

NEXUS

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R E N S H A W A N D T H E T A C H / S T O S C O P E
(a n d H e i n l e i n , t o o)

by Alexei Panshin

Everything a writer comes into contact with influences what he writes. Many writers carry notebooks to jot ideas down as they come along. Current books and interests of the moment may well wind up imbedded in a story.

As an example of how this works: not long ago Time had an account of a new paper that had just been read by Fred Hoyle, the British astro-physicist, in which it was suggested that the speed of light may only be a local constant, that the speed of light as a limit may just not apply to galaxies at some distance from us. This gave me the glimmerings of another way to slide around the light-speed barrier, so I saved the article. It's no fun to go on using the same old hyperspace in every story.

What the reader sees of these materials is another thing. Usually they fit inconspicuously into the story, and the most the reader realises is that Chad Oliver knows his way around anthropology or that A.E. Van Vogt has been influenced by Spengler. Van Vogt is actually not a good example; the books that he's been reading ("I, Claudius"; Dr Bates and his eye exercises) are generally very apparent. Sometimes, not often, an author doesn't explicitly name his sources, but reading his story then, or another book at a later time, you suddenly have a feeling of discovery. You say "Aha, Wilson Tucker must have been reading GODS, GRAVES AND SCHOLARS, when he wrote THE TIME MASTERS," or "I'll just bet that Heinlein had been looking through MAINSPRINGS OF CIVILISATION when he wrote "The Year Of The Jackpot"." These, by the way, are just speculations: I had my moment of discovery in each case, but since neither Tucker nor Heinlein ended his story with a bibliography, I cannot verify what I suspect to be so.

Heinlein's materials in particular are hard to pin down. He has credited Sinclair Lewis with giving him the idea of charting a series of stories, but this affected only the structure of the Future History, not its content. At the moment, I can think of only one bit of material of which Heinlein has explicitly named the source, - in fact, he has done it three times. In the short novel "Gulf", in CITIZEN OF THE GALAXY, and in STRANGER IN A STRANGE LAND, Heinlein makes reference to the work of a psychologist named Samuel Renshaw.

In "Gulf", as part of a process in which his naturally-high mental abilities are being trained, the hero, Gilead-Greene-Abner-Briggs (he is a Man-of-Mystery-and-Many-Names) is exposed to a device that throws groups of digits on a screen for periods of a second. The device is described as being a "Renshaw tachistoscope". Briggs (I gather Briggs is his "real" name, though his monument carries 'Greene') is exposed to this device to increase his observational ability in both speed and accuracy. Renshaw's work is described as proving "most people are about one-fifth efficient in using their capacities to see, hear, taste, feel and remember."

In Citizen of the Galaxy, Heinlein talks about Renshaw and his work in somewhat greater detail. A boy named Thorby is educated by his adoptive father/owner/teacher. As the scene unfolds, it appears that the father is using a tachistoscope to increase the boy's reading speed. The technique is again attributed to Renshaw, and again Renshaw is described as having shown that our senses may be made more efficient by training. The only training method actually discussed, though, is an improvement of reading speed through tachistoscope training.

Finally, in STRANGER IN A STRANGE LAND, one of Heinlein's "Fair Witnesses" derives great prestige from the fact that he has been trained in total recall by Dr Samuel Renshaw, "the great Dr Samuel Renshaw".

This struck me as an interesting thing to look into: what could I find out about Renshaw? (Here, by the way, you can see Panshin's Law Of Repetition at work: if Heinlein had mentioned Renshaw in only one story, it would have seemed quite possible that Renshaw was someone made up for convenient use in a story; used three times, in separate, unconnected stories, it seemed most probable that he really existed.) I was interested to know Renshaw's stature in the field of psychology; what sort of work has he done, and what do other psychologists think of it? I was also interested in finding out how faithful was Heinlein's representation of all this.

I found immediately that there actually is a Dr. Samuel Renshaw, of Ohio State University, and that, as Heinlein said, he did attract attention around the World War II years for his work on thresholds of perception. Renshaw has done work in increasing the limits and subtlety of perception of smell and taste; in increasing acuity and field of sight, (of which his work in reading speed and comprehension is just a small part) and in increasing the power and strength of memory.

What the limits of perception actually are is something of which we are only dimly aware. People vary widely in use of their senses. Some of us are primarily visually oriented, others not. Most of us have rather foggy memories, while Isaac Asimov is one of those who have total recall.

