August 21, 1999 errata for Eric Rasmusen's Games and Information, Second Edition, arranged by page number. Updated December 8, 2000.

This list of errors is arranged by page number. A separate ¯le arranges them by date of discovery. I have tried to star the mistakes most likely to cause trouble, since most of the mistakes listed here are fairly obvious typos.

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Materials for for the second edition of Games and Information can be found at:

http://pacioli.bus.indiana.edu/erasmuse/GI/edition2.htm

To view Acrobat (.pdf) ¯les, you will need to download ‹A HREF="http://www.adobe.com/ Acrobat Reader‹/A›

If you don't use the web, just let me know and I'll send you hardcopy.

Many of the game descriptions lack the gray boxes that they are sup- posed to have. This includes the games described on pages 260, 276, 280, and 349.

p. 23. Teaching note: \Boxed Pigs" illustrates Nash equilibrium, but it is also possible to ¯nd the equilibrium of this game by iterated deletion of dominated strategies. There is no error here, but students may get confused.

p. 33. Question 1.2c. should be changed to:
(1.2c) Is every iterated dominance equilibrium made up of weakly domi- nant strategies?

p. 43. (found by Kyung-Hwan Baik, Appalachian State/Sung Kyun Kwan U., March 29, 1996). In Table 2.3, J should be J_4.

*p. 51. In Figure 2.7, the labels on the two moves proceeding from node S_1 should be switched: Small to Large, and Large to Small.

* p. 53: (Feb 1997, Chad Zutter) the very ¯rst word on this page should

be \Jones", not \Smith".

p. 61. (found by Kyung-Hwan Baik, Appalachian State/Sung Kyun Kwan U., March 29, 1996). The two equilibria that p. 59 says are boldfaced in Table 2.7 do not have the boldfacing. Those two equilibria are

fSue; Settle; Try); (Offer; Offer)g and fSue; Refuse; Try); (Resist; Resist)g.

p. 61, the payo® under (Sue;Settle,Try),(O®er,O®er) should be 0.15 (-0.15,-0.15), not 0.15 (0.15,-0.15)

p. 90 : \Curiatius", not \Curatius".

p105. (David Rosenbaum) In paragraph beginning "In determining the settlement...", third line should have defendant, not plainti®.

p. 111 (Kyung Hwan Baik, May 20, 1996). On page 111, 13th line from the top, "In section 3.4,..." should be "In section 3.5,..."

*p. 113. Second full paragraph, should be $V < C$, not $V > C$ (thanks to Michael Mesterton-Gibbons)

*p. 118. Patrick Chen (Feb 1997) The probability next to $Wait$ for Smith should be 1 ¡ μ, not μ.

p. 119. Question 4.4d should be added to the book:
  (4.4d) Which three games that have appeared so far in the book resemble \Grab the Dollar"?

p. 130. Four lines of text from the bottom: change \Table 5.2" to \Table 5.3" .

p. 141, problem 5.2. Should be \where $x \in (0; c]$ and the seller becomes liable for x at the time of sale", not \where $x \in (0; c]$". (clarifying addition)

Page 141. (David Rosenbaum) Question 5.2 refers to the quality game in section 5.8. The quality game is in section 5.4.

p. 151: (Feb 1997, Chad Zutter) Under Passive Conjectures, a parenthesis is missing. It should be $Prob(Hater|Apply) = 0.9$.

*p. 152. (January 8, 1996. Found by Hal Wasserman of Berkeley.) The sentence, \The following is the unique perfect Bayesian equilibrium." should become

``The following is the unique perfect Bayesian equilibrium in pure strategies.[1]''

January 8, 1996. Found by Hal Wasserman of Berkeley.

