Confidence in lack.

Most recent modernist, and much subsequent, significant poetry writing has negotiated damage, in awe of a range of specialist vocabularies, used in the public sector by commerce, education and the war machine. Throughout this period it has been evident that in spite of, or in deference to, the restricted and figurative use of language much that is public has involved catching a logic bus into an aspiration for coherence. One apprehension and understanding would be that poetry is at great variance to these expectations, both with regard to logic and coherence, and with regard to making vocabulary available and has led to a confidence in lack – a confidence that poetry, when it is at its most efficacious, cannot propose logic, as it is variously perpetuated in paternal and public thinking, and cannot aspire to coherence, as this is also prescribed. In particular, poetry needs to make these proposals or have these aspirations in a period following the extensive pollarding and retro-harnessing of modernism and its huge variety of materialist and fascist engines.

In February 2007, writing for *Nature,* an international weekly journal of science, a group of physicists, supported by the American army, Yale University and commerce, proposes to resolve the issue of photon number states in a superconducting circuit where they expect to distinguish between coherent and thermal fields (two apparently different orders of vocabulary) and create a photon statistics analyser which will generate non-classical states of light and perform superconductivity quantum bit-photon conditional logic, the basis of a logic bus for a quantum computer.

The paper thus celebrates a dilemma. Poetry and engagement with a Public, like Science and its public, provide a significant mismatch, potentially involved with self-deception, or more often, active deceit. The premise for this mismatch derives from a range of incapacities and inabilities necessary to the frailties that underpin vulnerabilities and contribute to sensitive thinking; that contribute to the æsthetic and ethical basis for all written poetic and scientific practice. This is a necessary dilemma in conceptual and historical terms, set against the western proposals for logic and its modernist aspiration to cohere.

Schuster *et al,* in February 2007, produced a description of a circuit quantum electrodynamic experiment within the permitted parameters of exactness and with confidence in lack of exactness.[1] 'Electromagnetic signals are always composed of photons ... and the discreteness of the photon's energy is usually not evident. However, by coupling a superconducting quantum bit to signals on a microwave transmission line, it is possible to construct an integrated circuit in which the presence or absence of even a single photon can have a dramatic

[1] Schuster, D.I., Houck, A.A., Schreier, J.A., Wallraff, A., Gambetta, J.M., Blais, A., Frunzio, L., Majer, J., Johnson, B., Devoret, M.H., Girvin, S.M. & Schoelkopf, R.J. 'Resolving photon number states in a superconducting circuit,' *Nature* **445**, 515-518 (2007).

effect. Such a system[2] can be described by circuit quantum electrodynamics – the circuit equivalent of cavity quantum electrodynamics, where photons interact with atoms or quantum dots.'[3] Schuster *et al* reported a new regime where a single photon has a large effect on the quantum bit without ever being absorbed. The hall-mark of this strong dispersive regime is that the quantum bit transition energy can be resolved into a separate spectral line for each photon number state of the microwave field. *The strength of each line is a measure of the probability of finding the corresponding photon number in the cavity. This effect is used to distinguish between coherent and thermal fields* (italics added), and could be used to create a photon statistics analyser. As no photons are absorbed by this process, it should be possible to generate non-classical states of light by measurement and perform quantum bit-photon conditional logic, the basis of a logic bus for a quantum computer.'[4]

Schoelkopf, *et al.,* note that, 'Cavity quantum electrodynamics[5] is a test-bed for quantum optics[6] that allows investigation of fundamental questions about quantum measurement and decoherence, and enables applications such as squeezed light sources and quantum logic gates. (Not that human beings can see the processes of these applications except through the artefacts of machines.) To achieve it, an atom is placed between two mirrors, forming a cavity that confines the electromagnetic field and enhances the atom-photon interaction strength...'[7]

'The results obtained ... also suggest a method for photon-quantum bit conditional logic. The quantum bit response is now strongly dependent on the number of photons in the cavity. For example, a controlled-not gate (where the vocabulary begins to breakdown) between photon and quantum bit could be implemented by applying a ... control pulse at the frequency corresponding to one photon in the cavity.'[8]

