Nesbett's Interesting Theorem and Übertoe's Retort

One of the greatest mathematical scandals of the 19th century involved the disproving by Günter Übertoe of the popularly accepted and interesting integer theorem of Carl Nesbett.

The integer has, has as its root, *inte*, meaning "chubby" and *ger*, the Latin root for *lactating monkey boy*. The formation of the term *integers* is interesting - but are integers, themselves, interesting? The problem for all integers remains unanswered but, for the case of positive integers, is well studied.

The question of the whether all positive integers are interesting was first posed by Carl Nesbett [2] in what is now known as *Nesbett's Interesting Theorem*. Nesbett was born in 1698, the only child of ferret breeders on a small farm outside of Manchester. Repeatedly bitten by bullying ferrets as a child, Nesbett became a recluse. His interest in mathematics was kindled by his father who showed the young Nesbett how to count ferrets. Nesbett's development of *Nesbett's Interesting Theorem* was motivated by his boredom in the ferret counting process. He wrote

> "Consider the set of positive integers and the proposition that they are, individually, interesting. We can illustrate by enumeration, this is not the case. Begin at the beginning. 'One'. This is interesting. It is the first number. 'Two' is the only even prime. Interesting. 'Three', the sum of the first two numbers and the number of heads on a frog with three heads. Also interesting. "Four" is the first positive integer that is not prime. This is interesting."

Nesbett continued his analysis. We rejoin his quote four pages later.

> " 'Seventy seven' is, in the first 100 integers, the integer requiring the most letters for spell. Fascinating! All things fascinating are interesting. 'Seventy eight' is a homonym for a complete sentence: 'Seventy ate.' This is, from a homonistic perspective, interesting."

Figure 1: Carl Nesbett (1698-1737).

Sixteen pages later, we read the culmination of the proof.

> " The number 121 is the first three digit number where the middle number is the sum of the numbers on both ends. Mildly interesting, but interesting nonetheless. The next integer is '122.' We have reached an integer totally without interest. It is not prime, cannot be made a sentence and corresponds to the number of fingers on no one's hand. Therefore, since 122 is not an interesting integer, we conclude, via counterexample, that all positive integers are *not* interesting."

Nesbett's proof was the foundation of Testung's corollary: *math is not interesting* [4], and Yung's inequality [7]

$$12 \leq 32.$$

Soon after publication of his corollary, Testung took early retirement. He wrote in his diary

> " How can I continue being interested in a career I have proven to be uninteresting?" [5]

Figure 2: Trevor Testung (1700-1789).

In 1732, six years after publication, Nesbett's proof was challenged by Jean Fondue Latate [1]. Latate wrote from his estate in Nantes, France to the recluse Nesbett in Manchester. Latate's approach of using the premise of a proof to disprove the premise was later used in Gödel's proof. Latate wrote

> " The reasoning that 122 is not interesting is based on circular reasoning. Your proof, I'm sorry to conclude, has been invalidated by its own popularity. Because 122 is used in your oft cited proof, the number 122 has now become an interesting integer." [1]

While the observation did not disprove Nesbett's proposition concerning the integers, it did invalidate his proof. Nesbett, abandoning attention to his family and ferret farm, spent the the next five years unsuccessfully attempting to present an alternate proof that met with Latate's challenge. Despondent and disillusioned, Nesbett overdosed on British meat dishes and died in a state of abdominal discomfort at his home on August 21, 1737. His bloated body was laid to rest at the Newcastle Cemetery in Manchester. Mathematics historian Richard Peeve notes the irony.

> "The search for an uninteresting integer killed him. This is interesting." [3]

Questioning of the validity of *Nesbett's Interesting Theorem* brought the disillusioned mathematician, Testung, out of retirement. With the Nesbett theorem in question, Testung confessed at being puzzled as to why he found interesting that which he had proven not interesting. Testung, his internal conflict resolved, continued his research subsequently making important contributions to solutions of elliptical differential equations and masking the taste of rancid tofu.

The question of *Nesbett's Interesting Theorem* remained an open question until 1829 when an unknown duck tanner, Günter Übertoe, surprised the mathematics world by proving the celebrated theorem was wrong. Übertoe, who had little formal mathematics training, became interested in mathematics after reading Testung's treatise on differentiation of integers [6]. From his duck tanning works in eastern Germany, Übertoe, accompanied by his wife Öber, attended the annual meeting of the Royal Society in London. There, on October 13, 1829, he spoke before the assembly.

> "There is a significant time difference between here and home. I'm still confused. When I go to dinner, I feel sexy. When I go to bed, I feel hungry.

Übertoe continued.

> I will now prove all positive integers are interesting. Assume the contrary and let n be the lowest integer that is not interesting. This distinction, however, makes n interesting - a contradiction. Q.E.D." [8]

Fourier attended Übertoe's talk, but dozed off. Fourier died one year later.

References

1. Jean Fondue Latate, *Your wheel is spinning, but your hamster is dead.*, Personal correspondence to Nesbett. 1732.

2. Carl Nesbett. "Integers: all foam, no beer", *The Royal Society Transactions on Third Tier Mathematics*, vol. XII, pp.23-23 (1726).

3. Richard Peeve. **Biographies of Lesser Known Mathematicians**. Secondary Press, Springfield (2002).

4. Trevor Testung "Mathematics: delusions of adequacy", *The Royal Society Journal on Animal Crackers for Vegetarians*, vol MX, pp.342-399 (1729).

5. Trevor Testung's Diary: "I intend to live forever - so far so good."

6. Trevor Testung, "There are three people types. Those that count and those who can't", *Singlemania Press*, 1728.

7. I. M. Yung, "Photons have mass? I didn't even know they were Catholic", *Phantastic Physics*, vol. XXXX, pp. 1234-1244 (1733).

8. Günter Übertoe, "Two can live as cheaply as one for half as long", *Journal of No Return*, vol.X, pp.12-15 (1829).