

## **A new look -- Continued from above -- Part II**

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international / prose / post

.... Both Ivins and the FBI scientist obtained a 10<sup>10</sup> (or 10 billion) measure.

From the behavioral analysis:

"Dr. Ivins acknowledged that he was the sole custodian of the 'RMR-1029' flask that held the anthrax used in the attacks, and had unrestricted and unobserved access to the 'hot suites' where work with anthrax could be conducted anytime day or night."

From the summary:

"The evidence gathered in this seven-year investigation establishes that Dr. Bruce Ivins was the anthrax mailer -- both direct evidence that anthrax spores under his sole and exclusive control were the parent material to the anthrax spores used in the attack and compelling circumstantial evidence set forth below."

In fact, Ivins only acknowledged being responsible for the flask, telling the FBI that the RMR-1029 flask had always been in building 1425, where he worked, but that vials of the material were held in building 1412 for use in animal experiments. However, after Ivins died, Adamovicz, his supervisor in 2001, produced a copy of an Army document showing that the RMR-1029 flask had been stored for a while in the late '90s in building 1412. Adamovicz told a court proceeding that the FBI "didn't want you to see" that receipt copy, which he testified he had found in his personal files.

There is nothing unusual about Ivins's apparent forgetfulness or misperception, and, in fact, Adamovicz's document establishes that various people other than Ivins had access to RMR-1029 prior to the attacks. Those with access or potential access included Steven Hatfill, who was reportedly suspected of possibly obtaining waste anthrax from containers that were awaiting sterilization in an autoclave. Louise Pitt, who ran the animal experiments, and various animal handlers and others had direct access.

Presumably, these experiments were still going on in 2001, though an interim lack of funding seems to have limited them in August and early September.

Note that the summary statements above convey the impression that Ivins had control of the 1029 anthrax fluid, as opposed to the beaker in which it was held, implying that the attack spores could only have been grown from the liquid in flask RMR-1029.

However, prodded by reporters, FBI scientist Majidi conceded that material identical to the RMR-1029 material had been located at Battelle Memorial Institute in Ohio. Battelle is a major CIA and defense contractor known to have worked on biological defense matters. Three biologists, citing the investigative summary, said the FBI made unwarranted assumptions that the attack anthrax could not have been made at Battelle while a buddy system was in force -- that is, the FBI assumed that only a single individual was involved -- and that Battelle and other laboratories were too far from New Jersey, where postmarks showed that the attack letters were mailed. The FBI reportedly

checked commercial flight records and found nothing.

When a science writer asked where the 1029-type anthrax had been found, Majidi replied, "What we found was in RMR-1029, the repository, and then the laboratory, and the letters." Majidi was referring to the flask numbered RMR-1029, the FBI's repository of anthrax samples from numerous labs, Ivins's laboratory and the attack letters.

There is no mention of Battelle in that briefing.

Further, according to the three biologist critics, 10 laboratories showed samples that had one or more genetic markers. The fact that all four markers did not appear in these other samples does not mean none of them was a match, the trio of biologists wrote. False negatives are a rather common problem in biological experiments.

The scientists observed that among the eight laboratories that submitted a total of 63 samples with between one and three positive assay results were Dugway Proving Ground in Utah, the Naval Medical Research Center, Northern Arizona University, the Canadian Defense Research Establishment at Suffield, and a second sample from Battelle. Also, in December 2001, federal sources told the New York Times that Fort Detrick anthrax had been sent to the University of New Mexico.

"The submitters of the other three samples have not been revealed," the scientists wrote.

The three argued that the most likely sites of production of the attack anthrax are those that worked with dry spores: Battelle, Dugway, and Suffield, and their associated institutions and subcontractors.

"Battelle, for example, is well-known for its aerosol study capabilities and biodefense activities, for which dry spores are routinely needed," the three experts observed.

Ivins told the FBI that his institute never worked with dry spores because to do would pose an exceptional danger in the metropolitan area around Washington.

