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NO PRECISE PROGRAMMING

FIVE years ago, in the issue for the Summer of 1974, *Dædalus* published an interchange between Steven Weinberg, an eminent theoretical physicist, and Theodore Roszak, whose criticisms of the scientific outlook have won a wide and appreciative audience. It was Roszak's hope apparently, to lift scientific thinking—or rather philosophizing—to another level, a more inclusive view that would acknowledge sources other than "objective fact" for scientific knowledge, and have a practical effect on scientific judgments. Mr. Weinberg's response to this appeal was thoughtful, urbane, and uncompromising.

Roszak had called for

> changing the fundamental sensibility of scientific thought—and doing so even if we must drastically revise the professional character of science and its place in our culture. There is no doubt in my mind that such a revision would follow. Rhapsodic intellect would slacken the pace and scale of research to a degree that would be intolerable by current professional standards. It would subordinate much research to those contemplative encounters with nature that deepen but do not increase knowledge. And it would surely end some lines of research entirely out of repugnance for their reductionism, insensitivity, and risk.

Weinberg replied:

> My answer is that science cannot change in this way without destroying itself, because however much human values are involved in the scientific process or are affected by the results of scientific research, there is an essential element in science that is cold, objective, and nonhuman.
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> . . . the laws of nature are as impersonal and free of human values as the rules of arithmetic. We didn't want it to come out this way, but it did. When we look at the night sky we see a pattern of stars to which the poetic imagination gives meaning as beasts, fishes, heroes, and virgins. Occasionally there is drama—a meteor moves briefly across the sky. If a correlation were discovered between the positions of the constellations and human personalities, or between the fall of a meteor and the death of kings, we would not have turned our backs on this discovery, we would have gone on to a view of nature which integrated all knowledge—moral, aesthetic, and scientific.
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> But there are no such correlations. Instead, when we turn our telescopes on the stars and carefully measure their parallaxes and proper motions, we learn that they are at different distances, and that their grouping into constellations is illusory, only a few constellations like the Hyades and Pleiades representing true associations of stars. With more powerful instruments, the whole system of visible stars stands revealed as only a small part of the spiral arm of one of a huge number of galaxies, extending away from us in all directions. Nowhere do we see human value or human meaning.

There would be little point in attempting to change Mr. Weinberg's views as here stated, in the terms given. The human meanings of the galaxies, if they exist, are too remote from the recognizable realities of present-day science to be admitted, or even suspected, and what sort of scientist would Mr. Weinberg be if he proclaimed them? In short, he describes science in its legitimate character at this moment of history. Science must deal, he says, with the facts that are unmodified by our "feeling" relationship to them. Only those facts can be made into "public truth." The point is clear.

Mr. Roszak, one might say, is arguing for a consideration of what could be tomorrow's science. He enters the field of debate by suggesting that the directions in which science looks may be more important, humanly and even scientifically speaking, than what science sees wherever it looks, whatever the checks and exactitudes involved. He says in his *Dædalus* article:

> It is surely striking how often science quite naturally presents its discoveries as if it were unfolding a spectacle before us, thus borrowing

> heavily on sensibilities that have been educated by dramatists and story-tellers. All cosmology is talked about in this way, and even a good deal of high energy physics and molecular biology. Everything we have lately discovered about the evolution of stars is, quite spontaneously, cast in the mode of biography: birth, youth, maturity, senility, death, and at last the mysterious transformation into an afterlife called "the black hole." Or, take the classic example of aesthetic perception in science. Can there be any doubt that much of the cogency of Darwin's theory of natural selection stemmed from the pure drama of the idea? Natural selection was presented as a billion-year-long epic of struggle, tragic disasters, lucky escapes, triumph, ingenious survival. Behind the sensibility to which Darwin's theory appealed lay three generations of Romantic art which had pioneered the perception of strife, dynamism, and unfolding process in nature. Behind Darwin stand Byron's Manfred, Goethe's Faust, Constable's cloud-swept landscapes, Beethoven's tempestuous quartets and sonatas. All this became an integral part of the Darwinian insight. I doubt there is anyone who does not still bring to the study of evolution this Romantic taste for effortful growth, conflict, and self-realization. The qualities are not only in the idea, but also in the phenomenon. It is not that these dramatic qualities have been "read" into nature by us, but rather that *nature* has read them into *us* and now summons them forth by the spectacle of evolution we find displayed around us.

An unsettling idea, this—that the kind of science we have is a result of how we were feeling when we put it together! Mr. Weinberg might say, Well, all right, but whatever inspired our scientific ideas and progress, I do not see how that alters my responsibilities. I cannot toss my discipline out the window because research began from value-inspired motives!

