# The Mars Effect in Retrospect

*The so-called Mars effect has haunted science for forty years now, but there's a light at the end of the tunnel. It most likely has been an illusion after all.*

JAN WILLEM NIENHUYS

The Mars effect hypothesis was first published by the French psychologist Michel Gauquelin in 1955. It says that Mars occupies certain positions in the sky more often at the births of sports champions than at the births of ordinary people. More precisely, the celestial path along which Mars travels from rising to setting is divided into six equal parts, called *sectors*. Sector 1 starts where Mars rises; sector 4 starts when Mars crosses the north-south meridian (the mid-heaven); and sector 6 ends with Mars setting on the horizon. The *key sectors* for sports champions are sectors 1 and 4. The time that Mars is below the horizon is similarly divided into sectors 7 through 12. Gauquelin claimed that among outstanding sports champions the *Mars rate*—percentage born in key sectors—was not around the base Mars rate of the population at large, namely 17 percent, but rather more like 22 percent.

Gauquelin had more such hypotheses. They all involved

sectors 1 and 4 and various combinations of planets and professions. If these findings could be reliably reproduced, then they might herald a major overhaul of science, even though they were devoid of any practical importance whatsoever. These planetary hypotheses are unrelated to the very real phenomenon that the birth dates of proficient sports people tend to be distributed very nonuniformly across the seasons (Dudink 1994). Indeed, the rise of Mars can occur any time of the day, independent of season.

German astrologer Peter Niehenke (1994) has called these alleged planetary effects invaluable scientific facts; quoting the German psychologist Suitbert Ertel, who has stated that Gauquelin's findings are just like any other empirico-theoretical scientific structure that has been proved true in history. The British psychologist Hans Jürgen Eysenck thinks that Gauquelin's results are the only reason not to reject astrology completely (Gauquelin 1988). Astrologer Robert Hand has stated that Gauquelin's findings are "one of the strongest threats to mechanist-materialism in existence" (Mann 1987); and A. Mather is on record with, "It is probably not putting it too strongly to say that everything hangs on it" (Mather 1979).

Gauquelin's hypothesis has been tested several times. The first such test was undertaken by the Belgian Para Committee (Comité Para) in 1967. They let astrologer Luc de Marré collect birth data (dates, places, times) of 62 Belgian soccer players, and Gauquelin collected data of 473 French champions, many of whom were already known to Gauquelin and even published by him in 1955. In 1976 the final result was announced. Out of the 535 champions, 119 (22.24 percent) were born in a key sector. The Para Committee, however, was not convinced. They considered the result to be merely a rejection of Gauquelin's method for computing the base rate, which they thought invalid.

To get the exact base rate for the population at large is not so simple. One might naively think that two sectors out of twelve make for a 16.67 percent base rate, but there are various small effects that raise this number somewhat. In the columns of *Leonardo* and *The Humanist,* a lively discussion on astrology in general and this subject in particular had been going on since 1973. In 1976, after the publication of the Para Committe test results, statistician Marvin Zelen proposed in *The Humanist* a test to settle this matter (Zelen 1976). The test involved collecting data about a huge number of "ordinary people." The Gauquelins (Michel and his wife Françoise) agreed to perform the proposed test under controlled conditions.

The results of the "Zelen test," as it is known, were published by the Gauquelins in *The Humanist* in late 1977 (Gauquelin and Gauquelin 1977). They showed that the base rate for the general population was close to 17 percent after all. This meant that the Mars effect was either genuine or due to data-handling errors. In their adjoining commentary on the Zelen test results, Zelen, Paul Kurtz, and George Abell pointed out possible compromises to the representativeness of the sports champion sample used by the Gauquelins as a result of their deviating from the test protocol (Zelen et al. 1977). Hence a completely new test with entirely fresh data was called for. This new test was the famous U.S. test of the Mars effect for American sports champions, the results of which were published in the SKEPTICAL INQUIRER (Kurtz et al. 1979–80). The bottom line was that out of 408 champions only 55 (13.48 percent) were born in a Mars key sector.

