid.*, pp. 86-87).

Admittedly, Chomsky himself later moved closer to an intuitionist methodology. In his later work, according to Lyons, "Chomsky includes intuitions of the speakers of a language as part of the data to be accounted for by the grammar" (*op. cit.*, p. 33). Chomsky also quickly qualified the role of intuitions in the methodology of linguistics by introducing the distinction between *competence* and *performance*. But this distinction is highly questionable and, predictably, it did nothing to cool philosophers' ardor in their appeals to intuitions. For by the token of Chomsky's distinction, to hesitate in one's appeals to one's intuitions would have been ipso facto to

⁵ New York: Plenum, 1975.

doubt one's own linguistic or, more generally, conceptual competence.

What is there to be said about philosophers' toeing the Chomskian party line? The most amazing fact about the current fashion of appealing to intuitions is the same as the proverbial dog's walking on two feet: not that it is done particularly well but that it is done at all. For what is supposed to be the justification of such appeals to intuition? One searches the literature in vain for a serious attempt to provide such a justification.

This blind faith is below the intellectual dignity of philosophers for whom unexamined intuitions should not be worth intuiting. It is also in stark contrast to the procedure of earlier philosophers. Every major philosopher or philosophical tradition whose argumentation relied on intuitions (or their equivalent) provided an explanation why, according to their lights, intuitions could provide the right kind of information or insight.

For Aristotle, for instance, to think of *X* is to realize the form of *X* in one's soul. This instantiation of the form is quite as authentic as an instantiation outside the soul. The instantiated form in the soul has the same powers and the same necessary links to other forms as an instantiation outside the soul. Hence I can find all about this form "intuitively" simply by realizing it in my mind. As one might put it, thought experiments for Aristotle were literally real experiments. Because of this, the immediate awareness of what there is in my soul, called by Aristotle *noûs*, could give me the first premises of a science.

It is hard to think of a better justification for appeals to intuition. Contemporary philosophers do not believe in the reality of forms, however, no matter whether they are supposed to be instantiated in the mind or in the world, nor have any earlier philosophers done so since the days of the medieval nominalists. Our contemporaries do not have the courage of their intuitions and claim infallibility for them, as Aristotle did. Their use of intuitions as *prima facie* evidence has nothing to do with Aristotle's *noûs*. If they want to find an Aristotelian precedent to their methodology, the obvious candidate is not Aristotle's reliance on *noûs*, but his use of reasonable common opinions, *endoxa*, as starting points of his dialectical arguments. The resemblance between them and twentieth-century philosophers' "intuitions" is uncanny, when it comes to the role they are supposed to play in philosophical argumentation. But I doubt that anyone before Kripke would have called such hunches "intuitions."

But even many postnominalist philosophers had a theory or theories to back up their appeals to intuitions. The best-known form of

such theories is the doctrine of innate ideas of the rationalists. An enterprising historian of ideas might try to trace this line of defense of intuitive knowledge to Plato's *anamnesis*. Be that as it may, it was the doctrine of innate ideas that provided the rationale for appeals to intuition (whether under this title or not) by rationalists like René Descartes.

When both Aristotelian forms and innate ideas became discredited, no respectable justification for intuition as a separate source of insights remained. Accordingly, by the eighteenth century the notion of "intuitive knowledge" became watered down and ended up meaning little more than immediate knowledge. When John Locke cites as a paradigmatic example of intuitive truths that one plus two equals three, he is not postulating a separate mental faculty of intuition or even a separate source of knowledge. This minimal sense of "intuition" has played a much more important role in subsequent philosophical terminology than is generally realized. For instance, interpreters like Emmanuel Levinas⁶ who see in Husserlian *Anschauung* a special kind of "theoretical act of consciousness that makes objects present to us" might be well advised to consider the ancestry of Edmund Husserl's notion.

Part of this ancestry is Immanuel Kant's theory of how intuitions, even in a minimal sense of immediate representations of particulars, can yield synthetic knowledge a priori. His explanation turns on the idea that in sense perception we impose a certain relational structure on experience, namely, the structure of space and time. Hence we can recover the relations we have ourselves imposed on our experience by reproducing them in imagination. What is remarkable here is that this Kantian justification of the use of intuitions in mathematics does not presuppose any particular mental faculty of intuition nor any sense of "intuition" stronger than Kant's own definitory *unmittelbare Vorstellung von dem Einzelnen*.

