Neils Bohr’s Fundamental Principle of Complimentarity that yields the wave-particle duality of the Copenhagen Interpretation of the Quantum Theory appears to violate two of Aristotle’s three “Laws of Thought,” the laws of Western logic and mathematics, namely the Law of Contradiction, and the law of the Excluded Middle. (Aristotle’s first law is the “Law of Identity, “A is A,” and not something other.) The Law of Contradiction—”A cannot be not-A” (contradictories cannot both be true)—is violated because light cannot be both a point-like particle, and a wave spread out in space. Waves and particles are distinct objective entities. If an object is A, it cannot also be B. The Law of Excluded Middle—”either A or not-A” (contradictories cannot both be false)—is violated because light must be either a particle or a wave, but not both. Moreover, in quantum mechanics, a particle—an electron—may exist in an ineffable “super-position,” that is, prior to a measurement that “collapses the wave function” the electron is in two places at once! In other words the electron is both A and not-A. This represents the essential ambiguity of quantum logic and ostensibly violates the law of Excluded Middle. Whether it is the Law of Excluded Middle or the Distributive Law that is ostensibly violated and whether or not Bohr’s Principle of Complimentarity saves the Excluded Middle, this untidy “quantum measurement problem” is only a problem if one insists on the primacy of the Western Logical Canon. Is Aristotle’s syllogistic logic the last word? In this purely deductive logic, the Law of Contradiction and the Law of Excluded Middle are not apriori true assumptions, but are logically deduced from the definition of contradictories as stated in the Law of Contradiction itself. But in the Eastern logical canon the truth of a statement is not logically equivalent to the falsity of its contradictory.

Is the human mind then, entirely bound by the logical syntax of this purely deductive, merely two valued truth-functional logic? Are we forever yoked to a view of reality that logically excludes inductive inference, probability, and worse, our subjective experience? This black and white mode of thinking, this pernicious, and unconscious intersubjective mythos of dualism has infected the history of ideas in the West—religion, science and culture—and we’re not even aware of it! How do we move then, from this fearful habitual quest for the totemic idol of absolute objective certainty—the limit of the logical syntax of language—to an atavistic, semiotic semantics, even a meditative contemplative integral understanding where the “modal mismatch” of
mathematical logical necessity and the radical contingency of the Quantum Theory are subsumed in their ontologically prior unity?

Both Hindu and Buddhist logicians in the East, and the European Intuitionists (Brouwer, von Pauler) deny the Western Law of Excluded Middle. This law is replaced with the unifying Law of Connection, “Both A and not-A,” (“Everything is connected with all other things”), and its complimentary, “Neither A nor not-A.” These two together permit the ontological interdependence, the non-separateness of all arising phenomena—Buddhist “dependent arising” (pratitya samutpada)—and do not assume or presuppose the existence of A, that is, the existence of anything at all. This then, permits a unified, East/West logic that allows, without contradiction, our fundamental Principle of Ontological Interdependence upon which turns the new post-critical theories of ontological and universal relativity explored above. This Law of Connection defies the Western logical orthodoxy—the great legacy of Aristotle, Frege, Russell and Quine—thereby revealing the ontologically prior, always present unity of the perennial Two Truths that is the one great truth that must be included in any theory of ontological or universal relativity, and in any “theory of everything.”

The wave-particle duality of the Quantum Theory then, is in principle compatible with the Law of Connection—both A and not-A. Thus, with this urgent logical enrichment, primordial light is, or may be, without contradiction, both a point-like particle (after a measurement), and a wave spread out in space (before a measurement). (See Boaz, “The Logic of Reality, East Meets West” in Zen: Seeing our Original Nature, 2004.)

Indeed, Bohr’s coat of arms was the tai chi—the yin-yang symbol that outpictures the primordial emptiness ground of Ultimate Reality—Tao—in whom arises these two primordial energies, yin and yang that is the very light that creates the five elements (wu hsing) from which evolve all of material spacetime reality. This dialectic of the Tao of emptiness includes both “is and is not,” “both/and,” “both A and not A.” Tao is the interdependent arising of all things spontaneously and effortlessly (te) as wu-wei or non-action, flowing return (fu) again to the light, supreme source that is “the stillness in motion that pervades heaven and earth.”