There is a whole misnamed class of people who, like Asimov, have some unusual and outstanding ability. They are ordinarily known as idiot savants, and the prototype of the legend is the village halfwit who can't tie his shoes but who can do fantastic arithmetic calculations in his head. Most, however, are not idiots by any means. The Saturday Evening Post recently ran an article on a bright youngster who, at age 5, was

able to give accurately the day of the week for any day of the year- and not just this year but any year from 1800 A.D. to the year 2000. This unusual ability was in addition to more than ordinary intelligence.

Much of Renshaw's work is of a controversial nature: I suspect that people who see themselves as essentially ordinary might feel threatened by his investigations. His results, too, are still in question

Heinlein at least, in direct exposition has chosen to write on just one aspect of Renshaw's work, his work with the tachistoscope. This study combines a spectacular nature (with education so much in the news, significant increases in reading speed are bound to attract a great deal of attention) with a high degree of controversy. As Heinlein handles the material, though, Renshaw's results are accepted flatly, at least for fictional purposes.

Renshaw has concentrated his work with the tachistoscope in two disparate areas: training Armed Forces personnel in enemy plane recognition during World War II, and in training poor readers for faster speed and retention of materials read.

In a demonstration to convince Navy personnel of the value of his methods, Renshaw's students had 95% recognition of twenty planes at flashes of duration of 1/100th of a second. A Navy line officer got none. Renshaw accomplished his plane recognition feats by training in recognition of planes as gestalts in split-second flashes on a tachistoscope. The Army & Navy officially credit Renshaw and his recognition training with saving thousands of lives and uncounted numbers of airplanes and warships, and the Navy honoured Renshaw with a citation for his work at the end of the war.

Since the war, Renshaw has concentrated on training for faster and more thoroughly understood reading, primarily by the method Heinlein introduces in "Gulf", by flashing strings of digits on a screen at high speeds, and then increasing the number of digits and reducing the amount of time in which they are shown. Renshaw claims that through the use of a super-fast timing mechanism, he has been able to achieve flashes on the tachistoscope screen that can be measured in millionths of a second, and that two students have been able to grasp nine-digit numbers at 3/1,000,000 of a second.

Renshaw has trained people to read with his methods at speeds of 1200 and 1400 words per minute with high levels of comprehension. He and adopters of his techniques have tested his methods in a number of schools, and report a universally high degree of success. General Electric hired a Dr William C Schwarzbek, who has worked with Renshaw, for the purpose of doing reading training among its employees. The average reading speed of the first 120 at G.E. to work with Schwarzbek was raised 1/3 at the end of a 12-week, 36-hour programme,

This is how Renshaw puts it: "...the evidence is clear and unambiguous; children who have had adequate tachistoscope training in the first grade read more fluently and understandingly, show distinctly greater skill in number work, exhibit greater range, quickness and accuracy in general observational noting, in art work, etc., than the children of equal native ability, under teachers of equal competence in the same curriculum who have not had this form of visual training."

No doubt they have fewer cavities, too !

This is Renshaw's side of the picture. There are plenty of people on the other side. One is Roy E. Sommerfield who quoted the above paragraph from Renshaw in his doctoral thesis for the University of Michigan.

He challenges Renshaw's handling of data, stating that in the present case the children were not of equal native ability, and that their teaching was not of equal competence. He also questions the evaluations of data in two other studies conducted by adherents of Renshaw's methods.

Sommerfield ran his own study in Ann Arbor, Michigan, and concluded: "This study has disclosed no significant relationships between tachistoscope span for digits and measures of rate and comprehension in reading," which is an academic way of saying that Renshaw is dead wrong.

At this point I felt faced by one of those you-are, I-am-not, you-are-too, name-calling battles. My faith in social scientists, whether in agreement or disagreement, is severely limited, and in this case it seemed the word of one against the word of another. To get an outside opinion, I talked to Dr Donald Smith, head of the reading clinic at the University of Michigan.

Dr Smith agreed with Dr Sommerfield that Dr Renshaw was dead wrong. He said that work with the recognition of digits is not transferable to faster recognition of anything except digits. This made a certain amount of sense to me - when Renshaw was training his plane observers, he didn't throw strings of digits up there on his screen, he flashed pictures of airplanes.

In "Gulf", the girl tutoring Our Hero flashed digits on the screen, but in CITIZEN OF THE GALAXY, it was not digits but pages of written material that was shown. I asked Dr Smith about that. He said that work with word passages and the tachistoscope is of no value to his clinic except in helping word-by-word readers to realise that they can read by phrases. (In jargon, this comes out as "increasing perceptual span".)

