

PROLOGUE

In the dog days of summer, 1962, a 74-year-old man lay in a London hospital bed. He was bored and in some discomfort after a prostate operation; but instead of trying to sleep, read or use his earphones, he amused himself by writing to his daughter:

Great-grandfather	died aged 72 years in about 1860–70
Grandfather	d. " 81 " " " 1906
Father	d. " 86 " " " 1945

Now it is not really possible to apply mathematical laws to an individual, but only to very large numbers of individuals as is done by insurance companies, etc., but it is amusing, if no more, to take advantage of the singular regularity of advance shown above, to see how old I should be, assuming that mathematical laws did apply to an individual. If we neglect end effects, as we must do, since historically they are buried in prehistoric times, and for the future are unpredictable for a variety of reasons, then we can treat the above sequence as a very small part of a curve that extends, virtually, to infinity in both directions.

The simplest form is parabolic, and the curve that fits the 3 known points reasonably well is $N = 72x^{166}$ where N is age at death, and x is the number of the generation.... On this basis I should have lived to just over 90, but now I have had an op. that I am assured will add 10 years to my natural term!! Estimated age at death = 100 years. What a dreadful thought. Of course its all nonsense anyway, because one cannot just deal in generations – but it has passed a tedious hour in hospital..”

Seventeen years later, at a memorial gathering soon after the patient’s death at 92 (not far off his original estimate), his eminent surgeon was one of the speakers. Very many patients, a large number of them notable people, had passed through his clinic in the meantime; but the description of symptoms by this particular one had stuck in the surgeon’s mind. The patient described his complaint in unusual terms: he could not pass water in the customary “beautiful parabolic arc”. Such ways of thinking, however, came naturally to this man.

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The patient was Barnes Wallis, an engineer, designer and inventor of considerable note. He is most widely remembered as the inventor of the bomb which breached the dams of the Ruhr valley in Germany in the Second World War; but this was only one of his achievements and interests. These ranged over airships, heavier-than-air-craft (most notably the Wellington and the trophy-winning Wellesley), variable geometry (or swing-wing) aircraft, submarines, bridge design, telescope construction, medical callipers, racing skiffs, school buildings and furniture, household gadgets, and a technique for accurate wood carving. He was creative for three quarters of a century, and was always imparting knowledge and arousing appreciation for mathematics and good design. Whenever an interested listener was available he launched into explanations and illustrations, using paper napkins, menus, programmes, envelopes – whatever came to hand. He was a teacher who followed his own methods, and paid no heed to the rules. He held just one brief teaching post in his long life; but throughout this life he inspired insight and understanding in many people by the dedication, the enthusiasm, the delight which he brought to his explanations.