It is unlikely that anyone wants Mr. Weinberg to forego the criteria by which physical theories are tested. The question rather has to do with the cultural status of what our science finds out by these means. Is it really the bottom line? Is the technique of scientific impartiality what we must live by and shall perhaps be saved by? Scientists, of course, or some of them, would disclaim any such large responsibility. What they are bound to say, however, is that the technique *works.* They do find out things about the world, and put them to use. In this science has no competitors worth talking about.

After a deft, fair-minded, and generally acceptable account of what present science is, Mr. Weinberg turns the challenge around. Speaking of critics like Roszak, whom he listens to with respect, he says:

> But in the end I am puzzled. What is it that they want me to do? Do they merely want the natural scientist to respect and participate in other modes of knowledge as well as the scientific? Or do they want science to change in some fundamental way to incorporate these other modes? Or do they want science simply to be abandoned? These three possible demands run together confusingly in the writings of the critics of science, with arguments for one demand often being made for another, or for all three.

His first question is of course impossible to answer in familiar terms. The others seem to the point. The first is unanswerable for the reason that Roszak's most poignant appeal is in behalf of people who, in Weinberg's view, already badly misunderstand what science is and what it sets out to do. The question then is: How are such misunderstandings corrected? And, far more difficult to answer: What should the idea of science be corrected to?

Roszak makes plain the character of such difficulties:

> We should by now be well aware of the price we pay for regarding aesthetic quality as arbitrary and purely subjective rather than as a real property of the object. Such a view opens the way to that brutishness which feels licensed to devastate the environment on the grounds that beauty is only "a matter of taste." And since one person's taste is as good as another's, who is to say—as a matter of *fact*—that the hard cash of a strip mine counts for less than the grandeur of an untouched mountain? Is such barbarism to be "blamed" on science? Obviously, not in any direct way. But it is deeply rooted in a scientized reality principle that treats quantities as objective knowledge and qualities as a matter of subjective preference.

It seems evident that Roszak is calling scientists—and all the rest of us—to do something about changing the *zeitgeist,* the spirit of the age.

And he admits or suggests that this cannot be done "in any direct way." Doubtless Mr. Weinberg senses this, too, and so he asks: What do they want *me* to do?

A direct answer to Mr. Weinberg could hardly escape being presumptuous or shallow. But a look might be taken at the background assumptions to which he openly admits. It is not necessary to embrace some astrological orthodoxy in order to propose the possibility that in the great web of universal life, the planets and stars have some connection with human affairs and well-being. The scientific activity, after all, is continually disclosing relations where none was believed to exist. It is not necessary to leap to some sentimental or superstitious conclusion because such possibilities are admitted to exist. Actually, when scientists *deny* such possibilities, they drive the untutored public into the arms of pretentious soothsayers, and then we have militant campaigns headed by astronomers against astrologers. All that is served by such efforts is polemical bigotry. But when men of real attainments set an example by saying, "We do not know; many things remain possible; and science has grown continually from the contributions of metaphysicians," a general strengthening of mind and refinement of taste would result.

Intelligence can be applied to the unknown as well as the known. For example, many years ago a biochemist, Albert P. Mathews, contributed to a biology text (*General Cytology*, ed., E. V. Cowdry, 1924) a paper in which he said of the life of the cell:

> Living things show an attribute which we may call mentality or psychism, and this psychism is as yet unrecognized elsewhere than in living things. No one speaks of the psychology of this great rock upon the illuminated surface of which we crawl. . . . But who can deny to the inorganic earth that which is in the same inorganic elements when in the organized, the organic form? The biochemist of the future, then, must be more than an electrical engineer, for he must be a poet and a psychologist as well.
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> The psychologist of the future will discuss the psychology of hydrogen, of oxygen, indeed, that of the electrons, positive and negative, themselves. For who can doubt that those properties of the atoms which show themselves in the psychical phenomena of living things are also present in the same atoms in the inorganic form? For the atoms are the same in living and lifeless, and every moment they are turning from the one to the other. . . .
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> We cannot understand chemistry, therefore, and certainly not biochemistry, the chemistry of cells, until the relation between material and psychic things is worked out. . . . We must leave out, because of our ignorance, the psychic side of chemical reactions. Our equations, therefore, will be as incomplete as if energy were omitted. The transformation of matter and energy alone can be considered . . . which becomes hence like Hamlet with Hamlet left out. Let us not blind ourselves to this fact.

We dare say that the capacities and integrities of Mr. Mathews as a biologist were not in the least reduced by this candid admission, and surely the possibilities of his science were enriched by the implications of what he said.

