Advertising: Exercises

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Problem 1

You are the CEO of TOTAL RECALL, Inc., a monopolist producer of facial oil skin-life extender. You need to determine the advertising budget for next year. The marketing department has provided you with three important items of information: (a) The company is expected to sell $10 million worth of the product; (b) it is estimated that a 1% increase in the advertising budget would increase quantity sold by 0.05%; (c) it is estimated that a 1% increase in the product's price would reduce quantity sold by 0.2%.
(a) How much money would you allocate for advertising next year if you applied the Dorfman-Steiner rule?
(b) Suppose the marketing department has revised its estimation regarding the demand price elasticity to a 1% increase in price resulting in a reduction of quantity sold of 0.5%. How much money would you allocate to advertising after getting the revised estimate? Why has the optimal advertising expenditure gone down?

Problem 2 (Problem 13.7 from Cabral)

Your company sells expensive, branded fountain pens. There are 100,000 people aware of your pens. Each of these 100,000 peoples has his or her own willingness to pay for your pens. These willingness-to-pay numbers are uniformly distributed between $0 and $50. So your demand curve is given by $Q = 100,000\,(1 - p/500)$. Your marginal cost per pen is $100. Well-versed in economics, you are pricing your pens at $300 each, and selling 40,000 pens, generating a profit of $8 million.

You have just become brand manager for these fountain pens. The previous brand manager engaged very little in advertising, but you are considering running a major promotional campaign to build your brand image and visibility. You are considering two possible advertising campaigns; call them "Build Value" and "Expand Reach". You will run either one of these campaigns or none at all; you cannot run both.

The "Build Value" campaign will not reach any new potential customers, but it will

increase the willingness-to-pay of each of your existing 100,000 customers by 25%. This campaign costs $2.5 million to run.

The "Expand Reach" campaign will expand the set of potential customers by 25%, from 100,000 to 125,000. The 25,000 new customers reached will have the same distribution of willingness-to-pay as the preexisting 100,000 potential customers (namely, uniformly distributed between $0 and $500). This campaign costs $1.8 million to run.

(a) If your choice is between running the "Build Value" campaign and running no campaign at all, would you choose to run the "Build Value" campaign? Show your calculations.

(b) If your choice is between running the "Expand Reach" campaign and running no campaign at all, would you choose to run the "Build Value" campaign? Show your calculations.

(c) What choice would you make in this situation: Run the "Build Value" campaign, run the "Expand Reach" campaign, or run neither?

Bonus Problem: Signalling Games

Englefield Green, 1852. The last duel in England.

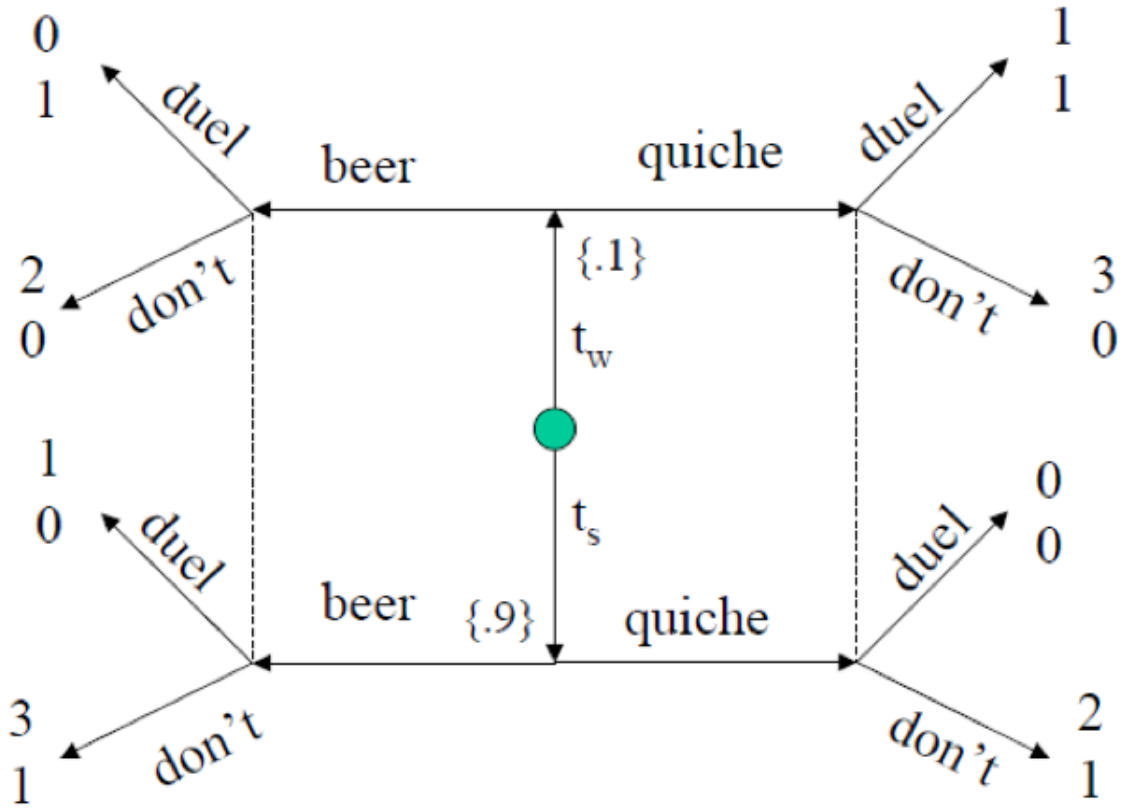
It was between two French refugees, Lt. Frederic Constant Cournet and Emmanuel Barthelemy. Cournet was supposed to have been the better prepared for a sword duel. Barthelemy, an extremely questionable individual (responsible for at least two murders by 1852), manipulated Cournet into challenging him (supposedly over comments Cournet made about Barthelemy's girlfriend), and chose pistols for the weapon. He killed Cournet, and was subsequently arrested for murder. However Barthelemy managed to convince the jury that it was not a homicide as in the normal sense of the word, and was acquitted.

