"Apokatastasis panton" (1715)[1]

by G. W. Leibniz, translated by David Forman

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60 **Ἀποκατάστασις πάντων**[2]

One can determine the number of all possible books of a given size composed of meaningful and meaningless words.

I call a book of a "given size" that which consists of a given number of letters. For example, a folio consisting of 10,000 pages, with 100 lines a page and 100 letters a line, would be a book of 100,000,000 letters. Now the number of all the books of this length, or which can be formed from 100 million letters of the alphabet, is finite. And this number can be obtained from the calculus of combinations, which would be N. It is also clear that all possible shorter books are contained in these longer ones.

62 Suppose, moreover, that a public annual history of the earth can be sufficiently related in a book of this length, which would contain 100 million letters: it is also clear that the number of possible public histories of the earth differing among themselves is limited; for any different history would produce a new book.

Hence it follows that if we imagine that humanity lasts long enough in the state it is in now, past public histories must return. For if we assume a number of years equal to the number N, I say that during these N years, in any year it is always the case that either new histories come to pass that differ from any preceding ones from these years included in N, or else the history of some prior year among them repeats. If the second happens, then we have what was sought. Otherwise, that is, if the annual history is always new, it follows that all possible public histories are exhausted in this number of years and that in the following years the past ones would return. Q.E.D. And so it is necessary that our Leopold and Louis and William and George would return with all their deeds within this time span.[3]

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[1] LBr. 705 Bl. 72. The Latin text is transcribed in M. Fichant (ed.), *De l' Horizon de la Doctrine Humaine (1693); Ἀποκατάστασις πάντων (La Restitution universelle) (1715)*, (Paris: J. Vrin, 1991), pp.60–66. Fichant provides a French translation, which I have consulted in preparing the present translation.

[2] This title, meaning "restitution of all," derives from Acts 3:21. See *Theodicy* §17 and §156, where Leibniz uses the Greek expression to refer to J. W. Petersen's *Μυστήριον ἀποκατάστασεως πάντων*, *das ist, das Geheimniß der Wiederbringung aller Dinge* (1700). Leibniz published an (anonymous) review of this work in the April 1701 issue of the *Monatlicher Auszug*. For a discussion of Leibniz's interest Petersen's work, see M. Antognazza and H. Hotson, *Alsted and Leibniz: on God, the Magistrate, and the Millennium* (Wiesbaden: Harrassowitz, 1999), pp. 170–198.

[3] Leibniz is presumably referring here to recent and current reigning monarchs: Holy Roman Emperor Leopold I (reigned 1658–1705), King William III of England (reigned 1689–1702), King Louis XIV of France (reigned 1643–1715), and King George I of Great Britain (reigned 1714–1727).

But it is clear that this is the same if we descend to private history, the only difference being that the work will be conceived with a longer book and more years; for a book of a size sufficient to relate all the smallest details of what humans have done on all the earth within a year is certainly possible. Imagine that there are a thousand million humans on earth (a number from which humanity is most distantly removed), and that a book the size we granted to the public annual histories, thus of 100 million letters, is assigned to each human to relate a single year of his life down to the smallest details. For even if 10,000 hours[4] are granted to a year, a sheet of 10,000 letters,[5] that is, a page of 100 lines each with 100 letters, would still surpass what is needed to describe each hour of a human.

Thus, for a work containing the annual history of the whole of humanity down to the smallest details, it would be sufficient to have a number of letters that would reach a hundred thousand million millionions,[6] if 'millionion' were to mean a million millions. Now the number of possible works of this size differing among themselves in some
64 measure is finite, and indeed can be obtained from the number of combinations. Let this number be called Q.[7]

Hence it follows: if humanity endured long enough in its current state, a time would arrive when the same life of individuals would return, bit by bit, through the very same circumstances. I myself, for example, would be living in a city called Hannover located on the Leine river, occupied with the history of Brunswick, and writing letters to the same friends with the same meaning. For the same demonstration can be applied to the number Q^8 that we established above applied to the number N, seeing that nothing would be different except for the size.

But these [returns will happen] not just once, but many more times,[9] and indeed a greater number of times than can be assigned, should humanity endure long enough. And the ancients seem to have had such [returns] in mind, which were called 'the revolutions of the great platonic year,'[10] although the reasons for their opinion have not been transmitted to posterity, but which is clear from what they say.

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[4] Reading '10000 horae' in place of '1000 horae.'

[5] Reading 'plagula superforet 10000 literarum' in place of 'plagula superforent 10000 literarae.' (Fichant instead suggests striking 'plagula' and making 'literae' the subject of the clause.)

[6] Leibniz writes 'centies mille milliones Millionionum' (10^{23}), forgetting to strike the 'milliones' as he shifts to his neologism for orders of large numbers. The corrected text would read either 'centies mille milliones millionum' or rather, with Leibniz's neologism, 'centies mille millioniones,' that is, 'a hundred thousand millionion' (10^{17}).

[7] Leibniz first wrote 'P.'

[8] Following Fichant's correction of 'Q' for 'P.'

[9] Reading 'saepius' for 'saepies.'

[10] Plato's *Timaeus* presents the idea of a "complete" or "perfect" year that is achieved when all eight celestial revolutions or periods return to their starting points (39c–d).

Finally, even if humanity did not always endure, assuming[11] that there always exist minds that know and seek the truth, it follows that minds will someday reach the point where it would be necessary to repeat truths that are independent of the authority of the senses, that is, demonstrable theorems that have been discovered and that do not exceed a given size (for example, a page if they are written); and [this follows] all the more for concise statements that can be written in [a few] words. Moreover, new theorems to be discovered would have to grow in size to infinity. But if that were to happen, it would be necessary that minds also could become capable of grasping such long theorems.

But sensible truths, that is, those based not on reason, but rather on experience, are able to vary to infinity even if they do not become lengthier, since the senses consist in
66 confused perception, which can be varied in infinite ways while preserving conciseness; for there can be infinite kinds of liveliness, senses, and sensible objects; which is quite otherwise than with theorems, that is, with truths that can be known through adequate or perfect demonstration.

[11] Following Fichant, who strikes out the 'quia' at the beginning of this clause.