

1-1-1997

Common Knowledge as a Barrier to Negotiation

Ian Ayres
Yale Law School

Barry Nalebuff

Follow this and additional works at: http://digitalcommons.law.yale.edu/fss_papers



Part of the [Law Commons](#)

Recommended Citation

Ayres, Ian and Nalebuff, Barry, "Common Knowledge as a Barrier to Negotiation" (1997). *Faculty Scholarship Series*. Paper 1498.
http://digitalcommons.law.yale.edu/fss_papers/1498

This Article is brought to you for free and open access by the Yale Law School Faculty Scholarship at Yale Law School Legal Scholarship Repository. It has been accepted for inclusion in Faculty Scholarship Series by an authorized administrator of Yale Law School Legal Scholarship Repository. For more information, please contact julian.aiken@yale.edu.

COMMON KNOWLEDGE AS A BARRIER TO NEGOTIATION

Ian Ayres* & Barry J. Nalebuff**

| | |
|--|------|
| INTRODUCTION | 1631 |
| I. THE IMPACT OF HIGHER-ORDER INFORMATION | |
| ON STRATEGIC BEHAVIOR | 1636 |
| A. Example No. 1: How Big Is the Strike Fund? | 1636 |
| B. Example No. 2: Rationality and the Prisoner's Dilemma | 1640 |
| II. "VALUE CLAIMING" TALK | 1642 |
| A. Don't Claim So Much Because Your BATNA | |
| Isn't as Strong as You Think | 1643 |
| 1. Example No. 3: A Threat of Divorce | 1643 |
| 2. Example No. 4: An Opportunistic Threat | 1644 |
| 3. Example No. 5: A Gratuitous Threat | 1646 |
| 4. Example No. 6: A Threatening Lie—An Example of | |
| Second-Order Communication | 1648 |
| B. Don't Claim So Much Because My BATNA | |
| Is Stronger than You Think | 1649 |
| 1. Example No. 7: Threatening Artificial Scarcity | 1650 |
| III. "VALUE CREATION" TALK | 1652 |
| A. Example No. 8: Misfeasance | 1652 |
| B. Example No. 9: Malfeasance—An Example of | |
| Second-Order Communication | 1654 |
| CONCLUSION | 1656 |

INTRODUCTION

When we communicate one thing, we often unavoidably send other messages. To start with a simple example, imagine that Ian says to Barry, "My mother's name is Karen." From Ian's communication, Barry learns more than just the underlying bit of information (mom's name). The communication also lets Barry know that: (a) Ian knows his mom's name, and (b) Ian knows that Barry knows Ian's mom's name.

What is less well understood is that *when we teach, we learn*. When Ian tells Barry about his mom, Ian learns several things. For example, by

* William K. Townsend Professor, Yale Law School. <<http://elsinore.cis.yale.edu/lawweb/faculty/ayrespub.htm>>.

** Milton Steinbach Professor, Yale School of Management. <<http://mayet.som.yale.edu/coopetition>>. Conversations with Bruce Ackerman, Adam Brandenburger, Jennifer Brown, Clark Freshman, Eric Green, and Kenji Yoshino were very helpful. We want them to know we appreciate their help and know, too, that we know they know how helpful they were.

telling Barry, Ian now knows that Barry knows Karen is the name of Ian's mom. Direct communication of a fact can potentially create two infinite series of knowledge.¹ If we symbolize the underlying bit of information (Karen is Ian's mom) as \textcircled{K} , then Ian's communication might create the following hierarchy of beliefs:

| TABLE 1: POTENTIAL HIERARCHY OF BELIEFS | |
|---|---|
| <i>Ian's Knowledge</i> | <i>Barry's Knowledge</i> |
| 1a. Ian knows \textcircled{K} | 1b. Barry knows \textcircled{K} |
| 2a. Ian knows Barry knows \textcircled{K} | 2b. Barry knows Ian knows \textcircled{K} |
| 3a. Ian knows that Barry knows that Ian knows \textcircled{K} | 3b. Barry knows that Ian knows that Barry knows \textcircled{K} |
| and so on . . . | and so on . . . |

If Ian's communication succeeds in creating both of these infinite series, economists would say that the underlying fact is "common knowledge."² Table 1 makes clear how directly communicating a simple fact can produce other types of knowledge. Ian begins with what we will call "first-

1. Of course, for this to happen, it must be apparent to both the speaker and listener that the listener heard and understood what the speaker was saying. In many contexts, it will be unclear whether the listener received the message. (Indeed, we will argue that such ambiguity may not facilitate settlement.) But in other contexts—for example, if Barry's response confirms that he understands ("Oh really, my mother is named Karen too")—it will be clear as a practical matter that common knowledge is created.

2. The term is usually defined more compactly: "Something is common knowledge if it is known to each player, and, in addition, each player knows that the other player has this knowledge; knows that the other person knows the player knows it; and so forth." DOUGLAS G. BAIRD ET AL., *GAME THEORY AND THE LAW* 304 (1994).

For pioneering work on common knowledge, see Adam Brandenburger, *Knowledge and Equilibrium in Games*, 6 J. ECON. PERSP. 83 (1992). See also Robert J. Aumann, *Agreeing to Disagree*, 4 ANNALS OF STAT. 1236 (1976); John Geanakoplos, *Common Knowledge*, 6 J. ECON. PERSP. 53 (1992); Paul Milgrom & Nancy Stokey, *Information, Trade and Common Knowledge*, 26 J. ECON. THEORY 17 (1982).

In both common parlance and the common law, the term "common knowledge" merely means that an underlying piece of information is generally known. See, e.g., *Garrison v. Heublein, Inc.*, 673 F.2d 189, 192 (7th Cir. 1982) (holding that vodka was not unreasonably dangerous because the dangers involved in the use of alcohol are "common knowledge"); *Caldwell v. Knight*, 92 Ga. Ct. App. 747, 89 S.E.2d 900 (1955) (stating that the "common knowledge" doctrine does not require expert evidence when the reasonableness of the defendant's conduct involves matters within the collective common knowledge of the jury). In terms of Table 1, this definition only requires "first-order" knowledge (1a and 1b) and not the higher-order knowledge required under the game-theoretic definition.

order" information (1a) and wants to convey this to Barry (1b). But in doing so, Ian may be teaching Barry "higher-order" information as well (2b, 3b, 4b, etc.). Moreover, by teaching Barry, Ian may unavoidably acquire higher-order information himself (2a, 3a, 4a, etc.).³

Now, for something like "my mom's name is Karen," it doesn't matter that "I know you know" and "you know I know you know," but in other situations it does. Indeed, the purpose of this Article is to show that during negotiations, parties will often want to communicate first-order information, but will not want to communicate to others (or teach themselves) higher-order information. We will show that common knowledge itself can be a barrier to efficient negotiation. Even when the communication of first-order knowledge facilitates agreement, the acquisition of higher-order knowledge at times can cause negotiations to unravel.

Our thesis contradicts accepted wisdom. In many negotiation models, common knowledge of crucial facts would facilitate trade.⁴ In these models private information is a "transaction cost" that can impede negotiation.⁵ But we will show that preserving ignorance about higher-order information can actually promote trade.

This is where mediation comes in. Mediators can break the link between communicating first-order information and communicating higher-order pieces of information. If a mediator caucuses first with Ian and then tells Barry \otimes , Barry will have acquired the first-order knowledge, but he may not know that Ian knows \otimes (2b), and Ian may not know that Barry knows \otimes (2a), and so forth.⁶ The use of caucus mediation can usefully prevent \otimes from becoming common knowledge between Ian and Barry.

