1975

Alphabet Soup

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April 9, 1975

Editor
Some Science Journal
Address
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Dear Sir:

I am writing to solicit the opinions of your readers concerning a remarkable phenomenon which befell me.

I am by vocation a naturalist with a strong interest in the life ways of such of God's creatures as crows, jays, brown thrashers, dogs, etc. I am also a victim of that terrifying socio-political movement called Women's Liberation. I was, as a consequence, required to feed myself and my two children one evening recently, and, feeling a bit unattended to, I decided to fix a can of Campbell's Alphabet Soup, an old family favorite to revive low spirits. Accordingly I located a can of said brand of soup bearing the packaging code, NO 1 TA/ERC.

I opened the can and I set about preparing the soup. To this operation the children were not a deterrent since they had taken the opportunity of their mother's absence to go on a television watching jag which had begun at 3:30 p.m. with "Hollywood Squares" and would not possibly end before the five o'clock screening of old Perry Mason reruns. I emptied the soup into a transparent Pyrex saucepan, the bottom of which was carboned and crusty, the result of a regrettable experience with some frozen carrots only the evening preceding. I added one can of cold tap water as the directions bid me, and bearing in mind the carrot disaster of the night before, armed myself with a wooden cook spoon and settled down, elbows on the stove, chin over the saucepan, to watch closely and stir occasionally as the soup heated. A ray of the late afternoon sun shone through the glass sides of the saucepan, causing the alphabets to glow luminously as they tumbled in the convective currents of the simmering soup.

I hope my readers may forgive the presentation in this account of details which may seem irrelevant. Since I have no way of explaining the events which followed I have no way of sorting out those of my actions which were significant from those which had no bearing on these events. I hesitate to leave out any detail however small in manifest significance which may prove to some knowledgeable insightful reader to be the very key to these extraordinary happenings.

As I watched the soup gently turning in the saucepan, I began to amuse myself by picking out and eating one by one the letters of my name. "N" and "I" came easily but "C" was more difficult to find and I began to wonder what the letter distribution was. Was it like Scrabble? Could I give myself more points for a C when I found it? Soon a C bubbled to the surface. I gave myself three points for it, ate it, and went looking for an "H" for which I was prepared to give myself four points. An "H" was found clinging to some foam near the glass walls of the pot and was about to suffer the same fate as the "N," the "I" and the "C" when I noticed something peculiar about it. It was deformed. Instead of possessing the conventional form of an "H," it had an extra verticle and horizontal member, thus:

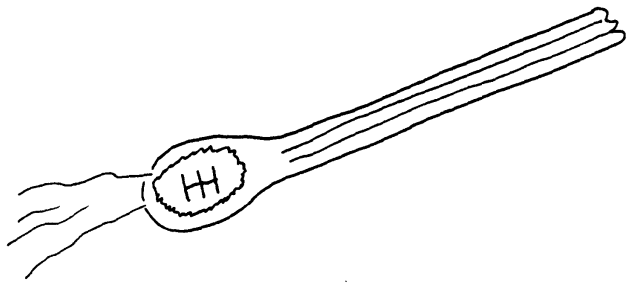

Figure 1. A Replicating H

As I held this little prodigy in my spoon for a second, the common verticle member split forming two complete "H's." I rejoiced in my good fortune, gave myself eight points, and went looking for an "O." I found an O readily enough, but since it was only worth one point I did not hasten to dispatch it but held it on my spoon for the better part of a minute. As I watched the wall of the O on one side, it began first to thicken, then to divide until where one "O" had been a few moments before, two "O's" now were lying side-by-side attached at their midriffs like a pair of Siamese twins. About 15 seconds after this process, the second O separated from its "parent," and about 15 seconds after the "parent" disintegrated and faded back into the broth. "Ashes to ashes, dust to dust, broth to broth," thought I.

The next hour I spent, wristwatch in hand, staring into the soup. The sun set and the kitchen became first dim, then dark. The children tip-toed in and seeing me bent over the stove, my face illuminated only by the red glow of the burner's coils, pilfered the cupboards for cola, saltines, and peanut butter and returned to the TV to watch the evening news. During the next hour I established that each letter in the soup was reproducing itself and dying at an average of once every five minutes, that each letter of the alphabet was equally represented in the soup, and that there were about five or six of each, so that one letter or another could usually be found reproducing every one or two seconds or so. The

rate, it turned out, depended on the temperature of the soup, above lukewarm, the rate slowed and the letters started to look ragged and disintegrate; below lukewarm, the rate slowed but the letters remained intact as if they were hibernating. I discovered that I could slow it to nothing or speed it up by changing the setting on the burner. I discovered that the optimal rate occurred at the temperature that the broth felt warm on the wrist or just about the temperature that Dr. Spock prescribes for a baby's bottle.