This test generated a lot of discussions, and discussions about discussions, almost *ad infinitum,* and certainly *ad nauseam.* In the process, Zelen et al.'s mildly critical comment on the results of the Zelen test was transmogrified into an urban legend about a major coverup by dastardly CSICOP. (Zelen was a fellow of the newly founded Committee for the Scientific Investigation of Claims of the Paranormal, along with Kurtz and Abell.) A story by Michel Rouzé on the U.S. test in the French science magazine *Science & Vie* in March 1981 drew a response from Michel Gauquelin, which finally led in 1982 to the publication of a research protocol for yet another test to be performed, this time by the French skeptical committee CFEPP (Comité Français pour l'Etude des Phénomènes Paranormaux).

The French skeptics eventually found that out of 1,120 champions, 209 (18.66 percent) were born in a key sector (Benski et al. 1996).[1] The protocol had stipulated that the base rate be determined in the manner proposed by the Zelen test,[2] requiring the collection of an enormous amount of data. However, the CFEPP was exhausted and could not collect any more data, let alone many thousands of birth times (24,000 from Paris alone!), to serve as a comparison. After consultation with Michel Gauquelin, another method was proposed, namely, random coupling of years, dates, places, and times to generate a set of artificial records. This method had already been considered by the Para Committee in 1970. It yields 17.70 percent as base rate. The difference between 17.70 and 18.66 percent is trivial. It should be emphasized that the French test covered a population that had been investigated three times before by Gauquelin and the Para Committee, in 1955, 1967, and 1979.

*The value of the CFEPP test is its protocol.* The test determined what remains of the Mars effect when one starts entirely from scratch, without the direct involvement of Gauquelin, and the answer is: nothing.

Such tests have an enormous error potential. The sports dictionaries from which the champions' names are taken contain errors, and selection errors can be avoided only by having two dedicated workers or teams do the whole job independently in duplicate. Before a champion's name ends up with his or her Mars position in the final database, many more errors are made. At least, that has been my experience while checking all details of the CFEPP investigation. Even after the book was published, I found some errors. The most intractable error was CFEPP's miscalculation of the base rate (they had 18.20 percent instead of 17.70 percent). A suboptimal place-

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ment of a single instruction in their backup randomization program had slowed the speed of convergence.

## Gauquelin Bias

The CFEPP protocol called for consultation with Gauquelin in all stages of the research (thus allowing him an indirect advisory role). So the CFEPP's lack of internal checks shouldn't have been a serious matter. But here something went wrong as well. Because of communication problems within the CFEPP, Gauquelin was informed only after all data had been gathered. However, he was then (in 1990) given ample opportunity to comment on their data.

Regrettably, Gauquelin's proposals to amend the CFEPP's database revealed a severe selection bias on his part. I did a comparison of Gauquelin's database (his published data as well as copies of his files as collected by Suitbert Ertel) and the CFEPP's data. There were 132 discrepancies between the two databases. By "discrepancy" I mean that either the date or time of birth for a champion was different. For each of these 132 cases, I also compared the Mars sector calculated for the champion by Gauquelin and by the CFEPP.[3] Some of the discrepancies, of course, resulted in different Mars sector computations; others did not. I divided the 132 discrepancy cases into: 1) those born in a key sector according to Gauquelin but not born in a key sector according to CFEPP; 2) those born in a key sector according to CFEPP but not born in a key sector according to Gauquelin; 3) and those that I call "indifferent" —for example, cases where the discrepancy in date or time of birth did not result in different Mars sector computations; or those where the discrepancy in date or time of birth did result in different Mars sectors, but neither sector was a *key* sector (e.g., 2 and 11). Finally, I checked which data discrepancies Gauquelin reported to the CFEPP and which he did not. (It is important to note that Gauquelin saw only the CFEPP's *raw* data, i.e., the data showed no Mars sectors.) All of this is summarized in Table 1.

Of the 132 discrepancies, Gauquelin reported only 39 to the CFEPP. Twenty champions were born in a key sector according to Gauquelin but not according to the CFEPP data. Gauquelin reported all 20 of these discrepancies, recommending that the CFEPP data be changed. However, in the reverse situation—17 champions were born in key sectors according to the CFEPP data but not according to Gauquelin—Gauquelin did not report the discrepancies. It seems an unavoidable conclusion that Gauquelin had been computing Mars positions from the raw CFEPP data, and that he based his decisions on what to report and what not to report on the results of these computations.

