14. Science and Understanding.

It might be claimed that what has been offered here is not science: no testable predictions have been set forth. But that judgment depends on what science is, or should be. During the earlier part of this century, under the influence of Positivist of one sort or another, science was narrowly construed so as to exclude the objective of providing scientific understanding; an understanding *based on experimentation and theory construction* of how nature works and how we fit into that picture. The founders of quantum theory exploited that narrower conception of science, but even they themselves were unable to quell the impulse to understand. And the recent profusion of efforts to go beyond the pragmatically superb Copenhagen position attests to the prevalence among scientists of the sentiment that stark prediction alone is not enough.

Moreover, the fact is that, like it not, science does impact strongly on the understanding of nature and our place within it that underlies contemporary Western culture. But the specific science that plays this role is mainly the mechanistic classical physics of the nineteenth century. As a foundation for society this conception is flawed no only by the fact that it is not true, but also by its internal inconsistency: how can we rationally contemplate and plan what we should do when it is already predetermined without any reference to our thoughts what we will in fact do? Building our lives and our institutions on false and contradictory concepts is a prescription for disaster.

What has been described in these pages is an understanding of nature and our role within it that is based squarely on twentieth-century physics: quantum physics. This use of quantum physics involves no mysticism or appeal to religious traditions from either The East or The West. It is right out of von Neumann's book. That does not mean that it is incompatible with religious ideas: indeed it is undoubtedly far more compatible with the world's important religions that classical physics could ever be. But it is not *based* on those ideas: it is based on the findings of physicists and mathematicians. This vision, being erected upon quantum theory, encompasses all of the truths of the earlier classical conception, and corrects its failings. How could a rational science-minded seeker of understanding not favor it over its classical competitor?