

Thus when Leibniz gives the second of his *charcateristica universalis* (the set of which forming his logical manifesto) as, in Scholz's words:

“ [that] the symbols must be so devised that whenever a thing thought is present, which may be divided into its components, the “image” of these components must again be components of the picture of what is thought in the available symbols.”<sup>53</sup>

we see that Leibniz is really attempting to cover his back. The reality is rather going to be as Frege understands it: very little is really “thought” in the symbols whatsoever. (What possible meaning could we give to the ‘thing thought’ being present in the case of an integral sign in any case, if we are not to take refuge from the real world in some platonic realm?) Yet it may be said of Michael Dummett's whole project in the philosophy of language, moreover, that he attempts to privilege the impersonal conventions and mechanics of ‘meaning’ over the deeply human and contingent element of ‘understanding’. A typical thought in Dummett's philosophy has it that understanding presupposes meaning, but meaning does not presuppose understanding, a sentiment which nevertheless Mason seeks to challenge<sup>54</sup>.

### East meets West: the geography of logic

The conclusion we are driving towards is that the Orient presents a fundamentally different mentality to the Occident. This contrast serves to localise and undermine the pretensions to absoluteness of Western logic. Dumitriu gives us a neat summary of these respective geo-cerebral differences, courtesy of the work of Liou Kia-hway. The European spirit is *analytical*. The Chinese spirit is *synthetic*. (We can use Kant's *Logic* to elucidate this distinction. The analysis of a concept involves a purely methodical dissection of the *actual concept* itself. The synthesis of an object draws on its experiential attributes to present a *possible total concept*<sup>55</sup>). Thus analysis maintains a special logical hygiene suited to the unique business of logic. If we reverse the process, so as to delve into the caverns of the Western psyche itself, it is easy to see how Liou Kia-hway maintains that the Western spirit strives to *build up an abstract whole without parts*. (Parts would obviously contaminate the logical integrity of the abstract whole). By contrast, the Chinese synthetic spirit strives to *build up a concrete whole with parts*.

Kia-hway poses a further distinction between Western philosophy of essence and the Chinese philosophy of existence.<sup>56</sup> The former entails a search for those invariable and permanent characteristics which constitute the essence of things. The latter, on the contrary, concerns itself with the existence of individuals which are undefinable, with countless and infinite variable differences. Now, such a critique of Western philosophy is

<sup>53</sup> Scholz, P.55

<sup>54</sup> E.g. “There are no grounds to insist that any conditions are sufficient or necessary for understanding” Mason, P.42 – so understanding does not presuppose meaning, and must be considered as a human phenomenon *sui generis*

<sup>55</sup> Kant, *Logic*, (London, Longman, Green and Co 1885) P.49

<sup>56</sup> Dumitriu P.32



nothing new; it directly recalls the work of Sartre and Heidegger, both of whom sought to reverse the traditional order of precedence in the Western tradition by privileging existence over essence. What is interesting is to see how a different mentality comes naturally to the Chinese without the need for a bludgeoning critique.

Lastly, courtesy of the work of Fung-Yu Lang, we have a distinction of fundamental active epistemological thrust. We are to understand that western philosophy ever seeks to advance in knowledge from the security of the known into the rousing spectre of the *terra incognita* of the unknown. It continually seeks the expansion of knowledge. Yet Chinese philosophy begs to differ - it proceeds in exactly the opposite direction. (Dumitriu makes the rhetorical appeal, of which – as we know - Levy-Bruhl was so fond, that such a logic will seem incomprehensible to Western minds). The guiding principle, however, is that, for the ancient Chinese, there prevailed the belief that the truth had been discovered long ago. The difficulty is to access it in its purity. Thus Chinese philosophy seeks only a *shrinking* of knowledge, “coming ultimately to an almost ineffable idea – like the Tao”<sup>57</sup>. In keeping with this mentality, the Chinese philosopher spoke little, preferring to utter aphorisms. Two quotes from Lao-Tzu in the Tao-te Ching encapsulate the Chinese thinking. “Study is progressive growth, Tao [the path, the truth] is progressive diminution”. “He who knows is silent, he who speaks does not know”.

