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"The Development of Society"

by

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The development of our planet can be represented as a combination of continuous change and discrete transitions from one stage to another. Early man could not understand many phenomena of nature, so he tried to imagine how and why things happened. Gradually man gained greater and greater insights into nature. Even though the concepts developed at certain stages were based on incorrect physics or chemistry, they explained important truths relating to human relations. Perhaps early man did not differentiate between physical science, social science, and religion.

We can consider a hypothesis (which must be verified or discarded later) as an approximation to the truth. Let us examine the trends of world power production, electric power production, mineral production to see what laws certain items which are capable of quantitative measurement conform to. We cannot transfer these laws to strictly social phenomena for which there are as yet no scales for precise checking. However, we may try analogies from physical science in the social sciences, if we set up a method of testing or a method of insuring the concepts remain tentative (not turned into an orthodoxy) until testing procedures are developed.

Let us examine world mineral production. Take t_o as a reference point in history, then let P_i= annual production of mineral i in year t.

The curves[1] for capitalist regions of the world fit reasonably close to

$$P_i(t) = e^{K_o + d_i(t-t_o)} \qquad \text{----------(A)}$$

with the exception that wars and depressions delay the development so that for the periods between wars and depressions a t_o must be used to replace t_o.

A similar curve applies to total world power production and to electric power. For electric power production eg(A) has been checked for the Soviet Union and found to be a reasonably close fit, excepting for revolution and war. For curves see Hogböm[2] and also F.B. Wood.[3]

To examine the development of society lets consider the application of equation (B) as a first approximation in Fig. 1.

$$K_m(t) = A_m + e^{K_o + d_m(t-t_o)} \qquad \text{----------(B)},$$

where $K_1(t)$ represents an approximation to the quantity of social knowledge, and

$K_2(t)$ represents an approximation to the quantity of physical knowledge

We may note that the constant d_i may be changed by a jump from one economic system to another, but that $_i$ cannot be changed outside narrow limits without greater sacrifice and energy on the part of the people. For study at present we can examine the record of the U.S.S.R. in its change to socialism, but keeping in mind the backwardness of the position from which the revolution started.

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1. "Report of the committee for the study of the problem of raw materials, Appendix I: Development of world production of raw materials," League of Nations Official Journal, 1937 II B 7, Off. No. A.27.1937 II B, annex 1682, pp. 1249-1267, Dec. 1937.

2. "Mineral production, a study in trend and geographical displacement," Ingeniors Vetenskaps Akademiens, Handlignar, (The Royal Swedish Institute for Engineering) No. 117, 1932. Dr. Hogbom

3. F.B. Wood. "Example of Use of Checking Chart, Part I: Checking Chart Historical Perspective, and World Power Production" manuscript 5/21/47. Reprinted as SEPR No. 14-A, 6/3/61.