Now, what conceivable theoretical rationale do contemporary philosophers' appeals to intuitions have? The embarrassing answer is: none of the above. The vast majority of philosophical writers these days take the name 'intuition' in vain since they do not believe in Platonic anamnesis, Aristotelian forms, Cartesian innate ideas, or Kantian transcendental deductions. Nor can they find aid and comfort in the other, minor source of allegedly intuitionist methodology in twentieth-century philosophy. G. E. Moore's argumentation is often labeled "intuitionistic." If so, the term 'intuition'

⁶ *The Theory of Intuition in Husserl's Phenomenology*, André Orianne, trans. (Evanston: Northwestern, 1995; second edition).

is used in the eighteenth-century minimal sense in which the phrase 'intuitive knowledge' is merely an euphemism for 'immediate knowledge'. Moore's method is predicated on his belief that in any experience we can distinguish the immediately given object of experience from the experience itself as a subjective happening that is merely part of one's consciousness. His appeals to "intuition" are therefore in reality appeals to what is objectively given to me in immediate experience. Not only is such a notion of "intuitively given" independent of any assumption of a special mental faculty of intuition, it presupposes that there is no such special faculty. Mooresque intuitively given objects are given in whatever experiences it is that we normally can have, not in special experiences called intuitions.

But few contemporary philosophers are likely to swallow Moore's "Refutation of Idealism"⁷ hook, line, and sinker so as to have the same rationale for their appeals to intuition. Nor are they likely to claim that they have solved the problems to which Moore's methodology led him and his friends when Bertrand Russell and others raised the question as to what the immediately known objects of experience are, for instance, in our sense experience. Sense data? But what precisely are sense data? Surfaces of physical objects? States of one's central nervous system? The search for such immediately given objects in one's experience ended up being truly the longest philosophical journey of the Bloomsbury philosophers.

Thus, contemporary thinkers' practice of appealing to intuitions in philosophical argumentation is without any justification whatsoever—in most cases. One of the interesting exceptions is the main character of the story of twentieth-century intuitions, Chomsky. Unlike his contemporaries, Chomsky could have a good intellectual conscience in appealing to grammatical intuitions, for he is a self-acknowledged Cartesian. He believes in innate ideas, at least in the form of an innate universal grammar. Thus, apart from details, Chomsky had, and presumably has, up his sleeve the same justification for appeals to intuitions as someone like Descartes.

Even though the matter needs closer analysis, it seems that Chomsky's emphasis on intuitions grew in tandem with his keener awareness of the Cartesian character of his own linguistic thinking. Later on, an opposite change seems to have taken place in Chomsky's views in that he has come to put less stress on innateness and universal grammar and, accordingly, less stress on intuitions.

⁷ *Mind*, N.S. xii (1903): 433-53, reprinted in Moore, *Philosophical Studies* (London: Routledge, 1922), pp. 1-30.

Of course, Chomsky's Cartesianism was originally unknown to the majority of philosophers. He came out of the closet only in his *Cartesian Linguistics*.⁸ And when he did, he used the rationalistic line of thought to defend his idea of deep structure rather than his intuitionist methodology. Hence it is perhaps not surprising that the rationale of Chomskian appeals to intuition has not been recognized by philosophers. Philosophers' surprise and dismay at the discovery of Chomsky's rationalism is in evidence in the historical Chomsky-Putnam-Goodman symposium on innate ideas.⁹

Even though Chomsky later enriched his views in a variety of ways and although he does not usually employ the term 'intuition', his position has remained basically the same. For instance, in *Knowledge of Language*,¹⁰ he still postulates "a particular faculty of the mind," the "language faculty." Moreover, speaker's intuitions, now re-named "the judgments of native speakers," provide access to that faculty: "To be sure, the judgments of native speakers will always provide relevant evidence for the study of language" (*ibid.*, p. 37). The main difference is that there are "many different sources apart from judgments concerning the form and meaning of expressions" (*ibid.*, pp. 36-37). But this does not really cast any doubts in Chomsky's mind on competent speakers' intuitions ("judgments") about language. The only qualification Chomsky registers is that such judgments may be disturbed by other factors: "judgments of acceptability, for instance, may fail to produce direct evidence as to grammatical status because of the intrusion of numerous other factors" (*ibid.*, p. 36).

Whether this Cartesian justification of Chomsky's reliance on intuitions is in the last analysis valid or not, it is not available to that great majority of analytic and nonanalytic philosophers who are not Cartesians. Since they do not believe in Aristotelian forms or in Kantian transcendental expositions or deductions as state-of-the-art philosophical truths, their use of intuitions in philosophical argumentation is totally without justification.

Chomsky's reliance on intuitions is a better tactic than philosophers' parallel ploy for two other reasons. First, linguists' intuitions pertain to the human language ability and its products. In contrast, philosophers' intuitions do not pertain to the supposed faculty of intuition itself but to the truths about which this faculty is supposed to

⁸ New York: Harper, 1966.