At this point, however, we should express a hidden contradiction in the characterisation of the Western epistemological spirit, papered over by Dumitriu. It is also the place to characterise Dumitriu’s methodology. It is to be expected of a history of logic that it must be sensitive to the likely shifting understanding of its subject-matter. (The broad transformation over 2500 years concerns logic’s gradual detachment from the jurisdiction of philosophy and correlative subsumption under mathematics<sup>58</sup>). In this way, however, such a history can avoid preoccupations with particular *words* and the correlative assumption of definite meanings attaching to particular words. In the pre-history of logic, of course, logic has no characterisation at all. We must rather concern ourselves with the hidden modalities of a particular subject-matter.

As Dumitriu puts it:

*We think the reader will realise from our work, that logic is not one particular science, but the very mirror of thought in its effort to consider itself its own object, thus looking for its own expansion and modalities. But these modalities of thought cannot be exhausted by a single act. The process of self-determination of thinking is an endlessly [sic] process, each of its moments representing a valid form of thinking, explicit in its own history*<sup>59</sup>.

It will therefore be incumbent on a history of logic to treat a particular constellation of terms, having to do with thought, language, knowledge, dialectic etc, as bearing equally on logic, perhaps in relations of metonymy, individuated only by circumstance rather

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<sup>57</sup> Dumitriu, P.37

<sup>58</sup> *ibid.* x

<sup>59</sup> *ibid.* xii



than distinct cognitive meaning. Yet the flip-side is that, gazing idly and approvingly (and relativistically) from afar, we will become blind to the possibility of hidden centripetal forces acting within the constellation serving to tear it apart. The fault line will occur between the sociology of logic and its internal metalogical critique.

The centrepetal force to which I allude is the tendency to epistemological stasis within the pure logic of the Western tradition. I have already alluded to the equivocal characterisation of Logic as an Organon in the Aristotelian tradition (see N34). And it is nothing but a trusty organon we require to advance sure-footedly from known to unknown, in Kia-hway's formulation. For Kant, logic cannot serve as an Organon to science as this would pre-suppose knowledge of its objects, and logic must abstract from all content of cognition<sup>60</sup> and conceive objects qua those of the understanding alone. Logic serves *not the enlargement* but the criticism and correction of knowledge.<sup>61</sup> More scathingly, J. S. Mill judges the syllogism to be guilty of the *petitio principii*, the conclusion to a syllogism telling us nothing we did not already know in the premises. The Earlier Wittgenstein understood logic as merely dealing in tautologies. The *Tractatus Logico-Philosophicus* excluded the possibility of any epistemological mechanism from its structure in any case (although the Vienna Circle misinterpreted the work as providing a basis for their own misguided project of fundamental epistemology – that of logical positivism). A proposition merely reaches out to touch the world; no effort of reaching is required. And on the basis that that the only propositions which are denied the possibility of picturing the world are those which are nonsensical, all propositions are, in a sense, true, and so are equally little informative.

Thus Western epistemology and Western logic pull in different directions. The fact that logic can nevertheless be seen to underpin the epistemological thrust, the clear implication of Dumitriu, clearly suggests some contradiction at the heart of logic. It is not enough to suggest that logic and epistemology must be demarcated, for knowledge does not arise *ex nihilo* like a rabbit from the hat. Epistemology constitutes, by definition, the logic of knowledge. There are two possibilities. Firstly, logic is in denial of its socially inflammatory power, which seeks to extend its jurisdiction wider and deeper over the 'knowable' world. Instead logic seeks to affect the sublimity of perfect stillness from its Olympian throne, in order to lay its seal of approval to each supposedly perfect shard of 'knowledge' comprising the anarchy of the infinite Western epistemological project. Or we may simply conclude that pure logic has never really existed. Both possibilities come to the same thing.