However, federal officials said that Ivins had had training on a lyophilizer (freeze dryer), which could have been used to dry anthrax. Ivins said he doubted use of that machine because it would damage the spore preparation too much for good quality powder. Ivins's colleagues argued that he couldn't have used the lyophilizer, which was not in a hot suite, undetected. One colleague, Patricia Worsham, testified that she would have thought non-vaccinated persons who worked in the unprotected area would have been sickened by anthrax.

Others testified that decontaminating the machine required a special mechanical process by trained technicians, and also that Ivins would have been unable to manhandle the machine into the hot suite in order to use it in a safe environment. But Paul Keim, the FBI consultant scientist whose genetic analysis pointed to flask RMR-1029, was skeptical of that argument, saying that microbiologists know how to clean up.

Though the Justice Department is unwilling to talk much about potential conspiracy, it seems as though FBI agents were not that naive. An anthrax scientist who worked at Battelle drew the FBI's interest in 2002 and quickly spiraled into alcoholism and death, relatives told the New York Times. Little is known about what caused Perry Mikesell to snap. He may have had remorse over recognition that his career choice was marked more by death than by life. Or, he may have felt shunned by fellow workers to the point that he was unable to cope. Or, Mikesell, who had worked

alongside Ivins for years at Fort Detrick, may have felt remorse over complicity in treachery and anguish about the possibility of being tried for treason.

Whether Mikesell's anguish -- so similar to that experienced by Ivins as his end drew near -- was deserved or not, it seems apparent that the FBI field agents were unconvinced by the buddy system records at Battelle, which does much classified work. Nor were they convinced by commercial flight records.

Hatfill, who was cleared by the Justice Department shortly before Ivins's death, had supervised construction of a mobile biowarfare lab while working for a major defense contractor, Science Applications International Corp. (SAIC).

The New York Times reported on July 2, 2003 that the FBI had intercepted the lab months earlier on the road to Fort Bragg, where it was to be used for training for the nearing Iraq war, and tried to impound it and test it for traces of anthrax. However, after "tense discussions," the Army held on to the lab, the Times said. A July 3, 2003 Washington Post story says examinations of the lab found nothing.

The newspaper accounts do not say whether the FBI was able to keep the lab under eyeball surveillance at all times, or whether its examiners, as opposed to Army examiners, were permitted to swab it.

As noted above, the behavioral analysis says:

"Later, Dr. Ivins' technicians reported that they had never seen the flask. He had been its sole custodian and presumably had kept it concealed in the cooler."

It continues:

"When investigators pressed Dr. Ivins's two lab technicians to describe what RMR-1029 looked like, neither of them could do so. They were aware that Dr. Ivins had created a spore preparation called the 'Dugway Spores' -- which Dr. Ivins explained to the prosecution team was another name for RMR-1029.

"However, neither lab technician was aware that the 'Dugway Spores' were contained in two flasks, and neither knew what a flask containing the 'Dugway Spores' looked like."

The idea that Ivins had been deliberately concealing the flask is somewhat blunted by the recollection of the technicians that they knew about the special anthrax material and by the testimony of Ivins's boss, Adamovicz, who said that though he couldn't recall whether he had ever observed the flask, he certainly knew of its existence. Ivins also told the FBI that he didn't supply much of that anthrax to many researchers, though many wanted it.

From the behavioral analysis:

"Do the sealed psychiatric records support or refute the Department of Justice's determination that Dr. Ivins was the sole mailer of the anthrax letters?"

The thrust of the report is yes. The report takes Ivins's mental health files and comes up with a psychological scenario that seems consistent with various clues, such as those in the attack letter addresses. The speculation is couched in scientific-sounding terms. And yet, it is quite interesting

that patterns of evidence pointed to others, as well: Steven Hatfill, Perry Mikesell and Joseph Farchaus, all former Fort Detrick scientists.

A welter of intriguing associations surrounded Hatfill, prompting strong suspicions aired by Rosenberg and New York Times columnist Nicholas Kristof. Hatfill strenuously denied having been involved in Rhodesia's germ warfare operations against rebels, though the Missourian returned from Africa in the 1990s and gravitated into Pentagon biological warfare work. His medical doctorate was valid but his PhD in microbiology was bogus. Nevertheless, after a two-year postdoctoral stint at the Centers for Disease Control, he went to Fort Detrick for another two-year post-doctorate as a virologist.