Since ancient times, thought in the west has debated the difficulties between direct perception and information derived from machines, between demonstrations of truth and informed presumption or speculation. Plato, that seminal thinker behind the demands of logical thought and truth, provides a number of significant examples. His description of how poets operate in his *Apology* immediately indicates the difficulty proposed. Grube translates Plato's words, 'After politicians, I went to the poets, the writers of tragedies and dithyrambs and the others, intending in their case to catch myself being more ignorant than they. So I took up those poems with which they seemed to have taken most trouble and asked them what they meant, in order that I might at the

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[2] Blais, A., Huang, R., Wallraff, A., Girvin, S. & Schoelkopf, R.J. 'Cavity quantum electrodynamics for superconducting electrical circuits: an architecture for quantum computation.' *Phys. Rev.* A **69**, 062320 (2004).
[3] Wallraff, A. *et al.* (2004) 'Strong coupling of a single photon to a superconducting qubit using circuit quantum electrodynamics.' *Nature* **431**, 161.
[4] Schuster, op.cit.1.
[5] Mabuchi, H. & Doherty, A.C. 'Cavity quantum electrodynamics: Coherence in context,' *Science* **298**, 1372-1377 (2002).
[6] Walls, D.F. & Milburn, G.J. (2006) *Quantum Optics,* Berlin: Springer.
[7] Schuster, *op.cit*.1.
[8] Schuster, *ibid*.

same time learn something from them. I am ashamed to tell you the truth, gentlemen, but I must. Almost all the bystanders might have explained the poems better than their authors could. I soon realized that poets do not compose their poems with knowledge, but by some inborn talent and by inspiration, like seers and prophets who also say many fine things without any understanding of what they say. The poets seemed to me to have had a similar experience. At the same time I saw that, because of their poetry, they thought themselves very wise men in other respects...'[9]

Poets' confidence in lack was further criticised by Plato in *Book X* of *The Republic;* Cornford's translation concludes, 'that all poetry, from Homer onwards, consists in representing a semblance of its subject, whatever it may be, including any kind of human excellence, with no grasp of the reality. We were speaking just now of the painter who can produce what looks like a shoemaker to the spectator who, being ignorant of shoemaking as he is himself, judges only by form and colour. In the same way the poet, knowing nothing more than how to represent appearances, can paint in words his picture of any craftsman so as to impress an audience which is equally ignorant and judges only the form of expression; the inherent charm of metre, rhythm, and musical setting is enough to make them think he has discoursed admirably about generalship or shoemaking or any other technical subject. Strip what the poet has to say of its poetical colouring and I think you must have seen what it comes to in plain prose.'[10]

Eric Havelock, Charles Olson's source for much of the information and rhetoric of his poetics, addresses Plato's attack in his *Preface,* Plato 'opens by characterising the effect of poetry as a 'crippling of the mind'. It is a kind of disease, for which one has to acquire an antidote. The antidote must consist of knowledge 'of what things really are'. In short, poetry is a species of mental poison, and is the enemy of truth...'[11] and on this basis of truth poets might as well perpetuate deceit. 'Plato's target seems to be precisely the poetic experience as such. It is an experience we would characterise as aesthetic. To him it is a kind of psychic poison.'[12]

Charles Stein begins to sort this out in terms of Olson's poetry, Plato banished the poets 'because *their* means of discourse obstructed the development of the abstract powers it was Plato's concern to nurture. Olson means to re-establish the poets' that is give them a public language, 'but first (Olson) must re-acquire for them certain habits of language and thought which Platonic revolution caused to become displaced.'[13] Stein continues,[14] 'Olson is relentless in his emphasis on concretistic linguistic theories: theories which emphasize the primacy of the sounds of words, action words, and nominalization, over