### the history of logic

We can broadly employ Lakatos' schema for understanding the history of science, mindful of Bloor's critique, in providing a framework for understanding the history of logic. Lakatos suggested a distinction between internal history and external history<sup>62</sup>. The

<sup>60</sup> Kant, Critique of Pure Reason, Critique of Pure Reason (Hackett 1996) P.110

<sup>61</sup> Kant, Logic, P.5

<sup>62</sup> Bloor, Knowledge and Social Imagery, (Chicago University Press 1991) pp 9-10



former attempts a 'rational reconstruction' of the history of science, linking each scientific theory with the next by means of an ongoing critique. It does so purely on the terms of the theories themselves. It is thereby somewhat an abstraction and idealisation. It also necessitates the adoption of a chosen methodology, to serve as a guiding thread. This is a presupposition from which we were gloriously free in our consideration of the 'pre-history' of logic.

"External history", by contrast, serves to mop up the external sociological factors contributing to scientific innovation. It will only play an arbitrary and bit-part in historical proceedings. It also lacks the dignity of internal history. Bloor is critical of this side-lining of sociology into the gutter. The whole tenor of his project in the "strong programme" in the sociology of knowledge is to demonstrate how all knowledge without exception is socially conditioned, including scientific and logical knowledge.

There is a crucial difference between the history of logic and the history of science, however. Logic is a widely understood concept in social usage. Thus its history comprises all the varied employments of the concept in different contexts, beyond the mere history of the canon. The history of science, by contrast, is normally understood to refer merely to the history of the canon, certainly by Lakatos. Nevertheless, Bloor laments the fact that the history of the applications of science has never been written.

The 'internal' history of logic itself is an odd and discontinuous affair. *'The orthodox, one-sentence caricature-history of logic is not too incorrect: the subject did indeed come into existence with Aristotle; its philosophical background was explored and charted by Leibniz; and it was transfigured into its modern form by Frege before its great explosion in the twentieth century'*<sup>63</sup>.

It thereby claims the right to shun historical sensitivity, 'internal' or 'external'. The very concept of a history of logic thereby has a quaint and antique feel about it, an interesting curio but of no possible use. It is nonetheless true that countless histories of logic have been written since Petrus Ramus penned his 'Scholae in Liberales Artes' in 1569, the first ever history of logic<sup>64</sup>, before Leibniz was even born. So the modern caricature should be seen as just that; it is a symptom of the modern ideology claiming logic to be ahistorical.

Corollary to the thesis that logic has no real history is the idea that logic emerged essentially fully-formed. This thesis was held by Kant. *'Since Aristotle's time Logic has not gained much in extent, as indeed nature forbids that it should. But it may gain in respect of accuracy, definiteness and distinctness. There are but few sciences which can come into a permanent state, which admits of no further alteration. To these belong Logic and Metaphysics. Aristotle has omitted no essential point of the understanding, we have only become more accurate, methodical and orderly'*<sup>65</sup>. It was Aristotle's belief too, memorable for its lack of humility, that his logical enterprise was historically unprecedented. From the epilogue to the Topics: *"That our programme, then, has been*

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<sup>63</sup> Mason, P.5

<sup>64</sup> Dumitriu, xiii

<sup>65</sup> Kant, Logic, P.10



adequately completed is clear. But we must not omit to notice what has happened in regard to this enquiry. For in the case of all discoveries the results of previous labours that have been handed down from others have been advanced bit by bit by those who have taken them on, whereas the original discoveries generally make an advance that is small at first though much more useful than the development which later springs out of them. .... [blah blah] .... Of this enquiry, on the other hand, it was not the case that part of the work had been thoroughly done before, while part had not. Nothing existed at all.”<sup>66</sup> For Kapp, however, the epiphany *ex nihilo* of Aristotle’s concept of the perfect syllogism is precisely what makes it suspect, and generates the intractable problem of the correct relation of the syllogism to experience: ‘In general, so much transformation has to be done if one is determined to find the Aristotelian perfect syllogism in pre-Aristotelian philosophic literature and what is known of mathematics of the time, that it becomes improbable that the notion of his syllogism was simply taken from experience. .... Aristotle does not even hint at concrete models from which his abstract patterns of correct syllogisms had been derived; otherwise, indeed there would be no problem and the history of logic would be easy to write’. This is a surely a reproach to the one-sentence-caricature-of-the-history-of-logic if ever there was.

