

Stage F
of A to T.

SEPR No. 51

A Working Paper Draft
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SOCIO-ENGINEERING PROBLEMS REPORT NO. 51

A series of manuscripts on the social relations of engineering and related philosophical questions dealing with the interaction of science and society. Distribution is limited to reviewers and discussion groups for criticism prior to consideration for possible publication.

"HISTORICAL NOTES, PARTS II-III."

(Continued from SEP Nos. 48-49)

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Economic and Political Theory
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Consumer Co-operative Stores

Date:	2/27/61	6/4/61	11/22/61	7/2/63
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ECONOMIC AND POLITICAL THEORY

When I was in high school, the various projects of F. D. Roosevelt were being applied. There were discussions as to the validity of "pump priming," price fixing, subsidies, etc. Some newspaper articles claimed these were old stuff just like the Greeks did 2500 years ago.

I thought I would use one of those Sunday Magazine articles for a social studies class report in high school. I studied the newspaper article carefully, but didn't believe it. Then I went to the Berkeley Public Library and got books in Roman history and the history of Greek civilization. After a whole weekend of study, I had not succeeded in settling the question and decided maybe it would be simpler to study physics or chemistry or be in electrical engineering, where one can make laboratory experiments to settle questions where there isn't a satisfactory theoretical model.

These economic and political problems appeared to have too many variables to be able to make a valid comparison of political and economic theory with history.

The measurement of the electric current and voltage along a resistor is something that can be easily done in high school physics to develop a feeling of security in our universe--that we can learn from experiment and history enough about nature to make intelligent decisions about the physical, economic, and social organization of society.

But at that time it was necessary to retreat back to the physical sciences in order to gain sufficient ^{security} through verifiable theory.

LIBRARY CENSORING

In high school I took all the mathematics and science courses I could. Even though the physics, chemistry, biology, and math courses crowded out more of the social studies and humanities courses, I did do some browsing in the University High School Library.

In looking for books I generally ran into obstacles. Some books I wanted were not available in the high school library; the librarian said some I wanted were textbooks and were only issued to students enrolled in the course for which the text was approved.

Some of the history and biology books available at high school were obvious distortions to appease some school boards. Some of the student teachers brought books from the University of California which had much more plausible statements in them and also gave some indication of the validity of the evidence for their statements in biology and history.

Sometimes on the way home from school I would stop and browse at the Berkeley Public Library. I found that they had many interesting things. Among them were reports on problems of international peace containing copies of speeches of the leading political leaders of the world, including F. D. Roosevelt, Joseph Stalin, Adolf Hitler, and Benito Mussolini in a way one could look up what they actually said.

Then compare these different programs with the ethics of our culture.

In one report in the library, I found a statement that anthropologists had concluded that there is no scientific proof for there being any distinction in intelligence and other potentialities between the white, black, yellow, and other races of mankind.

It was a thrilling experience to see something which heretofore had been stated by religious prophets, stated by far-seeing political leaders in our Declaration of Independence and in our Constitution—now to be supported (or more strictly, to see the opposition refuted) by scientific anthropological studies.

A few weeks later, I saw a short item in the Berkeley Daily Gazette that some committee of the American Legion had visited the Berkeley Public Library to look for "un-American" literature. The next day after school, I stopped at the Public Library. I looked for the article on the conclusions of anthropologists on the equality of the different races. It was gone. The whole series of the particular magazine was gone. There seemed to be other blank spaces on the magazine racks.

The pattern seemed to be that anything relating to the Soviet Union (Russia) or Communism that did not require a little searching had been removed. On the other hand, I could still find the speeches of Hitler and Mussolini in the library.

The action of the American Legion may have been a naïve attempt to do what they thought was patriotic. The effect upon me was to challenge the status quo. Then censorship led me to think about were we really living up to our debt of freedom in this country.

SIDE EFFECTS OF THE DEPRESSION

I preferred to see for myself where important problems existed. The two myths learned while going to elementary school in Berkeley—(1) the greatness of the City of Berkeley in having the most advanced police force, and (2) the best small city (100,000 population) newspaper in the country—The Berkeley Daily Gazette — had become

shattered by the Finish Comrades Hall incident. Realistically, this incident did not change the high level of routine functioning of either the police department or the newspapers. But the realization came to me that certain civic leaders were powerful enough to turn off temporarily the newspaper and the police when free reporting and impartial law enforcement might hurt certain vested interests.

In 1934 I visited the silent waterfront in San Francisco to see the effect of the strike first hand, also to visit the U.S.S. Constitution, which was in port, to see the unemployed men in shanties along the edges of the railroad tracks, the lines of striking dock workers at the union soup kitchens, and to see the National Guardsmen protecting the waterfront.

CONSUMER CO-OPERATIVE STORE,

I visited a little cooperative store on University Avenue to see what some people were struggling to do to accomplish two purposes:

- (1) To get groceries more economically to spread their low depression money farther.
- (2) To test out the principles of a more stable form of business that might be less susceptible to fluctuation leading to booms and depressions.