From a biologist we turn to a psychologist, perhaps the most eminent of all—William James. James called himself a "radical empiricist" in philosophy, yet a lifelong interest in psychic research led him to declare for a vast psychic "sea," as the only basis for explaining the phenomena he encountered. So, in 1909, this tough-minded scientist—often referred to as the father of American psychology—gave his view in the *American Magazine* (October), saying:

> . . . there is a continuum of cosmic consciousness, against which our individuality builds but accidental fences, and into which our several minds plunge as into a mother-sea or reservoir. Our "normal" consciousness is circumscribed for adaptation to our earthly external environment, but the fence is weak in spots, and fitful influences from beyond leak in, showing the otherwise unverifiable common connection. Not only psychic research, but metaphysical philosophy, and speculative biology are led in their own ways to look with favor on some such "panpsychic" view of the universe as this. . . .
>
> What, again, are the relations between the cosmic consciousness and matter? Are there subtler

> forms of matter which upon occasion may enter into functional connection with the individuations in the psychic sea, and then, and then only, show themselves? So that our ordinary human experience, on its material as well as on its mental side, would appear to be only an extract from the larger psychophysical world?

"Nowhere," says Mr. Weinberg, "do we see human value or human meaning." This refers to what is seen through modern telescopes. He suspects that even better telescopes will reveal no more. But the equation has two ends. Have we, indeed, perfected our understanding of "human value or human meaning"? If one dimension of our being has, as James proposed, tenuous continuity with the psychic sea around us, who knows what might be seen through *internal* telescopes sufficiently developed to map the extent of that vast continuum? Giordano Bruno, philosophical champion of science in the days of its birth, was convinced of this possibility and there may have been others who felt they had similar insight into the mental and even feeling structures of the universe.

Mr. Weinberg is concerned about the unreliability of the subjective impressions of "gurus and flower-children," arguing that "the rejection of an external standard of truth can leave a person as solipsistic and self-satisfied as a baby." He has a point. But what of the impressions of those who reject an internal standard of truth? Are they any more desirable? To make use of both seems the path of common sense, but Mr. Weinberg will point out that science becomes science only by making its findings independent of subjectivity.

So the question is: Can we restore subjectivity to science without destroying it?

A. H. Maslow's books, especially *The Psychology of Science*, might provide the beginnings of an answer. Weinberg, however, would probably say, "But I am a *physicist*, and I have no opinion about what social scientists and psychologists ought to do." Well, it would take a considerable leap of the imagination to make physics a department in psychology, as it may have been in some of the old philosophical religions. The impossible may take modern scientists quite a while.

For more general comment, we turn to an article by Vince Taylor in the February *Technology Review*, titled "Subjectivity and Science: A Correspondence about Belief." Mr. Taylor, an economic analyst with training in physics at Cal Tech, writes to explain to a graduate student how and why he believes the subjective side of human life should enter into the practice of science. Again, his science is not physics, but policy analysis, yet the breadth of his discussion includes attitudes that could affect practice in all the sciences. To the student, who has been dogmatically critical of Taylor's "subjectivism," he says:

> I would like to help you gain an appreciation that came to me only slowly, painfully, and with much difficulty: how our intellectual concepts and beliefs limit our ability to perceive what is really happening in the world. When the world "was" flat, the heavens "had" to move around the earth. We see the world through the blinders of our own beliefs. When the world's behavior resists our expectations, as now seems to be the case in many areas of policy analysis, we need to question whether some of our important beliefs are in accord with reality. Unfortunately, our most basic beliefs are seldom accessible to our conscious mind: they appear to us as simple, unquestionable observations about reality. . . .
>
> To truly see that one of your own beliefs is just an assumption can be liberating. This experience, though, is not amenable to precise programming. You must stretch your mind, envelop your beliefs with contrary thinking, and allow your imagination to roam in forbidden territory without automatically rejecting its perceptions as "absurdities." . . . By holding fast to certain beliefs, you may be denying a part of yourself that would come to the surface if you were willing to accept a somewhat different set of values or beliefs. . . . What I am suggesting derives from a belief in the indivisible unity of life and, therefore, in the importance of making work an integral part of the whole. . . .
>
> To be able to integrate your life, however, you will first need to re-examine your unquestioning

> belief in the superiority of "objective" over "subjective" research, a belief apparent in your condemnation of what you consider subjectivity in my writing. Until you relinquish this belief, you will be afraid to approach work with feeling as well as intellect for fear of losing your much-valued objectivity. But, pure "objectivity" doesn't exist, since any observations, experiments, or analysis must always be done by a person, who inescapably must have values, emotions, and feelings that influence his or her work. . . .
>
> You seem, however, to believe that because you desire to be objective you will be immune to those passions, prejudices, and dominating opinions which "are the abundant source of dangerous illusion." [Laplace.] What nonsense. I am sure that Laplace would agree with me that those most likely to be led into dangerous illusions by their emotions are those who would deny most vehemently that emotion played any role in shaping their opinions about "objective" truth. . . .
>
> I have no desire to deny that my views of the world influence my work. You term this "subjectivity" and denounce it soundly. I term it "wisdom" and recommend it highly. By drawing on all of my perceptions of the world, I believe I obtain a more complete and coherent view of the world processes that are unfolding than would be possible if I limited myself to information that I process intellectually and analytically. In a sense, I work backwards from my overall view of the world to the specifics of a given problem, applying tests of logic and evidence to check the correctness of the perceptions derived initially as well as from thinking.