Because logic claims the status of absolute and necessary truth, there is a perception that a logic text-book will be of far more use than a history of logic. Text-book authors of logic have always faced the curious paradox that if logic merely espouses basic and uncontroversial truths concerning how people think, then there should be no particular need to teach it. E.g. From the Port-Royal Logic: “That part of which we have now to treat, and which comprehends the rules of reasoning, is regarded as the most important in logic, and is almost the only one which has been treated with any care. But it may be doubted whether it is really as useful as it has been supposed to be. The greater part of the errors of men..... arises much more from their reasoning on false principles, than from their reasoning wrongly from their principles. It rarely happens that men allow themselves to be deceived by reasonings which are false only because the consequences are ill deduced; and those who are not capable of discovering such errors by the light of reason alone, would not commonly understand rules which are given for this purpose, much less the application of them”<sup>67</sup>.

Likewise, Mill addresses ‘the question, so often agitated, respecting the utility of logic’. His affirmative answer, however, is weak, plainly guilty of *petitio principii* (but, ironically of course, Mill believes even a rigorous logical syllogism to be guilty of the same): ‘If a science of logic exists, it must be useful. If there be rules to which every mind consciously or unconsciously conforms in every instance in which it infers rightly, there seems little necessity for discussing whether a person is more likely observe these rules, when he knows the rules, than when he is unaccustomed with them..... Mankind judged of evidence, and often correctly, before logic was a science, or they never could have made it one..... But the bulk of mankind require either to understand the theory of what they are doing, or to have rules laid down for them by those who have understood

<sup>66</sup> quoted in Kapp, P.5, Greek Foundations of Traditional Logic.

<sup>67</sup> Quoted in Kapp, P.80.



*the theory*'. (There are plainly echoes here of Luce's 'logical labours of past generations', quoted at the outset of my essay).

There is another possibility, which is that textbooks of logic present controversial truths as if they were necessary truths; these are thereby proselytised and reproduced. Geach believes Aristotle presented a flawed theory of the syllogism, which has been generally swallowed uncritically by logic authors ever since. Geach maintains that attempts to patch up the theory have sullied those limited insights which were to be found in Aristotle's theory in the first place.

There is a special reason why histories of logic have always been so popular. Traditionally, histories of logic are presented as 'heroic narratives of victory, breakthrough, defeat, reverse, that show logic moving steadily, if fitfully, toward perfection'<sup>68</sup>. A case in point concerns Scholz's treatment:

*'I am sending this little volume into the world in the hope that I might thereby kindle in the reader a confidence, which he might not have had before, in the new logic [i.e. symbolic logic] upon which I have based my history, hoping of course that he may overcome all obstacles with which we have to reckon. Furthermore, I possess faith that the history of logic, with the new light which can be thrown on it today, will become a beautiful and fascinating chapter in the history of Western civilisation, so that at long last it may be studied with pleasure and sympathy. This accomplished, there will follow the labours of scholars as a matter of course which will close the gaps in the history of logic which we still, regretfully, have to admit today'*<sup>69</sup>.

My reader will note the curious echo of Kant in that closing remark. Those pesky gaps seem as stubborn as ever.

Scholz's translator gives us a concise analysis of the prejudices inherent in Scholz's polemical approach:

*'His immense regard for Aristotle is only matched by that for Leibniz, the founder of symbolic logic, and by his contempt for all who are even mildly critical of formal logic. When he comes to men like Hegel, whom he considers a calamity, his criticism becomes charmingly skittish'*<sup>70</sup>

Scholz is most upset that Hegel rejects outright the principle of the excluded middle, believing such an innovation to be frivolous and marking the death of serious logic. *'Hegel's "Wissenschaft der Logik" is linked with Aristotelian logic only by the caricature he has drawn of it in the second volume of this work. Even this caricature seems extraneous and its very presence belongs to the greatest riddles of this work which abounds in enigmas. The rest of the work is so vastly different from anything which could be brought into relation with Aristotelian logic that it remains inaccessible to an*

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<sup>68</sup> Nye, P.3

<sup>69</sup> Scholz, preface, *Concise History of Logic* (1931, Philosophical Library, New York)

<sup>70</sup> Leidecker in Scholz, Translator's introduction.