[9] Plato (c.400 BCE) *Apology,* edited by John M. Cooper, translated by G.M.A. Grube (1997), Indianapolis and Cambridge: Hackett Publishing. p.22.
[10] Plato (c.388-348 BCE) *The Republic*, translated by Francis MacDonald Cornford (1941), Oxford: Oxford University Press. pp.323-324.
[11] Havelock, Eric A. (1963) *Preface to Plato,* Oxford: Basil Blackwell. p.4.
[12] Havelock, *ibid*. p.5.
[13] Stein, Charles (1987) *The Secret of the Black Chrysanthemum,* Barrytown, New York: Station Hill Press. p.103.
[14] Stein, *ibid.* p.105.

subordination and abstract grammatical relationships. In his 'Grammar–a Book'[15] Olson quotes passages from Edward Sapir's *Language,* to the effect that "word order and stress" are "the primary methods for expression of all syntactical relations" and that the "relational value of specific words and elements" are "but a secondary condition due to the transfer of values." '... Sapir's radically concretistic theory of grammar goes hand in hand with Havelock's "parataxis" in providing Olson with linguistic concepts with which to justify his emphasis on the most concrete aspects of language at the expense of syntax.'[16]

'The practice of "syntax by apposition" is related for Olson to his understanding of the "shift" in cosmological perspective effected by Relativity Theory and the institution of the space/time continuum as the context for events of reality. In (The) Special *View of History* Olson emphasizes:

'*Coincidence* and *proximity*, because the space-time continuum is known, become the determinants of *chance* and *accident* and make possible *creative* success....'[17]

'The emphasis on the inclination of purpose and chance, accidence and necessity, form and chaos, as being *within* actual process, is the cosmological justification for Olson's "concretism," his insistence that words be treated as solid objects, and poems be treated as fields of force....'[18]

Adorno links the failing coherence of modernism with what he identifies as the semblance of meaning. 'All modern art after impressionism, probably including even the radical manifestations of expressionism, had abjured the semblance of a continuum grounded on the unity of subjective experience, in the "stream of lived experience." The intertwinement, the organic commingling, is severed, the faith destroyed that one thing merges wholly with the other, unless the intertwinement becomes so dense and intricate as to obscure meaning completely. This is complemented by the æsthetic principle of construction, the blunt primacy of a planned whole over the details and their interconnection in the microstructure; in terms of this microstructure all modern art may be called montage. Whatever is integrated is compressed by the subordinating authority of the whole so that the totality compels the failing coherence of the parts and thus however once again asserts the semblance of meaning.[19]

Even Michel Foucault prefers to re-establish the status of coherence when we writes, 'We are no longer inside truth but inside coherence of discourses, no longer inside beauty, but inside complex relations of forms.'[20] Foucault's

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[15] Olson, Charles (1974) *Additional Prose*: *A Bibliography on America, Proprioception, & Other Notes & Essays,* ed. by George F. Butterick, Bolinas: Four Seasons Foundation. pp.27*ff.*
[16] Stein, *op.cit*.13. p.105.
[17] Olson, Charles (1970) *The Special View of History,* edited by Ann Charters, Berkeley: Oyez.
[18] Stein, *ibid*. pp.106-107.
[19] Adorno, Theodor W. (1997) *Æsthetic Theory,* trans. by Robert Hullot-Kentor and edited by Gretel Adorno and Rolf Tiedemann, London: Athlone Press. p.155.
[20] Foucault, Michel 'On the Ways of Writing History' (1967) in Michel Foucault, *The Essential Works of Foucault 1954-1984, volume 2, Aesthetics, edited by James D. Faubion,* trans. Robert Hurley and others (1998), Allen Lane. pp.290*f.*

understanding of what I would call 'a pattern of connectedness' is to discuss identity. He writes, 'Now it is a question of how individual, a name, can be the medium for an element or group of elements that, integrating itself into the coherence of discourses or the indefinite network of forms, effaces, or at least renders vacuous and useless, that name, that individuality whose mark it carries for a certain time and in certain regards. We have to conquer anonymity, to prove we are justified in having the enormous presumption of becoming anonymous one day, a bit like the classical thinkers needing to justify the enormous presumption of having found the truth, and of having attached their name to it. In the past, the problem for the person who wrote was to pull himself out of the anonymity of all; in our time, it is to manage to obliterate one's proper name and to lodge one's voice in that great din of discourses which are pronounced.'[21]

