work relevant to cryptography? The work of Miller (*1*) on primality depends on the truth of the generalized Riemann conjecture, and it is not inconceivable that future factoring algorithms would also depend on basic results in number theory of the same ilk. Would that then mean that all future work on the Riemann conjecture would have to be cleared by the NSA before publication? What about general work on zeta functions that might relate to the Riemann conjecture?

Similarly the work of Rivest, Shamir, and Adleman (*2*) is based on number-theoretic results attributable to Euler and Gauss among others. Does that then mean that all future extensions of Gauss's and Euler's work must be cleared by the NSA before they can be discussed with colleagues?

The threat of possible classification of a research result as well as the knowledge that publication would be delayed due to the extra NSA review is sure to have chilling effects on the eagerness with which nontenured researchers would approach problems relating to cryptography. A major result, therefore, of an NSA review will undoubtedly be less research in this area. Is this one of the NSA's aims?

It seems to me that the scientific community should give much more thought to the question of the implications of prior restraint and should oppose it. If the NSA wants to exercise a policy of prior restraint, it should either be forced to obtain a legislative mandate for such a policy or made to test its current authority in the courts.

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Participatory Management

Amitai Etzioni (Editorial, 22 Aug., p. 863) concludes that "We have overburdened our industrial machine, the modern American economy. . . . We have indulged in overconsumption . . . and underinvestment. This is reflected in most . . . components of the industrial system . . . . Once the broader picture is drawn, the corrective practically suggests itself: a decade or so of reindustrialization of America . . . ."

The manner in which decisions are made and implemented to modernize equipment or plant may have very considerable influence on payoff from the investment. Many organizations overlook this point in their managerial decision-making. As an illustration, a small steel company that I was consulting with a few years ago decided to install a new furnace at the cost of several million dollars. This furnace had the rated capacity to yield x melts a day with fewer workers, compared with the existing furnace from which the company was getting an average of $3/5x$ melts per day. The potentially much more efficient and productive furnace seemed necessary to lower costs and thus make it possible to compete with the Japanese steel imports that had seriously decreased this company's share of the market.

The manner of planning, making, and implementing that decision was (characteristically) unilateral—the company's top management and engineering department just arranged with the furnace manufacturer to build and install the new equipment, without involving the various stakeholder groups (union, workers, foremen, and so forth) in the plan. The result: Because of some design errors (not all relevant personnel were consulted in the planning), inadequate training with the new equipment, and the workers' fear of losing their jobs by potential technological displacement, yield from the new furnace was only about the same number of melts a day as that from the old furnace—until union-management relations improved and a more participatory style of management was introduced.

Etzioni's Rx includes (among his priorities) the shoring up of human capital. One demonstrably effective way to do that—and to improve productivity and product quality in the process—is through joint management-labor efforts at improving the quality of working life. The nature of such efforts, and of conditions needed to optimize the likelihood of sustained success, has been well described in readily available articles and books. Despite evidence offered of outcomes such as markedly improved morale, job satisfaction, productivity, product quality, and overall economic performance, the spread of this managerial modus operandi has been slow.

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Erratum: The correct surname of the first editor of *The Universe at Large Redshifts*, reviewed in the issue of 14 November, p. 781, is Kalckar.