*Aristotlelian. How could an Aristotelian be expected to think himself into a "logic" which begins with the cancellation of the two fundamental propositions of the principle of contradiction and the excluded middle!*<sup>71</sup>

Scholz explains his impression of the intellectual consequences of Hegel's philosophy thus: *'Because of the wide popularity of Hegel's philosophy his concept of logic even today hampers any serious work of logic in the Aristotelian sense; that is, logic which is subject to rigorous checks'*.<sup>72</sup> Scholz nonetheless feels secure in the ascendancy of the new symbolic logic.

There is an irony in Scholz's paean to symbolic logic. He is proud that symbolic logic is the first "logic" to disambiguate the 'different' meanings of the copula, i.e. the word 'is'.

*Which logic, prior to symbolic logic, has shown that the "is" in "7 is a prime number" is totally different logically from the "is" in the "the raven is black", and just as completely different from the "is" in "Goethe is the poet-author of Faust"? Not any of them!*

Yet Geach, on the other hand treats such a revision – i.e. attempting to splinter the straight-forward meaning of the copula into so many different logical nuances – as symptomatic of the decadence of modern logic:

*For the newer books tell us that 'is' means different things in 'Socrates is a philosopher' and 'Every logician is a philosopher'; that the first 'is' is a copula of class-membership and the second a copula of class-inclusion. Of course this ambiguity is a mere illusion; the predicable expression 'is a philosopher' means exactly the same in both propositions, just as 'errs sometimes' means exactly the same in 'Socrates errs sometimes' and in 'Every logician errs sometimes'; and here there is no copula to pin the ambiguity on.'*<sup>73</sup>

Geach traces this modern confusion right back to Aristotle's misguided 'two term theory' (of which more later). The 'later' Aristotle did not need any theory of the copula because a proposition merely consisted of the crude gluing together of a subject and predicate (for it was essential that they could be equally crudely glued together the other way around). Successive corruptions of logic have attempted to smooth over the fissures in the logical join. This is the spirit of Geach's whole counter-history of logic.

It is particularly interesting to see how scathing is Scholz of Lotze's joyfully simplistic analysis of the copula. *'Who would think it possible were it not true beyond the shadow*

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<sup>71</sup> Scholz, P19

<sup>72</sup> Scholz, P13

<sup>73</sup> Geach A History of the corruptions of Logic (Leeds University Press 1968) pp13-14

We should not be surprised that Scholz is proud to say that symbolic logic is the first logic to furnish the symbolic support for a clear-cut interpretation of statements of the form: *"All S are P," "Some S are P," and "S is P" and hence, has made all theories of judgement antiquated which try to achieve a reduction of the statements of one of these three forms [to a common form]*". (Scholz P.64) I.e. Scholz is referring to the very issues of class membership and class inclusion dismissively discussed by Geach.



*of a doubt that even a logician and thinker the calibre of Lotze interpreted the copula in "S is P" fundamentally as an expression of the relation of identity between S and P'.<sup>74</sup>*

One wants to believe that Scholz's horror must verge on the parodic, because Lotze's analysis appears so basically uncontroversial. Lotze's elaboration is interesting however: *"Stated briefly, the principle of identity asserts: All categorical judgements of the form 'S is P' are false and inadmissible"*<sup>75</sup>, the simple reason being that, as Scholz puts it, the principle of identity asserts: S is S, and not P. This is distinctly Parmenidean.