⁹ *Synthese*, xvii (1967): 2-28.

¹⁰ New York: Praeger, 1986.

provide knowledge. Hence Chomskian intuitions are not subject to the same epistemological problems as philosophers'.

Second, Chomsky wisely restricts the intuitions mainly, albeit not exclusively, to one kind only, namely, to intuitions of grammaticality. Admittedly, it turns out, Chomsky notwithstanding, that not even all our intuitions of well-formedness have the kind of generative explanation Chomsky prefers.¹¹ But linguists are not normally exposed to misdiagnosed intuitions to nearly the same extent as philosophers are.

The example of generative grammarians has been misleading in a more specific respect as well. Typical linguists' intuitions have pertained to the grammaticality of sentences. Linguists have not asked about people's intuitions as to how that grammaticality might be tested. Philosophers' intuitions have typically pertained to the truth or acceptability of various propositions. They have not usually inquired into our intuitions as to how that truth or that acceptability is established. Yet an answer to the latter question is likely to be more easily forthcoming and more confident than an answer to the former. I doubt that many philosophers can honestly claim to have sharp intuitions as to which one of the several so-called theories of truth is itself true, but everyone will agree that in order to ascertain that $(\exists x)S[x]$, one should find an individual b such that $S[b]$; that in order to ascertain that it is the case that $(\forall x)(\exists y)S[x,y]$, one must be able to find, given any individual d , an individual b such that $S[d,b]$; and so on.

Philosophers' mistake in adopting the intuitionist interpretation of Chomsky's methodology was compounded by their blind acceptance of an oversimplified construal of another aspect of that methodology. That aspect is the notion of explanation relied on by transformational grammarians. Most analytic philosophers seem to think these days that the main role of their intuitions is to serve as raw material for a generalization. Conversely, a successful generalization—that is, one that captures all the different data provided by intuition—serves to explain those data.

Once again, Chomsky is not a Chomskian, any more than Karl Marx was a Marxist. There is not a trace of the idea of generalization-as-explanation in his early methodological reflections. In his early thinking, paradigm cases of linguistic explanation included accounts of the structural ambiguity of a sentence (like the proverbial 'Visiting relatives can be boring') by pointing that it can be gener-

¹¹ See here my "On the *Any*-thesis and the Methodology of Linguistics," *Linguistics and Philosophy*, IV (1980): 101-22.

ated in two different ways. In his later writings, he emphasizes such indicators as deductive depth as hallmarks of good explanations at the expense of subsumption under a generalization.

It is nevertheless possible to argue that Chomsky's own theories rely far too much on straightforward generalization from examples (particular cases). For instance, the successive versions of the government-and-binding theory seem to have arisen from their predecessors, not through any deeper analysis of the interplay of different factors affecting the conditions of coreference, but merely through adjustments in the relevant generalizations calculated to eliminate counterexamples that had meanwhile been discovered. I have argued that such a tactic reduces greatly the theoretical appeal of generative linguists' theories.¹²

This observation has even some direct methodological significance for linguistics. As I have also argued elsewhere, transformational grammarians and other contemporary linguists would do a much better job if, instead of relying on our intuitions about isolated examples, they tried to vary systematically suitable ingredients in some sample sentence and observed how our "intuitions" change as a consequence. Now we can see why such systematic variation is a way of persuading our intuitions to yield general truths (dependence relations) rather than particular cases.

More generally, reliance on generalization from particular cases is foreign to the methodological spirit of modern science, which originated by looking for dependences of different factors in instructive particular cases (often in controlled experimental situations), and by studying these dependences by the same mathematical means as a mathematician uses in studying the interdependences of different ingredients of geometrical figures in analytic geometry.

In any case, philosophers' reliance on the idea of explanation-by-generalization is rife with historical irony. The best-known philosophical explication of such an idea of explanation—Carl G. Hempel's "covering-law" model of explanation—was generally rejected, at least verbally, around the same time as the intuitionist methodology became popular among them.¹³ It has been said that the covering-law model is dead, but in reality it is alive and popular among linguists and among philosophers who are wittingly or unwittingly imitating linguists.

¹² See here Gabriel Sandu and my *On the Methodology of Linguistics: A Case Study* (Cambridge: Blackwell, 1991), chapters 4-5.

¹³ See here Ilpo Halonen and my "Toward a Theory of the Process of Explanation" (forthcoming).

