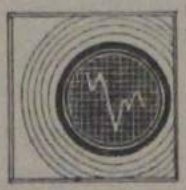
AN INTRODUCTION TO THE CALCULUS OF DESK-CLEARING

By MAURICE PRICE

Since the introduction of Parkinson's Law, many other researchers have started serious studies of the dynamics of Organizational and Administrative Systems. Mr. Price has, we feel, a valuable, if somewhat unclear, contribution.



ONE of the more fascinating aspects of modern mathematics is its ability to cope with hitherto unpredictable actions of daily life. Our very life spans are now pre-ordained by the actuary. It is obvious that a relatively simple operation such as desk-clearing is amenable to an equally rigorous analysis. So, here we go . . .

It is convenient to divide desk-clearing into a number of phases, since this refinement will enable us to assess the problem more accurately. It will first be necessary to consider the process by which the chaos reaches that pinnacle demanding a clearing operation.

Assume a desk A of standard proportions. Let it be completely clear of every possible encumberance. The top is glinting under the fluorescent light. The chair is neatly drawn up before it. All drawers are empty. This is the new-born world which forms the theater of our analysis. The desk A is placed precisely between two others called B and D. These neighboring desks are assumed to be

in an average state of confusion C_o.

Our time measurement starts from t_o, the moment when the new engineer, E arrives at his desk A. There is an initial transient period in which his fellow engineers and other generators of memos learn his name. Until E is known to a wide enough circle, his desk will remain free of reports, memos, requests, time cards, mysterious telephone messages, et cetera. There is an additional variable delay during which E fills all the drawers and covers a good part of the surface of A with his private collection of books, technical notes, catalogues, slide rules, drawing instruments, graphs, nomograms, telephone numbers, stationery and so forth. None of these will ever be of use to him, but they play a vital role in the cycle of confusion.

As we are interested only in the steady-state solution, the transient period ending at t_1 will be ignored. When it has subsided, the normal cycle of confusion begins to operate. The desk is at an initial level of confusion C_1. The confusion rises exponentially along a b (see Fig.1), reaching a critical point at b, where the desk surface is completely covered. From b to c, the exponential rise of confusion continues with steeper slope as the papers pile up in the vertical direction. At c we have reached the stagnation point of equilibrium. No work on past projects can be carried out since all the relevant papers are buried. No new work can be started as all the necessary directions and information are just not noticed. At this point the engineer is reduced to fishing old technical journals from the pile and actually reading them. This is known as "keeping up with the state of the art," and persists up to point d, where the thought first occurs to him to clear the desk.

So revolutionary an idea takes from d to e to sink in. At e there is a great flurry of activity marking the beginning of desk-clearing. The confusion drops rapidly to point f, and ends with a slower drop to g. The final point g forms the new initial level of confusion for the next cycle. Region c to e is a state of constant confusion. (The reader should ignore the fauna which have crept into Fig. 1. They merely prove that not all science is dry as dust.)

Several important conclusions follow from Fig. 1. The equation for each of the four exponential portions is of the form

$$C = K_1 \exp K_2 t$$

In this equation, K_1 is the constant of confusion and K_2 is the coefficient of chaos. These may vary from desk to desk and from engineer to engineer, but the general form of the curve is not altered. Note that the amount of work to be done does not affect the curve at all. This is because the amount of work expands to overflow the avalable desk area, a theorem which can be derived from Parkinson's results.

The initial level of confusion C_1 is slightly higher for each cycle, as is the stagnation point c. This means

that successive cycles fall inside an exponentially increasing envelope. Eventually the time must be reached when the initial level of confusion is too high for any work to be done at all. The only cure is to promote the engineer. This gives him a new desk so that the process can start all