Lotze's analysis of the categorical judgement gives us a neat obverse to the analysis by Durkheim and Levy-Bruhl of 'explanation' in general. We have an interesting parallel here between the antithetical realms of formal logic and empirical nature. Durkheim argued that to explain any phenomenon is precisely to identify it with what it is not. Yet, in distinction to Lotze's formal logic, this should be thought natural and justified. We need not merely consider the 'shocking logic' of totemic identity. For Durkheim, man's primal instinct has always been to make connections between things. Durkheim has Levy-Bruhl in mind when he writes: *'It is said that the participations postulated by mythologies violate the principle of contradiction and are therefore antithetical to scientific explanations.'*

Yet for Durkheim, *'The explanations of contemporary science are more certain of being objective because they are more systematic and based on more strictly controlled observations, but they are not inherently different from those that satisfy primitive thought. Today as in the past, to explain is to show how a thing participates in another or several things.'*<sup>76</sup>

Thus we must balance Scholz's idea of the history of logic 'as a beautiful chapter of Western civilisation', against the suspicion that the realm of logic is actually fairly alienated from civilisation. Nye diagnoses the history of logic as a linear progress of its formalisation and alienation. Thomas Nagel has diagnosed what he sees as *"a kind of decadence of analytical philosophy, a falling away from its origins in Frege's insistence on the fundamental importance of logic"*<sup>77</sup>. Insofar as logic it has a social referent, this may be restricted to the academic realm.

It is easy to appreciate that histories of logic have traditionally been written as elitist back-scratching exercises. They invariably culminate in plaudits for the author's academic contemporaries<sup>78</sup>. We must nevertheless contend with the possibility that the

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<sup>74</sup> Scholz P.129 (N204)

<sup>75</sup> quoted in Scholz P.129

<sup>76</sup> Durkheim, P.181

<sup>77</sup> Mason, pp110-111

<sup>78</sup> Even Geach, in his counter-history of logic, appears to feel obligated to end his monograph on a note of optimism: *'But in spite of all enemies modern logic grows and flourishes; we have reaped such a harvest of discoveries that in the words of the hymn we may 'boast More blessings than our father lost'. And thanks to Russell and Frege, most of the logical insights that were lost by Aristotle's Fall have been recovered; but not, to my mind, quite all of them'*. Geach, P.21



substance of elementary modern logic textbooks is not free from controversy. Let us turn to examination of Geach's counter-history of logic.

### counter-history of logic and the controversial significance of the syllogism

*'I may summarise what I am going to say in one sentence: Aristotle, like Adam, began right, but soon wandered into a wrong path, with disastrous consequences for his posterity'*<sup>79</sup>. That the whole of Geach's account is similarly infused with the theological imagery of good versus evil demonstrates how much he believes to be at stake<sup>80</sup>; fundamentally, the symbolic status of logic endows it with the power to indoctrinate, for better or for worse. Geach's complaint centres on what he calls Aristotle's adoption of the two-term theory. In his earlier grammatical work, *De Interpretatione*, Aristotle sharply distinguished the heterogeneous elements which serve to constitute propositions: following Plato before him, these are names and predicables, *onoma* and *rhema*. With the development of his theory of the syllogism though in *Prior Analytics*, however, he comes to treat predicates as an attachment of one term (*horos*) to another term. Geach explains: *'Whereas the rhema was regarded as essentially predicative, 'always a sign of what is said of something else', it is impossible on the new doctrine for any term to be essentially predicative; on the contrary, any term that occurs in a proposition predicatively may be made into the subject term of another predication'*.<sup>81</sup> This is the two-term theory or thesis of interchangeability. The nature of the syllogism, to be sure, is to combine propositions where the subject term of one proposition is the predicate of another. Geach's contention is that it is *'logically impossible for a term to shift between subject and predicate position without a change of sense as well as a change of role'*.