A closer study of Chomsky's argumentation should, in fact, have discouraged philosophers from generalizing his assumptions beyond linguistic intuitions. In his famous review of B. F. Skinner, Chomsky¹⁴ argues for the necessity of assuming a universal grammar by claiming that without such an assumption, we cannot explain children's capacity for language learning. The argument is that ordinary presuppositionless inductive learning is far too slow to account for the speed of children's language acquisition. But by the same token, it should be necessary for a naturalistic epistemologist to assume strong innate ideas in order to account for the possibility of theory formation by rational scientists. For it is a striking feature of the discovery of many important scientific theories that they relied initially on rather few instances from which they were generalized. An inductive logic that would allow such steps as inductive generalizations presupposes either strong background assumptions or a high degree of a priori faith in the orderliness of nature.

Some naturalistic epistemologists, most prominently W. V. Quine, have acknowledged the need (for their purposes) of some innate principles that could serve to give direction to inductive inferences. For instance, Quine speaks occasionally of innate quality spaces that govern our judgments of similarity. But such Quinean innate ideas are obviously far too few and far apart to provide a basis for a realistic theory of scientific reasoning.

Another dubious ingredient in the Chomskian use of intuitions is the tacit assumption that our basic intuitions about the particular examples to which they pertain are unconscious in the sense that we are not aware of the reasons why we accept or reject them. This feature of Chomskian intuitions is not unrelated to their being restricted to particular cases. The reasons for which we accept and reject particular cases, consciously *or* unconsciously, would realistically speaking have to include some general grammatical rules or principles. But if so, we could become aware of the general rules or principles of grammar directly, without going by way of induction from particular cases, which Chomsky does not allow.

A closer analysis of the nature of scientific explanation confirms these suspicions of contemporary philosophers' methodology. It turns out that, even though there are covering laws hidden in all why-explanations, the actual process of explanation does not consist in subsuming data under such a law. It consists in deriving the explanandum from an established background theory plus suitable ad hoc (or perhaps better ad explanandum) observations. A scientific

¹⁴ Review of *Verbal Behavior, Language*, xxxv (1959): 26-58.

explanation without a pre-existing theory is an oxymoron.¹⁵ Hempel does receive a qualified vindication, however. It turns out that under a wide range of circumstances, the success of an explanation guarantees the existence of a covering law. But to explain is not to find the covering law, and the covering law is not *the* explanation.

But where do such theories come from? Here we encounter one of the most debilitating weaknesses of contemporary philosophers' reliance on intuitions. For it is generally—though not universally—thought that intuition, like sense perception, always deals with particular cases, however representative. Some such restriction is implicit in all analogies between intuition and sense perception. But if so, intuitions alone cannot yield the general truths: for instance, general theories for which a scientist and a philosopher is presumably searching. Some kind of generalizing process will be needed, be it inductive inference, abduction, or a lucky guess.

This restriction of the data allegedly provided by intuition to particular truths is an instance of the more general assumption that I have called the *atomistic postulate*. According to it, the basic input into our epistemic process consists of particular data, excluding general truths. I have argued that it is the mistake that underlies much of current epistemology and philosophy of science. It is by any judgment an especially debilitating aspect of recent philosophers' intuitionistic methodology. Even if there are intuitions concerning particular cases, we are not any wiser because of them.

A defender of the use of intuitions in philosophy asked me in discussion: "What is wrong with starting from intuitively given obvious particular cases in philosophical argumentation?" I replied: "What would be an example of such obvious truths?" My interlocutor replied: "Surely, everybody agrees, say, that it is wrong to torture a child for pleasure. What is wrong with starting from such universally accepted special cases and using them as a basis for generalizations, in this case ethical ones?"

In fact, I could not have imagined a better illustration of my own point. For what is the generalization implicit in this particular case? This question is tantamount to the question: Which parameters of the given proposition are the ones with respect to which we should generalize? And asking this obviously amounts to asking: What are the factors affecting our judgment about the situation envisaged in it? Is it sometimes all right to torture a child for reasons other than pleasure? If so, what reasons? Is it ever permitted to torture an adult?

¹⁵ See footnotes 11 and 13 above.

If so, what is the critical age? Is it ever acceptable to torture an adult for reasons other than pleasure? If so, what reasons? Obviously, my interlocutor's "intuition" does not throw any real light on one's ethical principles.

In order to be useful, intuitions must have some kind of at least implicit generality. For instance, assume that I judge a gift not to be ethically meritorious because it was given merely to satisfy the recipient's expectations. In such a judgment, there is an implicit ethical principle involved in that the judgment presupposes that a necessary condition for an act to be meritorious is that it be spontaneous.