3. Notice that these two infinite series are linked together in a kind of "double-helix" structure. In its strongest sense, (3a) implies (2b), which in turn implies (1a); and, (3b) implies (2a), which implies (1b). Higher-order knowledge implies certain forms of lower-order knowledge (but not vice versa). However, if Barry and Ian merely "believe" certain things—and hence may be mistaken—then a higher-order belief (for instance, 3a) would not necessarily imply a lower-order belief (2b).

4. See MARTIN J. OSBORNE & ARIEL RUBINSTEIN, *A COURSE IN GAME THEORY* 117-31 (1994).

5. See Ian Ayres & Eric Talley, *Solomonic Bargaining: Dividing a Legal Entitlement to Facilitate Coasean Trade*, 104 *YALE L.J.* 1027 (1995).

6. In caucus mediation, it is true that:

- (a) when Ian tells the mediator, \otimes may become common knowledge between Ian and the mediator; and
- (b) when the mediator tells Barry, \otimes may become common knowledge between the mediator and Barry.

But, making \otimes common knowledge between the mediator and each of the individual parties may not be as destructive to negotiation as making \otimes common knowledge between the individual parties themselves—because the mediator will usually not have an ongoing relationship with the individual parties.

Caucus mediation can communicate \mathbb{K} (first-order knowledge) without creating common, higher-order knowledge among the parties. Moreover, even without caucus mediation, certain existing, indirect modes of speech might still communicate first-order information without creating common-knowledge problems. Though there is a trade off: communicating indirectly reduces the chance that the listener will understand the first-order information but reduces the chances of communicating higher-order information.

In this Article, we will work through a series of examples showing how mediators can facilitate agreement by *preventing* the creation of common knowledge.⁷ In each example, the communication of first-order information (\mathbb{K}) lubricates trade, but the communication of higher-order information impedes trade. Direct communication at times is unhelpful because the listener also learns higher-order information (Barry knows that Ian knows \mathbb{K}), and at other times it is unhelpful because the speaker learns higher-order information (Ian knows that Barry knows \mathbb{K}) that he would prefer not to know.

Our examples are organized around the “value claiming”/“value creation” dichotomy introduced by David Lax and James Sebenius.⁸ Communicating first-order information can be valuable in either type of negotiation. In distributive negotiations (value claiming), it is often useful for one side to communicate to the other side “You are claiming too much, because” In integrative negotiations (value creating), it is often useful for one side to communicate “You could create more value if you would”

The problem is the ellipses. First-order information often concerns *threats* and *insults*. In a distributive negotiation, it can be both individually and jointly useful for one party to explain why the other side’s best alternative to negotiated agreement (BATNA) is lower than she thinks.⁹ The problem is that the way a party makes the other side’s BATNA low is

7. Our Article extends the thesis of Jennifer Brown and Ian Ayres that the uniquely mediative role for mediators is to control the flow of information between the parties. See Jennifer Gerarda Brown & Ian Ayres, *Economic Rationales for Mediation*, 80 VA. L. REV. 323 (1994).

8. See DAVID A. LAX & JAMES K. SEBENIUS, *THE MANAGER AS NEGOTIATOR* 117–53 (1986). In distributive negotiations—in which the parties are merely trying to determine whether there are gains from trade and how to divide them—value claiming predominates as parties rivalrously claim different shares of the gains from trade. In contrast, integrative negotiations present opportunities for the parties to create additional value by varying the terms of trade—so the parties must engage in a mixture of “value claiming” and “value creating” activity.

9. See *infra* note 24. A negotiator wants her adversary to have a weak BATNA. More than that, she wants her adversary to believe that she has a weak BATNA because, ultimately, her adversary’s perceptions will determine her willingness to agree.

typically not very nice: "In the absence of an agreement, you will have a low payoff because we will do something that will hurt you (break off relations, bring suit, etc.)." But higher-order information about threats can destroy value. If it becomes common knowledge that Ian has threatened Barry, then Barry may be reluctant to trust Ian. And Ian (the threatener) may be less likely to trust Barry. After all, how can Ian trust Barry if Ian knows that Barry knows that Ian is willing to exploit weakness?

Common knowledge can also inhibit integrative bargaining. To tell the other side how she could increase the joint gains from trade often entails revealing existing weaknesses about the other side. To create additional value, a party sometimes needs to implicitly insult the other side. As with threats, insults that become common knowledge can destroy value. An employer might want to tell an employee that they could jointly have a more valuable relationship if the employee stopped stealing. But, directly communicating this information can make both the employer and the employee less willing to continue the relationship. How can the employee continue to work with someone who knows she has been stealing? And how can the employer continue to employ someone who knows that stealing is allowed?

It is often difficult to prevent second-order information from being communicated along with first-order information. If I tell a mediator a particular threat, I have a pretty good idea that the other side will be told.¹⁰ But it is less certain whether the other side will know that I know (and even less certain I will know that the other side knows that I know). Because higher-order knowledge is contingent on a chain of beliefs, uncertainty at lower levels may become exponentially magnified at higher levels.¹¹ Even when mediators cannot prevent the communication of second-order information, they can successfully create uncertainty about the more attenuated forms of higher-order information.¹² And we will show

10. Some mediators claim they will only pass on information with a speaker's consent, but in practice, mediators indirectly disclose information garnered from one side during caucusing. See Jonathan M. Hyman, *The Model Mediator Confidentiality Rule*, 12 SETON HALL LEGIS. J. 17 (1988); see also Brown & Ayres, *supra* note 7, at 391-92.

11. If there is an 80% chance that first-order knowledge is communicated, an 80% chance that the sender knows about the communication, and an 80% chance that the receiver knows that the sender knows, then there is only a 51% chance of third-order knowledge ($0.8 \times 0.8 \times 0.8$).

12. Professors Susskind and Cruikshank, for example, have described how mediators can preserve uncertainty in caucus mediation:

A skilled intermediary can, in private meetings with the other participants, explore whether they would be willing to give up Y and Z in exchange for X. This might be phrased, "What if I could get them to give up X? Would you trade Y and Z?" Of course,

that controlling third- and fourth-order information can at times beneficially affect negotiations.

The remainder of the Article is organized in three parts. Part I shows how negotiations can be crucially affected by beliefs about higher-order information. Part II presents a series of examples concerning "value claiming" talk. Part III discusses examples concerning "value creating" talk.

I. THE IMPACT OF HIGHER-ORDER INFORMATION ON STRATEGIC BEHAVIOR

A problem with most game-theoretic models is that they make one of two extreme assumptions about information. They either assume that particular pieces of information (K) are private information, or they assume that particular pieces of information are common knowledge. But as our previous discussion makes clear, there are literally an infinite number of intermediate assumptions that might be made. This discussion will show that assuming common knowledge is not just an innocuous proxy for situations in which both parties know a particular fact. Even when both sides know a particular piece of first-order information, the parties' beliefs about higher-order information can crucially affect how they behave and shape the ensuing equilibrium. For now, we will not concern ourselves with how players acquire information; we seek only to establish that higher-order information matters.

A. Example No. 1: How Big Is the Strike Fund?

To illustrate the importance of higher-order beliefs, we will begin with a story about a labor negotiation occurring before and possibly during a strike. For the sake of argument, imagine that both Labor and Management are intransigent, having made incompatible take-it-or-leave-it offers concerning job security. The only way to resolve the dispute will be for

the neutral already knows that such a trade is possible. He or she must phrase the question, though, in a what-if format to protect the confidentiality of the information secured earlier.

LAWRENCE SUSSKIND & JEFFREY CRUIKSHANK, *BREAKING THE IMPASSE: CONSENSUAL APPROACHES TO RESOLVING PUBLIC DISPUTES* 147 (1987).