This, indeed, is what we all do—what we must do—but Mr. Taylor is speaking of the immeasurable advantage of doing it consciously, and obtaining, thereby, the full benefits of both sides of the knowing process. How does one adopt this outlook? By recognition, by maturation, by accepting responsibility for what we are and are able to do. Roszak, therefore, isn't out to "convert" anyone to anything. He is inviting his readers to take some part in the restoration of the human process of growing up. No one can prescribe just how to do it. As Vince Taylor says, growth "is not amenable to precise programming."

REVIEW
OUTRAGEOUS FORTUNE

CHANCE AND CIRCUMSTANCE by Lawrence Baskir and William A. Strauss (Knopf, 1978, $10.00) is about "the 97 million draft-age men we call the Vietnam generation." It tells about those who were drafted and the ones who were not, and why in both cases. The account goes back and forth from personal histories and statements to statistical indications of how the men felt and what happened to them. Nearly nine years of experience are covered by this book:

> Fifty-three million Americans came of age during the Vietnam War. Roughly half were women, immune from the draft. Only six thousand women saw military service in Vietnam, none in combat. But as sisters, girl friends, and wives, millions of draft-age women paid a heavy share of the emotional cost of the war.
>
> For their male counterparts, the war had devastating consequences. . . . 26,800,000 men came of draft age between August 4, 1964, when the Tonkin Gulf Resolution marked the nation's formal entry into the war, and March 28, 1973, when the last American troops left. Fifty-one thousand died—17,000 from gunshot wounds, 7,500 from multiple fragmentation wounds, 6,750 from grenades and mines, 10,500 from other enemy action, 8,000 from nonhostile causes, and 350 by suicide. Another 270,000 were wounded, 21,000 of whom were disabled. Roughly 5,000 lost one or more limbs in the war. A half million were branded as criminals, more than two million served in the war zone, and millions more had their futures shaped by the threat of going to war.

Why read a book like this? What can be learned from it? Quite evidently, the war was a terrible mistake, but behind this obvious judgment is the question: Isn't *any* modern war a terrible mistake, and did the Vietnam War take us a long way toward recognizing this? Interestingly, both the authors came of draft age during the war, and both managed to stay out. Later they met as members of President Ford's Clemency Board—an experience which led them to collaborate in a report which has few heroes and few villains. The book is mainly a detailed compilation of the ignominy of a nation. The reader is left with questions which go beyond its content: What is the meaning of "loyalty" in a time like this? Do the needs and imperatives of a "nation"—a warmaking nation—any longer have a moral claim on individuals?

This was the background of wondering which haunted countless young men who were drafted, or were threatened by the draft. A persisting change is taking place in the way Americans think about nationality—a change that may have been vaguely on the way for a variety of reasons, but which the Vietnam war pressed into the foreground.

> *Chance and Circumstance* focuses on that part of the American people who were confronted most immediately with the reality of Vietnam—the 27 million draft-age men we call the Vietnam generation. Yet this book is not about those who actually fought the war. Their firsthand accounts are eloquent, tortured, and tragic, and are perhaps the most important single chronicle of the Vietnam experience. We have written instead about the 25 million men who did not fight. Our purpose is to show who they were and how they escaped the war—and yet, in truth, did not escape it. Vietnam was, as a *Washington Post* editorial once observed, "a generation-wide catastrophe." In its wreckage lay an astonishing variety of victims.

Yet there is a lot in the book about the men who were drafted and who fought—enough to show that changes went on in them, too. The army had serious problems:

> New recruits were "like foreigners," said one colonel. Appeals to their patriotism, selflessness, and sense of duty made no impression. . . . These soldiers were the product of a turbulent, disorienting, conflict-ridden period. Whether or not they themselves were socially conscious, they were deeply affected by the unrest in the society from which they came. It was a society in trauma—racial conflicts, riots, drugs, crime, political assassinations, a "new morality," and above all, a growing disenchantment with the war.