*p. 154. ``Even if the entrant is weak and Nature tells this to the incumbent, the entrant would choose Stay Out, because he does not know that the incumbent knows, and his expected payoff from Enter would be $-7.5 (= [0.9 + 0.05][-10] + 0.05[40])$.''

should become

``Even if the entrant is strong and Nature tells this to the incumbent, the entrant would choose Stay Out, because he does not know that the incumbent knows, and his expected payoff from Enter would be $-5 (= [0.9][-10] + 0.1[40])$.''

p. 156, first paragraph. Should be ``payoff is just 0.1'' not ``payoff is just 1''

p. 183 (April 1999, Axel Adam-Mueller and Stamen Gortchev). Figure 7.4. The line labelled $\mu_i = 6$ should be labelled $\mu_i = 3$.

p. 185, line 1. It should not read $\mu_i = 6$, but rather $\mu_i = 3$.

p. 186, Figure 7.5. C_3 should be immediately above the 6 on the horizontal axis.

p. 196, Order of play for PG VI, move (1). Should be ``the agent a wage'', not ``the worker a wage''.

p. 208 (November 1998, Kyung Hwan Baik). Equation (9) has (1-0) in the last exponent, but it should have $(1 - \mu)$.

p. 216. Change: ``Each student i reports a number evaluating other students in the class.'' to ``Each student i reports his numerical evaluation of the other students in the class.''

p. 219. First line of Problem 8.1. Change ``$U = \frac{p}{w - \theta e}$'' to ``$U = \frac{p}{w - \theta e}$''

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[1] There exists a plausible mixed-strategy equilibrium too: (Entrant : Enter if Strong; Enter with probability $m = .2$ if weak; Incumbent : Collude with probability $n = .2$). The payoff from this is only 150, so if the equilibrium were the one in mixed strategies, ignorance would not help.

p. 225, Order of Play. Should be \The seller accepts or rejects" not \The buyer accepts or rejects."

p. 227 (August 1998, Wendy Liu). Figure 9.2 should have $\overline{theta}$ on the horizontal axis, not μ.

p. 233. (November 1998, Kyung Hwan Baik). In some printings, Figure 9.5 might have the lavels switched on the dotted and solid indi®erence curves for Uunsafe and Usafe. To check whether it is correctly labelled, see if C2 is outside (away from the axis) of the Usafe curve, as it should be.

p. 233 (November 1998, Kyung Hwan Baik). Line 8 says, "The insurance company is risk neutral, so its indi®erence curve is the straight line ! F if Smith is a customer regardless of his type." This is correct, but ambiguous. A better phrasing would be:
"The insurance company is risk neutral, so its indi®erence curve is a straight line. If Smith will be a customer regardless of his type, the company's indifference curve based on its expected pro¯ts is ! F (although if the company knew that Smith was Safe, the indi®erence curve would be steeper, and if it knew he was Unsafe, the curve would be steeper)."

p. 259. (November 1998, Kyung Hwan Baik). The screening game order of play is di®erent here than in the general screening extensive form on page 167. I should redo the form on p. 167. It does not a®ect the analysis at all, but I should be consistent.

p. 265. The Matthews and Moore article was published in 1987, not 1981.

p. 268. Substitute

\I will use speci¯c numbers for concreteness. The entrepreneur could signal that the stock has the high mean value, ¹ = 120, in two ways: (a) retaining a high percentage, ® = 0:4, and making the initial o®ering at a high price of $P_0 = 90$, or (b) retaining a low percentage, ® = 0:3, and making the initial o®ering at a low price, $P_0 = 80$. Figure 10.4 shows the di®erent combinations of initial price and fraction retained that might be used. If the stock has a high variance, he will want to choose behavior (b), which reduces his risk. Investors deduce that the stock of anyone who retains a low percentage and o®ers a low price actually has ¹ = 120 and a high variance, so stock o®ered at the price of 80 rises in price. If, on the other hand, the entrepreneur retained ® = :3 and o®ered the high price $P_0 = 90$, investors

would conclude that μ was lower than 120, but the variance was low also, so the stock would not rise in price. The low price conveys the information that this stock has a high mean and high variance rather than a low mean and low variance."

for:

\Using particular numbers ... smaller discount and be willing to hold a larger fraction. Figure 10.4 shows the di®erent combinations of initial price and fraction retained that might be used."

(Peter Gordon, University of the West Indies)

p. 314. Top line of the equations should have $\backslash p_a < p_b$", not $\backslash p_i < p_b$".

p. 315. Equation (18a) should have $\backslash p_a < p_b$", not $\backslash p_a < p_a$".

p. 315 (clari¯cation, August 1998) Add this paragraph after equation (18).