Brown and Ayres have suggested that mediators should be more forthright about how they indirectly disclose caucus information. See Brown & Ayres, *supra* note 7, at 327, 392. But our analysis suggests that in a caucus mediation, the disputants may want the mediator to simultaneously: (a) reveal caucus information, and (b) say that she is not revealing. The fiction of mediator confidentiality may be a useful device to preserve uncertainty about higher-order information.

one side to cave in and accept the other's position.¹³ The question is who will concede.

Let us further assume that the cost of the strike is \$10,000 a day for Labor and \$30,000 a day for Management. However, Management is better capitalized: Management's strike fund is \$3,000,000, and Labor's strike fund is \$700,000. Accordingly, Management can afford to hold out for one hundred days whereas Labor's strike fund will be exhausted at the end of seventy days.¹⁴ (We assume that when the funding runs out, a party has to concede and the strike ends.)

Although Management can afford to wait one hundred days, it is not in Management's economic interest to do so. Management figures that giving into Labor's demands will cost it (in present discounted value) a total of \$1 million. Hence, if the strike were to last more than thirty-three days, it would be better for Management to simply give in today.¹⁵ For Labor, the strike is much more valuable. The present value of the job security it has demanded is worth \$600,000.¹⁶ Consequently, Labor would be willing to strike for sixty days if that is what it took to win. Should it anticipate that the strike would take more than sixty days, then it would not be worth fighting—even if Labor thought that it would ultimately win.

Given this scenario, who do we expect to win the conflict? At first glance, it looks as though Labor is willing to fight longer than Management (Labor has the incentive and sufficient resources to hold out past Management's break-even threshold). So it should be the victor. Anticipating this, Management might as well give in right away.

But as you might suspect, the parties' optimal behavior is more subtle and critically depends on beliefs about beliefs. To keep things as simple as possible, we assume that Management's and Labor's daily strike costs (\$30,000 and \$10,000, respectively), Management's strike fund (\$3,000,000), and Management's and Labor's cost of conceding (\$1,000,000

13. A dichotomous outcome might be caused by an indivisible contract term, such as job security.

14. For example, while our example is stylized, the size of strike funds powerfully affects labor negotiations. American Airlines and its pilots negotiated a recent dispute in the shadow of similar strike consequences. See Tom Stieghorst, *Deregulation, Unions: Airline Industry's Rocky Ride*, SUN-SENTINEL (Fort Lauderdale, FL), Feb. 9, 1997, at 14A ("American has \$1 billion in profits socked away . . .").

15. Even if management knew that it could ultimately win in 34 days, the strike would cost management \$1,020,000 (34 x \$30,000), and the wage concession would only save management \$1,000,000.

16. Job security might cost Management more than it benefits Labor if it makes production less efficient.

and \$600,000, respectively) are all common knowledge.¹⁷ We focus solely on the players' beliefs about the size of Labor's strike fund (\$700,000) to show that higher-order beliefs about the fund can crucially affect the length of the strike.

To understand the play of the game, we need to consider what would happen at all possible points in the game. Let's analyze the players' optimal behavior at the end of the game and then work backward. The game cannot last longer than seventy days because Labor would need to concede after this point. If the players reach the seventieth day, what should Management do? If Management knows Labor's budget constraint, then it shouldn't concede. By holding out a single additional day (costing \$30,000), Management can assure itself that Labor will concede (producing a \$1,000,000 benefit). Even though holding out for seventy days produces a net loss for Management,¹⁸ from the perspective of the seventieth day, the costs of past strike days are "sunk" and therefore should not affect Management's decision on whether to continue.

Indeed, this logic suggests that if Management knows the size of Labor's strike fund, Management's dominant strategy is not to concede after day 37. Upon day 37, Management will have to wait no more than thirty-three days to be assured of winning the strike, and the incremental cost of holding out from this point on is worthwhile.¹⁹ Of course, we haven't yet determined if Management will want to hold out until day 37, but if it does, Management will continue to hold out. For the sake of notation, we will call the fact that Labor has only a seventy-day strike fund \textcircled{D} . Our first conclusion, therefore, is that Management should stay in the game from day 37 onward if it knows \textcircled{D} .

17. For simplicity, we also assume no discounting of future profits.

18. $(\$1,000,000 - 70 \times \$30,000 = -\$1,100,000)$

19. See Lucian Arye Bebchuk, *A New Theory Concerning the Credibility and Success of Threats to Sue*, 25 J. LEGAL STUD. 1 (1996).

If Labor knows that Management knows \textcircled{L} , then at any point after day 37, Labor should quit immediately. That is, the consequence of Management knowing \textcircled{L} is that Management will not be giving in; once Labor understands this (by knowing that Management knows \textcircled{L}), Labor might as well save the otherwise-wasted strike costs and give in today.

What if Management knows that Labor knows that Management knows \textcircled{L} ? Then Management shouldn't quit if it ever reaches day 4 of the strike. The reason is that if Management can hold on until day 37—which is only thirty-three days away—Management knows it will then win right away. Management knows that on day 37 Labor will see the handwriting on the wall and then concede immediately. Therefore, Management's holding out after day 4 is worthwhile because the wait will at most be thirty-three days until victory.

To make the next step in the argument requires that Labor knows that Management knows that Labor knows that Management knows \textcircled{L} . In that event, Labor should concede right away at day 4. Labor can predict at day 4 that the game will be over on day 37 with Labor conceding, so it might as well concede now.

Of course, if Management knows that Labor knows that Management knows that Labor knows that Management knows \textcircled{L} , then it should surely not concede on even the first day. All Management has to do is wait until day 4 to be victorious. Four days is a small price to pay.

The final step of the argument arises if we can say that Labor knows that Management knows that Labor knows that Management knows that Labor knows that Management knows \textcircled{L} . It's a mouthful. If true, Labor might as well give in right away. The alternative is to strike for four days and then concede.

It seems that by using backward induction we have "solved" the game. The predicted result is that Labor will concede immediately. But that conclusion requires some very strong assumptions about higher-order knowledge. In particular, we can confidently predict that Labor will immediately concede only if we are willing to assume the existence of sixth-order

information.²⁰ It might very well be the case that both Management and Labor know \textcircled{L} . Labor might even know that Management knows \textcircled{L} . But Management isn't sure of this fact. Hence it can't count on Labor giving in on day 37. Since it's not worth fighting thirty-seven days to win, Management could, in full rationality, decide to concede right away. In fact, it could even decide to concede on any day between 1 and 36.²¹

B. Example No. 2: Rationality and the Prisoner's Dilemma

Critics of economics often attack the assumption that individuals are rational. But, in many contexts, the unexamined assumption that rationality is common knowledge can have profound effects on how players behave. Assuming that the rationality of each of the players is common knowledge is much stronger than merely assuming each player is rational.

20. We can restate this example in terms of Table 1 by re-labelling Ian = Labor; Barry = Management; and $\textcircled{K} = \textcircled{L} =$ first-order information that Labor's strike fund is \$700,000. Our example shows that the following types of information are sufficient to produce the following equilibrium behavior:

| TABLE 2 | |
|---|---|
| <i>Knowledge</i> | <i>Equilibrium Behavior</i> |
| (1b) Management knows \textcircled{L} | Management will hold out from day 37 on |
| (2a) Labor knows Management knows \textcircled{L} | Labor concedes on day 37 |
| (3b) Management knows Labor knows Management knows \textcircled{L} | Management will hold out from day 4 on |
| (4a) Labor knows Management knows Labor knows Management knows \textcircled{L} | Labor concedes on day 4 |
| (5b) Management knows Labor knows Management knows Labor knows Management knows \textcircled{L} | Management will hold out from day 1 on |
| (6a) Labor knows Management knows Labor knows Management knows Labor knows Management knows \textcircled{L} | Labor concedes on day 1 |

This example exploits the "double-helix" structure of iterated knowledge, discussed *supra* note 3, in that we assume (6a) implies (5b), which implies (4a), and so on.