By 1969 the major issue in the lives of students, both high school and college, was the draft:

> Although only 6 per cent of all young men were needed to fight, the Vietnam draft cast the entire generation into a contest for individual survival. The draft was not, however, an arbitrary and omnipotent force imposing itself like blind fate upon men who were powerless to resist. The "fittest"—those with background, wit, or money—managed to escape. Through an elaborate structure of deferments, exemptions, legal technicalities, and noncombat military alternatives, the draft rewarded those who manipulated the system to their advantage. . . .
>
> The opprobrium of "evader" is inappropriate for large categories of Vietnam-era offenders. About one-third of all draft resisters could have avoided the draft through deferments, exemptions, and legal loopholes, but they insisted on accepting exile or punishment as the consequence of their beliefs. One-fifth of all deserters never actually evaded Vietnam service. They finished full combat tours before running afoul of military discipline back home, often because of postcombat readjustment problems.

Drug use is identified as a measure of what the men felt themselves exposed to in Vietnam. At first only marijuana was the problem. In 1969-70 military police were making over eleven thousand drug arrests, and "the proportion of pot-smoking soldiers in Vietnam rose from 29 per cent in 1967 to almost 60 per cent in 1971. More than half were heavy smokers." Next came heroin:

> Heroin first attracted official attention in 1970. As late as 1969, only 2 per cent of all troops returning from Vietnam were known to use heroin or morphine. But by 1971, the total exceeded 22 per cent. Nearly 10 per cent used heroin or other hard drugs on a daily basis, and thousands of combat troops began to be arrested for heroin abuse.
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> The heroin epidemic was considered especially frightening because of the type of person involved. The military expected most addicts to be blacks or Chicanos from disadvantaged backgrounds, groups that comprised roughly 70 per cent of civilian addicts, according to one study. Yet, by contrast, more than 70 per cent of all military addicts were white. They typically came from small midwestern or southern towns, had no history of hard drug use, and lacked any obvious character disorders.

There were 172,000 conscientious objectors to the Vietnam War:

> In the view of most draft counselors, almost all conscientious objectors were spurred by deep principle, not by a shallow desire to avoid going to war; some even did their alternative service by working for civilian agencies in Vietnam. A large number of CO's were Jehovah's Witnesses, Quakers, Mennonites, Muslims, and others whose churches preached total pacifism. Many others were Catholics who had to overcome their draft boards' knowledge that the Catholic church was not pacifist. One Samoan was exempted by his California draft board because of his sincere belief that if he killed anyone, his pagan god would cause a volcano to erupt.

The chapter on "Exiles" tells about young Americans who migrated to Canada and Sweden to avoid the draft. Not many of them were happy in their adopted homes. Of these men the writers say:

> Many exiles, including some of the most radical, had a love-hate attitude toward the United States. They continued to criticize the nation's social and political problems in the apparent hope that they could make some difference, yet their separation gave them a new respect for America's social and cultural qualities: "You have to separate people from policy. Taking exile was not an anti-American move; it was an anti-government move." They criticized Canada for its "lack of creative spirit" and Sweden for its "gray mediocrity." Others acknowledged that their own characteristically American qualities of independence and resourcefulness had helped them as immigrants. Their circles of friends often included many Americans. . . .
>
> Some exiles maintained a deep, festering hatred for their homeland, whose war policies they considered symptomatic of fundamental social flaws.

Most of these men acted on principle:

> For every exile who was an unprincipled draft evader or an international outlaw, there were several who refused to submit to the draft or to participate in the war on moral grounds. About one-third of all exiled draft resisters refused to accept deferments and exemptions for which they apparently qualified. Joe Britt was an A student at a top-ranking university, but his student deferment gave him ethical problems. He quit school, sent his draft card back to his local board with a "letter of resignation," and took a last tour of America on a Greyhound pass before heading for Canada. John McDermott completely ignored his draft board, refusing to play the "game" of finding an

> acceptable way out of the draft: "I refuse to grovel! I could try numerous dodges, but I will not lower myself to that. Groveling puts the registrant's life in the hands that have no moral right to control it and presumes that the draft board's power is legitimate."
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> These exiles were similar to the draft violators who stood trial for refusing induction on moral principle.

Deserters, too, were often principled men. One of them deserted to Canada when only four months away from his discharge, saying that he would not wear the label of an "honorably discharged veteran of the Vietnam war."

This book is useful for its insight into the feelings of millions of young Americans when placed under the threat of killing or being killed. It is the story of agonizing decisions and aftermaths of depression. Most of all, it is the portrait of the youth of a nation which, by reason of its experience, sophistication, and increasing maturity, ought by now to have outgrown war as an instrument of policy. It is a good book to read, also, for the reason that Congress may now be readying itself for passage of another conscription law, more tightly enforceable than the Selective Service Act. Peace groups around the country are compiling reports on this possibility, and various offices of the American Friends Service Committee, the Fellowship of Reconciliation, and the War Resisters League are able to supply current information.

