INSIGHT

The Journal of the Titan Society

(Issue #14, May 1987)

Editorial

Ronald K. Hoeflin
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A Fourth Norming of the Mega Test: I am including in this issue of Insight a fourth attempt at norming my Mega Test. I think this is the most realistic norming of the test so far. It puts the Titan Society's cut-off score of 43 at about the 1-in-300,000 level. The 1-in-1,000,000 level occurs at a raw score of 45.

A Renewing Member: Cedric Stratton has renewed his membership, bringing our total membership to 13. I shall include a three-page letter from Professor Stratton in this issue. Thus, of the 14 members we had at the end of last year, we have lost two (Ron Lee and James Tetazoo) and gained one (H. W. Corley). Professor Corley has offered to submit an autobiographical sketch for Insight in the near future.

Subscribers: While I do not encourage subscriptions to Insight, I have agreed to add two names to the mailing list:

Barry Kington
P. O. Box 1111
Madisonville, KY 42431

S. Woolsey
P. O. Box 1942
Houston, TX 77251

Barry Kington is an active participant in many high-IQ societies, but I know him best in his role as Membership Officer of the Triple Nine Society. S. Woolsey is a member of the Mega Society, and I have heard that he has participated in local meetings of the Triple Nine Society in the Houston area. I have dropped two other subscribers from the mailing list: Leonard Weisberg and Kevin Langdon. I would appreciate no one providing a copy of this journal to Mr. Langdon, since he has caused considerable mischief for me.

Trial Tests: I would like to thank the four Titan members--Chris Cole, Dean Inada, Ray Wise, and Eric Hart--who attempted Trial Test "B", which appeared in Insight #10. I have already sent them the results along with copies of Trial Test "C". Any other member who wants to attempt these tests may still do so. I have nearly completed Trial Test "D", so I hope to finish the entire series of tests by the end of this summer, resulting in a new Mega-like test.

Change of Address: Dean Inada's new address is given on page 11 of this issue.

Letter to the Editor

Cedric Stratton
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Dear Ron,

April 7, 1987

I thank you very much for your recent letter and copies of Insight.

I had long since planned to send in my membership, but have been loaded down with (mostly self-imposed) work, and thus I let things slide somwehat. . . .

I noted that there were some questions in one of your earlier Insight's, and although belated, here are my reactions:

Dues: Within reason, anything you like. Up to a maximum of say $50.00

Name: During my recent work-binge I felt the society was in good hands and noted that there were several suggestions for names which were unaggressive. I have noted in forming societies that aggressive-sounding names, while attracting attention of intending members, tend to offend that part of the public which may offer support while not being members. Example: When we started the local distance running club, the name "Striders" caught the imagination of a number of inexperienced runners who were put off earlier by the designation "Track Club." So I think the several suggestions for names which have special meaning to ourselves but a generally bland external flavor to others is a good move. I knew I could trust our members.

Intelligence testing: I believe that the intelligence tests measure that part of intelligence which can be figured or communicated best on paper. The Mega Test calls for more neural action and less shows on the paper, so it comes closer to the mark than (say) CTMM, which has a lot of answers but each (of which) samples only a few seconds of neural activity. There may be some types of intelligence which can never be properly measured. For example, how could you test the type of intelligence which can cause the left-hand fingers to pick out a perfect C, F#, G sequence on unmarked violin necks. Difficult to measure, but audiences of hundreds sense when it has been done correctly. Again, (an ability) that sees and depicts a Mona Lisa can scarcely be tested, yet I feel there is an intelligence of some kind involved. I feel that the very highest forms of intelligence can probably only be appreciated and measured by those who are already "there", in a sense. Some music of recognised genius has had to wait for the education of the listening public, sometimes as long as a hundred or more years before it is finally recognised as such.

Projects for the Society: It seems logical to use "composite" projects which yield best to discussion or written discourse. Mathematical or thought problems lend themselves to this end. Invention of a new game could very well provide a source of group income, if it caught on, and permit expansion of our projects with improved funding.

Expanding the Society: It cannot, by its purpose, be expanded to more than some 250 in this country. The trick is to catch them young. I suppose any high school students making a perfect score on either section of the SAT would have to be candidates. They could be accepted (subject to accurate statistics which indicate certain total scores rank in the appropriate percentile) without further ado. I noted a suggestion to invite second or more tries at the Mega Test and also your later comments and re-norming. I have to admit that I was one of those who did "just enough," first time around, and was disappointed when the response from the (then active) Mega Society was that the standards had been changed. I would feel very leery of entering an Olympic race where there was an advertised "qualifying time," equaling or beating the standard, then being told after the event that the standard was being changed. So it makes sense to me to review the admission levels, and I see where it has been done in a manner which permits both an immediate potential expansion and a maintenance of high standards.

