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Comments on Puzzling Eminence Effects

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It is not easy to comment on a report in which no data are presented that permit any form of numerical reanalysis. Nonetheless, I do not agree with the conclusions of the author.

The author himself has demonstrated earlier (Ertel, 1988) that the Gauquelin data were biased, but he argued that these data showed an independent 'eminence effect'. Elsewhere (Nienhuys, 1993) I have argued that this eminence effect is not very convincing. In passing, I remarked that Ertel used three reference books that he had obtained from Michel Gauquelin. So some kind of bias might have come in that way.

I will now back up that argument with some numbers. The sources D, 0 , and B in the abbreviations of Appendix 3 of (Ertel, 1988) came from Gauquelin. These were the *Dictionnaire des Sports* of B. le Roy, four volumes of *Fahuleuses Histoires*, published by O.D.I.L., and the *World Almanac of Who*, edited by L.V. Umlauf.

If we ignore citations in these three sources, the eminence effect disappears almost completely. The following table is built up in the same manner as Table 1 in (Nienhuys, 1993), but for clarity percentages are added in the kS columns in cases where the full class has at least 30 members.

The numbers in the table do not show much of an increasing trend (i.e. an eminence effect). In addition we may remark that in the total of 4391 athletes investigated by Ertel (1988) there were 443 athletes that were not mentioned in sources D,O,B, but in at least one other source. Of these 443 there were 79 born in Mars sectors 1 or 4 (12-sector division) where theoretically 76 with a standard deviation of 3 may be expected. So these 443 didn't show (collectively) a Mars effect. As the 74 of these that were not published by the Gauquelins had only 7 (9.5%) born in a Mars key sector, something of a Gauquelin bias remains in this subsample.

If we present the data in the form of a graph, like Figure 3 of (Ertel, 1988), the graph of Figure 1 results, and again we see that the trend effect almost completely disappears. Only in the group of very famous athletes (4 citations or more) there is a surplus of 11 (namely 34 out of 91, where 23 would be expected from the key sector frequency in the total population of 4391 athletes). As these 91 athletes were almost all (with the exception of 9 Americans and 1

TABLE 1
Distributions of published French, unpublished French, published foreigners, unpublished foreigners, with corresponding numbers of those born in key sectors (6 sectors out of 36, citations in sources D,O,B ignored). Class 1: no citations, Class 2: 1 citation, etc.

Class	PFR	kS	UFR	kS	PFO	kS	UFO	kS
1	983	228 (23.2%)	560	73 (13.0%)	977	199 (20.4%)	764	127 (16.6%)
2	249	55 (22.1%)	105	13 (12.4%)	276	60 (21.7%)	47	6 (12.8%)
3	73	12 (16.4%)	13	2	132	29 (22.0%)	8	0
4	36	5 (13.9%)	5	1	71	13 (18.3%)	1	0
5	13	4	-	-	49	15 (30.6%)	-	-
6	3	2	-	-	21	5	-	-
7			-	-	5	1	-	-
Total	1357	306	683	89	1531	322	820	133

Italian) mentioned in sources D, O, or B as well, this surplus of 11 is not impressive.

Ertel's Figure 3 showed also the results of the so called 12-sector data. In this connection we recall that the concept of key sector can be defined in several ways. Ertel's research dealt with sectors 36, 1, 2, 3, 9, 10, 11, 12 as key sectors (in a 36-sector division), whereas the original division in 12 sectors corresponds to sectors 1, 2, 3, 10, 11, 12 in the 36-sector system. I show the '12-sector' data in a separate graph, Figure 2, so Figure 2 summarizes the data in Table 1. The error bars in these graphs represent 90% confidence intervals around the population mean. Ertel's legend to his Figure 3 claims that they

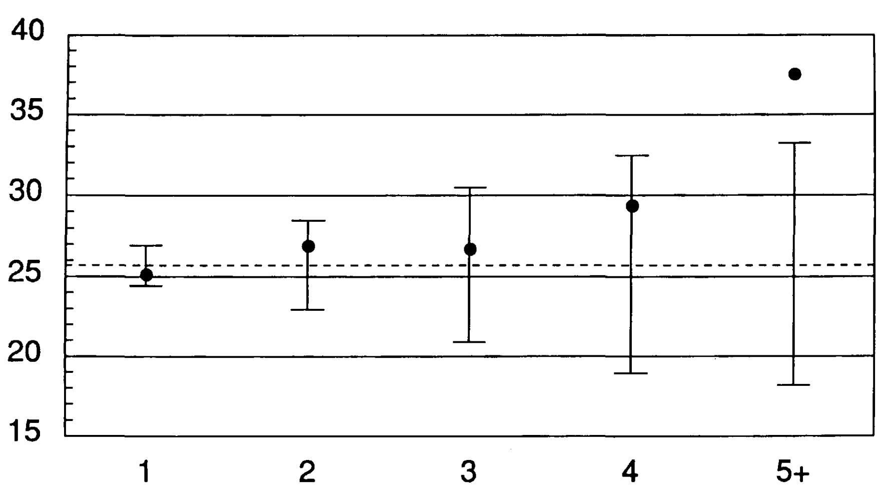

Fig. 1. The eminence effect vanishes when the three sources obtained from Michel Gauquelin are disregarded. Shown are: percentage (25.69%) of athletes born in key sectors 36,1,2,3, 9,10,11,12 (dashed line), error bars corresponding to 90% confidence intervals, centered on the dashed line, and actual key sector percentages of athletes with respectively 0, 1, 2, 3 or more citations. The last class contains 91 members, of which 34 were born in key sectors.