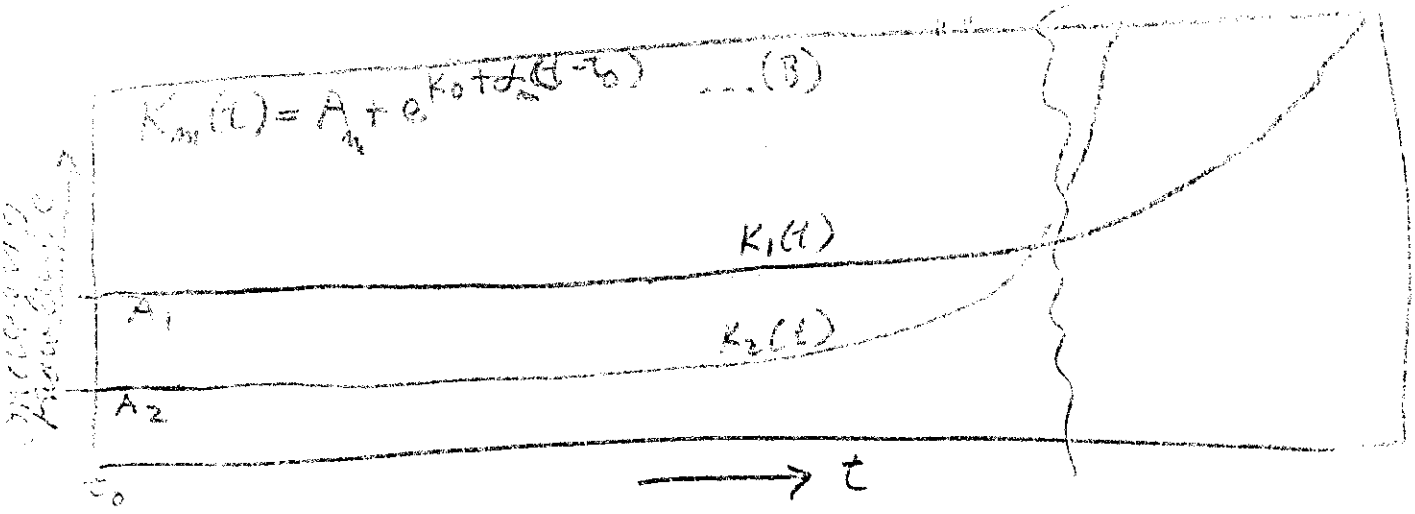


Fig 1.

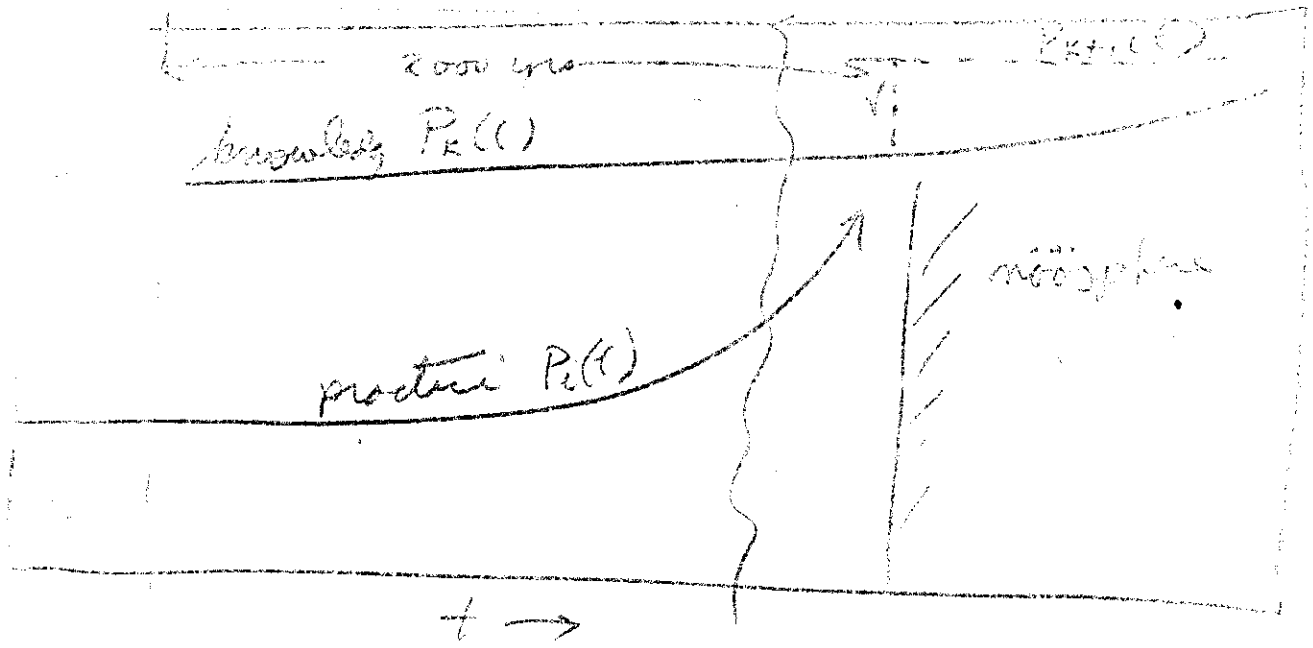
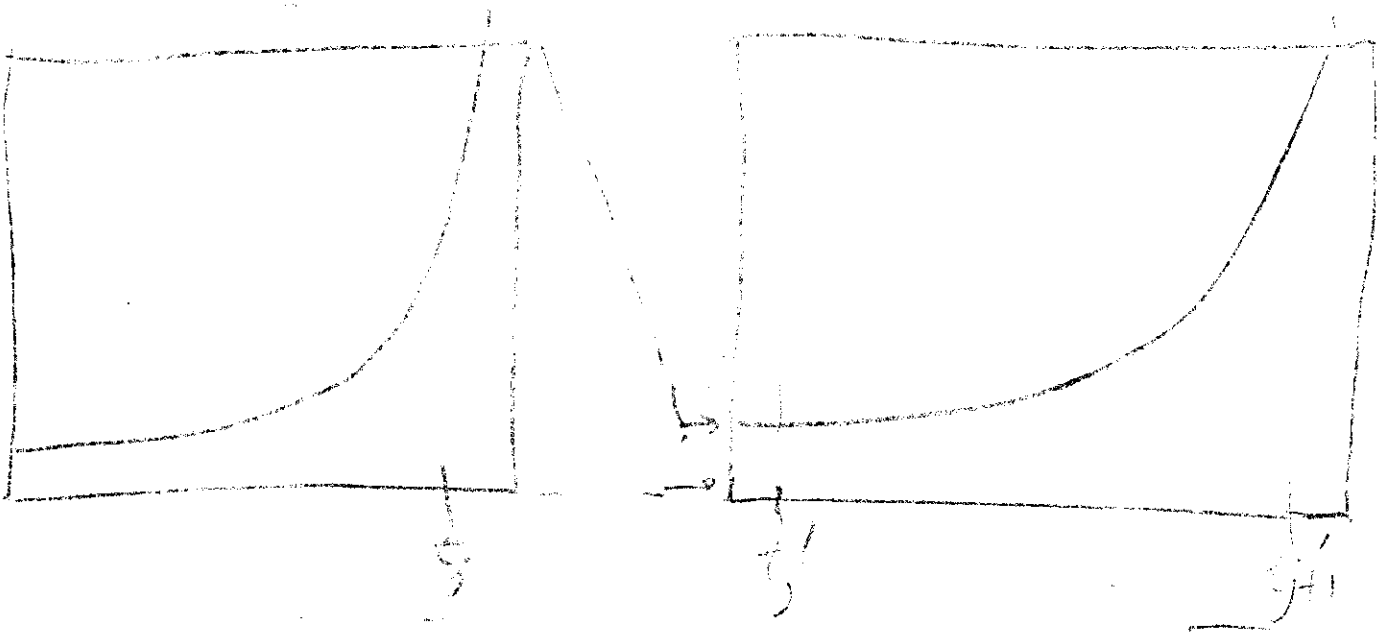
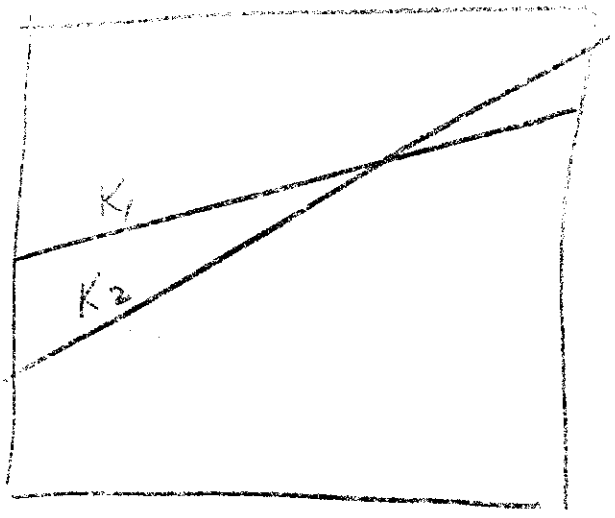


Fig 2.




K1
K2

If we can study the situation and plot approximating curves as Fig. 1 we can better understand the steps needed to correct the contradictions in our own society (U.S.A.) and to give constructive criticism to other societies (such as the U.S.S.R.).

Let us consider the relationship between knowledge and practice in social phenomena, as is illustrated by the two curves in Fig. 2.

Note on changes of scale in Figs 1 and 2 could be shown more clearly by separate curves as in Fig. 3. For example the jump in Fig. 2 between Pk(t) and Pk+1(t) just before the start of the nöösphere represents a discrete jump in the development of our knowledge of social phenomena. This jump is somewhat like the superposition of the old quantum theory upon classical atomic physics theory.

Examination of Hogböms curves of mineral production indicates an unbelievably steep rate of change after t_i. A change of scale as illustrated in Fig. 3 brings the data into the range of human comprehension. Plotting on log paper gives a better basis for comparison as is shown in Fig. 4.

Here nothing is outside of science (a disputed point). If something cannot yet be tested, we set up a hypothesis that is as consistent as possible with all that is known and mark the hypothesis with a rating as to its possible reliability with a note that it is to be modified as soon as we find a way of testing or a valid process of reasoning which sheds more light on the subject.

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