Only moments after I discerned these properties of the soup did a weird metamorphosis begin. At each census, I discovered a slightly greater proportion of A's and B's within the soup relative to the number of other letters. At first I thought it was a mere statistical oscillation: the A's and B's five minutes were all coming up at the same time. But after a half hour of careful counting, I became convinced that the A's and B's were gaining in number by a few percentage points every five minutes.

The cause for their advantage soon became apparent. Something about A's and B's had salubrious effects upon one another. Whatever this property was, whenever an A and a B happened to replicate simultaneously and in the same vicinity, each replicated twice before it disintegrated, thus:

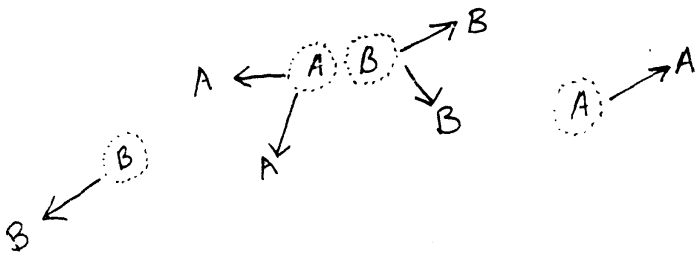

Figure 2. A's and B's Replicating Together and Apart

The effect was at first a temporary one. The offspring went their separate ways, but still some mutual comfort granted to A's and B's and vice versa meant that they were reproducing better in each other's presence than were other members of the soup. Only the casualness of their association prevented the A's and B's from conquering the soup. I was stunned by the implications of this discovery, so stunned in fact that I spoke aloud. I remember my very words. I said, "Hey! It would be in A's and B's interest to get together!"

My little son, who must have been standing for several seconds at my elbow watching me, said, "What did you say, Dad?" So engrossed had I been that I had not noticed him. We had then a trivial little conversation about a snack before dinner, I don't remember the details. Something about could he have the sugar frosted flakes? . . . Could he have the tollhouse morsels? . . . Could he have a pitcher of milk? . . . Could he turn on a light so that he could see into the cupboard? . . . and so forth. I remember that I cautioned him not to spoil his supper and returned to my observations.

The thought that I might predict the course of events in the soup transfixed me. If it were indeed in A's and B's interest to get together, would not a way be found for them to do so? Perhaps some other letter would tangle them together. I had observed such tanglings of letters and had hitherto thought them insignificant, but now I studied the soup with great care. "The way" proved to be the letter "Z." Occasionally the arms of the letter Z, due in part to the lacking property of the crossbar (which my typewriter does not reproduce since its typeface is not identical to the typeface of the soup) became entangled with the holes in the letters A and B. It would only be a matter of time before a Z should become entangled both in an A and B. I predicted that when such a combination should come about, it would rapidly become the rule of the soup. And my prediction proved to be well-founded. Near the center of the soup's surface, in a stagnant place created by two neighboring points of upwelling, I found one of the entangled AZ combinations bobbing beside a B. My readers will appreciate the extent of my temptation to help the process along, but I was scrupulous in leaving events to develop as God or Nature or both may have intended them. Sure enough, in time, through minute jostlings of the bubbling soup, the free end of the Z found itself into the open space of the B. They were attached! What then transpired demonstrated indeed that getting together had been in A's and B's interest.

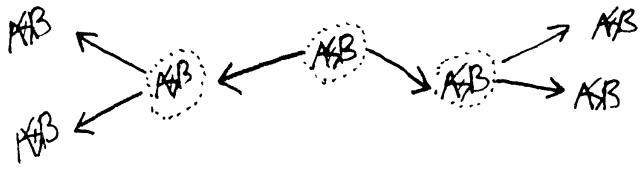

Figure 3. The Permanent Attachment of A, Z and B

Such a multiplication of AZB combinations then occurred that I thought the soup would soon consist entirely only of letter chains of this composition.

Little did I understand the prodigious creative processes which had been unleashed in my soup. The association between A's and B's were only the first of such associations. The double reproduction of these letters, rapid as it then seemed, was to seem a turtle pace indeed compared to the jack rabbit propagation that I was later to observe. Careful observation revealed that one of the other letters, a "C" as it happened, had the same sort of mutual relationship with the AZB combinations as A and B had had together: as a result of the simultaneous replication of AZB's and C's in the same vicinity, both would replicate doubly. But, as with A's and B's before, because the association was casual, the benefits of proximity were lost as the replicates wandered off at random into the soup. And again I was able to make a successful prediction. I searched through the soup and found that the letter Y frequently became ensnared with the letter C, thus:

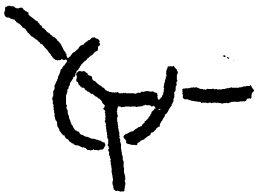

Figure 4. C and Y Entangled

Having made this discovery, I was able to predict successfully that if on some occasion the tail of such a Y became tangled in the B of an AZB, then the combination AZBYC would become the rule of the soup. Patient observation was soon rewarded by the discovery of the following cluster of letters, twisting languidly next to a bit of chopped chicken meat.