Furthermore, the CFEPP had extracted 1,439 names from two sports dictionaries, but for 368 names they drew a blank at the town halls. In his comments on CFEPP data, Gauquelin said that he could provide the CFEPP with complete records in 79 cases. But again, the same pattern prevailed: of the 368 names, Gauquelin actually had records for 173 in his files. Of these, 39 were listed as key-sector champions, and Gauquelin reported 37 of these to the CFEPP. Of the 134 non-key-sector champions, Gauquelin reported only 42.[4]

**Table 1. Evidence of Bias in Gauquelin's Comments on CFEPP Data**

| 132 champions whose birth data differed in Gauquelin and CFEPP databases | Reported | Not Reported |
|---|---|---|
| Born in key sector according to Gauquelin; not born in key sector according to CFEPP | 20 | 0 |
| Not born in key sector according to Gauquelin; born in key sector according to CFEPP | 0 | 17 |
| "Indifferent" | 19 | 76 |
| **Total** | 39 | 93 |

Note. "Reported" means that Gauquelin reported the discrepancy in the data and recommended the CFEPP data be changed. "Not Reported" means Gauquelin did not mention the discrepancy at all.

Basically, the CFEPP selected everybody who had been at least an individual national champion or recordholder, or who had been selected to represent France in an international contest. In some cases the CFEPP erred, sometimes overlooking qualified champions and other times selecting individuals that did not qualify according to the test criteria. Again the same pattern appeared. Gauquelin pointed out only "overlooked" champions that occurred in his own database (about half of all overlooked champions), and even then, generally only those born in key sectors, ignoring most of the ones not born in key sectors. For the "underqualified" champions selected by the CFEPP, the pattern was reversed again.

Supporters of Gauquelin have discussed the CFEPP investigation. Of course they thought the CFEPP was wrong, biased, and so on. At the same time they downplayed this evidence of Gauquelin's bias by omitting most details. Apparently they think the facts are too damning.

## Dubious Cases

Some of Gauquelin's remarks about the CFEPP data were difficult to evaluate because he doubted the data for a rather inhomogeneous group of champions. In some cases Gauquelin surmised a confusion of identities, and in others the birth towns seemed incorrect to him. He questioned the birth dates of several champions because they differed from the dictionary dates, even though in some cases Gauquelin's unpublished data agreed with those found by the CFEPP. This group was small (only 17 names), but 9 did not occur in Gauquelin's files at all. This is remarkable because almost all other remarks by Gauquelin concerned champions that were in his files.

The reasons for doubt were mostly that the dictionaries and the town halls gave different information, and in one case there was a conflict with another dictionary. Later investigations, which I won't discuss in detail, have suggested that the Mars effect correlation was stronger among champions listed in several sports dictionaries. So when Suitbert Ertel recently attacked the U.S. test by comparing it to the Para Committee test,[5] I decided to get to the bottom of this. In any such

research an investigator may decide, at the merest hint that data may not be reliable, to discard the data. So, in the language of statistical testing, I framed a null hypothesis, namely, that Gauquelin would never throw away data of champions collected by himself once he had computed their Mars positions. I tested this hypothesis by looking at data collected by Gauquelin that might contain many dubious data points.

More specifically, I examined sports champions whose data (as shown by the sports books used[6]) were either highly ambiguous or wrong or both, namely:

(1) champions whose month of birth differed from that stated by the reference book, including cases where the book didn't give the month;

(2) champions whose place of birth differed from that stated by the book, including cases where that place was missing or uninterpretable, for instance because of a misprint;

(3) champions whose place of birth was stated to be Paris with no further indication of *arrondissement*, and where there wasn't a reliable research method for determining the Paris *arrondissement*.

(4) champions with a place of birth with a name that is so common that it is shared with at least ten other towns. This happens only with French champions and some place names that lack an indication of *département*.

Henceforth, champions that satisfy any of the above four conditions will be called "difficult to find." Any Mars effect investigation will end up with a number of such champions, and each investigator must decide how to handle such data.

The CFEPP investigation had shown that providing a town hall with wrong birth dates will often produce an answer such as: "Sorry. We can't find this person at the given date." If the town hall can find the requested person in its records, it will often correct the birth date and thus provide the researcher with reasons for doubt. Writing to the wrong place will understandably often produce negative results, but then, if different sources give different information, any positive answer may produce doubt because at least one source is contradicted.