The idea that intuitions pertain to particulars, not to general truths, is deeply entrenched in the history of the idea. It is implied in the traditional consciousness by the analogy between intuition and sense perception; for the majority of philosophers used to follow Aristotle¹⁶ in thinking it is sense perception that deals with particulars. Accordingly, such "intuitive" methods as the use of *ekthesis* in logic were viewed with suspicion. It is interesting to see that thinkers as late as Gottlob Frege rejected all appeals to intuition in logic because intuitions are about particulars, not about the general truths logic deals with.

This misleading idea that intuition deals with particular cases was strongly encouraged by what was perceived as Chomsky's methodology. For the intuitions he recommended linguists to start from were intuitions concerning the grammaticality of particular strings of symbols, not concerning general rules of grammar.

More generally, what is wrong with twentieth-century philosophers' use of their alleged intuitions is not so much that they are wrong as that they are limited in their applicability and that their presuppositions are not recognized and spelled out. In this respect, Kripke's historically influential use of his presumed intuitions offers a telling example. As usual, the problem is not that there is nothing to a philosopher's intuitions. But intuitions in the sense Kripke talks about them come cheaply—at least as cheaply as the *endoxa* from which Aristotle typically starts his argumentation. Indeed, Aristotle's use of *endoxa* offers an interesting object of comparison for contemporary philosophers' handling of their "intuitions." Aristotle realized what Kripke and most others like him have never realized, namely, that *endoxa* or prima facie intuitions do not come fully equipped with instructions for their use. They are not premises for philosophical arguments; they are raw material to be critically weighed, cor-

¹⁶ See *Analytica Posteriora* A 18, 81b6.

rected, and integrated into a coherent view. Their presuppositions have to be uncovered and their tacit limitations recognized before such integration is possible. This is what most of Aristotle's own philosophical argumentation amounts to.

Such a critical scrutiny of our *prima facie* intuitions typically amounts to re-educating our *endoxa* so as to do better justice to the realities of the conceptual situation. One of the most crucial failures of contemporary philosophers has been that they have not realized the need of re-educating and re-regimenting even some of their most sacred intuitions. In this respect, an instructive and clear-cut test case is offered by the intuitions that have prompted the formulation of the most basic laws of our basic logic, the logic of quantifiers. A number of such intuitions were regimented by Frege and Russell into the received logic of quantifiers. It has taken more than one hundred years to realize that that regimentation was too narrow in that it excluded certain perfectly possible and intuitively interpretable structures of quantifiers.¹⁷ The resistance that this simple observation has encountered is unmistakably and undoubtedly due to the fact that it involves a partial re-education of our "intuitions" about quantifiers. In particular, it involves the realization that the full model-theoretical meaning of quantifiers is not exhausted by the "intuitive" idea of their "ranging over" a class of values.

In a different direction, many philosophers still have not acknowledged that the intuitions on which some of the familiar rules of inference are based are not operative in modal and intensional contexts. Logicians' intuitions seemed to tell them, for instance, that existential generalization is a valid mode of inference, that is, that from a sentence of the form $S[b]$ you can always infer $(\exists x)S[x]$. But this 'always' is mistaken. If you confront a philosopher with a specific example, he will readily confess to different intuitions. For instance, the intuitions on which existential generalization is based could never support an inference from:

- (1) Ari knows that Homer was Homer.

to:

- (2) There is an individual such that Ari knows that he was Homer.

which obviously says the same as:

- (2)* Ari knows who Homer was.

¹⁷ For a fuller explanation, see Sandu and my "A Revolution in Logic?" *Nordic Journal of Philosophical Logic*, 1 (1996): 169-83.

It is equally clear “intuitively” that an inference from (1) to (2)* is valid only if ‘Homer’ picks out the same individual in all the relevant possible scenarios—in other words, only if Ari already knows who Homer is.

In general, existential generalization with respect to a singular term presupposes that that term refers to the same individual in all the relevant worlds. This is acknowledged, in effect, by the likes of Kripke, who maintains that existential generalization with respect to a proper name is always valid. This he can do because his alleged intuitions include the idea that proper names refer to their objects necessarily, that is, in every possible world. This is what he refers to as rigid designation. In other words, it is not possible that they should refer to one object in one world and to another in another world. In some sense, this intuition can be granted to Kripke. But he never recognizes its tacit limitations, one of which is that it can only be taken to refer to logically or perhaps metaphysically possible worlds. It is the easiest thing in the world to imagine epistemically possible worlds in which a proper name refers to different objects. Thus, to the extent Kripke’s basic intuition is applicable to our actual discourse, it excludes from the scope of his theory the most important applications of intensional logics, namely, their application to our epistemic concepts.