Figure 5. The Permanent Attachment of AZBYC

As these chains increased in number, my alphabet soup took on more and more the demeanor of a pot of children noodle soup. I will not detain my readers with the details of how the chains continued to grow in length. Nor can I enlighten you as to the physiological process by which the proximity of one letter affected the replication of others. Suffice it only to say that each time I perceived that proximity affected favorably the replication rate of the proximate letters, I later noticed that a letter had been found which maintained proximity through the replication process. The longest single chain I saw was 11 units long.

Figure 6. A Chain of 11 Letters

I suppose the chains might have become very long indeed had not a process intervened, a process which I had observed earlier but which, like so many of the processes I observed that evening, did not make its profound significance known until later. I suppose I should have mentioned before now that 26 letters of the alphabet were not the only figures in the soup. Very occasionally, perhaps in one out of ten replications, each letter produced a deformed version of itself. The deformed version took the form of a normal letter with a bar laid across it diagonally as if the soupmaker had changed his mind about making it and crossed it out.

Figure 7. Failed Letters, Failing

Not only did these deformed letters themselves fail to replicate, they also had disasterous effects on the replication of any letters to which they were attached.For instance, if an A were attached to a ZB, not only would the A fail to replicate, but also the ZB as well.

As chains increased in length, the presence of these failed units became most noticeable. Suddenly chains which had been reproducing themselves like rabbits would shrivel up and disintegrate. Careful count revealed that no particular letters were any more likely to fail than any others. It also revealed that the failure rate was quite steady and did not appear to vary with other changes or events in the soup. These facts explained why the chaining of letters made the presence of failed units so noticeable. As the chains lenghtened, the possibility that one of the members of the chain was a failed letter rose correspondingly. Indeed I began to

be uncertain whether it was in the interest of letters to join strings, given the increasing rate.

I was not surprised, therefore, that quite a little struggle developed between two alternative forms of the letter U. For reasons known only to the soupmaker, not all U's were made the same: sometimes they had tails, U , and sometimes they didn't U. The significant difference was that when U's with tails became attached to G's, the tail facilitated the attachment of G's to strings at F, whereas when U's without tails became attached to G's they closed off the opening of the G without leaving any other point of possible attachment to the "tines" of the F. Thus, GU combinations kept getting themselves mixed up with chains whereas GU combinations did not. Apparently, the costs of being the 12th and 13 chain member were greater than the advantages, because grdually U's with tails decreased in number relative to U's without tails.

Figure 8. The Effects of "U's" With Tails and "U's" Without Tails

A period of relative quiescence followed. In the distant television room, the children could be heard squabbling over the choice of the next TV program, but this proved only a minor distraction. One of the phenomena I observed during this lull was the tendency of the S's to become entangled in one another, like links in a tire chain. I was wondering just what might be the consequences of this curiosity when those consequences began to manifest themselves. I had often observed complete chains of 12 members with S's hook inconsequentially into the end of the chain. I now observed two such chains with their S's hooked to produce two chains lying side by side. The chains replicated, produced their several offspring, many of which found other chains with S and hooked up with them. The significance of these entangles escaped me until I happened to notice two chains, each with a failed letter and each with a letter S. I was about to consign both of these chains to extinction when suddenly the S's became entangled so that the two chains lay side by side. I observed that the failed units of the two chains did not correspond and I took this to be the reason why the two chains survived to replicate, unlike their colleagues. Apparently the good letters on each chain blocked the failing action of the failed unit on the other chain. Apparently each chain was able to capitalize on the good letter in the other chain.

Now the chains recommensed a steady increase in length. First U's with tails conquered U's without tails to make the first 13 unit sequence, then R's and H's and so forth. The chains would lie along side each other between replications and then split up during replications only to hook S's and lie along side of one another until their next replication. These changes had two dramatic consequences. First the rate of replication of chains in the soup started once again to rise rapidly giving the soup a glutted appearance. Second, the number of failed units visible in the soup increased dramatically.

What followed was a grotesque game of alphabetical musical chairs. As the number of failed units increased, the dangers of a chain matching up with another chain bearing a corresponding failed unit also increased. These dangers were particularly high among replicates of the same chain. In this connection, the letter T became very important. Attached to the end of a chain by its stem, its arms formed sort of an umbrella which snagged the currents of the soup. These currents then bore the chain away from the site of its birth. Thus the replication of one chain, the offspring so to speak, seemed almost to flee one another. Chains not bearing the letter T attached in this fashion, tended to linger in the region of their formation and so to line up with "brother" replicates which bore the same failed units as they. Such "lazy strings," as I called them, were soon eliminated from the soup.

