

## *Prospectus*

# **Seminar: Why Savants Err [How Smart People Go Wrong]**

### **1. Catalog Information**

Psy 607 Why Savants Err

CRN 15868 04 Credits

Instructor: Ray Hyman

Meetings: Monday, 10:00 a.m.--11:50 a.m., 156 Straub

*First meeting will be Friday, Oct 3 @ 10:00 a.m in 156 Straub<sup>1</sup>*

### **2. Title**

The actual title of the seminar is *How Smart People Go Wrong*. This title has too many characters for inclusion in the Time Schedule. I had to shorten it to *Why Savants Err* to be acceptable to those who put out the schedule. To forestall a possible misunderstanding, the word *wrong* in this title does not refer to moral acts. Rather, my intent is to focus on how otherwise intelligent and competent scholars have blundered in intellectual matters.

### **3. Objectives**

We will examine some historical cases where a famous scientist or scholar goofed badly by supporting a claim which, at least in retrospect, he or she “should” have known was not adequately justified. We will focus on cases where we have sufficient detail to place reasonable constraints on possible reasons for the error. The goal is to provide a plausible reconstruction of the erring scholar’s cognitive processes that will account for the error. In making this reconstruction we will adhere to what philosophers call the principle of charity. According to this principle, we should reconstruct the scholar’s thinking under the assumption that he/she was acting rationally given his/her goals and the information available.

Such reconstructions differ from what is called psychohistory in that we will not assume that our particular reconstruction mimics the actual thinking of the scholar. We are less concerned with the actual cognitive processes and more concerned with constructing a plausible scenario. A good reconstruction will provide a plausible scenario in terms of contemporary cognitive psychology and cognitive science. In some cases, two or more different reconstructions might adequately account for the facts (I will illustrate one such case during the seminar).

The idea is to see to what extent we can use our current knowledge and theories about

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<sup>1</sup> One or more meetings might take place on Fridays 10:00 a.m.--11:50 a.m., 156 Straub

human cognition to provide reasonable accounts of complex behavior in the real world.

#### 4. Some possible cases.

I will provide a list of candidate cases from which participants can choose. I have selected cases with the following criteria in mind:

- 1) the scholar or scholars who committed the blunder were otherwise accomplished, sane, and competent individuals in their areas of speciality. Typically, the same individual who goofed, at the same time was producing outputs that were widely acknowledged to be first rate.
- 2) there exists sufficient documentation to provide some reasonable insights into the circumstances, thought processes, and motivations of the erring scholar.

Some of these cases would be :

##### 1) PILTDOWN MAN

In 1912, an amateur archaeologist and a professional scientist announced the discovery of a new genus of fossil man, which they believed was the 'missing link' anticipated by Darwin. The fossil finds consisted of some cranial fragments that all experts agreed came from an essentially human creature and part of a jaw bone that experts would normally attribute to an ape. However, the finders claimed that this ape-like jaw belonged to this human skull. Despite some initial skepticism, Piltdown Man was accepted as a legitimate human ancestor until 1953. In 1953, Jospher Weiner and some colleagues demonstrated that the skull and the jaw did not go together and that creation of Piltdown Man was clearly a deliberate hoax. Many books and articles have tried to fathom who committed this forgery. However, for our purposes, we want to know how come the very best anthropologists were taken in by this rather crude forgery for over 40 years.

##### 2) N-RAYS

In 1903 Blondlot, a physicist at the University of Nancy in France, announced the discovery of a new form of radiation which he named N-Rays. Soon, hundreds of papers appeared by well-known physicists and physiologists on N-Rays. Among other things, N-Rays were found to be emitted by the brain and Charpentier, for example, claimed he could use them to tell which parts of the brain were most active during different cognitive activities. After this initial burst of activity, however, signs of trouble occurred. Physicists in Italy, Prussia and Britain had trouble finding N-Rays. It turned out that almost all the physicists who were finding and doing research with N-Rays were in France. The non-French scientists were suspicious. The French scientists explained their success by arguing for a special Gallic sensitivity that foreign scientists lacked. In September 1904, the American physicist Robert Wood visited Blondlot. Blondlot graciously spent a day demonstrating his experiments with N-Rays. Wood, who had not been able to see N-Rays in his own laboratory, played some tricks on the unsuspecting Blondlot. In one experiment, Wood secretly removed the aluminum prism that allegedly would block the N-Rays. Not realizing that the prism was missing, Blondlot had no trouble apparently seeing the

N-Rays regardless of whether they were supposed to be blocked or not. After Wood's visit, the scientific community decided that N-Rays do not exist and they vanished from the scientific literature (although Blondlot continued to believe in them).

### 3. GALL AND PHRENOLOGY

Gall is the physician who in the late 1700s believed that he noticed a correlation between skull shape and various faculties. He was among the first scientists to popularize the brain as the seat of cognitive and affective faculties. He also pioneered in dissecting the brain. Even his detractors admitted that in this latter aspect, he was far ahead of other physiologists. Phrenology was spread beyond France, where Gall had settled, to England, Scotland, and the United States. It was taken quite seriously by scholars and laypeople for over 100 years after Gall first started it. In many ways, Gall was a much more committed empirical scientist than most of his detractors who argued against his ideas mainly on theological and philosophical, rather than empirical grounds.

### 4. CLEVER HANS

Perhaps you have heard something about Clever Hans, the talking horse. Hans was a horse who had been taught arithmetic, languages, and other things that a typical student in Berlin might learn in school. His owner, Her von Osten, was a retired school teacher who sincerely believed that horses had the same intellectual potential as humans. They simply were never given the opportunities that humans had. So he spent a few years patiently teaching his horse to tap out answers with his hoof or spell words by nudging letters of the alphabet with his nose. A blue ribbon committee of zoologists, educators, and animal trainers investigated and reported that Hans achieved his feats by means unknown to animal trainers. They implied that Hans, in fact, was intelligent. Pfungst, a student of the famous psychologist Carl Stumpf, got permission to study Hans further. Eventually, he discovered that Hans was reacting to minimal motor cues that the questioners inadvertently provided to Hans. Such cues, for example, simply signalled to Hans when to start tapping and when to stop.

### 5. MARTIAN CANALS

Percival Lowell believed he could see canals on Mars. Indeed, he and his followers drew elaborate maps of these canals. The canals, being straight lines, had to be products of intelligent beings. Lowell was so convinced of this, he even wrote books describing the civilization on Mars and the construction of the canals, etc. The astronomical community split over these claims. Many prominent astronomers claimed to see what Lowell saw and strongly supported his claims. Others claimed they could not see these canals. This dispute lasted from the late 19th Century to around 1970 when the Viking probe clearly failed to find evidence of the canals.

## 6. OTHER CANDIDATE CASES

- 1) The discovery of the Planet Vulcan by Le Verrier (the discover of Neptune)
- 2) Alfred Russel Wallace and Spiritualism
- 3) Arthur Conan Doyle and Houdini and Fairies
- 4) Johan Zoellner and Henry Slade
- 5) Berringer and his Fossil Stones
- 6) Mach Bands and Fomm's Striae
- 7) Morton's Skulls
- 8) Phlogiston
- 9) Geller and the Scientists
- 10) Poylwater
- 11) Mitogenetic Radiation
- 12) Cold Fusion
- 13) Mendel's Peas
- 14) The Creery Sisters

## 5. Seminar Requirements

Each participant will be responsible for a single case ( it is possible for a team of students to work on one case). The participant will lead a presentation of his/her case during one of the meetings as well as turn in a paper on that case.