What is even more important, Kripke’s intuition involves a colossal presupposition. He is assuming that it makes unproblematic sense to speak of the identity of two individuals residing in two different possible worlds. He fails to see that there is nothing in our notion of reference, either intuitively or explicated along the natural possible-worlds lines, that prejudices such questions of cross identity. For the purpose of the reference of, say, a singular term, it suffices to determine the individual (if any) for which it stands in each logically possible world. But such a determination is possible without presupposing anything about which individual is which in another possible scenario. And a modicum of analysis of how our actual discourse operates quickly shows that our principles of cross identification are indeed largely independent of our criteria of reference. We constantly use two different systems of cross identification, which makes non-sense of any unqualified idea of rigid designation.

Kripke’s inadequate excuse for not doing the critical analytic work that the explication of his own intuitions requires is that the “possible worlds” with which he is dealing are our constructions out of the individuals that there are in the actual world. But this restricts the applicability of Kripke’s intuitions so much as to make them uninter-

esting. In any half-way realistic application, the different scenarios contain different entities, most of which have no counterparts in the actual world. And these scenarios are not constructed by us in any reasonable (or intuitive) sense of the word. They are typically the objective possibilities we have to heed and from which some nonhuman agent—nature, chance, god—chooses one to be realized. When the National Hurricane Center is preparing for a new season, it assigns proper names to future hurricanes in the order of their appearance, but there is no presumption that in the different possible scenarios for this season, the equally named hurricanes are in some metaphysical sense the same storm. In 1992, it might very well have happened that the first hurricane of the season never touched the mainland of the United States and instead petered out in the Atlantic. I doubt that the good citizens of the Miami area would say that such a possible hurricane was the same as the notorious hurricane Andrew that was the most expensive storm in United States history. Yet it would have had the very same properly conferred name. If Kripke's theory were literally true, the National Weather Service could be accused of grossly abusing the English language by naming hurricanes the way they in fact do. And, what is most important here, if that possible namesake of hurricane Andrew had actually been realized, it would not have been constructed by Kripke as a part of his semantical theory or by any other agent, except (anthropomorphically speaking) by nature.

The upshot is that Kripke's intuitions about what possible scenarios ("worlds") are thus are even more limited in scope than his intuitions about rigid designation. Obviously, in his attempt to visualize his own "relations of ideas" about possible scenarios, Kripke has had in mind only the kinds of artificially simple combinatorial possibilities that probability theorists use in explaining to students their notion of sample space, such as different outcomes of a series of tosses of a coin or a dice or of outcomes of draws of balls from an urn. Unlike Kripke, the probability theorists nevertheless realize fully that most of the real-life applications of their concepts are to sample spaces messier by orders of magnitude than such artificial Las Vegas applications. How unrealistic Kripke is can be shown by the fact that even the simplicity of artificial gambling examples is arguably only skin deep. I have illustrated this point in another (unpublished) paper by reference to the sample space of possible outcomes of a toss of dice:

[But], what if the high roller in question is King Olaf and his dice splits into two, what do you do? Do you consider both halves of the broken dice as legitimate continuations of the original dice and add up

what they show, or is only one of them identical with the original one? If so which one? Or is perhaps neither one identical with the old dice?¹⁸ In the first case, an unexpected identificatory situation creates the splitting of sample-space points into several. In the last one, several sample-space points merge with each other. Even small-scale examples [of sample spaces] are thus, in principle, not immune to questions of identification.

What Kripke should have done is to try to work his intuitions patiently and critically into an explicit framework of expressing the intuitions and whatever else he wanted to express. This would have had to include expressing the methods of identification which Kripke presupposed but did not acknowledge. It seems that he might have been prevented from recognizing them by his uncritical adherence to other intuitions. Those intuitions are the ones on which the received Frege-Russell logic of quantifiers are based and which were seen to be unduly restrictive. For what is needed for the purpose of expressing in an obvious way the rigidity of reference by a singular term b in a context governed by the necessity operator N ? The obvious way is:

$$(3) \quad (\exists x)N(b = x)$$

For what (3) says is that there is an individual—one and the same individual—that is referred to by b in all possible worlds. But according to the holy rules of the received first-order logic, canonized by the intuitions of most post-Fregean logicians, (1) is entailed by:

$$(4) \quad N(b = b)$$

which merely says that b is self-identical in each such possible world. Hence an attempted inference from (4) to (3) springs from a confusion between ‘each’ and ‘all’. There is nothing in (4) to guarantee that b is the same individual in different possible worlds. More generally, many philosophers’ belief in the universal validity of existential generalization is due to the fact that in “intuiting” this validity, they had before their intuition’s eyes a situation involving only what can be said of the actual world (or in any case some one and only possible world). Such intuitions easily become seriously misleading when we are explicitly or tacitly considering several possible scenarios (“worlds”). This nonsensical result makes (3) useless as an expression of rigidity in all logics that assume the validity of existential

