

Articles for Review

Contemporary Ideas, Math 105

College of St. Catherine, Spring 2003

10 February 2003

These articles are all on reserve at the library. You are to read and review four of these articles by the end of the term, two of which must be done by midterm (March 21).

For the reviews, you are to read the entire article (or articles if there are more than one) and then write a 1-2 page summary of the article. I will grade the reviews on both your understanding of the article, and also on your ability to communicate. In particular I expect you to write clearly and to use accepted style. Please follow these guidelines:

- Do not use contractions! For example use **does not** instead of **doesn't**
- Check your spelling. If you are unsure of a word's spelling then look it up. In particular you should not misspell technical words from the articles. Remember that spell checking will not catch all misspellings. For example it would not catch the misspellings in "eye herd the knew higher say her sun was sic"
- Type your articles. I will not accept handwritten articles. Since you have plenty of time to finish these articles I will not accept e-mail submissions. Bring a hard-copy to class.

I will be adding some articles to this list as the semester progresses.

For your benefit I have briefly summarized some of the articles, and I have indicated which part of the course they come from.

- **Part I - The Mathematics of Social Choice**

[1] *This article is a comment on the article [4] by Professor Andrew Gelman from the same issue of Chance. The two articles are to be read together and only one review is to be done for both articles*

[3] *A light-hearted look at some interesting paradoxes which can occur in preferential voting schemes. The paradoxes are illustrated using a fictional election of the the mayor of the town where Mr. and Mrs. Smith live. There is some Math involved, but relatively little for the magazine it appeared in.*

[4] *Read this article along with [1] and then write a single review of both of the articles considered together. This article is a general discussion of the way in which our political system enhances or diminishes our political representation. It helps to know quite a bit about our political system in understanding this particular article.*

[5] *A technical article which refers to a law case in which the Banzhaf Power index is discussed. This article might be most interesting to any students who are studying political science. Warning: there is some deep mathematics referred to in this article.*

[6] *A good summary of the current results on the envy-free fair division problem. The Mathematics is hinted at, but does not clutter up the exposition. This article should be fairly easy to understand.*

[7] *This article summarizes the results of the physicist Alan Natapoff who proved that each voter's individual voting power is increased in an election system which employs districts, such as is the case with the U.S. Electoral College.*

[8] *An overview of different election methods which suggests that our plurality method is probably outdated.*

[9] *A good but somewhat detailed article about how the outcome of the 2000 election depended upon the size of the US House, which is currently set by law at 435.*

[10] *A short but very mathematical treatment of the Shapley-Shubik power index applied to a specific real-life example.*

- **Part II - Management Science**

- **Part III - Growth and Symmetry**

- **Part IV - Statistics**

[2] *A summary of all of the statistical and political aspects of conducting the decennial census in the United States. Also contains a brief history of the census in this country.*

References

- [1] Stephen Ansolabehere. Comment on 'voting, fairness, and political representation'. *Chance*, 15(3):27–28, 2002.
- [2] Lynne Billard. The census count: Who counts? How do we count? When do we count. *PS*, 15(3):767–774, December 2000.
- [3] Peter C. Fishburn and Steven J. Brams. Paradoxes of preferential voting. *Mathematics Magazine*, 56(4):207–214, September 1983.
- [4] Andrew Gelman. Voting, fairness, and political representation. *Chance*, 15(3):22–26, 2002.
- [5] Bernard Grofman. Fair apportionment and the Banzhaf index. *American Mathematics Monthly*, pages 1–5, January 1981.
- [6] Will Hively. Dividing the spoils. *Discover*, 16:49–57, March 1995.
- [7] Will Hively. Math against tyranny. *Discover*, pages 74–85, November 1996.
- [8] Erica Klarreich. Election selection: Are we using the worst voting procedure? *Science News*, 162:280–282, 2 November 2002.
- [9] Michael G. Neubauer and Joel Zeitlin. Apportionment and the 2000 election. *The College Mathematics Journal*, 34(1):2–10, January 2003.
- [10] Philip D. Straffin, Jr. The power of voting blocs: An example. *Mathematics Magazine*, 50(1):22–24, January 1977.