While there he became very friendly with the aging William Patrick, father of America's offensive biowarfare program, which had been officially scrapped by President Richard Nixon.

While at SAIC, Hatfill had commissioned a report from Patrick on risks presented by mailed anthrax that had been published in 1999. (Some observers have wondered whether the still-classified report was a "blueprint" for the 2001 mail attacks; Patrick had foreseen a low risk but had failed to consider the high-speed mail-sorting machinery that was said to have "milled" the powder into a purer form that made it highly dangerous.)

The FBI eventually ruled out Hatfill on grounds that his property and Patrick's basement, which contained a biological laboratory, were clean of anthrax.

The summary exonerates Hatfill thus:

"Ultimately, the FBI's genetic analysis of the organism used in the attacks led investigators to exclude him conclusively as a suspect. Early in the investigation, it was assumed that isolates of the Ames strain were accessible to any individual at USAMRIID with access to the bio-containment labs. Later in the investigation, when scientific breakthroughs led investigators to conclude that RMR-1029 was the parent material to the anthrax powder used in the mailings, it was determined that Dr. Hatfill could not have been the mailer because he never had access to the particular bio-containment suites at USAMRIID that held the RMR-1029. In other words, although Dr. Hatfill had access to the Ames strain anthrax while at USAMRIID, he never had access to the particular spore-batch used in the mailings."

Now it is possible that the bureau was actually basing its decision to clear Hatfill on data that have been withheld, and so one should beware leaping to any conclusions in that respect.

However, consider these points:

The government is assuming Hatfill cannot be guilty because he could not have pulled off the attacks without inside help.

Interestingly, Ivins told the FBI that he had worked on a national security case concerning anthrax "from Iraq," and had deliberately mislabeled it in order to conceal its national security status. It is not necessarily ridiculous to wonder whether Ivins was a go-to person in what he thought was a national security matter. (If so, however, Ivins apparently went to his death with his lips sealed.)

The summary's contention that Hatfill had no access to the Ames 1029 substrain of attack anthrax is countered by testimony that Hatfill had worked largely in Building 1412 where the 1029 flask was stored for a time in the nineties and where vials of the 1029 substrain were used for animal

experiments. Hatfill was at Fort Detrick until 1999, but the flask-1029 material was formulated sometime between 1997 and 1999.

Another scientist, Farchaus, lived within 15 minutes of Princeton, where the attack letters were apparently mailed. Additionally, he reportedly had a relative who lived very close to an elderly Connecticut woman who died from anthrax. To stretch a point, the locales of Kendall Park and Monmouth Junction, which have a return address and a zip code that relate to the mailings, are both roughly 15-minute drives from Princeton.

In the case of Mikesell, whom the summary doesn't mention at all, we don't know what the associations were that raised FBI suspicions. But apparently it was thought that some things didn't add up.

All this is to say that patterns of circumstantial evidence can be hung around the neck of any one of these men.

Tales from decrypt

The Justice Department, strongly assisted by the FBI psychiatric consultant team, made it appear that Ivins was strangely obsessed with codes and that this obsession is reflected in the code in the two Senate attack letters.

The emphasized A's and T's in the identical letters, the FBI found, relate to two of the letters used in DNA codons.

To buttress its case of a pattern of Ivins associations with DNA codons, the summary relates that on July 27, 2000, Ivins "forwarded" an email to former colleague no. 1 (Fellows), which began "Biopersonals: I have single-stranded too long! Lonely ATGCATG would like to pair up with congenial TACGTAG" along with a note "this is some cute humor for anyone who has ever had anything to do with biochemistry or molecular biology."

A number of coworkers have testified that Ivins enjoyed sending off funny emails, and the term "forwarded" implies the DNA joke was making the rounds among scientists. The joke is that in the replication process, a DNA string joins together with its inverse.