¹⁸ Cf. Ivar Ekelund, *The Broken Dice and Other Mathematical Tales of Chance* (Chicago: University Press, 1993), p. 3.

generalization. Once again, what is needed is a model-theoretical re-education of our intuitions. If (3) expresses what it obviously is calculated to express, namely, that b picks one and the same object in all the possible worlds brought into play by the necessity operator N , it is not implied by (4). Hence the first thing philosophers discussing identification and reference should do is to reformulate the logic of quantification as it is used in modal and intensional contexts when it comes to existential generalization. This amounts to the recognition of the limited scope of the intuitions which originally prompted the received Frege-Russell logic of quantification, prominently including the rule of existential generalization.

What has been said so far might give the reader the impression that I am against all uses of intuitions in philosophical and scientific reasoning. Such an impression would be wrong. What I am against are the reifications and mystifications surrounding both philosophers' and laymen's ideas about intuitions. These intuitions can be divided into two classes. They are the alleged intuitions concerning empirical truths and those concerning conceptual (including linguistic) ones. (David Hume might have called them intuitions about matters of fact and intuitions about relations of ideas.)

As far as empirical realities are concerned, the brute fact is that the intimations of intuition do not have any privileged epistemological status. They do not carry any automatic justification with them, no matter how convincing they may be subjectively. Epistemologically, they are on the level of clever guesses or perhaps of Aristotle's *endoxa*. We are all familiar (I hope) with insights that are instantly persuasive, but we are also familiar with equal persuasive insights that subsequently turn out to be mistaken.

Furthermore, there is no evidence that such insights, even when valid, are products of any particular mental faculty. Elsewhere, I have shown that what are explicitly called intuitions often turn out to be products of perfectly ordinary discursive thinking, combined with suitable observations. Even when one can locate a characteristic feature of what are called intuitive insights, that special character does not presuppose a separate faculty or capacity. I believe that, especially in mathematical and logical contexts, appeals to intuitions typically amount to uses of model-theoretical insights or concepts. For instance, why is it more "intuitive" to carry out a geometrical proof in terms of figures instead of (say) first-order logic? This question is pertinent because it is perfectly possible to conceive of the use of figures as being nothing but an alternative symbolism parallel with the first-order logical symbolism and intertranslatable with it. A proof in

either symbolism can be equally stringent and in fact analogous, so that even in the purely logical proof one can speak, for example, of the introduction of new individuals into the argument in analogy with the “auxiliary constructions” of traditional geometrical proofs. The answer to the question is that the use of figures brings out much more directly the model-theoretical meaning of a geometrical proof.

It is characteristic of the misconceptions that I am criticizing that this “secret” of the intuitiveness of proofs by means of figures has been misinterpreted. It is generally thought that figures served the purpose of facilitating appeals to our geometrical intuition for the purpose of introducing assumptions not sanctioned by the axioms and postulates of geometry. Such appeals are admittedly found in Euclid, but they are as much violations of the rules of figurative argumentation as the corresponding fallacious steps would be violations of the rules of logical proof. Typically, the assumptions so introduced were manifestations of the continuity properties of geometrical objects. Such properties were for a long time difficult for mathematicians and logicians to formulate in any notation.

From these observations it follows that it is nonsense to think that “intuitive” insights must be unconscious. Sometimes they are, but even then it might be possible for the reasoner in question to recognize the discursive steps of reasoning which originally surfaced in the form of a single “intuition.” In others, special techniques might be required, ranging from leading questions to truth sera and hypnosis. In others, it is clear that an “intuitive” judgment is the internalized product of training that utilizes perfectly discursive means in teaching the reasoner to notice subtle observational clues. One can enhance the intuitiveness of one’s own reasoning quite consciously, as in the use of figures and diagrams. All told, the unavoidably unconscious nature of intuitions is nothing but a pernicious myth we should quickly get rid of.

It may even be the case that we humans are hardwired to carry out certain types of reasoning more “intuitively” than others, probably for evolutionary reasons. For instance, we apparently have fairly sharp intuitions concerning the relationships involved in Euclidean geometry—sharp enough to have led Kant to think that they signal a special status of Euclidean geometry. Such intuitiveness can be exploited for analytic and systematic purposes. For instance, it was a brilliant idea of David Hilbert’s and John von Neumann’s to think systematically of the relationships among certain functions in analogy with the interrelations of geometrical entities like vectors. But such intuitiveness does not confer any privileged epistemological status on the resulting geometrized theories.