COMMENTARY
THE STATE RELIGION

IN *Language and Responsibility* (Pantheon paperback, 1979, $3.95), Noam Chomsky, in dialogue with Mitsou Ronat, a French linguist, provides a strong defense of young American resisters to the Vietnam war. (See Review.) He says:

> It is quite generally claimed now that the American resistance had as its cause the young men's fear of being drafted; that's a very convenient belief for the intellectuals who confined themselves to "pragmatic" opposition to the war. But it is an enormous lie. For most of those who were in the resistance from its origins, nothing would have been easier than to escape the draft, with its class bias, as many actually did. In fact, many of the activists already had deferments. Many of the deserters too chose a difficult and painful course for reasons of principle. But for those who supported the war initially, and who only raised their whisper of protest when the costs became too great, it is impossible to admit the existence of a courageous and principled resistance, largely on the part of youth, to the atrocities which they themselves had readily tolerated. The mainstream of American liberalism does not want to hear anything about all that. It would raise too many embarrassing questions: What were they doing when the war resisters were facing prison or exile? And so on.

Here Chomsky is distinguishing between those who finally opposed the Vietnam war because it wasn't getting anywhere and had begun to look like a very stupid mistake in policy, and those who opposed it because, first and last, it was *wrong.*

His point is that to recognize the actual motives and in many cases the heroism of conscientious objectors to the Vietnam war would be an act of self-condemnation for those who thought the war was maybe a good thing if we could accomplish our ends. In other words, we "meant well." After quoting a *Washington Post* editorial suggesting that our "good impulses" misled us into "bad policy,"

Chomsky asks:

> What were the "good impulses"? When precisely did the United States try to help the South Vietnamese choose their own form of government and social order? As soon as such questions are posed, the absurdity becomes evident. From the moment that the American-backed French effort to destroy the major nationalist movement in Vietnam collapsed, the United States was consciously and knowingly opposed to the organized political forces within South Vietnam, and resorted to increasing violence when these forces could not be crushed. But these facts, easily documented, must be suppressed. The liberal press cannot question the basic doctrine of the state religion, that the United States is benevolent, even though often misguided in its innocence, that it labors to permit free choice, even though at times some mistakes are committed in the exuberance of its programs of international goodwill.

It is this "state religion" which the conscientious objector challenges. It is not the religion of the people, yet it tends to fill the vacuum in the region of moral conviction during a time of trouble, and the conscientious objectors are made to pay the price for what is then made to seem mere moral insolence. *Chance and Circumstance* tells what we charge the young for having deep convictions, and explains in detail how payment is obtained.

CHILDREN
. . . and Ourselves
HUMAN GEOGRAPHY

IN *Man in Nature,* which Carl Sauer wrote for children (first published by ScriLner's in 1939, and now available in paperback from Turtle Island Foundation, 2845 Buena Vista Way, Berkeley, Calif. 94708, $7.95), the author begins with western North America as it was when only Indians lived there.

> Before the white men came all the land belonged to the Indians. This book is about Indian days. The Red Man lived in the land much as he found it. He was much more part of nature than we are. By learning how and where the Indians lived, we shall learn what kind of country the white man found. We shall then know better what he has done with it.

Drawings show a scene as it was in Indian times and as it is now. Only the hills and the sky "have stayed the same."

> We think it is a good thing to know about Indian days. We could not live like the Indians, even if we wished to do so. We have our own ways of living. But we did not need to cut down so many forests, and we did not need to destroy so much wild game. Often we have made the land poor and ugly. The land was natural and beautiful in Indian days. Perhaps we should make parts of it look once again as it did in Indian days. . . .
>
> Have you ever stopped to think that our own people learned a good many things from the Indians?

Toward the end of the book Carl Sauer tells how, when Columbus arrived, the Indians of the Carribean wore clothes of spun cotton, not the skins of animals. The cotton they used was long-fiber cotton and the Indians twisted its slender threads into yarn and wove cloth. The Indians also smoked cigars made from the tobacco they grew—the kind we use now. Sauer takes the account of how these Indians farmed from an old Spanish writer who came to the West Indies a few years after Columbus. The major crops were maize, cassava, sweet potatoes, and peanuts. Maize is what we call corn, and cassava or manioc is the source of what we eat as tapioca. The Indians, as Oviedo y Valdes tells it, planted maize as a team:

> . . . a number of Indians work shoulder to shoulder. Each has a stick or pole and pushes its point into the earth. Thus they turn the ground. In the hole that is made they drop four or five grains of maize. This seed is carried in a little sack tied about the waist or strung about the neck. With the foot the Indian then pushes shut the hole that has been planted, so that the parrots and other wild birds shall not eat the grain. Then they take another step forward and do the same thing over again. And thus the Indians work shoulder to shoulder until they come to the end of the field. Then they turn about and come back in the same manner. Thus they do until they have finished planting.

