

letters

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the Soviet Government.

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6/82

The exchange of letters, (May 1981, page 11 and May 1982, page 119), between Irina Brailovsky, Russian refusenik, and Anatoly Logunov, rector of Moscow State University, leaves out some of the story. Being acquainted with the principals and with the Soviet system, we feel compelled to respond. One of us (Callen) visited the Brailovskys in 1973 and again, with Irina, in 1981, just before Victor's trial. The other (Goldman) is an immigrant from the Soviet Union, knows the Brailovskys personally, was a fellow physics student with Logunov at Moscow State University, and met with him occasionally thereafter.

The Brailovskys applied to emigrate 10 years ago. Their visa requests were rejected on grounds of knowing state secrets, although neither had ever held a security clearance or worked on a classified project. Arrested in late 1981, Victor was held incommunicado, tried without a lawyer, convicted of "defaming the Soviet State," and internally exiled.

Referring to Irina, Logunov writes that "during the period of my association at Moscow University (since October 1977) in the position of rector, this individual did not work at the university nor did she have any relation with it." Of course not. Irina, a fluid dynamicist, had been employed as an applied mathematician by Moscow University under a previous rector, since deceased. She had been fired (as was Victor) when they applied to emigrate.

At that time Moscow University had failed to certify that Irina could be released without jeopardizing state security. Later, after she was fired and after Logunov had become rector, another university committee had reconsidered her case and cleared her. Their report was signed by Logunov himself, who has admitted in private conversations that there is no reason to detain Irina. Logunov claims to have so advised the Ministry of Interior orally but refuses to forward to them the written committee report. He is said to take the position that his dealings with the Ministry are always oral.

In his PHYSICS TODAY letter, Logunov asserts that "Moscow University and myself in particular do not have and can never have any connection with the solution of the question of an exit visa." Five years ago, Logunov could have gotten away with that obfuscation, but not now. By now, so many immigrants

have gotten out and so many party members and Soviet officials who had been themselves responsible for filling out the forms required by OVIR and the KGB have emigrated, that we have a pretty good idea how the system works, even though the forms, and the very procedures, are themselves secret.

There is a form which OVIR requires to be sent from the employer. The employer (in this case Logunov, as current rector) must explain that the person involved does or does not know state secrets. The final entry on the form is crucial. On this line the employer must certify that "because of this reason this person can, or cannot, be allowed to emigrate," or words to that effect. Upon each rejection and reapplication OVIR goes back again to the institution where the individual worked, for the required clearance. This is the regular procedure, secret but absolutely well-known to Russian officials and to the emigrant and refusenik communities. For Logunov to deny this is perhaps understandable, for he is an ambitious man, at 54 or so already the rector of the Soviet Union's greatest university, vice president of the Soviet Academy of Sciences, a member of the Central Committee of the Communist Party, and a member of the Supreme Council of the USSR. Logunov is a man on the make. But in doing so he forsakes the superb humanitarian tradition of physicists at Moscow State University. Mandelstam, Landsberg, Leontovich, Tamm, and Khaikin perhaps did not achieve such heights, but they would not have acted in this way.

Logunov wants to move high in the Soviet firmament, but he also wants to be well regarded by his fellow scientists. He desires to travel in the West and to be welcomed by physicists at our conferences and our universities. We do not think he should be. As long as he personally blocks the emigration of Irina Brailovsky, we call upon scientists and persons of good will everywhere to shun Academician Anatoly Logunov.

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6/82

Gamma-ray laser

A recent issue of the *Reviews of Modern Physics* presents a discussion of how one might hope to make a gamma-ray laser [George C. Baldwin, John Dale C. Solem, Vitalii I. Goldanskii, *Rev. Mod. Phys.* 53 687 (1981)]. I have a comment of such importance that I address it to PHYSICS TODAY with its numerous readership rather than to *Rev. Mod. Phys.* The authors perpetrate an exceptionally ugly acronym for the gamma ray laser—graser. The word has a bovine

sound, a heavy herbivorous drone that hides the excitement of the search to make a gamma-ray laser.

I propose an alternative acronym for the gamma ray laser—grayl. This name turns away from the cud-chewing contentment of "graser" and offers a rich mythic imagery. It catches the true spirit of the search for coherent radiation in the keV range.

Imagine also the advantages in seeking funding. What official of a funding agency would dare appear before Congress and say he had refused to fund a search for the grayl? The prospect that godless communists might find the grayl before the West would surely also loosen purse strings. A search for the grayl would fit naturally into policies of the present US administration.

