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EDITORIAL

In my view, the time is long overdue to remind—or just as likely, to inform—readers about the *Hypothesis of Trans-Temporal Inhibition*, advanced by Charles Tart in the 1970s to account for some striking features of data obtained in several of his ESP studies. Although in these studies Tart was exploring the importance of immediate feedback, the real interest of his results lies not so much in the strength of their evidence for ESP—at least as determined by the customary measures of deviation of hits from mean chance expectation.[1] It concerns, rather, a certain unexpected *pattern* in the data, quite unlike familiar position or decline effects. This pattern suggests not only a new way of measuring the presence of ESP effects in data, but also some new ways of conceptualizing psi functioning. Tart's analysis is quite complicated, and my own brief summary will hardly do justice to the care with which he interpreted his results. But I'll try to indicate in broad terms what Tart had in mind, and I encourage interested readers to go to the source for the full story (see Tart, 1977a, 1977b, 1983), and also Tart's more recent thoughts on the subject in an article in this issue.

To understand Tart's hypothesis, we must first review a particular approach to analyzing ESP data. Parapsychologists frequently look for evidence of *time-displacement* in ESP scores, because they've realized for some time that, while percipients' calls at t may not correspond significantly to targets generated at t, they may correspond significantly to targets generated before or after t. For instance, we may obtain no above-chance scores when comparing calls at t_i with targets generated at t_i. But above-chance scores may result from comparing calls at t_i with (say) the $(t_i + 1)$th target. That sort of consistent scoring may be taken as evidence for precognitive ESP.

Now one would think that if ESP were not operating in a precognitive or retrocognitive mode, tests for time-displacement would not reach significance. For example, we would expect calls at t_i to correspond at chance levels only to targets at (say) $t_i + 3$. But when Tart evaluated the data from some of his ESP-learning experiments, he found a very unusual pattern of time-displacement (see Tart 1976). When percipients tended to hit on real-time targets—that is, when calls at t_i tended to match targets at t_i—hitting tended to correlate with *missing* on the +1 and −1 targets. In other words, calls at t_i tended not to match the $(t_i + 1)$th and $(t_i - 1)$th target. Tart also observed that the +1 missing was significantly smaller in magnitude than the real-time hitting (i.e. on the (t_i)th target). He reasoned,

then, that one would need ESP-gifted percipients, scoring significantly on the (t_i)th target in order for the +1 missing to reach detectible significance.

Tart also considered a possible difference between −1 and +1 missing. He reasoned that missing on the −1 target might be best explained as "an ordinary memory and bias effect."[2] That is, percipients knew what the target had just been, and they might be in the grip of the common, and mistaken, belief that random numbers don't repeat. So they might have a tendency not to call the same number twice or more in a row. Granted, Tart theoretically discussed trans-temporal inhibition as though it might be a symmetrical effect, but that would need to be tested by studying gifted psi percipients *without feedback*.

At any rate, what struck Tart as especially interesting was the fact that significant missing tended to occur only for small temporal displacements. That is, there tended to be fewer correlations between calls at t_i and targets at $t_i + 1$ and $t_i - 1$ (and often $t_i - 2$) than between calls at t_i and targets further removed from the (t_i)th target. Tart also found that the degree of missing on immediately past and future targets was correlated (to a statistically significant degree) with the degree of real-time hitting. The more real-time hits the percipients made, the greater the likelihood of finding a significant number of misses on immediately past and future targets (even though scores for greater time-displacements continued to hover more closely around chance levels).

This suggested to Tart that psi inherently operates in a wider "now" than ordinary sensory perception, one which would allow interference from the immediately future target. But in that case, from an engineering or perhaps evolutionary perspective one might expect to find some sort of extrasensory discrimination process, whereby percipients suppress information about the immediate past and future in order to enhance the detectability of the desired real-time target. Tart writes,

> What I am postulating, then, is an active *inhibition* of precognitively and postcognitively acquired information about the immediately future and the immediately past targets, which serves to enhance the detectability of ESP information with respect to the desired real time target. As the inhibition extends over time, I have named this phenomenon *transtemporal inhibition*. (Tart 1977b:15)

This hypothesis benefits from an interesting comparison with the well-known neurological process *lateral inhibition* (see Cohen 2011; a classic text is von Békésy 1967), in which stimulated neurons send inhibitory impulses to immediately adjacent neurons and receptors. This is the phenomenon

that allows us, for example, to feel sharp pointed objects pressed on the skin as sharp pointed objects, even though the stretched skin is stimulating a range of sensory receptors (not just the one under the point), and which sharpens the visual perception of edges.[3] Tart is thus suggesting that in psi functioning there's a similar process of *contrast sharpening* (a common engineering term for this process) achieved through the suppression of ESP information concerning the immediate past and future of the real-time ESP information.

Tart tested this hypothesis in a preliminary way by exploring some of its apparent implications. I'll discuss two of these. Here, Tart's data seem most strongly suggestive of the reality of ESP, since the existence of the predicted additional patterns seem especially mysterious on the assumption that there's no ESP, or at least none at work in these cases.