21. In this stylized example, Management would have every reason to communicate that it knows the size of Labor's strike fund in order to make \textcircled{L} common knowledge. But in later examples, both parties will be better off if higher-order information is not produced.

We might not want to abandon the notion of rationality, but we may want to relax the notion of common knowledge of rationality. Doing so allows for markedly different equilibrium behaviors.

To explore how higher-order knowledge about rationality can affect a game, let's look at a prisoner's dilemma game that is repeated a finite number of times. Our point here is not to show how higher-order knowledge about rationality affects negotiations, but to show more generally how higher-order knowledge can affect equilibrium behavior.

First, let's analyze the case in which there is only one iteration. If you are rational, you should defect. Period. End of discussion.²² And the only requirement is rationality. It doesn't matter whether you think the other person is rational or not. Defecting is the dominant strategy if you are rational.

Now, let's look at a two-iteration version. Defecting in the first period is now only a dominant strategy if you are rational *and* if you believe that I am rational. If you think I might not be rational, it might make sense for you to cooperate in the first period to induce me to cooperate in the second period.

Finally, let's look at a three-iteration version. What is a sufficient assumption for you to defect in the first period? Well, you know that you will defect next period if (at the beginning of next period) I believe you are rational. Because if I think that you are rational (even after seeing you cooperate in the first period), I will believe that you will defect in the third period, and therefore I will defect in the second period. Since I will defect in the second period, you might as well defect in the first. It is your belief about my belief of your rationality that is crucial. And so, if you believe that I am rational, and if you believe that I will think that you are rational even if I see you cooperate in the first period, then you will want to defect in the first period.

The take-home lesson is that in a finitely repeated prisoner's dilemma game, the unique equilibrium is defect-defect in all rounds if the players have sufficiently higher-order beliefs about rationality. The order of beliefs about beliefs about rationality has to be commensurate with the number of repeat plays. We don't have to assume that the players are irrational to produce cooperation. It may be sufficient—and more reasonable—to simply assume that rationality is not common knowledge (and does not extend to

22. Defection is the dominant strategy for a rational player in a one-shot prisoner's dilemma game because defection produces a high payoff for a player regardless of her beliefs about how the other player will behave.

order levels higher than the number of rounds).²³ This “resolution” of the finitely repeated prisoner’s dilemma shows how assumptions concerning seemingly attenuated, higher-order knowledge can dramatically affect the play of the game.

II. “VALUE CLAIMING” TALK

We turn our attention now to how communication during negotiations can affect both first- and higher-order information. In a negotiation, it is useful for each party to know the maximum and minimum price at which a deal might be struck. ADR theorists tend to refer to these extremes as each party’s BATNA; economists tend to use the term “reservation price.”²⁴ But whatever the names,²⁵ misinformation about either of these extremes can impede negotiation. For example, a seller who is misinformed about the buyer’s reservation price may demand a price that exceeds the maximum amount a buyer is willing to pay. Poor information about BATNAs can impede trade because a party may mistakenly demand more gains from trade than actually exist. To prevent this inefficiency, it will be both individually and socially useful for negotiators to credibly communicate information about both their own and the other side’s reservation price. These communications take the generic form:

- (a) Your BATNA is weaker than you think, and
- (b) My BATNA is stronger than you think.²⁶

23. Cooperation can also be induced in infinitely repeated games if the future is sufficiently important (that is, the discount rate is sufficiently small). See ROBERT AXELROD, *THE EVOLUTION OF COOPERATION* 124–41 (1984).

24. ADR theorists might not equate BATNA with a reservation price because they are reluctant to monetize the “best alternative.” But when a BATNA is easily monetizable, the two concepts are identical. For example, if Yale is negotiating to buy electricity from a local supplier and Yale knows that it can buy as much as it wants out of state at 3¢/kw, then we could say that this outside offer represents either Yale’s BATNA or its reservation price.

25. We prefer to analyze negotiations in terms of “added value.” The most favorable payoff any party can hope for is that party’s added value. See ADAM M. BRANDENBURGER & BARRY J. NALEBUFF, *CO-OPERATION* 45 (1996).

26. These are not the only examples of “value claiming” talk. For example, if you are reluctant to negotiate because you mistakenly believe that there are no gains from trade, I might want to tell you: “My BATNA is lower than you think.” In Example No. 6, we will also discuss an example dealing with lying, in which one party wants to communicate: “I know (what you already know) that your BATNA isn’t as strong you are claiming it is.” See *infra* Part II.A.4. And as we discuss at the end of this section, “value claiming” talk can relate to any primitive of a distributive bargaining model. See *infra* Part II.B.

But these coolly rational communications are often backed up by hot threats that can impede settlement if the threats become common knowledge.

A. Don't Claim So Much Because Your BATNA Isn't as Strong as You Think

Each of the four examples in this section involve threats. Remember, our primary goal is to show that first-order communication of threats can facilitate settlement, but higher-order communication (that is, the threat becoming "common knowledge") can impede settlement. If we succeed in establishing this, it is straightforward to show that mediators can help achieve these competing objectives by passing on first-order information while filtering higher-order knowledge.

1. Example No. 3: A Threat of Divorce

Imagine a husband and wife who are having trouble in their relationship. The husband might say, "Honey, I want this relationship to work, but if you can't make these changes then I want a divorce." Some spouses would respond to this type of "threat" by saying: "You got it." The husband might reply, "I didn't want the divorce, I wanted the changes." But by this point, it may be too late.²⁷

The problem is that the husband's threat communicated not only the consequences of maintaining the status quo but higher-order information as well. The wife now knows that the husband is contemplating a divorce, and the husband knows that the wife knows this.²⁸ The wife might not be willing to see a marriage counselor or try to work something out if she thinks her husband has one foot out the door. The wife can't pretend not to know, and the husband can't pretend that the wife doesn't know.

The higher-order information can make each side more reluctant to stay in the marriage. The wife is reluctant to stay in a marriage when the

27. We know of an engagement threat that is all too close to this example. After wedding invitations had been sent, the bride-to-be raised the possibility of postponing the ceremony. The groom-to-be responded in no uncertain terms: "If you postpone the wedding, I will never marry you." This statement caused the engagement to quickly unravel. The bride-to-be could not marry someone who would make such an explicit threat.

28. In terms of Table I, Ⓚ is the fact that the husband is contemplating divorce. The husband's threat not only communicates Ⓚ (1b), but also communicates higher-order information.

husband knows she is knuckling under to a threat. And even if she was willing, the husband may think that given her current knowledge, she wouldn't really be committed to change, and thus he isn't willing to make the commitment. The higher-order information that the husband learns when he threatens can make him less willing to stay in the marriage. Common knowledge of the threat destroys the possibility of mutual trust and commitment.

Savvy mediators (marriage counselors) can help the couple see the consequences of their actions—without creating common knowledge. In essence, it is useful for the wife to understand that her BATNA is not as strong as she thinks it is. She may mistakenly think that she can keep the status quo and preserve her marriage. The marriage counselor (after talking privately with the husband) might ask the wife: "What do you think will happen if you stay on the current course?" or (if that doesn't do the trick), "Do you think your marriage might end if nothing changes?" Of course, the wife might infer that even the first, more indirect question has its roots in a threat that the husband communicated to the mediator. But if done well, the mediator can convey the message while retaining sufficient uncertainty on both the husband's and wife's sides about higher-order information.