Geach suggests that Aristotle is sensitive to these difficulties. In particular, he notes that Aristotle avoids schemata like 'A is B'; his standard expression is rather 'B applies (hyparchei) to (some) A'<sup>82</sup>. In this way, he avoids the difficulty of whether 'this timber is white' can be turned around into 'white is this timber', which presumably it cannot. Even so, Aristotle demonstrates that it can be possible for 'A applies to B' to make sense, while 'B applies to A' cannot. For example, in Aristotle's example, if B=contraries, and A=there being a single science of them, the statement 'There is a single science of contraries' can be rendered 'It is true to say of contraries that there is a single science of them'. However, we cannot say 'It is true to say of there being a single science of them that it is contraries' without straining the bounds of grammar to the point of gibberish.

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We might see a parallel with Nietzsche's cack-handed and misconceived attempt at the end of 'The Birth of Tragedy' to amend his whole historical thesis so as to pay tribute to his friend Richard Wagner. For after meticulously theorising the historical rise and fall of the spirit of Greek tragedy, Nietzsche claims that in the present day the self-same spirit has been suddenly single-handedly revived by Wagner; this was a tribute by which Nietzsche was to later become embarrassed, after ending his friendship with Wagner.

<sup>79</sup> Geach, P.1, History of the Corruptions of Logic

<sup>80</sup> For example, P.13 *'Between such logic [referring to the 'two-class theory'] and genuine logic there can only be war; what fellowship has light with darkness?'*

<sup>81</sup> *ibid.* pp4-5

<sup>82</sup> Geach, P.6



Aristotle's difficulties here reinforce Kapp's point that Aristotle's model of the syllogism cannot have been drawn from experience. In recoiling from the problematic forms of natural language into abstraction, Aristotle does not draw closer to experience (as Leibniz and Russell would later hope) but rather farther away, testing the limits of our interpretative ability.

The excessively oblique nature of the 'syllogistic process' itself is noted by both Scholz and Geach. Scholz disputes the transparency of Aristotle's definition. '*For inferring in Aristotle's sense is not [Scholz's emphasis] a "discourse in which certain assertions are made and something different from what has been asserted occurs necessarily on the basis of what has been asserted"* [Aristotle's definition of syllogism], *but it is an activity, an operation or process which presupposes a certain disposition of elements and is composed of certain subsidiary activities*'<sup>83</sup>. Scholz is also adamant that the syllogism is not a judgement, i.e. in the psychological sense (contra "the great Bolzano"), and remarks on the appropriateness of 'the colorless expression "logos"' which Aristotle chose to characterise the syllogism.<sup>84</sup>

Notably, scholastic philosophers believed they had found the syllogistic principle in the slogan '*dictum de omni et nullo*' (what is true of a class is true of everything included in the class)<sup>85</sup>. The justification lay in the fact that the 'dictum de omni' seemed to encapsulate the logic of the so-called 'first figure of the syllogism', which may be rendered: 'All B are C, All A are B, Therefore all A are C'. Since Kant, the 'dictum de omni' became the '*nota notae est etiam nota rei ipsius*' (a mark of a mark is a mark of the thing itself).<sup>86</sup> The first figure of the syllogism is then rendered: 'C has the attribute B, A has the attribute C, Therefore A has the attribute B'.<sup>87</sup>

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<sup>83</sup> Scholz, P.31

<sup>84</sup> Scholz P.32

<sup>85</sup> Mill, P.190, Scholz P.33

<sup>86</sup> Kant, Logic, P.81

<sup>87</sup> Kant, P.83



### primer on the structure of the figures and moods of the syllogism

the syllogism is traditionally divided into three or four figures, depending on the writer. Each figure is determined by the position of the middle term in the major and minor premises. The middle term is the term common to both premises, major and minor. The major premise is the premise containing both the middle term and the other term appearing in the conclusion, and is traditionally presented first. The minor premise is the other one. The major term is the term, other than the middle term, also occurring in the major premise

Thus:	position of the middle term	
<u>figure</u>	<u>major premise</u>	<u>minor premise</u>
1	subject	object
2	object	object
3	subject	subject
4	object	subject

There is a historical controversy over whether the fourth figure constitutes a distinct mode of reasoning. Even so, it neatly completes the above table.