I enclose a biography. It is one that I abstract for purposes of writing proposals or job hunting, so it is much longer than you need. Below are some of the things which seem pertinent to our group and a summary of things I have done which I take a measure of pride in having done:

Born Sunday, 26th April, 1931.

I was reading before going to kindergarten in England. At the first week of school I was put into third grade or its equivalent for the purpose of maintaining the good start my mother gave me. My mother, incidentally, left school at age 12.

I have had over 50% deafness in both ears until about 1978, when I had an operation which restored the left ear to about 90% of normal hearing. I have therefore been far more receptive to visual sources of information than to aural.

I have a wide variety of interests and find it hard to keep my enthusiasm within bounds.

My first subject at school was pure mathematics, followed by applied mathematics, then physics, then chemistry, in that order. I went into chemistry upon family advice (several of my uncles were chemical engineers and the like), eventually obtaining the Ph.D. from London University (Birkbeck College), for most of the time working 40 hours weekly at my full-time work, then 40 to 50 weekly

at the lab bench.

After a particularly hard English winter I requested (and accepted at once when it was made available) a post-doctoral fellowship at the University of Florida.

Since then I have been teaching at this rather small college (Armstrong State College) in Georgia. Although the academic standards are low (we cater to the community rather than an imported elite) and the work load is extremely large, I have opportunities within the community to do things which I may not have elsewhere.

I carry out consultations with local industries and laboratories, with occasional legal work thrown in.

I have displayed and sold paintings, acted in plays, originated societies and events, participated in Marathon races and Triathlons, participated in local championships of several sports that interested me at the time, retain an abiding interest in the sea and sailing (I have a small--21'--cabin cruiser which is ideal for this area of shoal waters), built several fiberglass canoes, one outboard-driven wooden boat for mud-flat cruising, and a catamaran.

I am becoming more and more interested in biochemistry, initially because (naturally, with my chemistry degree in inorganic chemistry!) I was required to teach it when we had a large influx of students in paramedical programs. It seems to me that the quality of life can be greatly influenced by one's personal habits of eating and living.

Since last year was the year of the comet, I honed up on the comet's predictor, Edmund Halley, and was interested to read that he seemed to carry the ideals of our Society (Titan, if we adopt that name). If we have beacons before us as to how we would like to live and serve our fellows, his life could very well serve as such a beacon. His breadth of interests, ability in mathematics, and his apparent great success with both written and spoken word might make him a candidate, if he were still with us. Do you think it would be appropriate to adopt great scholars' lives as examples for ourselves? If you do, I would be greatly interested to know which would be the selections made by other Titan members, especially yours.

(Editor's comment: I would like to emphasize that I am not a Titan member, merely the founder and--for now--the editor. I once did propose to members of the Mega Society that that group single out outstanding intellectual figures, one per year, to honor with some sort of token award. I also suggested that members of Mega might also single out great intellects of the past as part of a sort of intellectual "Hall of Fame". Nothing came of these suggestions, the only response--from Mr. Langdon--being negative.)

A Fourth Norming of the Mega Test

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My first and third normings assumed a linear relationship between IQ and raw score from the floor to the ceiling of the Mega Test. I simply equated the mean reported IQ on a number of previously attempted tests with the mean raw score achieved on the Mega Test by the same group of individuals, weighting each individual's scores equally. I then equated the standard deviation of the sample of reported IQs (a measure of their "spread") with the standard deviation of the corresponding sample of raw scores on the Mega Test. The first norming gave a floor of 122 IQ and a ceiling of 184 IQ, while the third norming gave a floor of 120 and a ceiling of 190 (where there are 16 IQ points to the standard deviation), all other IQs falling on a straight line between the floor and ceiling points. Needless to say, this approach was an oversimplification. The third norming seemed particularly suspect, since 190 IQ is theoretically achievable by only one person in a hundred million.