Julia Kristeva offers a kind of contra-view when she writes of Hannah Arendt, 'Having ... acknowledged the disconnection between the enacted story and the narrated story, Arendt does not believe that the essential feature of narration can be found in the fabrication of a coherence within the narrative or in the art of spinning a tale,'[22] which she subsequently confirms, 'If we get too wrapped up in the coherence of a plot, we forget that the main goal of plot is to disclose,'[23] and 'It can manifest that essential logical process can only if it becomes action itself.,'[24] and as Kristeva had noted earlier, '*Action,* even as Arendt understands the term, cannot by itself guarantee a free and creative life. The resumption of the "life of the mind," on the other hand, is capable of providing such a guarantee, as Arendt provided in her later writings.'[25] 'Arendt's experience as an intellectual proves, quite simply, to be an examined life – a life uprooted from biology through *labor, work* and, in particular, *action.* Yet it was also a life that harboured the superior form of human existence that is varied and incomplete thinking, provided such thinking is shared with a diverse and contradictory world.'[26]

Private pretence and public affirmation, particularly in terms of recommending a range of ethical activities, lead poets to a range of addresses, from engaged involvement to escape. What poetry is capable of through deliberate and detailed poetic investigation, of poetic form and the variety of vocabularies used, often leaves the best poetry incapable of matching the public demand for continuous and linear expression, ostensibly the demand for complete meanings.
The subject is too large to encompass and the paper will demonstrate this in its confident approach to its lack of solutions and any proposal for complete understanding.

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[21] Foucault, *ibid.*
[22] Kristeva, Julia (2001) *Hannah Arendt,* trans. Ross Guberman, New York: Columbia University Press. p.73
[23] Kristeva, *ibid*. p.74.
[24] Kristeva, *ibid* p.74.
[25] Kristeva, *ibid*. p.42.
[26] Kristeva, *ibid*. p.20.

The considerable lack of confidence proposed and promoted by the ideas of coherence and endings – or plot knowing – as substance for aesthetic choice are anathema to intelligent feeling. Alan Turing predicts this in his unsolvability solutions. Turing proved 'the existence of mathematical problems that cannot be solved by the universal Turing machine. There he also advances the thesis ... that any systematic method for solving mathematical problems can be carried out by the universal Turing machine. Combining these two propositions yields the result that there are mathematical problems which cannot be solved by any systematic method–cannot, in other words, be solved by any algorithm.'[27] 'The argument of 'Solvable and Unsolvable Problems' illustrates why it is that the need for intuition cannot always be eliminated in favour of formal rules.'[28] Turing, in the conclusion to his essay, writes, 'The results which have been described in this article are mainly of a negative character, setting certain bounds to what we can hope to achieve purely by reasoning. These, and some other results of mathematical logic may be regarded as going some way towards demonstration, within mathematics itself, of the inadequacy of 'reason' unsupported by common sense.'[29]

Last year I began writing an introduction to a book on literature and art in America after 1950.[30] A draft of this introduction became *iDamage*, which begins, 'In a sense it's over, because some while ago it was considered already a dilemma of melancholia and hope, or someone else thought, no way will Western cultures survive the next millennium.'[31]

In my abstract I drew from what Bernard Williams stressed about the degree to which polite ethical thought in the societies of the West today rests on or involves self-deception or more active deceit.[32] It depends on the private pretence, public affirmation, or purposeful suggestion of what is, for those concerned, knowably false.