2. Example No. 4: An Opportunistic Threat

The disruptive effects of direct threats apply equally well to business settings. Imagine a negotiation between two corporations concerning a contract renewal to supply certain goods on January 30. The supplier might try to negotiate a higher price by saying on January 15: "Look, we are the only company in a position to produce the goods right now for you, so if you want your supply on January 30, here's the price and you better sign this contract or your factory is going to get shut down." The buyer might sign the contract because she has no alternative. As in the divorce example, the supplier in essence is trying to tell the other side that she has a weaker BATNA than she realizes: If the buyer doesn't agree to pay the higher price, she will be left with no goods at all. But the buyer's BATNA is weaker because of the seller's opportunism. The seller is threatening to do something it may have a legal right to do but that violates any norm of a "partnership" orientation.

Directly communicating this threat might cause the relationship to end, because the threat becomes common knowledge between the two companies. The threat might force the buyer ultimately to break off the relationship because the buyer realizes that the seller has already actively

considered opportunism.²⁹ Once the buyer knows that the seller doesn't have a "partnership" orientation, the buyer might well choose not to continue a long-term cooperative arrangement.

Moreover, what the seller learns by making the threat may now make the seller herself more reluctant to continue trading with the buyer. Now that the seller knows that the buyer knows that the seller can't be trusted, the seller has less reason to trust the buyer. An unintended consequence of the seller's threat is that the seller now realizes that he can no longer trust the buyer. In retrospect, the seller may wish he had not made the threat, but his threat is irreversible: How can the buyer ever not know? The knowledge is irreversible.³⁰

Once again, a mediator could communicate to the buyer the consequence of no agreement without the threat becoming common knowledge. The mediator doesn't need to directly suggest the consequence: "The supplier might break off relations if you don't pay the higher price." It will often be sufficient to ask the buyer: "What do you think will happen if you don't reach this agreement? What do you think the supplier might do? What would you do if you were the seller?" This type of mediation can be effective precisely because it obscures the higher-order information. Even if the buyer comes to realize that the seller may stop shipment without a renewal, the seller does not know that the buyer has come to realize this.

Sometimes the role of the mediator can be played by the negotiators themselves. One of the things that good negotiators often do is turn themselves into mediators. They get the other side to imagine what will happen if they don't reach an agreement: "Think about what you would do if you were in my shoes?" This process of getting the other side to imagine can be even more effective if the person imagining doesn't reveal what he has thought. To be effective, the seller doesn't need to know what the buyer is thinking, and the buyer doesn't have to know that the seller knows, and so on.

Of course, this example also highlights that obstructing common knowledge to facilitate negotiation might also facilitate opportunistic threats. Potential victims might want to commit to direct communication.

29. Going back to Table 1, the underlying bit of information (K) that the seller (Ian) is trying to communicate to the buyer (Barry) is the possibility that the seller might not ship the current order if the buyer does not agree to a price increase. The seller's direct threat communicates not only this bit of information to the buyer (1b), but the buyer also learns that the seller knows K (2a).

30. In terms of Table 1, the seller's threat teaches the seller that the seller knows that the buyer knows K (2b).

If the parties understand that opportunism would become common knowledge, they might act more civilly.

All of our examples are constructed to show how common knowledge can impede settlement, but there are many contexts in which *creating* common knowledge is a goal of at least one of the parties. The powerful urge to have your "day in court" is in part a desire to have the other side's guilt (or your own innocence) become not only common knowledge between the litigants, but to the public generally.³¹ Even in private negotiations, it may be important for me to obtain an explicit acknowledgment of your prior wrongdoing before we proceed to a settlement.³²

3. Example No. 5: A Gratuitous Threat

In this example, we turn to a case study showing how a direct threat can cause a negotiation to unravel. The Harvard Negotiation Project filmed a simulation of an "unscripted and unrehearsed" negotiation, entitled "The Hacker/Starr Negotiation."³³ In this simulation, Hacker and Starr were partners in a computer software joint venture. Hacker's job was to come up with ideas and write the computer code; Starr was a dentist who provided capital. The dispute concerned the rights to a screen-saver program written by Hacker. Hacker claimed he owned the program because Starr had repeatedly vetoed the idea (repeatedly), and because Hacker had written the program on his own time. Starr claimed the joint venture owned the program because it was written with a company computer, and because the partnership agreement was broadly worded to give the partnership the rights to any software written by Hacker.

The first portion of the mediation was a tremendous success. The parties overcame the acrimony and rancor from a previous meeting and

31. See Trina Grillo, *The Mediation Alternative: Process Dangers for Women*, 100 YALE L.J. 1545 (1991). Hence in victim/offender mediation when mediators strongly counsel criminal victims to "own their own feelings" (that is, not directly blaming the criminals), they may be destroying value. See Jennifer Gerarda Brown, *The Use of Mediation to Resolve Criminal Cases: A Procedural Critique*, 43 EMORY L.J. 1247 (1994). In trying to preserve relationships, mediators at times overlook the legitimate desires of individual negotiators to directly confront their adversaries and thereby make certain information common knowledge.

32. It is not enough that I know you acted badly and you know you acted badly. I may want explicit acknowledgment that "you know I know" and "I know you know I know."

33. Videotape: The Hacker/Starr Negotiation (Harvard Negotiation Project 1985) (on file with the Program on Negotiation at Harvard Law School). The two negotiators had previously met neither their clients nor each other. Hacker and Starr were actors who were told the basic simulated facts giving rise to the dispute and were only instructed to do "the best they could for themselves."

agreed in principle to continue their partnership with a warm sense of good-feeling. They then began discussing how to divide the profits from the screen-saver program. Hacker (who had been carefully trained/coached by his negotiation adviser) tried to turn the discussion toward brainstorming about possible options to resolve the remaining dispute. Hacker began by suggesting the possibility of either arbitration or a 5% Starr/95% Hacker split of the profits. The following conversation ensued:

- Hacker: Arbitration is a good possibility. . . . And also, I've already offered 5-95 and that's another option. But maybe there're more [options]. Name more if you think of one.
- Starr: Well, one of the options is litigation that I could sue you.
- Hacker: Sue me?
- Starr: Well, you wanted options.
- Hacker: So, I will put that down. "Sue Allen." For what?
- Starr: [Reading from paper] First of all, you breached your contract. You disregarded the Board of Directors. Managed poorly. You did not devote full time to the company. . . . You caused a decline in the revenue of the company.

Starr's insistence on explicitly stating his willingness to sue and explicitly listing all of Hacker's bad acts almost ruined the deal. In the film, Hacker became visibly despondent, slumping back in his chair and lowering his head.

Starr's threat was gratuitous. It was already obvious that a suit was an option. Hacker had been asking for only non-litigation options. The parties had already agreed to the much more important aspects of the deal (a new management structure and a new capital infusion). Starr was trying to say: "Your BATNA is not as strong as you think." But the communication was gratuitous because Hacker had already indicated that if he was in Starr's shoes he would feel slighted (and would want to pursue litigation). It was as if the dentist couldn't help but say: "Good thing that you are finally being reasonable, because here are all the ways I was going to let you have it if you weren't." Starr's statements almost killed the deal because Hacker suddenly felt very uncomfortable continuing a long-term partnership after Starr coolly described how close he had been to suing Hacker. Hacker knew Starr was not currently planning to sue him (because they had, in principle, decided to rededicate themselves to the joint venture), but the very knowledge that Starr is the type of person who would do

this told Hacker that maybe Starr was not the type of person with which he wanted to have a long-term relationship. And more importantly for our purposes, Hacker may have had trouble maintaining his concessions (for example, the offer to arbitrate) once it becomes common knowledge that his concessions were the by-product of an explicit litigation threat.