In the second norming I retained the same norms as I had used in the first norming up to the 99.9 percentile, but above that point I tried a nonlinear approach, assigning IQs in accordance with how the participants were actually distributed above this level. Thus, the score exceeded by one-tenth as many participants as exceeded the 99.9 percentile determined the 99.99 percentile, the score exceeded by one-tenth as many participants as exceeded the 99.99 percentile determined the 99.999 percentile, and so forth. This approach, of course, also was an oversimplification, since it is reasonable to surmise that, since test participation was voluntary, the higher the intelligence level, the more likely a person would be to attempt the test, in which case the number scoring above the 99.99 percentile should be greater than one-tenth of the number scoring above the 99.9 percentile, the number scoring above the 99.999 percentile should be greater than one-tenth the number scoring above the 99.99 percentile, and so forth. But there seemed no clear way of deciding what these increased likelihoods of participation might be.

In the present norming I have returned to the nonlinear approach, but a quite different one from that in the second norming. I constructed graphs showing the distribution of scores on five principal intelligence tests--the LAIT, CTMM, ACCT, WAIS, and Stanford-Binet--a separate graph for each test. I then constructed five more graphs showing how those reporting scores on each of these tests scored on the Mega Test. I then made the assumption that even though individual participants might do better or worse on my test than on one of the other tests compared with the sample of individuals who had reported scores on the other test, nevertheless the range of performances of a group of individuals would be roughly the same on the two tests.

Rather than determining the range by calculating a standard deviation for all ten graphs, I adopted a simplified method. At intervals of 0.25 standard deviations with respect to the general population on the other test I counted the number of participants in my sample who reported scores equal to or less than that score. I then counted up the same number of participants on the parallel sample of Mega raw scores and noted the raw score at which I had arrived. Thus, for example, 2.0 standard deviations above the mean on the CTMM equals 132 IQ on that test. In my sample, 9 individuals reported CTMM scores of 132 or less. On the parallel graph of Mega raw scores for my sample of individuals who had reported CTMM scores, one finds that 9 persons got a raw score of 7 or less on the Mega Test. I thus tentatively identified 132 IQ on the CTMM with a raw score of 7 on the Mega Test. I did the same for all five tests at 14 different standard deviations, ranging from 1.25 to 4.50 s.d.'s above the mean. I found that the data below 1.25 and above 4.50 was too skimpy to be considered reliable. I then took the mean equivalent Mega Test raw score at each standard deviation level for the five tests as my final data point for plotting a curve on graph paper. For example, the equivalent Mega raw scores for the five tests at 2.0 standard deviations were 7 for the LAIT, 7 for the CTMM, 13 for the AGCT, 8 for the WAIS, and 8½ for the Stanford-Binet. Averaging these figures gives a result of 7.4 raw score points as the estimated equivalent of 2.0 standard deviations above the mean (the 97.7 percentile) on the Mega Test vis-a-vis the general population.

I discarded data from the SAT, GRE, and MAT because I felt that the determination of the mean and the standard deviation of these tests vis-a-vis the general population is somewhat speculative, since these tests are normed using above-average populations. I also discarded Cattell data because this data seemed consistently out of line with the data for the other five tests--perhaps because the supposed standard deviation of 24 points for the Cattell is erroneous. Mensa participants in the U.S., for example, regularly reported both Cattell and CTMM scores, since both tests are administered by Mensa for admission purposes in this country. One finds that Cattell scores do not have a tendency to be 1½ times greater than CTMM scores, as they ought to be if the standard deviations (16 for the CTMM and 24 for the Cattell) are right.

The results, using the five tests I had chosen to use, exhibited when graphed a virtually straight-line relationship for the seven data points plotted from 2.0 to 3.5 standard deviations above the mean. Below 2.0 s.d.'s there was a fairly abrupt leveling off in the curve for the three data points below that level. This was no doubt due to the fact that I had inserted several relatively easy verbal items in the test to get everyone started. I extrapolated the curve below 1.25 standard deviations so that it terminates at 0.0 standard deviations (100 IQ) for a raw score of one (1) right.

Above 3.5 standard deviations the problem is how to account for the apparent "dip" in the plotted curve. My surmise is that there is a partial failure in my working hypothesis, namely, that the range of performance for a given sample of individuals will remain largely unchanged as a whole from one test to another despite wide variations in individual performances. As persons with very high scores on other tests regress toward the mean of their sample when they attempt the Mega Test, they fail to be replaced in sufficient numbers at the high end of the scale on the Mega Test by persons from the middle of the pack. (The whole sample may have aged considerably, on the average, since attempting the other test, for example.) The resulting contraction of scores on the Mega Test would account for the dip in the observed curve. (The lack of dip at the 4.5 level may be due to the strength of the LAIT sample, most other tests having dropped out of consideration completely at this level.) I recommend, then, that reliance be placed on the extrapolated rather than the plotted line in the 3.5-to-4.5 interval in order to avoid the artificial dip.