Perhaps the email would have been relevant had the joke DNA strings carried secret messages similar to the purported messages in two of the attack letters. But, following the FBI decoding procedure, the result for the first string is, "mhm" and "eee." For the inverse string, the result is "tv(stop)" and "ee(stop)" or perhaps "tvs" and "eep".

So how is the joke email relevant? It isn't. Not to worry. A footnote explains:

"This e-mail was notable not because of any particular meaning ascribed to those specific nucleic acids, but rather because it demonstrated Dr. Ivins's familiarity with DNA, specifically As, Ts, Cs, and Gs."

And yet Ivins was a microbiologist who would have had at least some professional knowledge of DNA codons.

At any rate, the FBI code-crackers examined the "bolded letters" and discovered the left-to-right string

TTT AAT TAT -- an apparent hidden message. The three-letter groups appeared to be codons, meaning that each sequence of three nucleic acids will code for a specific amino acid.

TTT = P henylalanine (single-letter designator F )

AAT = A sparagine (single-letter designator N )

TAT = T yrosine (single-letter designator Y )

The FBI, says the summary, gleaned two meanings from this analysis: "PAT" and "FNY."

"Pat" is short for his former technician, Patricia, with whom Ivins was allegedly obsessed, the summary says. Patricia Fellows left Fort Detrick to upgrade her education and further her career.

On the other hand, "Pat" is a common name. For example, there is another Fort Detrick anthrax scientist, Patricia Worsham. Then there is Patrick Leahy (though the coded mailings went to the media and not the Senate). Or what of the father of the U.S. bioweapons program, William Patrick?

As for, "FNY," this is taken as representative of Ivins's psychotic antipathy toward New York. But, no evidence of such an extreme hatred is produced. Rather, the summary mentions his dislike of New York City, which is a distaste shared by many Americans and the reason New York officials promoted the "I love N.Y." campaign. At another point, the summary portrays his fan loyalty, expressed in a joking manner, as a psychotic hatred of the New York Yankees.

The summary continues, "It was obviously impossible for the Task Force to determine with certainty whether either of these translations was correct." True, one can't even assign a statistical confidence interval. But, argues the Justice Department, "the key point is that there is a hidden message, not so much what that message is."

But if the FBI is unsure of the meaning, then the idea that the two messages refer to his young friend, who had gone on to pursue a medical degree, and New York City rests on air. In 2001, colleges around the nation were beginning to prepare students for the genetic engineering revolution sweeping industry and academia. Even non-biology majors were often given some awareness of DNA codons.

On the other hand, as officials assert, Ivins voluntarily told the FBI, after confiding in Fellows, that as a younger man he had broken into KKG sorority houses and stolen a decoder used for secret rituals and later the code book itself. Also, he liked to send gifts to women coworkers and let them guess who was sending them, which they usually did. The FBI sees this behavior as a desire to have the women "decode" his cryptic antics. As he was in his early thirties at the time of the sorority burglaries, such actions -- had they become known -- would have destroyed his career, underscoring the idea that the scientist suffered from a long-term mental illness.

A couple of other points:

The highlighted letters are the same as those found in Mohamed Atta's last name.

This reporter was able, by converting the T's and A's to the 1's and 0's of the binary number system and using a bit of numerology, to come up with a reading of "9/11."

But supposing the FBI's interpretation is partly correct, how do we know that the message wasn't intended simply as "FNY"? Why assume both messages were intended?

Also, why send letters overtly blaming Islamic extremists but "covertly" pointing to a "clever"

scientist? The summary's theory is that Ivins was intrigued with the idea of wrapping one message inside another, as discussed in a book he owned.

Anyway, the summary relates, "Ivins showed a fascination with codes and also had an interest in secrets and hidden messages" and he "was also was familiar with biochemical codons." As a matter of fact, large numbers of people are enthusiastic about codes. An FBI website acknowledges this public interest and invites participation of code buffs.

