PREHISTORIC DICE I (HOMAGE TO CHANCE)

WILLEM BOSHOFF

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Artist Bryony Purvis completed her Masters degree in Fine Art at the Michaelis School of Fine Art at the University of Cape Town in 2012. I had the pleasure of musing over and responding to some of her postulations in a happy interchange of ideas. Like me, she is fascinated by chance and submitted to me the following interesting take on probability and how it might affect us.

In a few eternities

There is a funny relationship that exists between experimental ideas, and their realizations in different levels of 'reality'. Theories work well when their context fits them well. In 2007 Greta Lorge published an article called *The best Thought Experiments: Schrodinger's Cat and Borel's Monkeys,* in Issue 15.06 of wired magazine. Amongst them Schrodinger's cat, Searle's room and Einstein's light beam, but perhaps the one most frequently expressed in popular culture, is Émile Borel's infinite typing monkeys theorem.

The infinite Monkey theorem states that any text, such as the complete works of Shakespeare could be written by a monkey hitting at random the keys on a typewriter for an infinite length of time. The monkey is used as a metaphor for any device that produces random sequences of symbols. This event has such a tiny chance of occurring, that it is most improbable but importantly, not impossible. Jorge Luis Borges traced this concept as far back as Aristotle's *Metaphysics* and a theory about the world evolving from random combinations of atoms, a much-contested point of view. Cicero, over 300 years later argued against the plausibility of this world view:

> He who believes this may as well believe that if a great quantity of the one-and-twenty letters, composed either of gold or any other matter, were thrown upon the ground, they would fall into such order as legibly to form the *Annals* of Ennius. I doubt whether fortune could make a single verse of them. (Marcus Tullius Cicero, *De natura deorum*, 2.37. Translation from *Cicero's Tusculan Disputations; Also, Treatises On The Nature Of The Gods, And On The Commonwealth*, C. D. Yonge, principal translator, New York, Harper & Brothers Publishers, Franklin Square. 1877)

If two events are statistically independent, the probably of them happening simultaneously is the product of each of the events occurring independently. The greater the number of independent events required such as the letters that compose *Hamlet*, the smaller the product, and the more unlikely the chance of it occurring. Physicists', Charles Kittel and Herbert Kroemer put it, "the probability of *Hamlet* is therefore zero in any operational sense." (Kittel, Charles and Herbert Kroemer (1980). *Thermal Physics (2nd ed.)*. W. H. Freeman Company. pp. 53.)

In 1941 Borges's *The Library of Babel* takes this theorem to its ultimate extreme, with his concept of 'The Total Library". He conceives of an expansive universe that takes the form of a library, made up of interlocking hexagonal rooms. The endless shelves of books, though apparently random in order and content, contain every possible combination of just a few basic characters. As such, the library of Babel contains every possible piece of information, biographies of every person to have lived, or who will live and even somewhere a perfect catalogue of all the books in the library. Yet, because of the unimaginable wealth of information, the library and its books are rendered utterly useless.

I love to climb Lions head in Cape Town, but only ¾ of the way up, where there is a little ledge, inside an alcove on the side of its rocky face. I sit there with my dog Safi, who surveys the slopes with such intensity; we are like gremlins on the outskirts of the city. The wind picks up dirt that is settled on the flat outcrops of rock, and whips it into frenzy; each passing miniature hurricane lays down the dirt in the eye of the storm, and settles it momentarily. Then begins again.

I wonder how many times in the history of this dirt, has a word, or picture been formed, even perhaps a story been told. It is improbable, even less so that I would be sat there to see it. I shall not sit there and wait for it. But it is not impossible so when passing I will look, just in case. Perhaps it is as special to know that the exact formation that it does land in, is only moments before as improbable as it landing in the form of Shakespeare's *Hamlet*.

How far removed are we from the extremities of our thoughts, from the far-flung corners of our concepts. How estranged are we from even the nearest shores of infinity and how can we know when we are closer than ever to the improbable. I very much like this theme for exploring a glimpse of estrangement in our collaboration. I am already imagining butterflies, sandstorms, the alphabet, a myriad of letters, wind, motion, and an experiment.