Part of that discussion could involve the extensive elaborations from Francis Bacon, Aby Warburg and now Jean Baudrillard's ideas of simulation and the latter's idea of the hyperreal. *iDamage* notes, 'This juxtaposes with the recognition that an engagement with the proprioceptive demands of empathy could be undermined by assemblage methodology. Rather than a disadvantage however, this is a necessary outcome; the idea that methodological concerns should lead to singular focus would be a demonstration of damage that undermines sensitive thought and would promote false frameworks of truth

[27] Copeland, Jack, introduction to 'Solvable and Unsolvable Problems' by Alan Turing 1954, from *The Essential Turing,* 2004. p.576.
[28] Turing, Alan (1954) 'Solvable and Unsolvable Problems' in *The Essential Turing. Seminal Writings in Computing, Logic, Philosophy, Artificial Intelligence, and Artificial Life,* edited by Jack Copeland (2004) Oxford: Clarendon Press. p.580.
[29] Turing, *ibid*. p.595.
[30] *Assemblage and Empathy,* commissioned by Peter Lang.
[31] Fisher, Allen (2006) *iDamage.* Introduction to *Assemblage and Empathy,* a book in progress, *Critical Documents, Plantarchy,* Oxford, Ohio, forthcoming 2007.
[32] Williams, Bernard (2002) *Truth & Truthfulness. An Essay in Genealogy,* New Jersey and Oxford: Princeton University Press.

encouraged by popular summary and short-cut chemistry redolent of the social skills of a celebrity farm and the national news.'[33]

"Breakage may be considered a necessary and positive process. A metonym for broken civilisation or damaged social duty is not necessarily intended. The initial facture derives from direct breakage of the research. The factured product is a consequence of the breakage that has been involved, particularly in post-collage and in transformational poetics, where the facture of the text has been possible through a series of transformations. At the level of words in the text, for instance, transformations may be used which deliver word links, patterns of connectedness, through the use of sound (rhyming), comparable meaning (rhetoric), discussion or disruption of meaning (poetics), and damaged pasting (found in most genres including poetry, painting, and comedy). The factured product has thus undergone a series of breakages and factures. Sometimes this series involves transformation, planned breakage and incidental repair, sometimes the work uses collagic disruption of spacetime, and often the pasting together of different parts simulates continuity.[34] In post-collage a visual work may undergo further facture and transform into a new image.'[35] The facture of *iDamage* 'makes use of apparently coherent and sometimes-rhizomic, conservative processes often arbitrarily isolated from the mobile constellation of spins that the work proposes and (sometimes) disproves by this discussion.[36]

Readers have been gathering for some time what Terry Eagleton calls an "incoherence of grief".[37] Eagleton refers to Cleopatra's thoughts as she slips erratically from 'crown' to 'lord' to 'garland' over Antony's corpse. Eagleton's reliance on coherence continues into the book. On behalf of Yeats, discussing 'Coole Park and Ballylee', he writes, "the poem simply tells us that 'all is changed'; and though we know that it regards this change as pretty catastrophic, it neither tells us so nor makes a virtue out of its own reticence. It does not risk imperilling the robustness of its texture and coherence of its grammatical structure with an ill-natured rant.'[38] Later, Eagleton notes, that Yeats use of the verb 'commend' 'locks authoritatively into place in the next line, to bind these various elements together and lend them some overall thrust and coherence.'[39]

Jim Baggot, out of the physics department in Seattle pulls this into a different focus. He writes, "as we increase the displacement of the destination of the (electromagnetic) wave further and further, the spacetime dependencies of the waves become increasingly 'misaligned': at specific points in spacetime, peak no longer lines up with peak, trough no longer lines up with trough. The result is destructive interference and a loss of *coherence* of the light. Clearly, we get constructive interference and maximum coherence of light paths that do not differ significantly in terms of distance and therefore time. The mystery is now

[33] Fisher (2006) *op.cit*.31.
[34] Fisher, Allen (1999) 'The Poetics of the Complexity Manifold' in *Boundary 2,* p.117.
[35] Fisher (2006) *op.cit*.31.
[36] Fisher (2006) *ibid.*
[37] Eagleton, Terry (2007) *How to Read a Poem,* Oxford: Blackwell Publishing.
[38] Eagleton, *ibid.* p.82.
[39] Eagleton, *ibid*. p.85.