The following are my recommended cut-offs for the various high-IQ groups that use the Mega Test for admission purposes:

(1) The 99.9 percentile, which is used as a cut-off by the Triple Nine Society and the International Society for Philosophical Enquiry, theoretically occurs at 3.0902 standard deviations above the mean. My calculations put the 3.00 standard-deviation level equal to a raw score of 22.8 and the 3.25 standard-deviation level equal to a raw score of 26.4. To find how far above a raw score of 22.8 the 99.9 percentile lies, one can use the proportion:

$$\frac{.0902}{.2500} = \frac{x}{26.4 - 22.8} = \frac{x}{3.6}$$

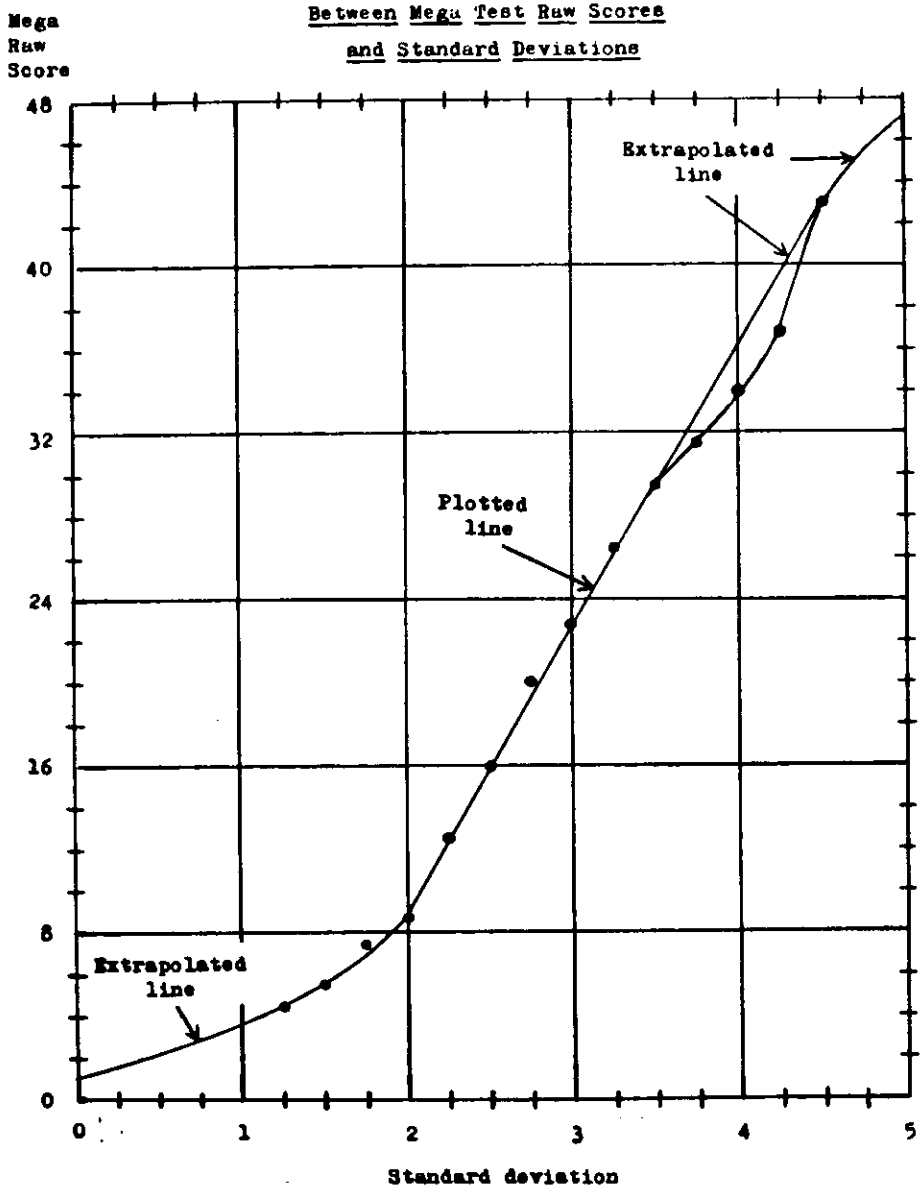
which yields x = 1.29888. Adding this to 22.8 yields 24.0988, which is thus my estimate for the raw score equivalent of the 99.9 percentile. I suggest that this figure be rounded off to 24 rather than 25.