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HISTORICAL NOTES; PART IV:

"WHY I DECIDED TO BECOME AN ELECTRICAL ENGINEER"

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HISTORICAL NOTE: PART IV

"Why I Decided to Become an Electrical Engineer."

(Feb. 11, 1937)

Introductory Note*

This note was originally prepared in partial fulfillment of the requirement for associate membership in the American Institute of Electrical Engineers, University of California Branch. On reviewing this note twenty-four years later, I find most of what I said is still valid. However I wish I had preserved a record of the "idealistic principles upon which electrical industries should be operated." The best that I can recall of this issue I was thinking about is:

- (1) Is not the major factor in the instability of the capitalist system a psychological factor where the fear of the future drives people to extremes? (Ref. 1)
- (2) Does the consumer cooperative movement offer a democratic way of stabilizing the capitalist economic system? (Ref. 2)
- (3) What are the significant factors in the battle between private capital and public ownership in the electric power industry? (Ref. 3)
 - (a) How were most of the small municipal power plants liquidated?
 - (b) What is the potential future role of consumer cooperatives in electric power?
 - (c) What will we learn from developing the Tennessee Valley Authority?
- (4) What beauty, symmetry, or order meets one's senses when studying the flow charts, thermodynamic cycle diagrams, and efficiency graphs of electric power plants? (Ref. 4)

(5) By an extended reciprocity theorem can we visualize an analogous chart of human values in a community? (Ref. 5).

Frederick B. Wood
November 22, 1961

*The notes and questions added in 1961 are restricted to ideas which I can truly recall thinking about back in 1937.

WHY I DECIDED TO BECOME AN ELECTRICAL ENGINEER.

First I should present my definition of an electrical engineer. An electrical engineer is one who studies electrical phenomena for the purpose of applying this knowledge to practical use.

Electrical engineering is the field in which I believe I am best qualified to enter. One of the primary requirements for success in any field is interest in the work. Electricity has always been one of my interests. The repairing of electric motors, clocks, and other appliances is one of my leisure interests.

In school I have taken an interest in the sciences. Subjects such as chemistry, physics, and mathematics, which are prerequisite to an engineering education, are very interesting to me.

With interest one must have ability to do the work in order to succeed. If grades are an indication of ability, I can say that I am capable of studying electrical engineering.

One reason why I have chosen this field is that there are great opportunities in electrical engineering for research work. Electrical engineering is a comparatively new field in which there remain many things yet unknown.

One question I considered in selecting my vocation is 'Will I be doing something that will benefit society?' This consideration is particularly important when we see the economic system not functioning properly and a trend away from democracy

in many parts of the world. Some people have even suggested that science should take a vacation while people learn how to use to the best economic advantage the contributions of science to industry. I do not agree with this tenet.

Technical science should be advanced as much as possible and the scientific method should be applied to economics and sociology.

Economic problems are very important at this time. I have considered studying political science or economics. After considering the matter I have decided I would make a better engineer than a politician. Also I don't believe that an industry like the electric power industry can be forced to operate for the best benefit of the people by various political laws and regulations. The management of an industry must be interested in supplying efficient service to the public if the business is to be run for the benefit of the public. In electrical industries managers are more likely to follow the advice of engineers than of politicians. I believe that I can be of more use in this world as an electrical engineer than as a politician.

I realize that the technical work of electrical engineering is by far the most important part of the work. The products of electrical engineering are of great benefit to society. The standards of living of the American people have been raised by the development of electricity. These benefits have been very unevenly distributed between the unemployed and the millionaires of this country. I believe that electrical engineers

should take the responsibility of studying the economic aspects of their work besides the technical work.

I have some idealistic ideas about the economic principles upon which the electrical industries should be operated which I shall keep in storage until I gain a position of influence, if ever. Probably these principles will not be feasible, anyway, until the American public develops the ability to elect better government officials. So my immediate task is to diligently study to become an electrical engineer.

I have decided to become one of those variations of the homo sapiens called electrical engineers, because I like it, because there are great opportunities in the field, because I think I have sufficient ability, and because I think I will best be able to contribute to the progress of society by becoming an electrical engineer.

Frederick B. Wood
February 11, 1937

References to Introductory Note (9/23/62)

- Ref. 1: Question (1) is based upon my personal observations of the various events of the depression.
- Ref. 2: Question (2) resulted from my observation of how some people cooperated during the depression by pooling their individual initiative into buying clubs which developed into consumer cooperative stores.
- Ref. 3: Question (3) might not have become significant to me if it were not for the interference in the high school by a Vice-President of the Pacific Gas & Electric Co. who convinced the School Board to reprimand my Social Studies teacher mentioning the question of public ownership versus private ownership of public utilities.
- Ref. 4: Question (4) was inspired by a thrilling visit to the Hunters' Point Steam Plant of P.G. & E. Co.
- Ref. 5: Question (5) was inspired after the steam plant visit combined with the concepts of thermodynamics and electrostatics learned in high school physics.