Here is why equations (18c) and (18d) look the way they do. If Brydox has the lower price, all consumers will want to buy from Brydox if they buy at all, but only 70 will be able to. If Brydox's price is more than 50, then less than 70 will want to buy at all, and so 0 customers will be left for Apex{ which is equation (18c). If Brydox's price is less than 50, then Brydox will sell 70 units, and the residual demand curve facing Apex is as in equation (17), yielding equation (18d).

p. 326: The ¯rst line of equation (52) should have a negative sign in front of it (the second and third lines are correct).

p. 328. What is now \ From equation (13.??), $\frac{@\mu_n}{@p_n}$ is increasing in , so $\mu_n(p_n; p_{i\ n};\ ) \ \mathop{?}\ \mu_n(p_n^0; p_{i\ n};\ $ "

should be

`` From equation (13.??), $\frac{@\mu_n}{@p_n}$ is increasing in , so $\mu_n(p_n; p_{i\ n};\ ) \ \mathop{?}\ \mu_n(p_n^0; p_{i\ n};\ )$"

p. 334. Add to the Appendix B glossary: maximand A maximand is what is being maximized. In the problem \Maximize $f(x; \mu)$ by choice of x", the maximand is f.

p. 335. Should be: \but that the lower durability makes it credible to high-valuation buyers that the seller expects their business in the future and will not lower his price."

not

\but that the lower durability makes it so credible to high-valuation buyers that the seller expects their business in the future and will not lower his price."

(drop the \so")

p. 336. The Kreps and Scheinkman article was published in 1983, not 1985.

p. 338. Should be:

\In the durable monopoly model this would happen if the high-valuation buyers bought in the ¯rst period and thus were absent from consideration by the second period. In the bargaining model this would happen if the buyer rejected the ¯rst-period o®er and the seller could conclude that he must have a low valuation and act accordingly in the second period."

not

\In the durable monopoly model this would happen if the high-valuation sellers bought in the ¯rst period and thus were absent from consideration by the second period. In the bargaining model this would happen if the seller rejected the ¯rst-period o®er and could conclude that he must have a low-valuation and act accordingly in the second period."

p. 339. (found by Kyung Hwan Baik) Underneath equation (81) it should read \where ® > ¯" rather than \where ® ¡ ¯".

p. 346. Should be:

\ Because equation (6) uses the di®erence between the two ¯rm's values of f, it is relative e®ort which determines the winner."

not

\Using the di®erence between the f functions for each ¯rm makes it relative e®ort which matters."

6

p. 348, 1st paragraph of 14.2. Should be \predatory pricing is charging a low price", not \predatory pricing is charging a high price".

* p. 351 (March 1997, Peter-John Gordon): In the middle of the page it should be: \Equating these two payo®s and solving for ¯ yields ¯ = $\frac{MR_1 \text{¡} R_2}{(M \text{¡} 1)R_2}$, which is..."

p. 351 (March 1997, clari¯cation): Just above inequality (21), say: \...either of two conditions, both of which are found by substituting the equilibrium value of ¯ into expression (20). The ¯rst is if R_0 is small enough, a su±cient condition for which is"

p. 370. Formula (2) should be s¤ = $\frac{2 \pm \mu}{n + \mu}$.

p. 382. (Erik Johannessen)

The problem answer on p. 382 is wrong. The arrows and explanation for Scarface I are wrong.

* 1.3: **Timmy and Scarface.** Players Timmy and Scarface are caught in a game like the \Prisoner's Dilemma" of Table 1.1, except that Scarface already has a criminal record, so he will always get a prison term at least 5 years greater than Timmy, regardless of who confesses and who denies. Construct an outcome matrix (with Scarface as Row) and ¯nd the Nash equilibrium for this game. (Note: There is more than one game that reasonably ¯ts this story.)

<u>Answer.</u> The story is too vague to tell us exactly how the payo®s change from Table 1.1, so I will give two possibilities. Table A.2 is constructed by just subtracting 5 from each of Scarface's payo®s in the original \Prisoner's Dilemma" in Table 1.1, except for subtracting 15 from his payo® for (Confess, Deny). In equilibrium, Scarface denies and Timmy confesses.