(2) The 99.997 percentile, which is used as the cut-off for the Prometheus Society, corresponding to 4.0 standard deviations above the mean (164 IQ), can be set at a raw score of either 34 or 36, depending on whether one wishes to rely on the plotted or on the extrapolated line. I leave this decision to the Prometheus Society's Psychometrics Committee, chaired by Gary Bryant.

(3) The 99.9997 percentile, corresponding to 172 IQ or 4.5 standard deviations above the mean, appears to be the cut-off for the Titan Society if that group retains its minimum raw score requirement of 43 correct.

(4) The 99.9999 percentile should be achievable by 3 people among those who attempted the Mega Test since about 90 people exceeded the midpoint of 36 right (1-in-30,000) and 9 exceeded the midpoint of 43 (1-in-300,000). This would put this percentile at a raw score of 45. I had to bend the curve a bit to the right above 4.5 s.d.'s to accomplish this fit.

Plotted and Extrapolated Equivalences
Between Mega Test Raw Scores
and Standard Deviations



Recommended

Raw Score/IQ/Percentile Equivalences

for the

Fourth Norming of the Mega Test

Mega Raw Score	IQ	%-ile	Approx. Rarity
1	100	50	1 in 2
2	107	67	1 in 3
3	113	80	1 in 5
4	118	87	1 in 8
5	122	91	1 in 10
6	126	95	1 in 20
7	130	97	1 in 30
8	131	97	1 in 37
9	132	97.7	1 in 43
10	133	98	1 in 50
11	134	98	1 in 60
12	136	98.8	1 in 80
13	137	99	1 in 100
14	138	99	1 in 120
15	139	99	1 in 140
16	140	99	1 in 160
17	141	99.5	1 in 200
18	143	99.6	1 in 250
19	144	99.7	1 in 335
20	145	99.8	1 in 400
21	146	99.8	1 in 500
22	147	99.8	1 in 600
23	148	99.86	1 in 750
24	150	99.9	1 in 1,000
25	151	99.9	1 in 1,500
26	152	99.95	1 in 1,750
27	153	99.95	1 in 2,250
28	154	99.96	1 in 2,750
29	155	99.97	1 in 3,500
30	157	99.98	1 in 5,000
31	158	99.98	1 in 7,500
32	159	99.99	1 in 9,000
33	160	99.99	1 in 11,000
34	161	99.99	1 in 15,000
35	163	99.996	1 in 25,000
36	164	99.997	1 in 30,000
37	165	99.998	1 in 40,000
38	166	99.998	1 in 50,000
39	167	99.9986	1 in 70,000
40	168	99.999	1 in 100,000
41	170	99.9995	1 in 175,000
42	171	99.9996	1 in 225,000
43	172	99.9997	1 in 300,000
44	174	99.9998	1 in 500,000
45	176	99.9999	1 in 1,000,000
46	178	99.99995	1 in 2,000,000
47	180	99.99997	1 in 3,000,000
48	183	99.99999	1 in 10,000,000

Calculations on which the IQ Plotted Graph Points are Based

Standard deviation:	1.25	1.50	1.75	2.00	2.25	2.50	2.75	3.00	3.25	3.50	3.75	4.00	4.25	4.50
LAIT	3	5	7	7	13	15	16	17	21	24	29	34	38	44
CTMM	5	5	5	7	12	16½	20	25	31	37	38	40	41	42
AGCT	--	9	11	13	17	21	28	28½	29	--	--	--	--	--
WAIS	5½	6	6½	8	10	12	20	23	25	30	31	32½	34	--
S-B	--	3	7½	8½	11	15	17	20½	26	26½	28½	29½	34	--
Mean score:	4.5	5.6	7.4	8.7	12.6	15.9	20.2	22.8	26.4	29.4	31.6	34.0	36.8	43.0

Data Not Used in the Calculations

Standard deviations:	1.25	1.50	1.75	2.00	2.25	2.50	2.75	3.00	3.25	3.50	3.75	4.00	4.25	4.50
Cattell	3	4	6	10	14	27	32½	34	39	42	44	--	--	--
SAT	4½	6	8	12	15	20	24	33	44	--	--	--	--	--
GRE	--	--	--	8	10	13	19	24	30	36	--	--	--	--
MAT	--	--	4	6	12	15	21	25	--	--	--	--	--	--

Means and Standard Deviations of Cited Tests

	(Mean)	(S.d.)
LAIT (Langdon Adult Intelligence Test)	100	16
CTMM (California Test of Mental Maturity)	100	16
AGCT (Army General Classification Test)	100	20
WAIS (Wechsler Adult Intelligence Scale)	100	15
S-B (Stanford-Binet)	100	16
Cattell (Cattell-Verbal)	100	24(?)
SAT (Scholastic Aptitude Test, V + Q)	715(?)	255(?)
GRE (Graduate Record Examination, V + Q)	765(?)	255(?)
MAT (Miller Analogies Test)	10(?)	28(?)