The Justice Department goes to absurd lengths in its desire to persuade. Consider these words from the summary:

"Finally, Dr. Ivins's own words demonstrated that he enjoyed playing detective and unlocking secrets. In an e-mail to Former Colleague #1 (Linscott) on June 26, 2000, he wrote: 'For me, it's a real thrill to make a discovery, and know that I've just revealed something that no one else in the world ever knew before. I feel like a detective, and that which is unknown dares me to try to find out about it, to decipher its code, to understand it, to fit it into the puzzle or 'Big Picture'.'"

Officials seem to be overlooking the fact that Ivins was a scientist, and this is the sort of thing scientists say.

The FBI reported that Ivins owned a 1992 copy of American Scientist that includes an article "The Linguistics of DNA," which discusses, "among other things, codons and hidden messages."

This reporter scanned the article by D.B. Searls and found that indeed there are a few graphs that contain codons. However, the article is a dense excursion on the DNA process as a form of information transfer. It is not concerned with secret messages or cryptography. The article is available at JSTOR. [Please see footnote on Searls background below.]

Another item owned by Ivins was a copy of the book Godel, Escher and Bach -- An Eternal Golden Braid (abbreviated GEB) by Douglas Hofstadter.

Consider this statement from the summary: "While the subject matter of GEB may be confusing to some, it nevertheless remains of evidentiary value to investigators." That is, the book is a complex intellectual excursion and isn't a handbook for code-crackers or spies.

The book does discuss many ideas about information transfer. It might be described as a playful discussion of how mathematical logic relates to human cognition. In a word: philosophy.

Hofstadter himself told USA Today he thought the FBI conjecture was a "red herring," though the logician's opinion needn't be correct.

GEB does include a fun bit of code with certain letters in boldface. And elsewhere in a fat book it does talk about codons.

The summary observes: "The second relevant passage in GEB contains a series of dialogues" of creatures with names that begin with codon letters. Within one dialogue occur the names:

D e Morgan  
A b el  
Bo o le  
Bro u wer

Sier p inski  
Weier s trass

In this passage, Achilles explains, "I believe it is supposed to be a Complete List of All Great Mathematicians. What I haven't been able to figure out is why the letters running down the diagonal are so much bolder." To which Tortoise replies that at "the bottom it says, 'Subtract 1 from the diagonal, to find Bach in Leipzig'."

If one decodes this list as directed, the answer is "Cantor." To understand this message properly, one needs to know that Bach was the Cantor of Leipzig.

This passage is similar to the emphasized A's and T's in the anthrax attack letters, the summary writer believes. Except that the anthrax code seems to be far less clever than Hofstadter's.

By itself the coincidence is unremarkable. So what that scientist Ivins owned a book on scientific matters that happened to contain similarities to the anthrax letter code? And the paper by Searls seems barely relevant. Also, any American capable of launching the anthrax attacks is likely to have been familiar with DNA codons, and quite a few may have owned a copy of GEB, which achieved enduring popularity in the scientific community after its appearance in 1979.

But, the summary answers such doubts by relating that, soon after a search of his house, the harried scientist in November 2007 threw out GEB and the magazine containing the Searls article.

"The night he did so, Dr. Ivins behaved in the fashion of a nervous man, watching for the garbage truck, and then checking the garbage can to ensure that it was gone, and finally checking the bushes to see if he was being watched."

One may wonder when the video recording of this incident will be released.

The summary does not consider the possibility that, by this time, a panicky Ivins was worried that the FBI would "read something into" the book and the magazine. Another point: was Ivins really so naive as to not realize his garbage would be checked after pickup? If the written materials were so incriminating, why not wait until no one is home and burn them? Even so, it must be granted that anxious people make foolish mistakes.

At another point, the summary says, Ivins lent GEB to a female friend, recommending it enthusiastically. Upon learning sometime later that she hadn't read it, he asked for its return. This is meaningful, says the summary, because when asked by the FBI in January 2008 about books he had lent the woman, he did not mention GEB, "one of his favorites," that he had given her about a year earlier.

Granted, an alert FBI agent would see this as grounds for suspicion of evasiveness. On the other hand, human memory is notoriously fickle, especially after a year's lapse. And there remains the other possibility that an innocent man -- who as it happens suffered from episodes of clinical paranoia -- feared the government would want to read something in to his possession of GEB.