Table A.2 \Scarface I"

		Timmy	
		Deny	Confess
	Deny	¡ 6; ¡ 1 !	-15,0
Scarface:		"	#
	Confess	¡ 15; ¡ 10 !	¡ 13; ¡ 8

Payo®s to: (Scarface, Timmy).

Table A.2 is a little far-fetched, because it implies that when Scarface confesses, Timmy's denial increases Scarface's punishment, as well as Timmy's. This is possible. Maybe the judge wants to punish Timmy more (for denying), but must always punish Scarface more than Timmy. Table A.3 shows another game to ¯t the story, one which preserves the \Prisoner's Dilemma" property that a prisoner is treated more leniently for providing useful evidence.

Table A.3 \Scarface II"

		Timmy	
		Deny	Confess
	Deny	¡6; ¡1 !	¡30; 0
Scarface:		"	#
	Confess	¡13; ¡8 !	-20,-5

Payo®s to: (Scarface, Timmy).

In both new games, (Confess; Confess) is the Nash equilibrium, even though Confess is not a dominant strategy for Scarface (he would Deny if he thought Timmy would go along with him).

p. 395. (Clari¯cation) Problem 5.3e. Add: \if payo®s are received at the beginning of each period". It would have been better to specify payo®s at the end of each period.

p. 395. The answer to question 5.5a should have r = R=(T ¡ R) rather than r = (T ¡ R)=R.

p. 400. In 6.1f, the ¯gure 26 2/3 should be replaced by 23 1/3.

p. 404. (Clari¯cation) The problem answer currently says:

\(7.5a) Will the worker be paid anything if he makes a mistake?
Answer. Yes. He is risk averse, unlike the principal, so his wage should be even across states."

It would be clearer as:

\(7.5a) Will the worker be paid anything if he makes a mistake?
Answer. Yes. He is risk averse, unlike the principal, so his wage would be even across states ideally; that is, whether he made a mistake or not. Paying him zero when a mistake occurs would stop him from taking

the job, since the ¡ 10=w term in his utility function means he would have a positive probability of a utility of negative in¯nity."

p. 408. In problem 9.1d: \compared to 1.57 (=0:5log(10:99)+0:5log(2:01))" should become \compared to 1.50 (=0:5log(9:99) + 0:5log(2:01))" .

(found by Richard Tucker, Indiana U. poli sci)

p. 410 (April 1999), Francisco Galera) In 9.3c, the answer should be $®^¤ = 1$, not 0.5. Also, I have rewritten this problem and its answer generally, and can send the new, enlarged version to anyone who desires it.

p. 418. Should be

\ Answer. The utility point at which Jones has all the molasses and Smith has the mu±ns is now (1000, 350),"

not

\ Answer. The utility point at which Jones has all the molasses and Smith has the molasses is now (1000, 350),"

p. 419. Clari¯cation: Add a sentence at the end , changing,
\11.5: A Fixed cost of Bargaining and Incomplete Information. Smith and Jones are trying to split 100 dollars. In bargaining round 1, Smith makes an o®er at cost c, proposing to keep S_1 for himself."
to \11.5: A Fixed cost of Bargaining and Incomplete Information. Smith and Jones are trying to split 100 dollars. In bargaining round 1, Smith makes an o®er at cost c, proposing to keep S_1 for himself. Smith does not have the option to refrain from making this ¯rst o®er. "

p. 433. This is OK as it stands. (The Rs refers to two 1-dimensional real lines)

p. 449. Chuan-Yang, not Chuan-Yank.

p. 440. Theorem B.2, ¯rst paragraph, should have: y ¸ z (not y z), so y is the \big" equilibrium. (found by Mathias Erlei, U. Muenster, March 29, 1996)

p. 457. McMillan, John (1992) Games, Strategies, and Managers: How Managers can use Game Theory to Make Better Business Decisions. Oxford,

Oxford University Press, 1992.

not

McMillan, John , Games, Strategies, and Managers: How Managers can use Game Theory to Make Better Business Decisions. Oxford, Oxford University Press, 1992.

p. 463. Scarf, Herbert.... The \63n" should be deleted.

Not yet paginated:

If I talk about Rohm and Haas and arsenic in denture plastic, I am probably relaying a mistaken story. See McAfee and Deneckere, p. 158-9, JEMS, 1996, for a better story.