Tart's discussion wavers between describing trans-temporal inhibition psychologically (as a process creating *dispositions* or *biases* against calling targets) and more mechanistically (as an information-suppression mechanism). Of the two, the latter most closely corresponds to descriptions of lateral inhibition. But the descriptions are not incompatible. For example, if information about the identity of the +1 target is suppressed, the subject may develop a bias against calling that target. Of course, one must be careful here, because the putative relationship between information suppression and bias development is likely to be contingent and not lawlike. Thus, that relationship may hold only for some percipients, or only for certain times rather than others. In any case, Tart postulated that the suppression at t_i of the identity of the target at $t_i + 1$ would create a kind of holdover effect. That is, the suppression (and any biases developed at t_i against calling the digit of the next target) would probably linger for a while, thus increasing the likelihood that the subject would *not* call the digit corresponding to the $(t_i + 1)$th target at $t_i + 1$. Since Tart hypothesized that trans-temporal inhibition is correlated with psi-hitting, he suggested that, when a subject hits at t_i, he is more likely to miss on the next trial than if he had not hit at t_i. Therefore, Tart reasons that the data should show fewer hit doublets (i.e. two hits in a row) than would be expected if every trial were independent of the previous one, an effect Tart called *psi-stuttering*. There is, indeed, some evidence for this in Tart's data: the more that percipients showed real-time hitting, the more hitting tended not to occur sequentially.

Tart also reasoned that the effect of trans-temporal inhibition would appear in tests for precognition. He predicted that there would be a similar pattern of missing surrounding hits on whatever future target the subject focused on. Thus, if the subject were to try to guess the targets at $t_i + 10$, we should expect information to be suppressed concerning the identity of

the targets at $t_i + 9$ and $t_i + 11$. Hence, we would expect missing with those targets to accompany hitting on the $(t_i + 10)$th target.

To test this hypothesis, Tart conducted a brief preliminary experiment with Ingo Swann. He did not inform Swann of his prediction; but since he had told Swann about the rudiments of his hypothesis of trans-temporal inhibition, he expected him to have more concern for the identity of the +1 target than others tested in Tart's lab (whose scores provided Tart with his data). Accordingly, Tart expected Swann to show real-time hitting as well as +1 hitting,[4] with missing on the +2 target.

Although Swann's visit was rushed and he had time to complete only 129 trials, his results are nevertheless suggestive. He made a total of 21 hits on the real-time target, where only 12.9 would be expected to occur by chance. He also showed some psi-stuttering (but not, in this small sample, a statistically significant degree of it). Swann also made 19 hits on the +1 target, where 12.4 were expected by chance. (In measuring displaced hits, the length of the run decreases with the degree of displacement, thus accounting for the difference in expected hits between real-time hitting and +1 hitting.) But Swann scored only 7 hits on the +2 target, where 11.9 would be expected by chance, and he showed a slightly greater degree of missing on the –1 target.

Although these results are suggestive, the trial sample is obviously much too small to warrant sweeping conclusions, or even to support Tart's conjecture about precognitive trans-temporal inhibition. Also, the results are somewhat confounded by the fact that Swann showed bursts of hitting twice in a row on the +1 target. If Tart were justified in expecting psi-stuttering in his real-time ESP tests, then we should expect psi-stuttering in the +1 target for the same reasons. But again, the number of trials is still too small to enable us to interpret this fact clearly. And the other psychological conditions of the test, including concern for a friend of Swann's who had come along, made it hard to consider it a uniform psychological test period.

In any case, whether or not Tart was correct in all his conjectures about trans-temporal inhibition, his analysis suggests that the presence of psi functioning may be measurable even when the subject's number of hits does not represent a statistically significant deviation from mean chance expectation. Rather than simply measuring the number of hits, we should perhaps consider the difference between hits and *adjacent misses*. If psi hitting on the (t_i)th target correlates with psi-missing on the $(t_i + 1)$th and $(t_i - 1)$th targets, then when psi is operating we should presumably find a greater difference between the score on the (t_i)th target and scores on adjacent targets than between the score on some other target in the series and scores on targets adjacent to that—say, targets surrounding the $(t_i + 18)$th

member of the series, or between the score on the (t_i)th target and scores on targets not surrounding that one.

I should emphasize that Tart's personal position for decades now has been that the existence of ESP was established long ago and that he only works with it to try to understand its nature and potential applications. Accordingly, Tart felt that trans-temporal inhibition may provide a clue to the nature of psi and mind. That, after all, was the topic in which he was most interested.

Finally, I'm pleased to say that, after I decided to write about this subject for my Editorial, I was able to persuade Tart to say even more about it for this issue. It's been many decades since Tart originally tackled the topic of trans-temporal inhibition, and now *JSE* readers can see for themselves what his current thoughts are.

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On another matter, I'd like to welcome an addition to our distinguished, discerning, and hardworking team of Associate Editors—Imants Barušs. As many *JSE* readers undoubtedly know, Imants is Professor of Psychology at King's University College at University of Western Ontario, and he's a long-time member of the SSE and a contributor to its conferences, as well as to the *JSE*. Coincidentally, his latest book receives two reviews in this issue.

Notes

[1] However, Tart reminded me in a personal communication: "By the customary measures we had enormous amounts of psi compared to standard studies."

[2] Personal communication, January 2, 2017.

[3] Tart also suggested that there may be an analogous phenomenon of trans-*spatial* inhibition in ESP, in which hitting on distant targets correlates with missing on spatially nearby targets.

[4] Because, according to Tart, he was probably thinking about the +1 target as well as the present time target, although this is a guess about Swann's mental processes.

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