## Three Groups Collected by Gauquelin

That information on Paris champions is hard to find may become clear from Gauquelin's own publications. For example, France contains about 18 percent Parisians, much more than the 4 percent Parisians among Gauquelin's French champions. The sports facilities in a big city like Paris are much better than those in small towns or the countryside, so one might expect Paris to have a higher proportion of champions than the rest of France. The CFEPP had more than 15 percent Parisians in their initial sample. Incidentally, it had been remarked already in 1977 that the Mars rate among Gauquelin's Parisian champions was rather high, namely 33 percent.

Professor J. Dommanget has kindly provided me with a copy of the book used by Gauquelin to select champions[7] for the Para Committee test of 1967. This book, the *Dictionnaire des Sports* published by Seghers (Seidler and Parienté 1963), contains 636 eligible French champions; and judging from marginal handwritten annotations, Gauquelin requested birth data for 589, the remainder having no identifiable birth place. Useful data were obtained in 430 cases, and among these the number of those "difficult to find" was 88. Of these 88, 27 (30.7 percent) were born in a Mars key sector. (See Table 2.)

In 1979 Gauquelin published a new selection of European champions, taken from the successor of the Seghers dictionary, namely *Dictionnaire Encyclopédique des Sports, des Sportifs et des Performances*, by Bernard Le Roy (1973). Gauquelin considered all non-French champions mentioned in this work as eligible per se. Here the Mars rate among the "difficult to find" was high too.

From this same source Gauquelin selected 224 French champions. He used rather dubious criteria. For example, people engaged in "individual sports" were admitted only if they had at least obtained a medal in a European competition, whereas for soccer players, being selected once to defend the glory of France sufficed; on the contrary, for non-soccer team sports such as rugby and handball, more than ten selections for the national team were required. And again, the "difficult to find" yielded a high Mars rate.

Maybe the "difficult to find" among the three groups were eventually found because they were very famous, but I don't think so. There are several ways to compare fame or quality of these groups with the larger groups from which they are taken. They do not differ from these parent groups.

## Control Groups Collected by CFEPP

For comparison we may look at the "difficult to find" in the CFEPP investigation. Some criteria do not apply here because CFEPP excluded all candidates with ambiguous birth places, and moreover they had a good research methodology for Paris. CFEPP volunteers spent a lot of effort searching systematically the twenty *arrondissements* of Paris. This yielded 127 champions, about three times the 44 that Gauquelin collected in

**Table 2. "Difficult to find" Champions among Three Groups of Data Collected by Gauquelin**

| Group | Total champions found | No. "difficult to find" | No. of "difficult to find" born in key sector | % of "difficult to find" born in key sector |
|---|---|---|---|---|
| Seghers / Para Committee test (1967) | 430 | 88 | 27 | 30.7% |
| Le Roy non-French European (1979) | 134 | 37 | 13 | 35.1% |
| Le Roy French (1979) | 224 | 40 | 11 | 27.5% |
| **Total** | 788 | 165 | 51 | 30.9% |

twenty-five years. Incidentally, there were a number of "Parisians" that CFEPP couldn't locate, probably because in many cases "Paris" may have meant a suburb of Paris.

Among the entire set of 1,120 CFEPP champions, 103 were "difficult to find" for the CFEPP in the technical sense defined; and of these, 15.5 percent were born in a Mars sector. That's hardly different from the base rate. It shows that "difficult to find" does not necessarily imply a high Mars rate. But among these 103, there were 20 that Gauquelin also must have tried to find, apparently in vain (if only while looking for the "lesser champions" that he used as control groups, without publishing their names and data). Of these 20, only one was born in a Mars sector.

There were other "difficult to find" champions in the CFEPP investigation that had not been found previously by Gauquelin. Among these were 33 champions (many from Paris) who were included in Gauquelin's search for the Para Committee test, but who were never found and also not found in later searches by Gauquelin. Among these 33, only 2 were born in a key Mars sector. As before, there's nothing especially "inferior" about these champions. Table 3 summarizes this information.