Only humans eat manioc, a plant which grows as tall as a man and had great roots like turnips or carrots, with "flesh," Valdes says, "very white and firm," but poisonous. But as the Indians treated it, cassava was good to eat.

> They make of these roots large loaves or cakes which they call cassava. This is the common bread of all these islands and it is made in the following manner:
>
> First, they take off the skin so that none remains. They scrape it with sharp sea shells. Then they grind the flesh of the root with some rough stones. Thereupon they put it in a very clean place where they fill large sacks with it. These sacks are made of palm matting. With the help of the stones they then press all of the juice out of the ground manioc until what remains in the sack is quite dry.
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> This dry mass they take and place in a large earthen pan or tray over a fire. They spread a cake of it, about two inches thick, on the pan. When it is baked on one side, the woman who takes care of the baking turns it with a wooden shovel so that it bakes on the other side. In a short while the cassava pancake is ready. Afterward they put it in the sun for a day or two to dry and it is then very good bread. Where there are many people they set up many ovens and earthen trays and they make a large amount of bread. This is fine bread and keeps very well.
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> The juice which is pressed out is so great a poison that from one swallow of it one must die. Yet if they boil this deadly poison twice or three times, the Indians eat the juice, making a very good and

nourishing soup out of it. They also make vinegar and a sour drink of the juice.

Cassava bread keeps a year or longer. It is carried by sea to all the islands and the shores of the mainland and even to Europe. It keeps without spoiling if it does not become wet.

Anyone who has tried to find out about tapioca from dictionaries and other "adult" reference books will appreciate this account, which tells what you want to know. Carl Sauer does what we have always felt should be done with history books for students, young or old. He goes to the sources and introduces the reader to the first or best tellers about the past. When he comes to the conquest of Mexico by Cortez, Sauer lets Bernal Diaz describe the great market the Spanish found in the City of Mexico. The old soldier who was with Cortez relates:

. . . we were astounded at the number of people and the things it held, and at the good order, for we had never seen such a thing before. Each kind of goods was kept by itself and had its fixed place marked out. Let us begin with the dealers in gold, silver, precious stones, feathers, and mantles. Next there were traders who sold great pieces of cloth and cotton and twisted thread and there were some who sold cocoa. There were those who sold coarse cloth and ropes and sandals all made from the same plant, and sweet cooked roots. . . .

Let us go on and speak of those who sold beans and sage and other vegetables and herbs in another part, and to those who sold fowls, cocks with wattles (turkeys), rabbits, hares, deer, mallard ducks, young dogs, and other things of that sort in that part of the market, and let us also mention the fruit sellers and the women who sold cooked food. Then every sort of pottery in a thousand different forms from great water jars to little jugs. These also had a place to themselves; then those who sold honey and honey paste and other sweets, and those who sold lumber, boards, beams blocks and benches, each article by itself, and the sellers of firewood, paper, which in this country is called amol, and reeds full of tobacco and yellow salve and things of that sort are sold by themselves.

I am forgetting those who sell salt, and those who make stone knives . . . axes of brass and copper and tin, and gourds and gaily painted jars made of wood. The things are so many and of such different kinds and the great market place was so crowded with people, that one would not have been able to see and ask about it all in two days.

Sauer comments:

There are no markets like this in Mexico today. But there are still markets in many Mexican towns and villages where one can see many of the things made just as the Spaniards first saw them more than four hundred years ago.

What it was like to be a discoverer of America is taken from the Journal of Columbus. After landing on October 12, 1492, Columbus wrote about the Indians:

I gave to some among them some red caps and glass beads, which they hung around their necks, and many other things of little value. At this they were greatly pleased and became so entirely our friends that it was a wonder to see. Afterwards they came swimming to the ships' boats, and brought us parrots and cotton thread in balls, and spears, and many other things.

Of one of the Bahama islands, Columbus wrote:

I walked among the trees, and they were the loveliest sight I have yet seen; they seemed to be as green as those of Spain in the month of May, and all the trees are as different from ours as day is from night, and so is the fruit and the grasses and the stones and everything else.

There is of course a lot about Geography in Sauer's book well told within the framework of Indian life.