Love and light

Bryony

I answered Bryony as follows:

Hi-there dear Bryony

In a few eternities

It's almost two-and-a-half months that I have tucked your e-mail into the corner of my must-do box, hoping to answer you very soon. I've been to Israel and back and the flu had me down for a month. I have also made a host of artworks and all this time your note stared me in the face. My dragging feet answer, partly because I want to contribute to your cause, and more importantly because my letter-writing gives me a chance to cope with my own

steam, to offload or overload my head with it. I haven't yet met you or seen you and because I don't know what you look like, I am at a disadvantage. Yet it is not fair to say that merely because I don't have a face to talk to that I don't know you or who you are. It's a bit like talking to God – even if you don't really know or believe in Him. Talking helps.

And that is the aleatoric thing. So is your and Cicero's 21 letters that might one day make sense or Borges's repeated book trials until Hamlet comes. I am a Dadaist at heart and I have worked with casting things all my life. Walks are fascinating to me and in 1972 I tried to find my way on one such a Borges walk. I would study a piece of writing as it grabs me from 'nowhere', something I might have found to be interesting, something that somehow got to me. The finding of this piece (or its finding me) would be done as Dada poetry is written. I would open books in my library and put my finger on the text. The first secret is to do this in the firm belief that that particular accidental/incidental act will lead me to find a great pearl of wisdom, no matter what the text may say. The second secret is to give myself only one chance, one stab of the finger at an all-encompassing universal truth. Later on I read that Wittgenstein believed that such a linguistic frolic is in any case what happens in 'all' conversations and writings and that one will 'always' make sense from the incidental and co-incidental in a way that is profound.

Once I had my message to the world, I would go and look for the world. A message is not a message if it has no audience. I would meditate for some time and then venture into the street to deliver my message. My chosen method would always be to 'trust' the road and what it accidentally has to offer – accidentally being the operative word. I was later to see that distinctions made between serendipity (happy accidents) and thaumaturgical experiences (serious acts of God) are superficial. It's all one and the same thing and any distinction should follow this because I manage my thoughts thus. The road offered me traffic lights. I would follow the green lights for as long as possible. I would walk across every green light opportunity and this would decide my path. I would, for example walk from Hillbrow (where I lived) to somewhere in downtown Johannesburg. Once I ran out of traffic lights, I would look on the ground. The ground is as much an 'open book' with instructions to follow as any randomly opened book. I remember that the first bit of paper debris I spotted was a bus ticket with numbers on it. I would follow that number to a specific building in that street and follow the subsequent sequence in that number to a specific door where I knocked. Some people opened that door and I asked as nicely as I could whether I might tell them something important – and so my message was delivered.

In the early seventies, as a student' I learnt about Jean Arp (1886-1966) and his experiments with the 'Laws of Chance' (1916-17). All my life I have experimented with these. Levi Strauss speaks the contingency of incidence and co-incidence. Cage speaks of aleatoric (throwing the dice) work when he ventures more into the co-incidental and Xenakis uses the term stochasitic (guessing/aiming) for his rationalising of irrational happenstance.

Jean Arp's story is that he tried to make some compositional sense of a few torn pieces of paper on his desk. He tried to arrange these sensibly and with an expectation of well-resolved design – but failed. Then the wind blew the bits and pieces off the table and gave him a much more exciting composition on the floor. He claims that he then stuck the bits of paper down in the position that they had landed and named this effort the 'Arrangement according to the Laws of Chance'.

The term 'Laws of Chance' is a paradox. It seems contradictory that chance, a phenomenon that appears to function outside the law, should have laws. One can't claim that it will always be lawless. Cicero and Borges were waiting for chance to deliver the ultimate answer to a specific expectation and they were prepared to wait forever – and who is to say they won't be indulged.

My study of Jean Arp's composition made me come to the conclusion that he is a fraud. But I may be wrong. His compositions show a sense of vertical/horisontal formatting. There appears to be a fairly even space between his bits and pieces and they appear to fit relatively snugly onto his picture plane. I too experimented with similar bits and pieces of paper as he did, but regularity and regimentation has never been my fortune, but, who knows – perhaps Jean Arp knocked on that one single moment in the history of eternity where his pieces fell within the expected/unexpected *Annals* of Ennius.

I have devoted my life to live in a stochastic/aleatority manner and I have made rather large installations in which I study how randomly deployed objects and experiences may hold the truth. The correct word for such endeavours is 'divination' and the practice of divination is older than any record of human existence. I am now writing a book: "What every Druid Should Know", in which I devote considerable time to how we might manage to decipher our Hamlet from chicken bones, bird droppings and a monkey playing with a typewriter.

Hope this helps

Willem