

shall shatter a rock. Granted: but the work-concomitants of that energy are all familiar, and equally present whether it be arranged so as to produce any predetermined effect or not. The opening of the throttle-valve for instance demands just the same exertion, and results in just the same imperceptible transformation of fully-accounted-for energy, whether it be used to start a train in accordance with a time-table and the guard's whistle, or whether it be pushed over, as if by the wind, at random. The shouting of an order to a troop demands vocal energy and produces its due equivalent of sound; but the intelligibility of the order is something superadded, and its result may be to make not sound or heat alone, but History.

Energy must be *available* for the performance of any physical operation, but the energy is independent of the determination or arrangement. Guidance and control are not forms of energy, nor need they be themselves phantom modes of force: their superposition upon the scheme of Physics