Dr Smith's best reader, by the way, a girl with an eidetic memory like Asimov's, managed a speed of 2000 words per minute with perfect recall. Among non-eidetics, Dr Smith stated that 2% of those with whom he works could achieve Dr Renshaw's top speed of 12-1400 words per minute with high levels of comprehension.

In another University of Michigan doctoral thesis, a man named Robert Leestma agreed that perceptual span could be modified by training. Leestma says, "While span is subject to improvement, there exists considerable doubt and confusion as to whether improvement in tachistoscope span brought about by training positively increases reading ability. At present, Renshaw is the leading advocate of the transfer claims, while other studies show no significant transfer."

He further states, "There is reason to believe that transfer is possible but that it may actually be as a result of some secondary factor such as motivation rather than inherent in the training method itself, or because of a real change in the subject's habits of perception. At present, the best experimental work - (and here Leestma cites our old friend, Dr Sommerfeld) - has tended to frown on extravagant claims for improvement in reading ability as a result of tachistoscope training, especially after training with digits."

Sommerfeld attributed any gains in reading speed after tachistoscope techniques to the secondary factors that Dr Leestma mentions (this sounds almost as incestuous as the bibliographies in flying saucer books which cheerfully spend their time citing each other as authorities.), especially an increase in the desire to read. The implications are that a poor reader of good intelligence mainly needs a shove, a motivation to start reading with all of his potential, and that the tachistoscope may do this as well as a Great Literature course. Or may not (In one study, by the way, a Great Literature course was used quite successfully to increase reading speed.)

What this amounts to, as it seems to me, is that Dr Renshaw's tachistoscope reading programme is a dead end. There seems to be doubt that it has any value, and Dr Smith (and, I assume, other reading clinicians) has had results equal to, or better than Renshaw's claimed results, without using the tachistoscope.

On the other hand, Renshaw's success with recognition of species through tachistoscope training (airplanes, nine-digit numbers in three millionths of a second) seems an exciting, fruitful and largely unexplored field of study.

Heinlein's representation of the claims made for Renshaw's work is quite sympathetic and quite accurate - that is, granted the possibility that other aspects of Renshaw's work may be questionable, too, but that is a point that may be overlooked, since our interest is in Heinlein's accuracy, not in Renshaw's.

Before I drop this subject, however, I would like to interject one minor quibble. In CITIZEN OF THE GALAXY, Thorby, the boy, has never seen or used a tachistoscope before. Baslim has to explain it to him, at length. Yet Baslim expects Thorby to read a page of a book that is flashed for only three seconds. We can assume that this was not an Avalon book with only 150 words to the page. A page of my typing, for instance,

double-spaced, runs around 300 words to the page. At a minimum of 300 words to the page, then, Thorby was expected to read at a rate of 6000 words per minute. I don't wonder that the kid never got finished - even Renshaw has never claimed that his beginners can read 6000 words per minute or more. Everybody who felt awed, brow-beaten, or envious when they read the story can relax now.

Alexei Panshin, 1966

Most members of OMPA seem to get my gen-zine, (Zenith)SPECULATION already, but for the benefit of the few I'll mention that Issue 14, to be published about now, contains a huge piece of Panshin's book on Heinlein. That's 17,000 words, a chapter entitled "The Period of Success". Copies are available from me at 2/- each.

I'll be glad to see OMPA revive; after all, it is the only APA of a British base, and deserves preservation if only as a curiosity. I think the trouble arises because British members aren't APA-minded enough (we prefer to put out gen-zines), while US-members are too APA-minded (they contribute to too many APAs at once, and a 'foreign' product gets less attention than home-based products.) To make things worse, I'm sure that the UK 'PaDs' run by the Mercers, has drawn much of OMPA's potential talent into a sort of shadowy limbo of its own.

I hear Elinor Busby is coming back to the fold; and I know Darroll Pardoe is making the debut into active-fandom that he's been postponing for eight years.

I'm currently rushed off my feet with Zenith and with a whole host of semi-mundane interests. I'm in the Glades of Gafia, by the way, and enjoying it; seems I discovered the Young Conservatives Association, which is a fandom all of its own with plenty of GIRLS ! Burkhard Blum, you're not the only one to go into politics rather than fandom. If you can't beat 'em, join 'em!