resolved. When light travels through a single medium (such as air), the light paths that do not differ significantly in terms of distance and time are all clustered around the shortest, straight-line path from, source to destination, which is also the path of least time.'[40] As he later notes, "The pragmatism and instrumentalism typical of the younger generation of theoreticians involved in (Quantum) theory's early development, such as Heisenberg, Dirac, and von Neumann, called for a coherent mathematical framework which *worked.* To these physicists, it did not matter too much that the deeper meaning of the theory's concepts appeared to become increasingly disconnected from the reality that the theory was trying to describe ...'[41] which thus begins to equate to poetry in public language.

The need is engendered from a raft of considerations and this paper will celebrate its lack of completeness or holistic conception. The addresses are first to connectedness and entanglement (and their direct relation to æsthetics and its components in consciousness and cognition). This will be further damaged by a hint of discussion about measurement, unsolvability, errors, disconnectedness and the necessity of decoherence. The trail will lead into rudimentary understandings of quantum lack and the resulting confidence position, lead, as it does so, into the undermining topic of this paper which I first named, with as gobstopper in my mouth, *truth*.

Gordan MacKerron reviewed *Uncertainty Underground: Yucca Mountain and the Nation's High-Level Nuclear Waste,*[42] he noted, 'Varying degrees of reassurance emerge from … [a] hydrology-based set of papers, from virtually complete (with regard to hot upwelling) to much more uncertain (transport in the saturated zone).... There are good sections in the volume 'on the distinctions between risk (the probability of something going wrong, from which decision-making at least has a starting point) and the inevitable uncertainties over very long periods into the future, for which precise risk levels are unknown and probably unknowable.'[43]

Discussing Felix Klein's programme, Mario Livio 'emphasises the isomorphism between the order-60 group A_5 of even permutations of five objects and the symmetry group of icosahedron.'[44] The latter has no normal subgroup, which is precisely the property that Evariste Galois used to prove unsolvability.

William Mitchell noted, 'As broadband wireless connections deliver fatter streams of bits to the mobile body, attention management will become an

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[40] Baggot, Jim (2004) *Beyond measure: Modern physics, philosophy, and the meaning of quantum theory,* Oxford: Oxford University Press. p.48.
[41] Baggot, *ibid.* p.59.
[42] Gordan MacKerron review of *Uncertainty Underground: Yucca Mountain and the Nation's High-Level Nuclear Waste,* edited by Allison M. Macfarlane and Rodney C. Ewing, MIT Press, 2006. *Nature* **442**, 633; 2006.
[43] Gordan, *ibid.*
[44] Ian Aitchinson, reviewing The Equation that Couldn't Be Solved: How Mathematical Genius Discovered the Language of Symmetry by Mario Livio, Souvenir Press, THS September 15, 2006. p.25.

increasingly crucial design issue.'[45] Paying attention to confidence and its lack, Roland Omnès provides a good summary for *decoherence*. 'The most worrying difficulty in the interpretation of quantum mechanics is certainly the problem of macroscopic interferences, which are apparently predicted by any linear theory and practically never observed so much so that they would look absurd if we were to see them. Reflection on this problem as led to the idea of decoherence, which is certainly the most important discovery of the modern interpretation,'[46] which after a stretch of examples notes, 'When a history includes a phenomenon that is specified by decoherence, *there can be no consistency for a later property that would contradict this phenomenon or its consequences.* One cannot logically deny it. It gives rise to an indelible record that retains its consequences, even if it is erased or dissipates. It remains present in the inward details of the wave functions, decoherence forbidding the consistency of its negation. Any history that would try to deny it (or its later consequences) necessarily violates the consistency conditions and therefore the rules of logic.'[47]