4. Example No. 6: A Threatening Lie—An Example of Second-Order Communication

We end this section with a discussion of how a negotiator might respond if she catches the other side lying in negotiation. Imagine you are a supplier for a large corporate buyer. The purchasing agent for this corporation comes to you and says: "If you don't lower your price, I will buy from Acme who has offered me a 15% lower price." By some means, you find out that the purchasing agent is lying. What should you do?

Your initial impulse might be to directly confront the purchasing agent and say "you're lying." The purchasing agent has claimed (falsely) she has a strong BATNA. But unlike our earlier examples, the response is not "Your BATNA isn't as strong as you think," because the buyer already knows that her BATNA is weaker than she has claimed. Instead, the impulse is to say in effect, "I know what you already know (that your BATNA is weaker than you've claimed)." Your impulse then is not to communicate first-order information, but instead second-order information.³⁴

The problem now is that conveying this second-order information—I know that you know you are lying—may embarrass the purchasing agent in ways that make it impossible for her to continue to buy from you. The purchasing agent may be willing to lie but would be ashamed about having been caught lying. And even if she isn't ashamed, for the sake of your reputation, you may have to end the relationship: You can't let others (even liars) know that you're the type of person who does business with someone who is known to be a liar.

Instead of making the purchasing agent's lie common knowledge, it might be more productive to respond with a "white lie"³⁵ of your own: "Well, Acme may be able to cut its price, but I think that the quality of

34. In terms of Table 1, Ian is the purchasing agent; Barry is the seller, and the first-order information \otimes is that the claimed Acme price discount is false. Because he is not a pathological liar, Ian already knows that the claimed discount is false (1a). Because Barry has independently learned of Acme's true quote, Barry also knows that Ian's claim is false (1b). But Barry's impulse is to let Ian know that Barry knows the claim is false (2b).

35. For an insightful discussion on the ethics of "white lies," see Gerald B. Wetlauffer, *The Ethics of Lying in Negotiations*, 75 IOWA L. REV. 1243 (1990).

our product is better and I hope that in spite of the price difference, you'll still be willing to continue buying from us." Even if there are no real quality differences between your own and Acme's goods, your white lie allows the purchasing agent to "save face"³⁶—to continue to buy from you without her lie becoming common knowledge. If the purchasing agent comes back and ultimately buys from you, she does not know that you know she's a liar.

Of course, if the goods in question are really homogeneous commodities, the purchasing agent may guess that you have caught her in a lie. But even then the white lie might facilitate trade because you won't be sure whether she received the message. It's embarrassing enough for her to have to buy from someone who knows she lied, but it's even more embarrassing to buy from someone who knows she knows that she has been caught. Thus, even if the white lie communicates second-order information (and it might not), it can still facilitate trade by impeding the communication of even higher-order information. It might be useful to let the purchasing agent know that you are on to her, but keep yourself in the dark about whether she ever got the message.

Here again a mediator could help implement a similar outcome. It is much less embarrassing for a mediator to confront (perhaps indirectly) the purchasing agent about the lie, because the purchasing agent will not have to deal with the mediator on a long-term basis. The lie may become common knowledge between the mediator and the purchasing agent, but this may be much less troubling than making the lie common knowledge between the seller and the purchasing agent.³⁷

B. Don't Claim So Much Because My BATNA Is Stronger than You Think

It is often effective to educate the other side about the strength of your BATNA. Instead of saying: "Don't claim so much because your BATNA is weaker than you think," you might want to say: "Don't claim so much because my BATNA is stronger than you think." Indeed, this was the purpose behind the purchasing agent's claim (albeit false) in the last example: My BATNA is stronger than you think it is (because I can get a great

36. In international diplomacy, giving your adversary an option to "save face" can be a way of obscuring whether she has capitulated to your threat. See ERVING GOFFMAN, *INTERACTION RITUAL: ESSAYS IN FACE TO FACE BEHAVIOR* 6-7 (1967) (describing the nature of saving face).

37. The purchasing agent may be particularly averse to public knowledge of her lie if she fears punishment from her superiors in the corporation.

price from Acme if I don't buy from you), so you'd better claim less (that is, cut your price).

Yet the reason why a speaker's BATNA is unexpectedly strong can be just as much of a put-off as the reason why a listener's BATNA may be unexpectedly weak. Accordingly, there may be times when a negotiator will want to communicate first-order information explaining why her BATNA is unexpectedly strong, but will not want this explanation to become common knowledge. In such situations, as before, caucus mediation and indirect communications might be of use.

1. Example No. 7: Threatening Artificial Scarcity

One of the ways to increase your BATNA is to induce (or threaten to induce) artificial scarcity. Imagine that Nintendo is negotiating with Toys "R" Us ("Toys") over how to split \$100 of profits on each of its video machines for a particular Christmas shopping season.³⁸ Nintendo might begin the negotiation by revealing there is an unexpectedly strong demand for its machines. Toys might respond that Nintendo still needs to use Toys as a retail outlet if Nintendo wants to sell one million units this season (Nintendo's total productive capacity). Accordingly, Toys could argue: "We both need each other and therefore we should split the \$100 profits per machine."

In turn, Nintendo might threaten to reduce its productive capacity to increase the strength of its BATNA. In essence, Nintendo would be saying: "While we need you to sell one million units, if you don't agree to give us more of the profits, we will only produce 750,000 machines. We won't need you (or any other particular retailer) if we reduce our production. In that case, you'll be scrambling to get any units that you can, and you'll be happy to give us most of the profits. So you (Toys "R" Us) should agree to

38. A true-to-life narrative about Nintendo's marketing success is included in BRANDENBURGER & NALEBUFF, *supra* note 25, at 111.

let us have most of the profits, or we will create artificial scarcity which means we won't need to deal with you at all."

As should be obvious by now, the problem for Nintendo is that while it might want to communicate this first-order information to Toys, it might not want this threat to become common knowledge. Toys might be reluctant to continue a long-term relationship with a seller who knows that Toys has caved in to a threat.³⁹ Moreover, making the threat common knowledge may reduce Nintendo's ability to trust Toys' future marketing efforts—after all, what kind of company is willing to continue dealing with a supplier that opportunistically threatens to reduce quantity?

The larger point of this example is that negotiators will, at times, want to communicate information not about what the speaker will do to reduce the listener's payoffs absent an agreement, but what the speaker will do to increase her own payoffs absent an agreement. Fisher and Ury explicitly detail a variety of ways negotiators can strengthen their BATNA or weaken those of the other side.⁴⁰ To be effective, these BATNA changes must not only be communicated, but must be communicated in a way that does not queer the deal. Direct communication that makes these threatened BATNA changes common knowledge can ultimately be counter-productive—hence creating the possibility for caucus mediation and indirect communication to facilitate trade.

While we have focused almost exclusively on BATNA talk, negotiators might also want to communicate about any of the other underlying variables that affect distributive negotiations. For example, game-theoretic models of bargaining often turn on the parties' cost of bargaining or degree of rationality.⁴¹ And Jennifer Gerarda Brown in this symposium has sug-

39. Studies in experimental economics indicate that people will incur some loss in order to punish others for unfair behavior. See Daniel Kahneman et al., *Fairness as a Constraint on Profit Seeking: Entitlements in the Market*, 76 AM. ECON. REV. 728 (1986).