Letter to the Editor

Dean Inada
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Dear Ron, February 27, 1987

Perhaps I was a bit hasty in dismissing problem #26 (in Trial Test "B", Insight #10). I can now imagine arguments supporting specific answers.

(Editor's note: The problem in question reads as follows: "Suppose a black box contains ten marbles of unknown colors. The marbles' colors can be determined only by selecting one marble at a time at random from the box, but it must be returned to the box and mixed thoroughly with the rest before another marble is chosen for inspection. If ten marbles are inspected in this way and all turn out to be white marbles, what is the probability at this point that the box contains only white marbles? (Round to the nearest whole percent.)")

If one assumes that the marbles' colors are selected with equal probability from among all the possible colors, one can find an answer dependent on number of possible colors. But since this number is unknown, one may suppose that this number is uniformly distributed between, say, 1 and n. Again, the answer depends on n, but it quickly reaches a limit as n gets large, so one can find a well defined answer which is not particularly sensitive to the number of colors one can see and name. Unfortunately, it is not within 1% of what I submitted. If you believe this approach is correct, then my IQ is in jeopardy unless I can suggest another solution plausible enough to make you doubt this, or whatever one you believe.

I can imagine some intelligent people reasoning that, since the probability of a marble being a given color is unknown we may assume that they are n random numbers that sum to 1. (For a while I suspected that this might be your model with n = 2, i.e., probability of white is uniform between 0 and 1, which would have difficulties when you ask the probability that the box contains only non-red marbles, or only non-blue marbles.) This answer also reaches a limit as n gets large but the limit may seem trivial and uninteresting to most intelligent people. One can find a non-trivial limit by letting n be a random number between 1 and m and taking the limit as m approaches infinity. This gives a slightly different answer.

Then again, it may be more reasonable to weight the probability of a given distribution by the product of the probabilities for each color.

It might also be argued that the probability that there are n colors in the universe should be proportional to n. Since the more colorful universes contribute little to the probability of our out-

come, we avoid an ultraviolet catastrophe and find yet another well defined limit.

If you think that none but your solution is correct, you might want to use these other numbers as distractors in a multiple-choice test. This would directly measure intelligence as one's ability to choose between the alternative models. Or, if you can avoid listing the most plausible alternatives, you could leave your answer as indisputably the only possible correct one. And perhaps I can redeem my IQ on the multiple-choice version of this problem.

The latest renorming seems to have increased my intelligence substantially. Can't complain about that. Since the Mega Test was published, the size of my cohort has fluctuated by more than two orders of magnitude. I guess that's not surprising; if it's as small as claimed, it may be difficult to make a statistical sample significant to 7 decimal places.

Lowering the admission standard seems more practical than raising it if you wish to maintain a viable size, and fairer to those already offered admission. Allowing multiple attempts also seems reasonable if you are more interested in measuring ultimate ability than rigid consistency. . . .

As to the norming itself, it seems unrealistic to expect a linear correlation to be maintained right up to the limit. I might think a more reasonable approach would be to take the scatter diagram of Mega score vs. IQ, normalize it so that the IQ percentiles fit their theoretical shape. Then look at the Mega score percentiles. . . . The Mega score percentiles should then reflect a score distribution for the general population, independently of how they correlate with Stanford-Binet or any other test.

Of course, since you are calling it an intelligence test, you may then want to look back at the normalized scatter diagram and see that your percentiles correlate more with other IQ percentiles than, say, age.

It may also be interesting to do a separate norming on each question on the test. If you assume that the probability of getting each question right is a monotonic function of some parameter, call it "intelligence," and that the probabilities of getting two questions right are independent, except that they are both correlated with the same "intelligence" parameter, you might be able to find the optimal weighting of each test question. You have apparently been trying to weight verbal and non-verbal sections equally, but if the scores on one section have a greater variance, that section is effectively being given more weight.

(Editor's note: I'd be happy to send you or any other statistically knowledgeable member all the data upon which the preceding norming was based. Perhaps you could arrive at informative conclusions.)