'Of course, authority is also displayed in the handling of theory and interpretation, but in the humanities and the sciences alike, one can have confidence in that only if one can respect the writer's dealings with everyday truths.'[48] Poets are again in the condition Arendt knew as 'The frailty of human affairs.'[49] The patterns of connectedness that have the potential to enhance coherence are delicate. The patterns are a 'shift from a world structured by boundaries and enclosures to a world increasingly dominated, at every scale, by connections, networks, and flows... Today the *network,* rather than the enclosure, is emerging as the desired and contested object: the dual now dominates. Extension and entanglement trump enclosure and autonomy.'[50] To exaggerate this problem, Vlatko Vedral noted that connectedness in natural phenomena can actually be better than perfect. 'This was first realised when physicists tried to infer the laws governing the behaviour of small objects ... in the study of quantum physics .... Electrons are like small spinning-tops, each rotates in its own way depending on the external circumstances. ... Astonishingly, if (the scientists) measure the electron spin at two different times, the correlations between these measurements can actually exceed any correlations allowed by classical physics. ... (with actual electrons) their spin measurements can be correlated in the vertical direction at the same time as in the horizontal direction (and in all directions)... Such quantum correlations that exist between objects and events are known as "entanglement".'[51]
'Connectivity has become the defining characteristic of our twenty-first-century urban condition.'[52] But we need planned imperfection, not exactness of match, '...the ultimate network will operate by the quantum-magical means of quantum

[45] Mitchell, William J. (2003) *Me ++ The Cyborg Self and the Networked City,* Cambridge, Mass.: The MIT Press.
[46] Omnès, Roland (1999) *Understanding Quantum Mechanics, New Jersey:* Princeton University Press. pp.73-74.
[47] Omnès, *ibid*. p83.
[48] Williams, *op.cit.*32. p.11.
[49] Kristeva, *op.cit*.22. p.45.
[50] Mitchell, *op.cit*.45. p.5-11.
[51] Vedral, Vlatko (2006) *Nature,* **439**, 26 January, p.397.
[52] Mitchell, *op.cit*.45. p.12.

entanglement and teleportation of quantum states from one site to another.'[53] As Arendt put it, 'She did not herself want to become entangled again; she wanted to be the immutable soil which absorbs everything into itself.'[54] 'As information carriers in quantum computing, photonic quantum bits have the advantage of undergoing negligible decoherence. ... One solution is to introduce an effective nonlinearity by measurements resulting in probabilistic gate operations. In one-way quantum computation, the random quantum measurement error can be overcome by applying a feed-forward technique, such that the future measurement basis depends on earlier measurement results. ... One-way quantum computation is based on highly entangled multiparticle states, so-called cluster states, which are a resource for universal quantum computing.[55]

'Entanglement established between quantum systems at different locations enables private communication and quantum teleportation, and facilitates quantum information processing. Distributed entanglement is established by preparing an entangled pair of quantum particles in one location, and transporting one member of the pair to another location. However, decoherence during transport reduces the quality (fidelity) of the entanglement. A protocol to achieve entanglement 'purification' has been proposed to improve the fidelity after transport.'[56] Further more, however, 'Success probabilities were (only) above 35 per cent.'[57] 'The multi-segmented trap architecture used here should allow the distribution of entangled particles to separate locations for exploring repetitive protocols in future experiments.'[58]

'It is "plain" to Leavis that we see (in Keats' ode 'To Autumn') the gnarled, sturdy trees with their thickly loaded leafy entanglements, though the poem says nothing of this.'[59] Omnès clarifies the condition and leaves it undone when he notes, 'The entangled state is a quantum superposition of two distinct physical systems. (Thus a state of two realities in a collage.) This is a very frequent situation because any composite system whose wave function is not simply a product of the wave functions of its components is entangled.'[60] (Metaphorically the relationship between cognition and æsthetics.) John S. Bell was more concise in his 1986 paper, there are 'mathematical counterparts in the theory to real events at definite places and times in the real world (as distinct from the many purely mathematical constructions that occur in the working out of physical theories, as distinct from things which may be real but not localized, and as distinct from the 'observables' of other formulations of quantum mechanics, for which we have no use here). A piece of matter then is a galaxy