40. See ROGER FISHER ET AL., *GETTING TO YES: NEGOTIATING AGREEMENT WITHOUT GIVING IN* 183-84 (2d ed. 1991).

41. See, e.g., Ian Ayres, *Further Evidence of Discrimination in New Car Negotiations and Estimates of Its Cause*, 94 MICH. L. REV. 109 (1995).

gested "satiation" and "optimism," theories of hope that might affect distributive negotiations.⁴² One can easily imagine a negotiator saying: "Don't claim so much" because:

- (a) I'm less rational than you think;
- (b) My bargaining costs are lower than you think;
- (c) Your bargaining costs are higher than you think;
- (d) I'm more optimistic than you think, etc.

To make these claims credible, the speaker will often have to explain why the world is different than the listener thinks. Before providing direct explanations, the wise negotiator will consider the ramifications of communicating higher-order information.

III. "VALUE CREATION" TALK

The common-knowledge problem can also be a barrier to integrative bargaining. In integrative settings, parties have more to bargain about than simply the price, because the joint gains from trade can be increased if non-price terms are chosen wisely. Under such circumstances, it will often be mutually advantageous for one side to communicate information of the kind: "We'd have larger gains from trade, if you would (agree to) do X." The problem is that ongoing relationships emphasizing that I would like "X" often contain an implicit insult that you have been producing "not X" in the past. Communicating the first-order information (containing this implicit insult) facilitates integrative bargaining, but communicating higher-order information can embarrass and erode the trust of both sides to the negotiation.

A. Example No. 8: Misfeasance

Imagine you are negotiating an extended employment agreement with your employer. You enjoy your job, but you would be happier if your boss used (more effective?) deodorant. You know that she needs it, but she does not use any. What should you do?

You could tell her directly. But by now, it should be obvious that to do so would convey not only the first-order information of interest, but also higher-order information: "I know that you need deodorant," and "You know I know you need deodorant." The implicit fact that "your body odor

42. See Jennifer Gerarda Brown, *The Role of Hope in Negotiation*, 44 UCLA L. REV. 1661 (1997).

has bothered me in the past” can be insulting or embarrassing—especially if it becomes common knowledge. It is easier to correct the problem and preserve your relationship if the boss is not sure that you have identified her odor as a problem, or at least if you are unsure whether the boss knows you know.

Or consider the communication problem that Ian encountered with his child’s day care center. He wanted to communicate that he would get more value out of the center if one of the caregivers would give more detailed comments about his child’s progress. But Ian was worried that if his criticism became common knowledge (between this provider and him) that everyone would feel uncomfortable. Ian’s solution was to communicate using negative pregnants and what mediators call “flip sides.”⁴³ In his evaluation, he stressed how much he appreciated the comments of the two other caregivers (negative pregnant) and instead of saying that he disliked the generic comments of the third, he emphasized that he would appreciate individualized comments about his child (flip sides). While the caregiver probably understood Ian’s first-order message, Ian does not know for sure whether she knows his criticism, and moreover, she does not know whether Ian knows that she knows it.

These are both (rather trivial) examples of “misfeasance,” in that the listener does not realize that she is doing something that reduces joint value. And as in our previous examples, the speaker would like to tell someone something they do not know without letting them know that the speaker knows it (or without letting the speaker know that they know the speaker knows it).

In these settings, a suggestion box or an anonymous note may have done the trick. Even if the recipient can figure out who sent the note, a sender will be uncertain about whether the recipient knows. Anonymous notes and suggestion boxes can be useful because they may prevent the dissemination of higher-order information.

In other situations, a speaker might want to use indirect or ambiguous statements—taking a chance that the listener will not understand the first-order message, but in return preserving a kind of “plausible deniability” about higher-order information. In more serious contexts, a speaker might even want to enlist the help of a mediator to send the message.

43. When a mediator uses “flip sides,” she paraphrases a party’s negative statement by transforming it into a positive statement about what the party desires in the future. For example, if A says “B is always late,” the mediator might translate “A, you would like B to be more prompt.”

B. Example No. 9: Malfeasance—An Example of Second-Order Communication

In contrast to the unintentional misfeasance of the last section, it is sometimes useful for negotiators to communicate information about malfeasance. Imagine, for example, that a husband is having an affair.⁴⁴ The husband already knows that he is being unfaithful. But unbeknownst to him, his wife discovers his infidelity. The wife might want to tell her husband that they could have a better relationship if he would be faithful.⁴⁵ In essence, she would be communicating second-order information: "I know what you already know—that you are having an affair."⁴⁶

But as in our previous examples, making the affair common knowledge might cause the relationship to unravel. As an initial matter, the adulterous husband may be too embarrassed to continue. He might be too ashamed to live with someone who knows that he had (or is having) an affair. It is one thing to have acted badly but another to be caught. The husband might be able to control how much guilt he feels, but he can't control how much his wife will "guilt trip" him.

Moreover, common knowledge of the adultery might make the faithful wife less willing to continue the relationship. She has to live with the fact that her husband knows she knows and that she did not have the nerve to do anything about it: What kind of person would just sit there and let her husband have an affair and continue living with him? And so, the need to show that she is not a wimp might force her to call it off.⁴⁷

Direct confrontation changes the situation from "the husband knows of the adultery" and "the wife knows of the adultery," to "the husband knows the wife knows" and "the wife knows the husband knows the wife

44. We used a coin flip to determine the gender of the adulterer.

45. Unlike our earlier divorce example, the wife would not be threatening to divorce her husband if he did not stop ("Your BATNA is weak because . . ."). Rather she might just be engaging in integrative bargaining ("We would have a more mutually beneficial relationship, if you would . . .").

46. The malfeasance examples in this section are similar to the false-threat example previously discussed. The seller was tempted to tell the purchasing agent about his lie (another type of malfeasance): "I know what you already know—that you have acted badly."

47. We can go even further. The unfaithful husband might be willing to continue in a marriage in which his wife knows that he has been unfaithful. But maybe he cannot continue in a marriage in which his wife knows that he knows that she knows of his infidelity—and did nothing about it.

knows.” These higher-order pieces of information can have destructive consequences.⁴⁸

Indirect communication via a mediator or ambiguous statements by the wife can, at the very least, let the husband know that his affair might become known. Even if the mediator effectively lets the husband know that his wife probably knows of the affair, the mediation can help preserve the marriage by not letting the wife know that the husband knows she knows, and so on.

While we have used adultery as our example, the same basic story could be told with regard to other types of malfeasance. If an employer finds out that her employee has been stealing (or intentionally shirking, etc.), she might want to signal that she knows of the wrongdoing without finding out whether the employee learns of the signal.

Or imagine a parent who has discovered that her teenager has tried marijuana, but does not want the teenager to know she knows. If the teenager’s use becomes common knowledge, the parent would be forced to punish or condone the behavior. Punishing would be hypocritical and condoning would send the wrong message. Hence the best outcome is for the parent to be informed (to monitor if the experimentation becomes a problem), but not have the teenager know she knows.⁴⁹

48. This suggests that if you learn that a friend has been the victim of adultery, perhaps you should not disclose the adultery in a way that makes the malfeasance common knowledge between the spouses. The consequences could be quite different if you disclose the adultery to the faithful spouse and let him or her decide whether making the information common knowledge is worthwhile. A similar argument might hold for other forms of malfeasance (such as employee theft), except for third-party interests in deterring bad acts generally.

49. While homosexuality is not mal- or misfeasance, some homosexuals and lesbians want their sexual orientation to be an “open secret”—meaning, they want their friends and relatives to know they are gay, but they do not want their orientation to become common knowledge. In some families if the “open secret” of a child’s orientation became common knowledge, parents would feel the need—for example, because of religious principles—to break off their relationship or vocally criticize the child. See generally D. A. MILLER, *THE NOVEL AND THE POLICE* (1988).