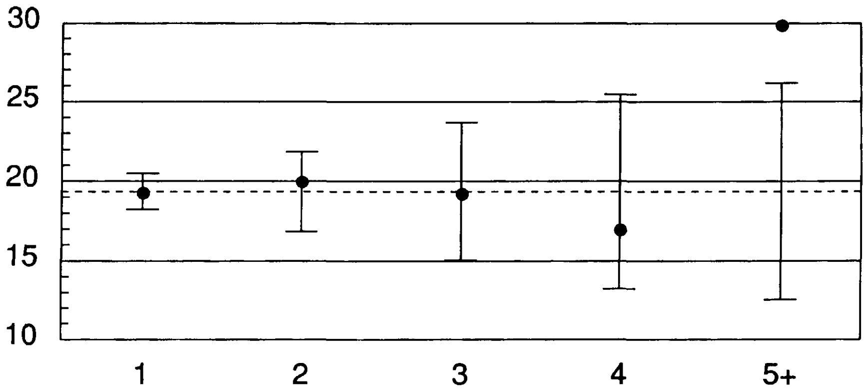

Fig. 2. As Figure 1, but now with sectors 1, 2, 3, 10, 11, 12 taken as key sectors. The average is now 19.36%, and the last class has 27 members born in key sectors.

represent 95% confidence limits, but their lengths do not match his Table 6. They seem closer to 90% confidence limits.

Instead of ignoring citations from D,O, and B we may ignore all other citations. In that case we get a graph (Figure 3) which shows a much clearer increase than the graphs of (Ertel, 1988). The conclusion seems inescapable: one cannot with any confidence claim that the eminence effect has nothing to do with a Gauquelin bias. Figure 3 represents graphically the fractions 66512714, 30511159, 1581518, and a chi-squared test yields 8.525 with 2 degrees of freedom, corresponding to a 'significance' level of 1.4%.

Ertel reports on several investigations of the eminence effect, to wit: wrong slopes (Mars Effect with olympic medallists, Saturn Effect with scientists), the unexpected drop in the highest ranks of actors with Jupiter and Müller's test of eminent professionals. After so many failings one might easily conclude that the whole idea doesn't work.

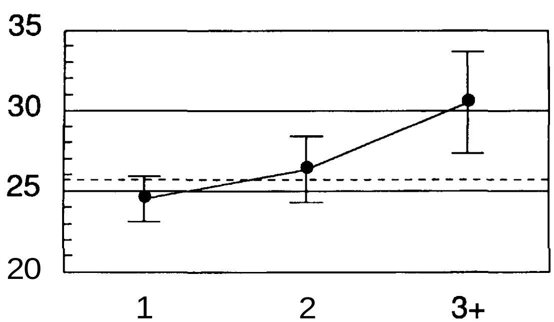

Fig. 3. As Figure 1, but now only citations in the three Gauquelin sources (and in no other sources) are counted. The slope is about 3% per citation, roughly double the slope of Ertel's eminence effect.

This is not Ertel's conclusion. He postulates ('a breathtaking inference') that the straight lines found or predicted previously were just part of a curve. Now there is no way to compare the value of a citation in *Dictionary of scientific biography* with one in *The international cyclopedia of music and musicians*. One might argue that the general public is very familiar with contemporary film actors, musicians and sports champions, but that in matters of science public knowledge is restricted to Pythagoras, Newton and Einstein plus a few national heroes (like Descartes, Pascal, Pasteur and Curie in France), and hence that 'scientific excellence' rates far below 'sports or music fame'. Because there is no way to objectively compare excellency in different professions, Ertel can at will hypothesize that the scientists are so excellent that the scientists are collectively in the 'truly excellent' area (where the trend in the planetary effect is reversed) and the musicians not. With this type of analysis almost any outcome can be fitted to existing data.

Ertel's curvilinear model in fact has four parameters: the onset of the first and second slope, and the values of both slopes. Maybe the location of a horizontal piece in between can be counted as a fifth parameter. No wonder he can fit just about anything with at most seven points and large error margins. Usually (in physics) the addition of extra parameters to a model is considered the opposite of simplification. But Ertel confuses unification with simplification.

I'll leave it to the reader to ponder whether this exercise is in curve fitting mirrors 'the precision of planetary eminence discrimination' or 'the near end of the entire spook' in a quagmire of complexity. But to consider 'prevented the triumph of true disbelievers' as an advance in science seems strange.

The strong influence of the sources D, 0 , and B may serve as an illustration of the limits of citation analysis. In this case the conclusions are only as good as the choice of sources permits. If for some reason the sources are biased then this bias is in the conclusions too. For example, if the sources are chosen in such a way that the USA (with a population of over 200 million) is represented much less than a few European countries with a comparable total population, then these sources will of course indicate a lack of excellent sportsmen among Americans.

The conjectured modus operandi of the Gauquelin bias may partly explain the puzzling eminence effects. Suppose this bias is the result of choosing for separate groups of champions separate proficiency levels. In each separate group the choice of a single level that maximizes the 'Mars Effect' would nearly always be done in such a way that the very famous (Gold Medal winners) would be included. So the very famous would not be the subject of any kind of bias, and therefore their Mars percentage would be close to that of the general population. In other words the bias would be strongest in the low range, and decrease towards higher ranges. Also, one would expect that in the unpublished material the Mars percentage would also decrease with increasing eminency. In fact, with some imagination one can discern such trends in the data of Table 1, but they are not very strong. Therefore I think that selection by separate setting of proficiency standards cannot be the only source of the Gauquelin bias, other methodological errors may also be responsible.

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