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[53] Mitchell, *ibid*. p.10-14.
[54] Arendt, Hannah (1997) *Rahel Varnhagen: the Life of a Jewess,* ed. Liliane Weissberg, trans. Richard and Clara Winston, Baltimore and London: John Hopkins University Press.
[55] Prevvedel, Robert, Walther, Philip, Tiefenbacher, Felix, Böhi, Pascal, Kaltenbaek, Rainer, Jennewein, Thomas and Zeilinger, Anton (2007) 'High-speed linear optics quantum computing using active feed-forward', *Nature,* **445**, 4 January, p.65.
[56] Reichle, R., Leibfried, D., Knill, E., Britton, J., Blakestad, R.B., Jost, J.D., Langer, C., Ozeri, R., Seidelin, S., and Wineland, D.J. (2006) 'Experimental purification of two-atom entanglement', *Nature* **443**, 19 October. p.838.
[57] Reichle *et al, ibid.* p.838.
[58] Reichle *et al, ibid.* p.840.
[59] Eagleton, *op.cit.*37. p.59.
[60] Omnès, *op.cit*.46. p.274.

of such events. As a schematic psychophysical parallelism we can suppose that our personal experience is more or less directly of events in particular pieces of matter, our brains, which events are in turn correlated with events in our bodies as a whole, and they in turn with events in the outer world'[61] where, as Karl Popper notes, 'all measurements of momentum go back to measurements of position'.[62] John S. Bell writes, '... observation, even when all possible results are averaged over, is a dynamical interference with the system which may alter the statistics of subsequent measurements.... together with the belief that instruments after all are no more than large assemblies of atoms, and that they interact with the rest of the world largely through the well-known electromagnetic interaction, seems to make this a distinctly uncomfortable level at which to replace analysis by axioms.'[63] 'The quantum formulation is constructed on a set of four postulates, together with the position-momentum commutation relation, the convergence properties of Hilbert space, and the expansion theorem. The last remaining ingredient to consider is also one of the most puzzling. It is the mathematical treatment of indistinguishability.... Apples are distinguishable because they occupy measurably different regions of space. ... The fact is that the electrons, like all quantum wave-particles, are indistinguishable. ... Indistinguishability is a property of quantum particles that is intrinsically linked to their wave-particle nature, as is their position-momentum commutation relation and Heisenberg's uncertainty principle. All these problems are one problem.'[64]

As poets writing after the end of history, we may have no problems understanding Mitchell's statements that 'The digital world is logically, spatially, and temporally discontinuous,' and 'The discontinuities produced by networks results from the drive for efficiency, safety, and security.'[65] This misfits when he writes that 'If you want to build complex structures' presumably like poems can be, there's no point trying to 'minimize errors, and to correct errors automatically when they occur.'[66] Nanoscale widgets click directly to quantum mechanics; it is a world of spume, interference, non-equilibrium, uncertainty and confidence. It is necessary to open a tube of Zubes before you holler. Bernard Williams asks, 'Can the notions of truth and truthfulness be intellectually stabilised, in such a way that what we understand about truth and our chances of arriving at it can be made to fit with our need for truthfulness?'[67] Indeed, can poetry be made to 'fit' our need for public language, when 'Truthfulness as an ideal retains its power...'[68] but there can be no power without violence (or damage) and this leads to prevent an efficacious aesthetics.

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[61] Bell, John S. (2001) *The Foundations of Quantum Mechanics,* Singapore, New Jersey, London: World Scientific. pp.178-179.
[62] Popper, Karl R. (1982, 1995) *Quantum Theory and the Schism in Physics,* London and New York: Routledge. p.143.
[63] Bell, John S. (1987, 1996) *Speakable and unspeakable in quantum mechanics,* Cambridge: Cambridge University Press.
[64] Baggot, *op.cit.*40. p.71.
[65] Mitchell, *op.cit.*32. p.15.
[66] Mitchell, *ibid.* p.69.
[67] Williams, *op.cit*.32. p.3.
[68] Williams, *ibid.* p.16.