Suppose Cournet can observe what Barthelemy had for breakfast but cannot observe if Barthelemy is strong or weak.

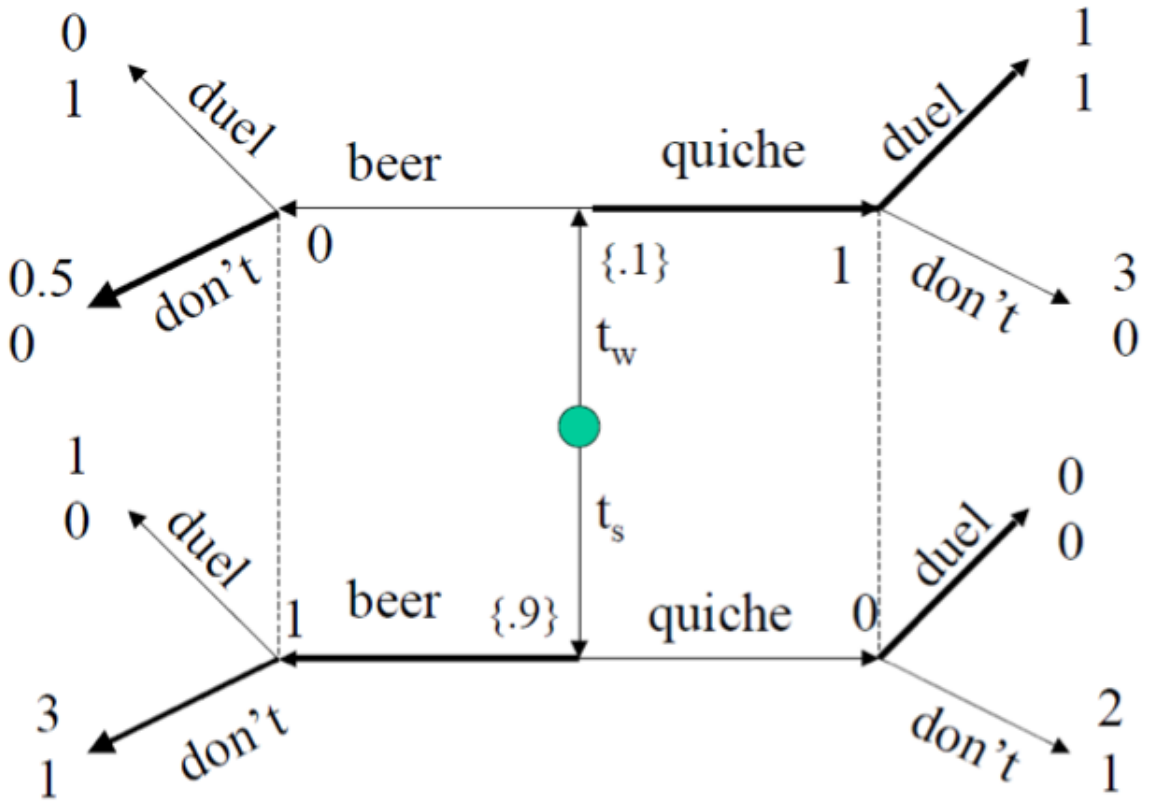
Definitions:

A pooling equilibrium is an equilibrium in which all types of sender send the same message.

A separating equilibrium is an equilibrium in which all types of sender send different messages.



Is there a separating (informative) equilibrium in this game? What about in the next game?



Should Cournet choose to fight Barthelemy in this equilibrium after observing him have beer for breakfast?