**Table 3. Two Subsets of Champions Found by CFEPP and Absent from Gauquelin's Files**

| | No. | Born in key sector | Percent |
|---|---|---|---|
| "Difficult to find" for CFEPP; apparently searched for by Gauquelin | 20 | 1 | 5.0% |
| Searched for by Gauquelin in Para Committee test; not found | 33 | 2 | 6.1% |
| **Total*** | 47 | 3 | 6.4% |

*Note. The overlap of the two subsets is 6 champions; hence the total number of champions is 47, not 53.

The remaining newly found CFEPP champions comprise 91 people, of whom 17 (18.7 percent) were born in a key sector. Of these 91, 60 hailed from Paris (not "difficult to find" in the CFEPP test). A partly overlapping set of 50 was only mentioned in *L'Athlége*, hence it is not clear to me whether Gauquelin ever tried to obtain their data, and in the 13 remaining cases the town halls answered the CFEPP's inquiries, at most indicating minor corrections of the CFEPP's data.

If we consider Gauquelin's "difficult to find" Seghers and Le Roy dictionary candidates (from Table 2) together with the champions (from Table 3) that the CFEPP found, but Gauquelin didn't find even though he tried, and that were probably "difficult to find" for him, we get the summary shown in Table 4.

The conclusion seems reasonable that this is not the result of a chance process. It must be left to the reader to judge whether this is merely a product of dexterous data juggling by this author, or that 30.9 percent and 6.4 percent really differ. Readers who are fond of *post hoc* significance calculations might try Fisher's exact test.[8]

I believe Table 4 indicates a bias on Gauquelin's part. There's nothing wrong with throwing away unreliable data,

**Table 4. Evidence of Gauquelin Throw-Away Bias**

| | Not born in key sector | Born in key sector | Total "difficult to find" | Mars rate for "difficult to find" |
|---|---|---|---|---|
| "Difficult to find" for Gauquelin; found | 114 | 51 | 165 | 30.9% |
| Probably "difficult to find" for Gauquelin; not found | 44 | 3 | 47 | 6.4% |

but you shouldn't look at the Mars sector data first and then make up your mind. This is apparently what Gauquelin did. Most of the champions in Table 3 are champions that the CFEPP, in a manner of speaking, fished out of Gauquelin's wastepaper basket.

I conjecture that Gauquelin systematically threw away "unreliable" data of champions who weren't born in a key sector. In some cases he might have kept the data without publishing them, until he could obtain more certainty. Another point of support for my conjecture is the composition of the champions who weren't found by the CFEPP, but whose names had been found and published by Gauquelin before. There were 98 of these, and about two-thirds, 63, were "difficult to find." Among these there are 20 (31.7 percent) born in a Mars sector. Of course there are many of these among the Seghers champions and the French Le Roy champions mentioned above, but about half them are not.

## Ertel's Views

Ertel (1988) observed already that Gauquelin's judgment about champion quality was biased, but he tried to save the Mars effect. He said that the Mars effect was stronger among champions who were mentioned in many different sports dictionaries. I think the explanation is that Gauquelin's doubts were stronger if a champion occurred in more than one source he knew, and if these sources contradicted each other.

The total of 1,439 eligible champions of the CFEPP can be divided into six groups:

(a) found and published by Gauquelin but not found by CFEPP;
(b) found and published by Gauquelin and found by CFEPP;
(c) not found by Gauquelin and found by CFEPP;
(d) found but not published by Gauquelin and found by CFEPP;
(e) found but not published by Gauquelin and not found by CFEPP;
(f) not found, neither by Gauquelin nor by CFEPP.

From (a) to (e) the Mars rate goes down, which makes sense if one assumes that Gauquelin was holding back or throwing away "dubious" data. The Mars rate of (f) cannot be determined, but something can be said about it. Gauquelin mentioned 73 champions in this group but didn't mention 39 that he almost certainly must have tried to find. What was he holding back?

Ertel and Irving (1996) attack the CFEPP study on the same grounds. Ertel assumes that Gauquelin is free from any bias, but that the CFEPP was biased, for example by avoiding to choose famous champions or including droves of mediocre athletes—as if the CFEPP secretly believed Ertel's theory.

