

CAUSAL INFERENCE ANOTHER PERSPECTIVE ON THE NECESSITY AND USEFULNESS OF STRUCTURAL ANALYSES IS PROVIDED BY CONSIDERATION OF THEIR ROLE IN CAUSAL INFERENCE. THE INFERENCE OF CAUSALITY IS, ESPECIALLY IN THE SOCIAL AND BEHAVIORAL SCIENCES, RESTRICTED TO AND IDENTIFIED WITH THE EXPERIMENTAL DEMONSTRATION OF CONTROL. THIS TOGETHER WITH THE INTRINSIC SIMPLICITY OF DICHOTOMOUS FRAMES PROBABLY ACCOUNTS FOR THE DOMINANCE OF SUCH FRAMES IN THE METHODOLOGIES OF SUCH SCIENCES (EXPERIMENTS TEND TO INVOLVE DICHOTOMOUS FRAMES OF ANALYSIS).

THE FACT IS, HOWEVER, THAT CAUSAL MODELS ULTIMATELY REQUIRE BOTH EXPERIMENTAL AND STRUCTURAL VERIFICATION, AND THAT INITIAL IMPUTATIONS OF CAUSALITY CAN AND HAVE BEEN MADE ON THE BASIS OF EITHER EXPERIMENTAL OR STRUCTURAL SUPPORT ALONE. ^P THE RATIONALE FOR THIS IN TERMS OF AN ANALYSIS OF THE CONCEPT OF CAUSALITY IS NON-TRIVIAL* (BICKHARD & MURRAY, 1971), BUT ITS HISTORICAL FACTUALITY IS EASILY ILLUSTRATED. THE TWO MOST SUCCESSFUL DETERMINISTIC THEORIES EVER PROPOSED, NEWTON'S AND EINSTEIN'S, WERE BOTH STRUCTURAL AND WERE BOTH ACCEPTED IN THE SCIENTIFIC COMMUNITY ON THE BASIS OF THEIR SUCCESS IN MODELING STRUCTURAL REGULARITIES ^{BEFORE THEY HAD} BEEN TESTED EXPERIMENTALLY. ^{eg. ORBITS AND CURVATURES OF STARLIGHT,} IN NEWTON'S CASE, A DIRECT EXPERIMENTAL TEST WAS NOT EVEN TECHNOLOGICALLY FEASIBLE UNTIL ALMOST A CENTURY AFTER THE PRINCIPIA (KUHN, 1970, PG. 26). THERE ARE, IN FACT, A NUMBER OF SCIENCES IN WHICH EXPERIMENTAL ANALYSES ARE IMPOSSIBLE FOR EITHER TECHNOLOGICAL OR ETHICAL REASONS, AND THUS IN WHICH CAUSAL IMPUTATIONS MUST BE MADE, AT LEAST INITIALLY, ON THE BASES ON STRUCTURAL MODELS. THESE INCLUDE ASTRONOMY, GEOLOGY, ^{AND} METEOROLOGY. PSYCHOLOGY AND SOCIOLOGY SEEM TO BE SEATEDLY RECOGNIZING THAT THEY TOO, IN PART, BELONG ON THIS LIST.

* INTUITIVELY, CAUSALITY INVOLVES INDEPENDENT ASPECTS OF CONTROL AND STRUCTURE. WHEN OUR MODELS OF CAUSAL DETERMINISM MATCH OUR EXPERIMENTAL EXPERIENCE ^(CONTROL) WE HAVE GROUNDS FOR ACCEPTING THEM. LIKEWISE, WHEN OUR MODELS OF CAUSAL STRUCTURE MATCH EMPIRICALLY OBSERVED STRUCTURE, WE HAVE GROUNDS FOR ACCEPTING THEM.