The summary adds, "Also reinforcing the importance of GEB to Dr. Ivins was the fact that he once sent an email to Janna Levin, complimenting her work, presumably referring to *A Madman Dreams of Turing Machines*, a book that discusses GEB and chronicles the lives of Godel, known as the world's greatest logician, and Alan Turing, known as an exceptional code-breaker."



A search of the novel's text via Amazon returns blanks for search terms "Escher," "Bach" and "Hofstadter."

The Justice Department chooses to emphasize Turing's code-breaking, but he was also a giant of mathematical logic, whose "Turing machine" was an intellectual exercise that, along with Godel's chief theorem, revolutionized both logic and mathematics.

In words paralleling those in the summary, Rachel Lieber, lead federal attorney in the Ivins case, told Frontline in 2011 that the "confluence of all these things taken together, that's the compelling evidence."

"It's only when you take a step back and you look at all the evidence taken together can you realize this is the right person," Lieber said.

In August 2008, soon after Ivins's suicide, U.S. Attorney Jeffrey Taylor, FBI Assistant Director Joseph Persichini and other officials assured the press that the pattern of circumstantial evidence against Ivins as the sole anthrax attacker was strong.

FOOTNOTE: Searls lists his expertise as computational and systems biology, pharmacoinformatics macromolecular linguistics data integration philosophy of science.  
Searls, D. B., 1992. The linguistics of DNA. Am. Scient. 80: 579-591.

## Appendix A

The psychiatric report lists Saathoff and DeFrancisco as chair and vice chair, respectively.

Others:

David Benedek, MD, psychiatry professor at the Uniformed Services University School of Medicine; Anita Everett, MD, psychiatrist with the Johns Hopkins University School of Medicine; Christopher P. Holstege, MD, a toxicologist at the University of Virginia School of Medicine; Sally C. Johnson, MD, psychiatry professor at the University of North Carolina-Chapel Hill; J. Steven Lamberti, MD, psychiatry professor at the University of Rochester Medical Center; and Ronald Schouten, MD, a psychiatrist specializing in legal matters with the Massachusetts General Hospital Harvard University School of Medicine.

J. Patrick Walsh is listed as a "special assistant and coordinator to the panel and its operations."

## Appendix B

An FBI official explained that the possibility of natural silicon uptake into the spore coats had been discovered during a review of scientific literature. An old published paper led investigators to the widow of one of the authors, A.P. Somlyo, who still had her husband's samples from the experiment on hand. Analysis of the Somlyo samples confirmed the presence of silicon in the spore coats, the official said.

The Somlyo article mentioned above says the silicon spike Somlyo and his coauthors detected was unlikely to have been solely from a contaminant, from the glass containers or from silicon material used in freeze drying. So, the online copy leaves us to conjecture that it came from the growth medium.

Stewart, M., A. P. Somlyo, A. V. Somlyo, H. Shuman, J. A. Lindsay, and W. G. Murrell. 1980.

Distribution of calcium and other elements in cryosectioned *Bacillus cereus* T spores, determined by high-resolution scanning electron probe x-ray microanalysis. J. Bacteriol. 143:481-491. [PMC free article] [PubMed]

The online copy's description of method curtly says that the method is identical to that used by another research team as described in "Cytological and Chemical Structure of the Spore" by W.G. Murrell, D.F. Ohye and Rosalind A. Gordon. This reporter's copy of that article shows that no silicon was among chemicals tested, and there is no discussion of silicon uptake. However, the article says that a New Brunswick Scientific shaker was used. Current New Brunswick shakers come with a silicone mat.

One of Somlyo's coauthors was W.G. Murrell. He is also coauthor of another paper in which silicone antifoam is used in experimental preparations.

<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2106236/pdf/579.pdf>

<http://jungledrum.hopto.org/news/story-1336.html>

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Jungle Drum Prose/Poetry. <http://jungledrum.lingama.net/news/story-1337.html>