SCI199Y: April 2, 1996

Required for next week: April 9, 1996

- Essay due today

In the Globe and Mail this week

I didn't have so much luck with the G&M this week, so I've reprinted the entries from last week, with typos and other inconsistencies corrected (I hope). The first three items are new; the remaining are repeats.

- "Universities resort to variable tuition", Mar. 27, A10 (J. Lewington). The article describes the trend to differential tuition fees for different programs, and the pros and cons of this. It tries to display two variables on a bar graph, with confusing results.

- "B.C. Faces massive fishery shutdown", Mar. 29, A1&A8 (M. Cernetig).

- "Britain plans partial slaughter of cattle", Mar. 29, A18 (E. Ipsen, International Herald Tribune). Options discussed are: destroying the entire cattle population in Britain (estimated cost $40 billion); destroying herds with recorded cases of the disease, an option which could cripple the $12 billion dollar dairy industry; or destroying older animals without processing, the cheapest and most likely option. The National Farmers Union is quoted as saying 'we must go beyond what science requires in order to restore consumer confidence'.

- "Breast cancer risk linked to Hodgkin's treatment", Mar. 21,A6 (Reuters). "Women who had childhood Hodgkin's disease and were treated with radiation have a much higher risk of developing breast cancer and some other types of solid tumours, according to a new study published in today's New England Journal of Medicine. The research, which shows a breast cancer rate 75 times higher than in the general population,..." An important question touched on in the article but not discussed in detail is whether the radiation treatment causes breast cancer, or whether the two diseases are related in some other way. Can they really mean 75 times higher?

- "Alzheimer's memory testing effective", Mar. 22,A9 (D. Lipovenko). "Memory testing predicts more accurately which elderly people will get Alzheimer's within two years than does a blood test for a gene linked to the disease, a new study shows." The blood test is for the apo E4 gene associated with late onset Alzheimer's. This gene was discovered by University of Toronto researcher Peter St. George-Hyslop.

- "Suicides plague French police forces", Mar. 22, A16 (B. James, International Herald Tribune). According to this article a record 60 police officers killed themselves last year – 50 per cent more than the average for each year since 1988. Although interior minister Michel Debre said that the number of police officers taking their own lives is not proportionately greater than in the population as a whole, the ministry has plans to increase the number of psychologists and social workers working on the force.

- "Reorganized Peruvian rebels returning to deadly old ways", Mar. 22, A16 (D. Koop). An article on the Shining Path guerilla movement, which should win a prize for the most ghoulish graphic: a time series of number of people killed per day by Shining Path between 1980 and 1996.

- "European partners ban U.K. beef", Mar. 22, A1&A10 (D. Wallen). This story is making huge waves in Europe, especially Britain. It is not clear whether a new strain of Creutzfeldt-Jakob brain disease is linked to 'mad cow disease' (bovine spongiform encephaly). Much of the evidence is statistical: in particular there seems to be an elevated rate of C-J disease among farm workers handling cattle feed. Half of Britain's schools have already introduced a ban on beef in children's meals. Another article on Mar. 25 (A16) reports that the British government acknowledged for the first time a possible link between C-J disease and BSE. The most recent 10 cases of C-J disease are believed to have been acquired from beef that was infected before the government introduced safety measures on the handling of meat in 1989. Because the disease has a latent period of 15 months to 30 years, the potential size of the problem is completely unknown. Canada banned beef imports from Britain in 1990.

- "Book stirs debate on synthetic chemicals", Mar. 20, A1&A8 (New York Times). A new book called *Our Stolen Future* provides warnings that synthetic chemicals pose new and serious health threats. The book has been criticized by many scientists, and this article is a balanced account of the two points of view.

- "Quebeckers 'worried about future' ", Mar. 23, A1 (R. Mackie). Léger and Léger still going strong.

Technical Note: voting paradoxes

There are references in both of the articles for today to Arrow's Theorem. It is discussed in another article in *A Mathematician Reads the Newspaper*(p. 153–155), and also in another book by J.A. Paulos called *Beyond Numeracy*. Here is a quote from *BN*, (p.264):

> The mathematical economist Kenneth J. Arrow has demonstrated that there is never a foolproof way to derive group preferences from individual preferences that can be absolutely guaranteed to satisfy these four minimal conditions:
>
> 1. if the group prefers X to Y and Y to Z then it prefers X to Z;
> 2. the preferences (both individual and group) must be restricted to available alternatives;
> 3. if every individual prefers X to Y, then the group does too;
> 4. and no individual's preferences dictatorially determine the group preferences.

And from *MRTN*,(p. 156):

> Recent polls provide an instance of a related mathematical problem, that of preserving coherence when moving from a small set of statements to a larger one. ... The general mathematical question of determining when a large set of statements is jointly consistent is a most intractable one.
>
> These and other principles and ideas may be somewhat abstract and unappealing, but there are no alternatives if we're to have any hope of scaling up our understanding without buckling under the mental strain. As news services and cable news take over some of the transcriptional aspects of reporting, there is room in newspapers for more analytic, comprehensive accounts to supplement (but certainly not replace) the parochial fights, intrigues, and drama that make up the bulk of the news.