Underlying several of the points just made is an important distinction between heuristics and justification. In a specifiable objective sense, it is easier for human beings to discover and to formulate geometrical proof, for example, by using such "intuitive" techniques as figures. But that does not make such proofs any more or any less stringent than logical proofs conducted in the pedestrian notation of formal logic.

Thus, when it comes to empirical truths and empirical theories independent of my own concepts and my own language, it might very well be wisest to forget the ill-conceived concept of intuition altogether. Of course, this does not deny the reality of the phenomena that people are trying to fit under this term.

But what about my knowledge of my own language and my own concepts? Do I not have, for example, a privileged access to what I mean by my words, of the kind someone might label intuition? This would not be anything stranger than the intuitions of grammaticality on which transformational grammarians at one time used to rely. I have no objection to granting the existence of such access to my own concepts and meanings. What I challenge, however, is the privileged epistemological character of any knowledge obtained through this allegedly privileged access.

How do I find out about another person's language or about her concepts? For instance, what does she mean by a certain word? The first approximation to an answer is: Why not see how that person uses the word? Or perhaps you can simply ask her. If you want to find out how your informant uses color words, put her in a room with differently colored objects and observe which color word she uses for each. Or you can use a color chart and ask the informant which word is applicable to each of them.

This simple (and in some sense simple-minded answer) in fact carries us much further than most philosophers seem to be willing to admit. It may be the case that neither method gives us an indubitable particular case from which to generalize, but I believe that we must adopt a fallibilist epistemology anyway. Quine and some others have argued that we cannot exhaustively determine the meaning of a word in this way. This argument is in the last instance predicated on a rejection of the idea of possible scenario ("possible world"), as is shown in my "Three Dogmas of Quine's Empiricism."¹⁹ If that notion is allowed, then there is, in principle, no definite limit as to how far your experimentation (construction of ever new situations) can carry you in determining the class of scenarios in which the word does or

¹⁹ *Revue Internationale de Philosophie*, LI (1997): 457-77.

does not apply. And such a determination will, at least for a Montague semanticist, determine the meaning of the word. Indeed, in Montague semantics, the meaning of a term is the function that maps possible worlds on references (extensions) of the appropriate logical type (category). And such functions can, in principle, be identified even more and more fully by systematic experimentation with the references that a person assigns to his terms in different actual or imagined scenarios.

The sketchiness of this account is blatant. But this approximate character of my account does not matter here, for I am not trying to give a full account of meaning determination but to compare third-person (or second-person) and first-person cases. And if so, I can simply say that what is semantics for a goose is also for a gander. In other words, the third-person and the first-person cases are, in principle, on a par. I can put myself in different situations and find out how I apply my words in them. Or I can put a question to myself. (There is nothing in the logic of questions and answers that prevents my doing so.) The only difference is that in the first-person cases (of either kind) I can typically skip the stage setting. Instead of putting myself physically in a certain kind of situation and seeing what I shall do in it, I can imagine myself as being in such a situation. Normally, I can confidently say how I would use my words and my concepts in them. Of course, I cannot always do so, as J. L. Austin's²⁰ bullfinch reminds us, and sometimes I can be wrong. But this does not affect my main point. It is simply an aspect of this analogy between first-person and third-person cases, in that there can be fuzziness in our concepts in either case.

I do not see any reason to deny that I can by means of such a thought experiment obtain objective knowledge about my own language and my own concepts, just as I can do so in the case of others by real experimentation. I do not need a concrete stage setting for the purpose. Thought experiments serve as well in the first-person case as real experiments in the third-person cases. If someone wants to label the answers obtained by means of such thought experimental "intuitions," I do not have any objections, as long as it is realized what is involved. Such intuitions are not unlike Aristotelian ones, obtained by realizing the appropriate forms (concepts) in my soul. Unlike Aristotelian intuitions, however, the results of my thought experiments need not be infallible. Unlike Aristotle, I am also maintaining that such intuitions are informative only about our

²⁰ *Philosophical Papers* (New York: Oxford, 1961), p. 56.

own language and about our concepts. Hence there is room in our epistemological arsenal, I believe, for intuitions with a respectable historical pedigree.

Unfortunately, the vast majority of appeals to intuition by contemporary philosophers cannot be conceived as controlled thought experiments nor be justified by recasting them as such. In view of such goings-on, I am tempted to suggest, half-jokingly—but only *half*-jokingly—that the editors of philosophy journals agree to a moratorium on all papers in which intuitions are appealed to, unless the basis of those appeals is made explicit.

JAAKKO HINTIKKA

Boston University