Each figure is further divided into moods according to quantity and quality of the premises. The quantity of the premise may be universal ('all A', or just 'A') or particular ('some'). The quality of the premise may be affirmative or negative (e.g. all A are B, as opposed to not all A are B). Traditionally, every mood of every figure has a particular name.

Mill has mixed feelings about the status of the 'dictum de omni'. On the one hand, as a generalisation of the first figure of the syllogism, it expresses the logical primacy of the first figure over the others, which can be 'reduced' to the first figure. Science, moreover, will always concern affirmative and negative universals, and thus will principally deal with the first two moods of the first figure. To be sure, Mill is very concerned to show that logic should serve as a handmaiden to empirical science. On the other hand, Mill dislikes the metaphysical baggage of the 'dictum de omni'. It suits a belief in universals, that *substantia secunda*.<sup>88</sup> If we disregard this baggage, the 'dictum de omni' may be seen to be nothing more than a circuitous explanation of the word 'class'. Mill is similarly concerned that even though belief in universals has waned, logic has become just such a juggling of words. Yet names cannot think for us. We should concern ourselves far more with the facts of nature than with the sterile facts of classification.<sup>89</sup>

Now, Scholz's disavowal of a syllogistic principle redounds on the model of the different figures and moods of the syllogism. Scholz claims that '*the Aristotelian syllogistic presupposes much more than a single principle, to wit, presupposes apart from "Barbara" and "Celarent" all the operational rules requisite for the reduction of the*

<sup>88</sup> Mill, P.199

<sup>89</sup> Mill P.203



*rest of the 12 Aristotelian modi to this rootstock*<sup>90</sup>. If this is the case, then it would appear that Aristotle discovered no great invention in the syllogism after all.

Geach helps to bring this irony home. According to Geach, *'Aristotle's going over to the two-term theory was a disaster, comparable only to the Fall of Adam. What kept Aristotle from seeing he had gone wrong was the spectacular success of his theory of syllogism'*.<sup>91</sup> Geach identifies the spirit of the misguided interchangeability thesis as underlying the so-called 'rules of reduction' which allow the different moods of the different figures of the syllogism to be formally reduced to the first figure. These rules of reduction legitimise the reversal of subject and object in a premise, with the caveat that the necessary 'corrections' are made to the quantity and quality of the proposition (corrections which must appear arbitrary, as Scholz notes, in that as they are in no way necessitated by any universal syllogistic principle itself). Geach surmises that it is nothing other than a hidden ambivalence towards Aristotle's interchangeability thesis which has underlain the historical ambivalence, even repugnance, towards the so-called fourth figure of the syllogism. Logicians have swallowed the thesis, yet as this unconscious ambivalence shows, it has been without entirely good faith. Aristotle himself recognised the validity of such arguments, yet excluded them from his systematic account of syllogistic forms. Geach tells us that *'the grounds for this invidious distinction have been various, and all very bad'*. Kant himself wrote a mini-treatise on 'The Mistaken Subtlety of the Fourth Figure of the Syllogism', as an appendix to his Logic. Kant nonetheless upheld the distinctiveness of the other three figures.

Geach's point is that what marks out the fourth figure of the syllogism like a sore thumb is merely an over-use of the principle of interchangeability between subject and object (while respecting the necessary 'corrections'). Yet it is the very same principle of interchangeability which underlies all the rules of reduction which have facilitated the traditional picture of at least three distinct syllogistic figures. *'A logical gear change.... the shift of a term from subject to predicate position, or the other way round, occurs three times in any fourth figure argument, but only once in any other Aristotelian syllogism'*.<sup>92</sup>

Notably, Scholz contradicts his earlier insights and correlative rejection of a syllogistic principle when he comes to describe the magical powers of the new symbolic logic: *'It was further brought out earlier that Aristotelian logic is not able to describe syllogising. What we are doing when we syllogise we have come to know with precision only through symbolic logic'*. Such an assertion can only be true if what we are doing when we syllogise is merely symbolic logic itself. We are doing nothing over and above.

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<sup>90</sup> Scholz, P.33

<sup>91</sup> Geach, P.5

<sup>92</sup> Geach P.9