I wish I could say for certain what the final outcome of all these processes was to be. In the months since this curious evening I have often speculated that I might have seen the rearrangement of letter sequences, the migration of some letter sequences to some portions of the soup, while others stayed behind, the occurrence of letter sequences which captured letters against their interest, and so forth, almost infinitely. I fancy that I might have seen all the basic processes of development and evolution take place right within the space of my Pyrex saucepan. Unfortunately, it was not to be. As the process hurtled toward its denouement, the nutritive medium of the soup gave out. Hitherto healthy letters began to behave like failed units. Even without the dreaded "/" they failed to replicate. Chains began spontaneously to fall apart. In desperation, I sought other sources of nutrition. Three cubes of beef bullion, located in the back of the food cupboard, stayed the attrition of the soup for several minutes. But the appetite of the burgeoning letters was too great. I would have gone out for more soup, but the Superette had closed at nine and my frantic calls to the grocer's home phone produced no reply. The creative process which I had unleashed was bent on destroying itself.

In desperation I took the only path left to me: I cooled the soup. I poured it into a freezer tray and placed it in the freezing compartment. The temperature fell rapidly. The activity of the letters first slowed then ceased. When the

first ribbons of ice crystal began to appear on the surface of the soup, I removed it gently, poured it back into the saucepan, and placed the saucepan on a shelf in the refrigerator, ready to heat in the morning, when I should finally be able to purchase some more broth.

I was exhausted. In the distance was the blare of the late evening news. The children were still watching TV. My wife might be home from her meeting at any time. My terror knew no bounds. I rushed into the TV room. It was littered with cracker crumbs, sugar cereal bits, and the unconscious forms of my two children. They were asleep, splayed on the couch before the television like sacrificial animals. My son was borne first without complaint to the potty and then to his bed. My daughter I likewise carried except that she awoke enough to ask if she could watch just one more program.

Before going to bed, I looked in on the soup. All was quiet. Although starvation had taken a terrible toll, still there were remaining several dozen letters and even a few letter sequences. A few of the letters appeared to be ever so slowly replicating. I was confident that next morning I would regenerate the processes which I had observed during this extraordinary evening.

When I awoke the next day, the house was silent. My wife had fed the children, put them on the bus, and gone for work. She left me a pot of coffee and a note. The note said:

> Sleep on, chauvanist . . . Hot coffee awaits you. Actually it was really sweet of you to leave enough of the soup for me to have some. I know how you guys feel about alphabet soup.
>
> Have a good day.
>
> Love, etc.
>
> P.S. Where did you get that crazy soup?

Where indeed? I have scrounged through the cans of alphabet soup on the shelves of dozens of supermarkets looking at that code. I have bought cases of soup with other codes, all to no avail. Never have I seen so much as a single replication. The only gain achieved from my search was a letter from the Campbell soup people informing me that my regional representative had nominated me to be the Campbell Soup Mother of the Month.

As for my wife, I told her what had happened. She was ever more upset than I. She tended to see the calamity in ethical terms, rather than biological ones. "My God," she said. "Where would the world be today if Eve had eaten the apple of knowledge all herself?"

Yours truly,

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NST:bc

HUMANE METHOD OF CUTTING FROGLEGS

Froglegs are a valuable export commodity of India — they bring in about Rs 1.2 crores of foreign exchange every year, mainly from exports to France and the USA.

The cutting of the legs from living frogs is a pitiable sight. The distress croaking and the helpless struggle of the frogs that follows this buturing is revolting. This method of cutting froglegs has been objected to by the societies for the prevention of cruelty to animals and also by the general public on ethical grounds.

Besides being inhuman, the froglegs cut in this manner are heavily contaminated with pathogenic micro-organisms. As a result of contamination of froglegs, a sizable portion of the exports from India are rejected by the importing countries.

Efforts to find out an alternative method of cutting froglegs — suitable from both ethical and bacteriological point of view — have been made both in India and abroad. Electrocution and anaesthetizing of frogs were tried, but did not prove successful.

Shri T. S. Gopalakrishna Iyer of the Central Institute of Fishries Technology, Ernakulam, had now come up with a simple, cheap and humane method of cutting froglegs. His method consists of paralysing the live frogs by putting them in a 10 percent solution of common salt for about 10 minutes. Tho painful sufferings of the frogs is thus avoided during subsequent cutting of the legs. The froglegs obtained by this technique are also bacteriologically in a much better condition than those obtained by the traditional method.

Shri Iyer's method has now achieved commercial success, and it is being practised extensively in the frogleg industry.

The Inventions Promotion Board has awarded Rs 500 to Shri Iyer for his invention.

From: *Invention Intelligence*, December 1970