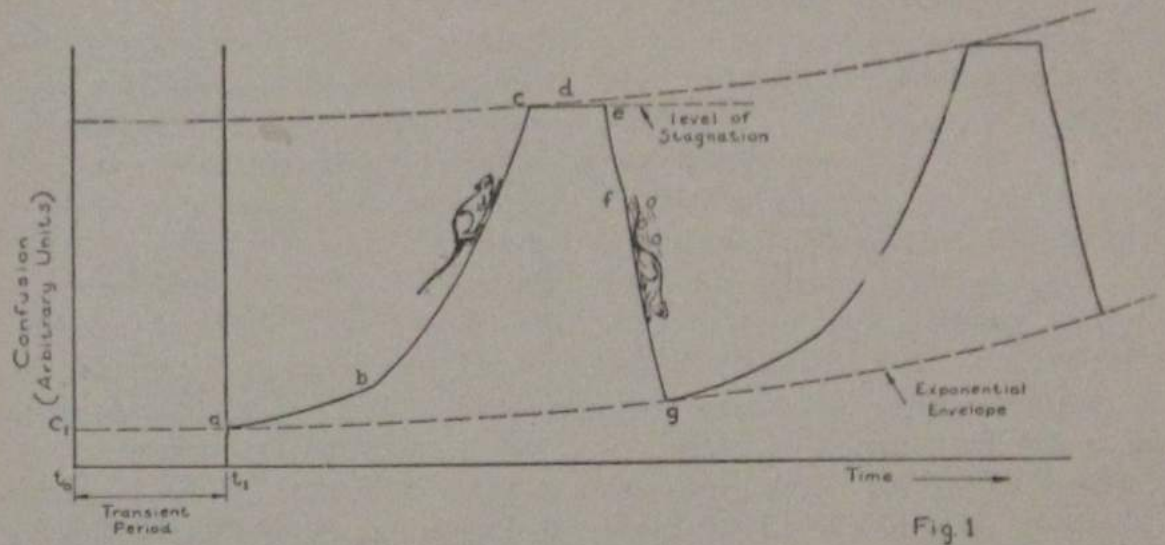


Fig. 1

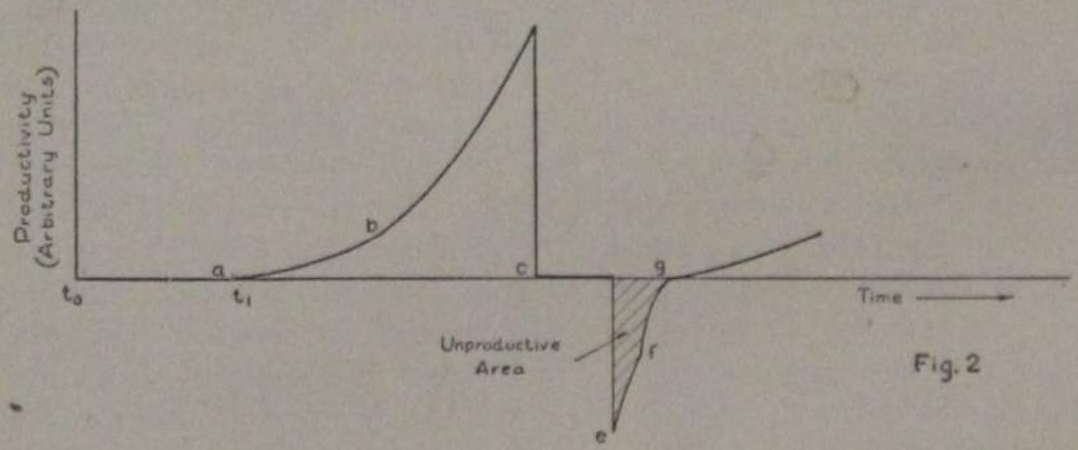


Fig. 2

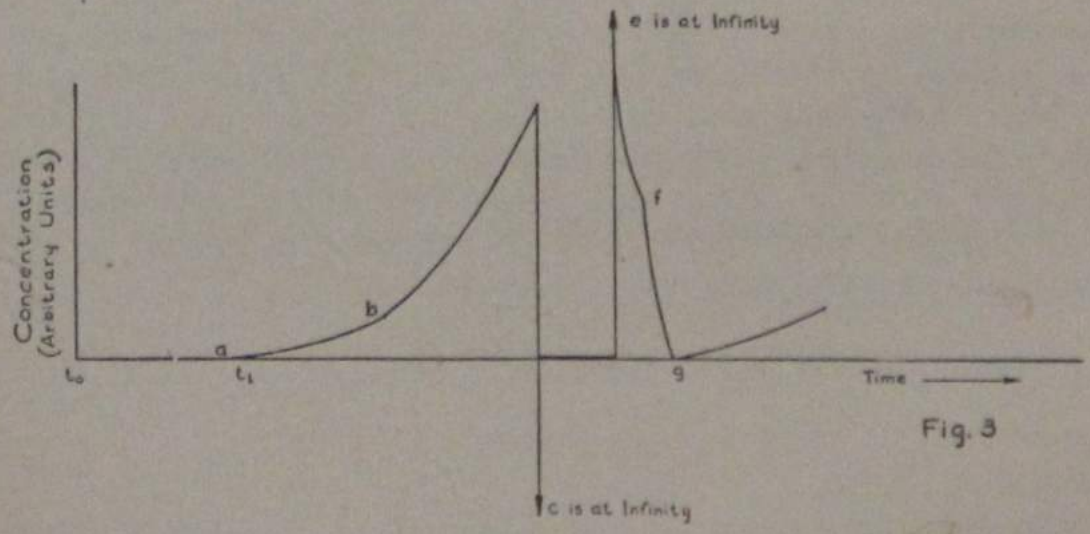


Fig. 3

over again. If a promotion is not forthcoming, the engineer becomes bored. He will look for another job, giving as his reason that "opportunities for advancement are lacking and the work is not stimulating."

It is informative to plot the slope of the curve of confusion, as has been done in Fig. 2. The exponential portions of Fig. 1 give rise to similar exponential parts in Fig. 2, but there is a negative section during the desk-clearing process. The state of constant confusion has zero slope. Fig. 2 is clearly a curve of productivity. Note that the engineer is most productive when his desk is most chaotic. It must be the aim of management to cut the negative part of the productivity curve to a minimum. Increasing the desk size does no good, but increasing the diameter of the waste-paper basket is effective.

The slope of Fig. 2 is the second derivative of Fig. 1 and is plotted in Fig. 3. Again the exponential portions are present, but we have infinite points at the start and finish of the level of constant confusion. The new curve of Fig. 3 is undoubtedly a graph of concentration. It bears a startling resemblance to the Bilkley-Moss experiments with rats in a maze. Concentration is intimately connected with the degree of chaos. If company procedures are introduced to reduce chaos and improve communication between groups, the productivity and the concentration are bound to suffer.

We must now refer to that extreme body of men who clear their desks to an inordinate state of tidiness at the end of each day. It is obvious that their curves of productivity and concentration will be negligibly small, with the negative areas too large. They are unable to reach the heights of chaos necessary for efficient work. Parkinson has also proved this point by a different approach on the corporate level. Tidiness is anathema to industry.

What is the cure for this inevitable desk-clearing cycle? How can we avoid a state of constant confusion? It is simple. The engineer should bring his desk to the state of stagnation as soon as possible. From then on, the desk should be ignored completely. All work must be carried out by telephone. Not even a phone directory is needed, as the operator can be consulted for numbers. Only the most effective engineers can operate in this highly advanced manner. The rest will resign. The company then retains only the most productive personnel and will forge ahead. The atmosphere of individual initiative and responsibility so achieved is the result of not writing anything down. It is impossible to produce in any other way.

THE END