20 August 2005. Eric Rasmusen, Erasmuse@indiana.edu

This file is about changes from the third to fourth editions of my book, *Games and Information*

Changes in the Fourth Edition, 2001

Games and Information continues to do well despite the continued flow of books on game theory and industrial organization, and the arrival of a number of specialized books on topics such as contracting and auctions. I've had emails from readers in Canada, Chile, China, Dubai, Germany, Great Britain, India, Iran, Italy, Jamaica, Korea, Malaysia, Man, Mexico, Norway, Portugal, Spain, and the United States. This encourages me to think a new edition would be worthwhile, incorporating, especially, new models and ways to organize thoughts for the the material on asymmetric information in the second half of the book. I have also added more homework problems, and fourteen classroom games, one at the end of each chapter.

Besides the specific changes mentioned below, I have made minor changes throughout the book. I have, for example, renamed the strategies in the Prisoner's Dilemma from *Deny* and *Confess* to *Silence* and *Blame*. The new terms are less conventional, but they do avoid avoid the confusion in the abbreviations C and D with *Cooperate* and *Defect*, two other commonly used terms I dislike because they invite confusion with cooperative games and deviations in strategies. This is an illustration of how I have tried to think of writing up the material in this book.

The chapters that have been most changed are Chapters 10 (Mechanisms), 13 (Auctions), and 14 (Pricing), but there is also new material in other chapters.

Chapter 3 (Mixed Strategies) now has material on Bertrand equilibrium and strategic substitutes and complements formerly in Chapter 14 and material on patent races formerly in Chapter 15. It has a new section on existence of equilibrium, and an example of how a pure strategy can be strictly dominated by a mixed strategy.

Chapter 7 (Moral Hazard I) has a discussion of quasilinear utility functions and the effect of changes in bargaining power.

Chapter 8 (Moral Hazard II) has a new section on Holmstrom & Milgrom's 1991 idea of multitask agency, in which the agent uses more than one kind of effort and generates multiple outputs, only one of which can be well measured.

Chapter 9 (Adverse Selection) has a new version of The Production Game to illustrate the combination of moral hazard with adverse selection.

Chapter 10 (Mechanisms) also has a new version of The Production Game, used to illustrate mechanism design and the new topic of the Maskin matching scheme. I've cut back on the treatment of Myerson's Trading Game, giving just one version instead of three. In general, I have tried to make the notation and analysis of this chapter more uniform, putting special emphasis on the standard outcome that the bad type's participation constraint and the good type's incentive compatibility constraints are

binding. I have moved away from the term "moral hazard with hidden knowledge" in favor of the more direct "post-contractual hidden knowledge".

Chapter 11 (Signalling) contains the new topic of countersignalling (introduced in Feltovich, Harbaugh & To [2002]), under which middle-quality types signal, but the best types deliberately do not, instead relying on other means of conveying their type. I have also replaced the 3rd editions's model of limit pricing as signal jamming with a new, simpler model.

Chapter 13 (Auctions) is the most drastically changed, by far. In earlier editions the treatment of auctions was relatively nontechnical because I wished to avoid the difficult task of trying to convey that intricate but unified literature in the simplified but formal style of the rest of the book. By now, however, enough new treatments of the old material has appeared for the unities in auction theory to be presented more simply, and so I've made the chapter much longer, and technical. This allows me to add topics such as all-pay auctions, proof of the Revenue Equivalence Theorem, the marginal-revenue interpetation of reserve prices, a formal model comparing different auction rules in a common-value auction, Klemperer's Wallet Game, affiliation, and linkage.

Chapter 14 (Pricing) has a section on vertical quality differentiation, by a monopolist and by a duopoly, which also allows discussion of "crimping the product".

I have dropped Chapter 15 (Entry), though it remains available at the website. Its topics had no technical unity, and while they served well as examples of techniques from earlier chapters, I decided that they contained enough examples, especially as new editions have been increasing the number of models in those earlier chapters.

The book's website is at

http://rasmusen.org/GI/index.html

The answers to the odd-numbered homework problems, and teaching notes for the classroom games are at

http://rasmusen.org/GI/funstuff.htm

The classroom games are an innovation with this edition. I have found it helpful in MBA and undergraduate classes to have students take the parts of players in games. The greatest benefit is to force them to think about possible strategies and to realize that models are imperfect descriptions of the real world even in the controlled situation of a classroom— but that they do provide a starting point for thinking about the real world. Most of the games are less useful at teaching actual results because of the many outcomes that can happen, but they are useful as something like case studies, particular histories on which students and teacher can comment. Whether the games are useful for PhD students is less clear, but they, too, need to understand the link between models and reality, something hard to convey in lectures.

I am very interested in hearing feedback on how the classroom games work in particular situations. I have included detailed instructions on practical matters (e.g., what overheads to bring to class, what instructions the players are likely to get wrong),

but I am sure I will hear of improvements in both implementation and explanation. I have included one game for each chapter, but some topics lend themselves to games more than others— mixed strategies, public good dilemmas, and backwards induction, in particular, with contracting being the least suited to games.

Readings in Games and Information continues to be available in hardback and paperback from Blackwell Publishing. Its website is at

http://rasmusen.org/GI/reader/rcontents.htm