I don't think this is correct. First, there's the evidence that Gauquelin was biased in several respects. Second, Ertel doesn't mention group (e). By his count (generally his counts are erroneous) group (e) should contain 36 champions, with a Mars percentage of only 8 percent. How could a CFEPP bias bring that about? Third, I have looked at all French champions in Gauquelin's database whose names occurred in at least two sports dictionaries different from Le Roy. Altogether there were only 41 that were not selected by the CFEPP, generally for good reasons (such as unqualified, birth place missing, or not at all mentioned in the CFEPP's sources, or born outside of France). *Only 3 of them were born in a Mars key sector. So* where are those famous champions that the CFEPP deviously excluded to suppress the Mars rate? Ertel has pointed out that the CFEPP refused to include Algerians. Ertel only looks at the Algerians in Gauquelin's database (17 qualified, with a Mars rate of 41 percent), and he ignores that the CFEPP's sources contain twice as many, namely 34. Why would a CFEPP search turn up precisely Gauquelin's Algerians? Fourth, the CFEPP's standards couldn't be much higher, as the protocol specified a minimum of a thousand champions.

Fifth, Ertel claims that group (c) consists of "athletes for whom Gauquelin had never requested data," and he displays prominently the low Mars rate (as computed by him) of this group. As we have seen, it is simply not true that Gauquelin never requested these data. And if a Gauquelin bias is the explanation for the low Mars rate shown in Table 3, then there is no low Mars rate left to explain for the remaining 91 members of this group.

The Mars effect hypothesis was based on data collected by Gauquelin. The evidence for Gauquelin's massive bias is compelling. No value can be attached to the hypotheses these data gave rise to. This does not imply any willful deceit on the part of Gauquelin. The eminent physicist René Blondlot never gave up believing in his nonexistent N-rays and died twenty-seven years after his "discovery." The academician Boris Deryagin acknowledged after ten years he was mistaken about polywater. Two-time Nobel laureate Linus Pauling never gave up his belief in vitamin C, even though clear clinical evidence never materialized. Even the best scientists can be trapped in illusions of their own making. Michel Gauquelin died in 1991. His archive is gone, and no one knows what he would have said upon confrontation with his bias. Let's leave it at that and move on to more fruitful research.

## Acknowledgments and Final Remarks

I would like to thank Françoise Schneider-Gauquelin for generously and promptly providing me with Gauquelin's publications containing names of European sports champions, and Carl Koppeschaar for making Gauquelin's database (as collected by Ertel) available to me, as well as for many other things. I also would like to thank Gwen A. Burda, J. Dommanget, Cornelis de Jager, Ivan Kelly, Jean Meeus, Lewis Jones, Paul Kurtz, Ranjit Sandhu, and Edgar Wunder for various contributions and comments.

This article is a condensed and amended version of a paper presented at the World Skeptic's Conference, June 20–23, 1996, in Amherst, New York. The full paper and all data underlying it can be obtained from the author.

## Notes

1. The numbers given in this paragraph differ from the ones in Benski et al. 1996, because only after the appearance of that book could I muster the time and energy to write (from scratch, but with the help of the excellent book by Jean Meeus [1991]) a program to compute the rise and set of Mars with two-second precision.

2. The Zelen test was based on weighing the control population, giving all births corresponding to a single champion birth date a fixed joint weight. For the CFEPP test, all control births should have received equal weights, so the Paris controls would have constituted a large part of all controls.

3. Gauquelin had Mars sectors computed in his files. The data made available to me by the CFEPP showed their Mars sector computations (when Gauquelin saw the CFEPP data, it did not show Mars sectors).

4. From copies of Gauquelin's files collected by Suitbert Ertel.

5. Ertel and Irving (1997), followed by a rejoinder by Kurtz et al. (1997). Small errors in the latter, notably in what is here Table 3, have been corrected.

6. I investigated the Seghers dictionary (Seidler and Parienté 1963), used in the 1967 Para Committee test; the Le Roy dictionary (Le Roy 1973), used by Gauquelin in 1979 and by the CFEPP; and *L'Athlége* (1951), used by the CFEPP.

7. For French champions another source was also used, namely lists published by France Football of national soccer team players up until 1962. These lists ultimately yielded 43 names with birth dates and birth times.

8. Significance calculations are a kind of scientific bet. They only make sense if they are planned ahead of data collection. In ordinary life, betting after the race is over, or placing several bets for the price of one, isn't considered fair, and in this respect science ought to be like ordinary life.

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