FRONTIERS

Creeping Idealism

A FRONTIER that has slowly been disclosing itself over the period of a hundred years is covered by the term Extra Sensory Perception or psychic research. What are now called "paranormal" phenomena have of course been known as far back as human history reaches, but there is a great difference in how they are considered: The high cultures of the past took for granted trans-physical powers of mind, while the present-day "scientific" approach regards them with deep suspicion. Two recent books tell the story of modern psychic research, illustrating both the advantages and the limitations of the scientific method as now applied. Louisa E. Rhine's *Psi—What Is It?* (Harper & Row, 1975, $10) is for the general reader. The book provides many accounts of supernormal perception—case histories, so to speak—and seems to have two purposes: first, to show why practically all those who have looked into the matter are convinced of the reality of Psi, and, second, to point to the follies of too-easy belief. Dr. Rhine says in a chapter titled "The Fringe":

> The acceptance of quick, sensational, publicized claims about psychical matters is evidence of a general need to know the answer to "What am I?" and to know it now. Like a cancer victim, the general public wants a cure and quickly without waiting for the slow, painstaking way of science. . . .
>
> The careful person must therefore beware of unproven claims, even while he keeps an openminded attitude toward new ideas which may seem impossible, but are as yet untested. With this attitude the fringe beliefs will not smother the good research as it slowly separates the true from the false. And some of those fringe beliefs may have in them elements of truth that will be needed before the entire secret is revealed.

What are the "fringe beliefs"? Mrs. Rhine illustrates some of them, but from the viewpoint of scientific method they doubtless include reports of supernormal happenings or capacities which cannot be subjected to proof or disproof. This naturally rules out an enormous mass of material, including accounts of experiences that were totally convincing to the persons involved.

In her concluding chapter, "The Meaning of Psi," Mrs. Rhine speaks of the spontaneous longing of people for a non-mechanistic explanation of the nature of man, suggesting that this is "behind the present-day upsurge of interest in the mystical, the occult, and all the fringe areas that offer quick and easy answers to the question of the end and meaning of existence." It is a hunger, she suggests, to be able to think of oneself as "something more" than a Cartesian machine.

> Now comes psi ability. It is not a concept founded on the authority of a priest or a prophet. It is not a religious dogma. It is not an idea to accept on faith. Instead, it is a logical attempt to apply the methods of physical research to the question of a possible non-physical aspect of man, but by adapting those methods according to the situation, just as each of the other sciences adapted its methods and techniques to fit its individual type of data.

There will naturally be those who decide that "the methods of physical research" are not altogether appropriate for study of non-physical happenings, and will find their own methods more productive for personal use. Dr. Rhine would doubtless say, "Fine, but don't call your conclusions scientific!" In this she would be quite right, and will be, so long as science is defined as publicly established truth. Yet there may be incalculable human value in truths which, because of their inward delicacy, cannot be stated in objectively verifiable terms. These, one would think, are truths which thoughtful people tend to keep to themselves.

This may constitute a principal difference between ancient and modern psychic research. In the past, truth was measured by intuitive and rational and moral as well as objective (countable) standards. Today, in our scientific milieu, only the objective demonstration is acceptable. Hence the enormous difference between ancient and modern ideas on the subject. Some thinkers are beginning

to suspect that our losses are much greater than our gains.

What conclusion has modern psychic research reached concerning the nature of man? Mrs. Rhine gives a conservative view:

> . . . the answer to the question is: I am a temporary arrangement of molecules, yes. But also something more. I have properties that no known arrangement of molecules has . . . The answer, of course, is not complete or final, but it goes beyond any earlier one, for it has in it the hope of meaning and the reliability of science.

The other book, *Science of Psi* (Charles C. Thomas, 1978, $16.95), by Carroll B. Nash, intended as a college text, seems a fairly complete account of about a century of scientific psychic research, with brief coverage of the beliefs and practices of primitive peoples, and of the ideas of the ancients, showing, for example, that the Greeks called extrasensory perception *divination.* Swedenborg and Mesmer have attention, and the instability of modern psychics or mediums is illustrated by reference to the Fox sisters, whose strange feats began the modern cycle of psychic inquiry in 1848. While this book, too, accepts and works within the criteria of modern scientific research, the author at least refers to richer conceptions of the meaning of paranormal phenomena, recalling William James's view of "a continuum of cosmic consciousness against which individuality builds but accidental fences," and mentioning "the concept of the Akashic records, a cosmic picture gallery and record of every thought, feeling, and action since the world began."

Dr. Nash also reaches a conservative conclusion, but allows himself to wonder a bit:

> It is a safe prediction that, whatever theoretical basis for psi becomes scientifically accepted, it will be modified and replaced through a succession of deeper insights into the nature of reality. A universe with psi is very different from a universe without a paranormal aspect. If, as some paranormal phenomena suggest, mind is on a par with or even underlies matter, the universe can no longer be considered to be a void, inhabited solely by a relatively infinitesimal amount of irregularly distributed matter. Instead the macrocosm takes the form of a multiplicity of holistically related events each of which occurs at the moment it is observed, the observations being spatially and temporally independent of the location of the observers whose minds are coupled into a single unit. Perhaps, there is but one mind, the universe consisting of it and the observation it makes.

This rather Hegelian idea has many possibilities, but scientific psychic researchers are unwilling to develop them. Others may feel free.