Obviously the community of physicists should work to adopt the more euphonious, more hopeful, more exciting acronym of "grayl" for gamma ray laser.

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4/82

Help on pyroelectric history

We are preparing a historical account of the research and development of pyroelectric materials as sensors for infrared detectors, with special emphasis on the period from 1940 to 1960.

We would greatly appreciate receiving information on this subject. Your may send information to

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Japanese mode of thinking

Letters to the editor regarding the Japanese mode of thinking (April, page 91) prompted me to re-read the excellent article by Makoto Kikuchi (September, page 42).

Referring to the "Language Characteristics" chart in that article, a certain dichotomy is apparent:

Language Characteristics

English	Japanese
Digital expression	Analog expression
Logical orientation	Feeling orientation
Linear structures	Pattern structures
Quantitative	Qualitative
Science is easier	Poetry is easier

The English language has characteristics that we sometime refer to as "hard," whereas the Japanese is more flexible, or "soft." Further reflection reveals that there is a strong similarity

between the terms in the chart and those used to characterize the functions of the sides of the human brain—the left side handles logical, serial, analytical processes while the right side controls original, parallel and creative functions. Thus, there appears to be a conflict between the performance of the Japanese people and the implicit characteristics underlying their language.

One is forced to wonder whether there may be a strong dormant creativity there which is currently suppressed by societal patterns, including a rigid educational system. If this is true, perhaps there is a "second shoe" ready to fall upon competitors as the Japanese shed some of their rigid discipline and release their inherent originality.

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4/82

May I add two items to the evidence on the Japanese mind:

- The Japanese predominance at the game of Go, where pattern recognition is required to a highly developed degree
- The failure of the Japanese to crack military codes in World War II (Lieutenant General Seizo Arisue, Chief of Japanese Army Intelligence: "We couldn't crack your codes at all," quoted by David Kahn in *The Code Breakers*, page 328, abridged edition, 1968).

These two points suggest that several aspects of pattern recognition need to be distinguished. A known pattern may be known (or at least suggested) to lie hidden in a mass of confusing detail, and the problem is to extract the pattern. This is perhaps not a creative process, though it can require high logical and computational ability. Call this process "pattern re-recognition."

A second aspect is the recognition of a familiar pattern in situations where previously no such pattern has been noticed. Solving a tough code requires this second process, as does much scientific research.

A third aspect of pattern recognition is deeper. In it a new combination of elements are identified as worth grouping together, and a new mental pattern is created—as distinct from observed—to occur in the physical world. Transformations of science have depended on this kind of process. A description that fitted the observations might be that the Japanese mentality excels in pattern re-recognition rather than pattern recognition or creation.

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5/82

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THE AUTHOR COMMENTS: I very much agree that the game of Go requires a

highly developed degree of pattern recognition. I remember that one of the famous experts of Go once said, "Looking at a certain stage of the game, I recall most of similar patterns which I have ever seen in my old big matches or in historical records, and try to focus on possible best candidates of the next stone. Logical processing for the assessment comes next."

I don't necessarily agree, however, that the *second* and *third* aspects of pattern recognition suggested by Fraser should be distinguished essentially from the first aspect. I know the weakness of Japanese on this aspect, but I think it should rather be attributed to social and cultural differences of our societies. One of the main factors is the "independentness" of people or "individualism." As far as the pattern recognition is concerned, the right hemisphere of the human brain will be playing the major role, regardless of the difference in the "aspects" defined here. Social effect seems to be much more influential.

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5/82

Referees are an audience

Occasionally one reads here about referees and our refereeing systems suggestions that something like challenging to a duel should be worked into the system. The referees are censors, which makes us First-Amendment types hostile. The point I will make and which has occurred to me only recently—perhaps I am slow—is that a subtle effect exists through which the refereeing system enhances publication *quantitatively*. The subtlety follows from the fact that the referee usually *reads your paper*. Now that I knew long ago. My *new* insight is that this reading is itself publication, a transmission of the text's message. I clarify:

The paper, when published, reaches a formal thousand readers or so, because our journals have a small circulation. The majority of these formal recipients do not read it. If requests come back for a hundred copies, that is a lot. Most of these requests are, I think, made by collectors, file-keepers, not people who really *read* the thing. It may be best for us to think that many recipients marvel quietly over it. But I suspect that a goodly portion of the true readers argue with you, and that rarely; one debate per paper, perhaps. If the real meaning of publication is conveyance of the new point to another person, then the skirmish with the referee can itself be the primary act of publication. The secondary act will

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