AN APPARENT ERROR IN BORGES'S ENUMERATION OF THE NUMBER OF POSSIBLE METAPHORS

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Borges begins lecture 2, "The Metaphor," of the Charles Eliot Norton series delivered in 1967-68 (*This Craft of Verse*) with what could be an error:

> As the subject of today's talk is the metaphor, I shall begin with a metaphor. This first of the many metaphors I shall try to recall comes from the Far East, from China. If I am not mistaken, the Chinese call the world "the ten thousand things", or— and this depends on the taste and fancy of the translator—"the ten thousand beings"
> We may accept, I suppose, the very conservative estimate of ten thousand. Surely there are more than ten thousand ants, ten thousand men, ten thousand hopes, fears, or nightmares in the world. But if we accept the number ten thousand, and if we think that all metaphors are made by linking two different things together, then had we time enough, we might work out an almost unbelievable sum of possible metaphors. I have forgotten my algebra, but I think that the sum should be 10,000 multiplied by 9,999 multiplied by 9,998 and so on." (21-22)

Borges asks us to think of all metaphors as made "by linking two different things together". Since there are 10,000 beings, it would seem to follow that there are 10,000 multiplied by 10,000 possible metaphors; one between each item and one other.[1] Ten thousand multiplied by ten thousand equals a mere

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1   The number might be $10,000^{9,999}$ since Borges defines a metaphor as linking two *different* things together, i.e. the relationship between a thing and itself is not a metaphor. However, for reasons discussed further on in the main text, Borges may not always accept the law of identity as it applies to metaphors.

one hundred million ($10^4 \times 10^4 = 10^8$). The calculation that Borges invokes is different and the resulting number alluded to is far larger (10000 factorial is 35,659 digits long, see http://gimbo.org.uk/texts/ten_thousand_factorial.txt).

Has Borges made a mistake as he says because his algebra was "forgotten"? We think not. Professor Bloch (Bloch) has clarified and documented Borges's deep familiarity with combinatorics and permutations. This evidence supports the hypothesis that Borges did not make a simple error. Listening to Borges's voice on the excellent recording of this lecture (also available from Harvard University Press) one can detect an irony in voice and phrasing "I have forgotten my (long pause) algebra" just before he launches into a description that on the surface is plainly wrong and quite a bit more complex than the way that he just defined the problem. Thus we doubt Borges made a simple error. (At any rate we prefer attributing to Borges the quality that Talmudic scholars attribute to the Torah, i.e. that the text written or spoken contains nothing that should be interpreted as an error.) If Borges did not make a mistake, we are left to consider what he might have meant. Therefore we ask "What theory of metaphors would have as its answer that given by Borges: 10,000 factorial (also denoted mathematically as 10,000!)?"

We propose an answer to the problem and hypothesize that it is what Borges meant. Suppose that metaphors are not merely a 1:1 correspondence between two things. Consider instead that each metaphor —each relationship between two things—occurs in the context of every other metaphor, i.e. every relationship gains meaning from the universe of relationships of which it is part. In this case each metaphor must be considered in the context of all possibilities for all other metaphors. Each metaphor of one of the ten thousand things is related differently in each of the possible contexts of all other possible metaphors. The meaning of each metaphor differs depending upon the total universe in which it exists. The "total universe" is being defined as the 10,000 things and their relationships based upon metaphor. This understanding would yield the required number. In this context Borges has not explicitly said but he has implied that to change the relationship between any two things one must simultaneously consider that it has changed the relationship of all things to all other things.

Borges's formulation of "10,000 multiplied by 9,999 multiplied by 9,998 and so on..." makes another implicit assertion: namely that the normally expected equivalence of A = B with B = A does not apply to metaphors.[2]

A different way of considering metaphors also gives rise to a factorial rather than a squared number of possible relationships. Although Borges implies a one to one correspondence, by saying "if we think that all metaphors are made by linking two different things together," he does not say "one and only one." The lack of exclusion suggests the possibility that a single thing might be linked to more than one other thing. Borges's examples are one to one correspondences but this could be be a matter of invoking simple cases to make a point while hinting at more.[3] The meaning implied here is that one thing may be related to one thing, two, or in this case, all ten thousand. This is another way to the calculation proposed by Borges of 10,000(factorial).

Apparently the two cases we have described that each give rise to 10,000(factorial) can be combined. This correspondence of one thing to each possible combination of relations between all other things would

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2   The normal way of thinking about things is that if A = B then it is trivially true that B = A. Applying this reasoning to the calculations of the number of possible metaphors means that Borges should have said 10,000!/2. Even the simpler calculation that Borges eschewed of 108 should have been 108/2. As before, one might say that Borges really has forgotten his algebra, i.e. this may be simple mistake. And again we reply with the view that Borges is profoundly, originally and masterfully in touch with the concepts he invokes. In fact, Borges has considered this question and come to his own conclusion that A = B is not the same as B = A. Here we quote from the third to last paragraph of the same Lecture 'The metaphor' whose initial "mistake" forms the premise of the present essay. Borges quotes Byron and comments: " 'She walks in beauty, like the night.' We have, in the first instance, a lovely woman, a lovely lady, likened to the night. But in order to understand this line, we have to think of the night as a woman also; if not, the line is meaningless. So within those very simple words, we have a double metaphor: a woman is likened to the night, but the night is also likened to a woman." Regarding Byron's brilliance at the double metaphor of a woman and the night, Borges said "I do not know and I do not care whether Byron knew this. I think that if he had known it, the verse would hardly be as good as it is. Perhaps before he died he found it out, or somebody pointed it out to him" (*This Craft of Verse* 14-15).

3   With reference to Robert Frost's creation of a new metaphor by means of repeating the identical phrase "And miles to go before I sleep" Borges says "I now see that metaphor is a far more complicated thing than I thought. It is not merely the comparing of one thing to another—saying 'The moon is like' and so on."

also be considered in the context of each possible change of relationship between any one of the things to any other.

The question arises is the larger set of possible permutations the product of two factorial numbers, i.e. 10,000! x 10,000! or is it the first factorial raised to the power of the second factorial?

Some readers may believe we have made too much out of little. Perhaps Borges simply did forget his algebra. As a closing defense against what we consider heresy we note a particularly poignant example in which Borges comments on others' use the minimal means to indicate infinity (Borges "Purgatorio I, 13"):

> The third example is from Robert Browning. He includes it in the dedication to his vast dramatic poem, *The Ring and the Book* (1868): "O lyric Love, half angel and half bird..."
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> The poet says that Elizabeth Barrett, who has died, is half angel and half bird, but an angel is already half bird, and thus a subdivision is proposed that may be interminable.[4]

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