Understanding the potential utility of preventing common knowledge also provides a justification for President Clinton’s “don’t ask, don’t tell” regulation of gays in the military. Judge Eugene H. Nickerson in *Able v. United States*, 880 F. Supp. 968 (E.D.N.Y., 1995), criticized this regulation by arguing in part:

To “accommodate” the privacy of heterosexuals presumably means, for example, to keep their naked bodies safe in the showers from the stares of homosexuals. But if indeed there are homosexuals who wish to peek at naked bodies, they might do so quite as readily when their orientation is a secret as when it is open. The only difference will be that heterosexuals will not know which of their servicemates are homosexuals, and heterosexuals will have reason to have a generalized suspicion of everyone in the showers, hardly a circumstance likely to increase “cohesion.”

As we have shown, directly telling someone "you could do better in the future" often implicitly communicates an insult, "you've been bad in the past." But this direct statement, in turn, might impede settlement because it might also communicate "I know you've been bad" and "You know I know."

CONCLUSION

Critics might argue that only an article written by two economists would go to such great lengths to show that threats and insults can impede negotiation. But we have argued something more subtle. If these threats and insults merely impeded trade, one could simply counsel—like the Vaudevillian doctor⁵⁰—to stop making such statements. Instead, we have tried to illustrate types of information that negotiators will want to communicate to facilitate trade—but that can become destructive if the information becomes "common knowledge."

One of the classic tough-guy responses to intimidation is the query: "Is that a threat or a promise?" This question implicitly arises during negotiations whenever one party describes what she will do if no agreement is reached. While it is often difficult to distinguish threats from merely describing the consequences of failing to reach agreement, our analysis suggests that higher-order communication might be a necessary element of what it means to threaten (or to insult).⁵¹ Telling the other side about how you will affect her BATNA is likely to be less threatening if she does not know you know (or if you do not know she knows you know).

Mediators often work to increase the objectivity of negotiators. The mediator may serve as an "agent of reality" or engage in "reality checking"—making sure that each party knows both her own and the other

To suggest to heterosexuals that the secrecy policy will "accommodate" their privacy interests is to attempt to mislead them. They are not dunces or ostriches. They can hardly be unaware that because of the passage of the Act homosexuals are serving with them.

Id. at 978. But the regulation need not assume that heterosexuals are either "dunces or ostriches." Bigoted officers might feel pressure to retaliate against any soldier whose homosexual orientation becomes common knowledge. Even if bigoted heterosexuals know the identity of homosexuals in the shower, preserving plausible deniability about their knowledge might foster unit "cohesion." However, to see this potential benefit from the policy does not mean that the benefits outweigh the (civil rights) costs.

50. "Doctor, my arm hurts whenever I lift it like this." "Don't lift it like that."

51. Communicating second-order information also seems to be a necessary component of successful "irony." If Ian ironically tells Barry, "That paper was *really good*," part of Ian's intent is not only for Barry to know that the paper is bad, but for them to share in the common-knowledge joke that Ian intended just the opposite of what he said.

side's BATNA. Yet the goal of increasing objectivity could be applied to higher-order information as well. In a trade negotiation, a mediator or a negotiation consultant might want to increase the seller's objectivity about how the buyer perceives the seller. Besides making the seller understand what her BATNA is, it can often be useful for the seller to understand what the buyer thinks the seller's BATNA is. Even if the seller's BATNA is actually weak, she may have more bargaining power because the buyer thinks her BATNA is strong—and she can bluff her way to a favorable agreement. Understanding the other's perceptions of you can be particularly difficult. The other side often does not know as much about you as you do. And it's impossible not to know what you know.⁵² (This is why you cannot play chess against yourself.)

Acquiring objectivity about others (and others' perceptions of you) is difficult but does not necessarily require mediation. Mediators are not the only ones who can serve as agents of reality; negotiation consultants, lawyers, and friends can enhance someone's objectivity about herself, about her perception of the other side, and about the other side's perception of her. In theory "reality checks" could be done by each negotiator without the help of a mediator or the other side.

The most difficult challenge is when a negotiator has private information that could make the other side more objective. This Article has attempted to show how communication between the parties can be used to increase each side's objectivity. If you have a strong BATNA but believe the other side's perception of you is mistaken, you will be tempted to say: "My BATNA is stronger than you think" (or at other times: "Your BATNA is weaker than you think"). Savvy negotiators will at times turn themselves into mediators and try to increase the other side's objectivity in ways that facilitate settlement.⁵³

Caucus mediation can play a central role in helping each side educate the other. Controlling the flow of information between the parties is the only uniquely mediative task.⁵⁴ But more objectivity is not always good. Somewhat surprisingly, we have shown that mediators in many instances should not strive to create better objectivity about higher-order knowledge.

52. Game-theorists succeed at doing this in highly reductive models. A player who knows her own reservation price imagines how the other side—knowing only the distribution from which the reservation price is drawn—would play.

53. Of course, we are unlikely to hear: "You're mistaken, my BATNA is weaker than you think it is." *But see supra* note 26.

54. *See generally* Brown & Ayres, *supra* note 7. Caucus mediation is the most "alternative" of the ADR techniques. It is the only dispute resolution method in which the parties do not speak face to face.

It is useful for a seller to be able to communicate to a buyer why the buyer's BATNA is weaker than she thinks, but it can be destructive for this threatening "why" to become common knowledge between the negotiators.

Game-theorists often model private information as *the* but-for cause of inefficient distributive bargaining. In these simple bargaining models, if each side's BATNA was common knowledge, the parties would instantaneously (and costlessly) reach agreement. But we have argued that while the lack of first-order information can impede trade, the presence of higher-order information should at times be thought of as a barrier to negotiation, a transaction cost that might be avoided by ambiguous or indirect communication or by caucus mediation.

Our argument provides an economic justification not only for mediation, but for a host of communication techniques that are already in use—such as "negative pregnant" and "flip sides." Our goal, however, is to do more than merely translate current practice into economic jargon.⁵⁵ Instead, we believe that more explicit attention to "common knowledge problems" can lead toward a better practice. In closing, we focus on two take-home lessons.

First, in choosing between direct vs. indirect communication, negotiators (and mediators) should focus on the tradeoff between first- and higher-order information. The cost of ambiguous or indirect statements is that the listener may not understand your primary (first-order) message, but the benefit is that the first-order information is less likely to become common knowledge. The optimal degree of ambiguity should turn on the relative size of these benefits and costs. Particularly in ongoing relationships, the costs of making threats and insults common knowledge may outweigh the benefits of clear first-order communication. Mediation and indirect communication can provide a useful, intermediate choice between the extremes of silence or common knowledge.

Second, before speaking, negotiators should consider not only how their speech will affect the perceptions of the listeners, but how speaking will change their own perceptions (even if the listener says nothing in response). Speaking changes your own information set, because now you know that the listener knows something (and you know that the listener

55. See Mark C. Suchman, *Translation Costs: A Comment on Sociology and Economics*, 74 OR. L. REV. 257 (1995).

knows that you know she knows, and so on).⁵⁶ Once we gain higher-order information by making a statement (“I know you’re committing adultery,” or “I will breach my contract if you don’t agree to pay more”), we might be forced to break off our relationship ourselves. Savvy negotiators not only think about how their statements will change the other side’s “frame,” but also, how their statements will necessarily change their own “frame.” And here, we are not talking about a cognitive bias story in which we might react differently to a problem if it is framed as a gain or a loss, but instead, we have shown that what you say irreversibly changes what you know.

56. We all know the witticism: “I could tell you X, but then I would have to kill you.” Almost always it means: “I would have to kill you because of your additional knowledge.” But we have shown that sometimes the phrase might mean: “I would have to kill you because of my additional knowledge.”

