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Chapter 1

Do We Get What We Expect?

1.1 Decisions

At some time today you will make a decision. But, will it be the correct one?

Let me illustrate with an hypothetical example where your book club unanimously decided to drop you from membership because you violated their trust. All of this shame and controversy just because you like pepperoni pizza and have a sincere desire to help others.

To explain, the book club entrusted you to order pizza for their next meeting. Scrupulously checking with everyone, you compiled the following list of their preferences. The first line shows, for instance, that you and two other members are pepperoni lovers. Based on the information

Number	First Choice	Second Choice	Third Choice
3	Pepperoni	Sausage	Anchovy
2	Sausage	Pepperoni	Anchovy
2	Anchovy	Sausage	Pepperoni

the choice is clear; with an election, pepperoni would win with three votes while sausage and anchovy would tie for second place with two votes each. Pepperoni was ordered.

While gagging on a piece of pepperoni and making tenuous comparisons between the writing styles of Hemingway and Joyce, Jack offered his opinion that he really would have preferred sausage. The reaction was immediate; a total of four club members, a majority, voiced their preference of sausage

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over pepperoni. In response to Mavis's obvious follow-up question, a majority expressed their preference of sausage over anchovy. Since sausage is the club's majority choice, why did you order pepperoni? Such an outrageous abuse of trust!

1.1.1 Decisions

Decisions, whether for a group or an individual, play a standard but integral role in our daily lives. The reason is obvious; to avoid chaos, confusion, and, maybe, a good old fashion fist fight, decisions must be made on a continual basis within our social groups, families, organizations, and political and economic units. We vote to decide the kind of pizza to order, what to name a family's new pet dog, where to go for a summer vacation. Over morning coffee, my day starts by searching the sports pages for voting results which determine the weekly ranking of the collegiate basketball teams, or which collegiate football team is the national champ, or who is the MVP (most valuable player) in the Super Bowl football game, or which city will host the next Olympics, or who won a figure skating or gymnastics competition.

Individual and group decisions play a central role in our professional lives. After all, much of what we do involves deciding. We decide who should pass or fail a course, who should be hired — or fired, where money should be invested, who should receive the new contract, what should be the new product and how should it be designed. In a more subtle realm, group and individual economic decisions, based on who wants what, combine in mysterious ways to determine the economic laws of the marketplace.

1.1.2 Surf, Snow, or Governor Jesse Ventura?

Our voting procedures are among our most important decision methods. These tools of democracy not only determine that choice of pizza to order ("Let's have a show of hands"), but also the next chair of our social group, our mayors, our legislators, our presidents. In legislative bodies, voting procedures are used to decide among differing alternatives in the development of laws. But, as the book club's pizza altercation suggests, do we really select whom or what we want?

To explore this issue, suppose a marching band one hundred strong is planning a joint winter vacation. Forty of them, who have previously experienced the pleasures of cross-country skiing, want to ski through the frigid but silent hemlock and birch forests found along the beautiful shores of Lake Superior. The other sixty are tired, very tired, of snow and cold; they want

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to wear nothing more than a very brief swimsuit while swimming, wading, and sunbathing in the warm Caribbean surf. Where? Anywhere! When pushed for a preference, 35 opt for the Bahamas while the remaining 25 suggest Jamaica.

You can finish the story. Even though most of the band members want to enjoy warmth, their vote over the three vacation choices dictates that they better start searching for their long underwear and warm gloves in preparation for their winter trip to the Copper Country of Michigan. (Skiing in Michigan receives 40 votes, Bahama receives 35, and Jamaica receives 25.) Of course, after they arrive and start skiing, these vacationers might agree that Michigan is an excellent choice. But that is not the issue; the point is that the election outcome does not reflect their wishes on election day. While the band story illustrates an unjust outcome, what about actual elections?

While it is difficult to find precise figures, there are reasons to believe that a phenomenon similar to the "band vacation" occurred during the November 1998 election for the governor of the state of Minnesota. To set the stage, Minnesota is an American state which prides itself on good, solid experienced leadership. With its strong Nordic population, a culture where undue public expression tends to be discouraged, Minnesota is hardly known for revolutionary fervor. Entering election season, the candidate for the Democratic party, Hubert "Skip" Humphrey III, was the state's attorney general. Humphrey was expected to win easily thanks to his considerable public support and praise resulting from his sizeable $6 billon victory over the tobacco companies. His Republican opponent, Norm Coleman, was a Humphrey protege. Although an underdog, Coleman was expected to raise at least a reputable challenge based on his strong reputation for efficient public service. Finally, we had Jesse "The Body" Ventura, a 6 foot 4 inch ex-professional wrestler who previously earned his living wearing sequins and a feather boa. This showman, bit-part player in movies, radio shock-jock, and mayor of a small suburb was running on the Reform Party.

Without question, Ventura was a refreshing addition to the political scene. By comparing his charisma with his highly competent, experienced, but somewhat drab opponents, it is not surprising that he pulled thousands upon thousands of new voters to the polls. Press accounts proved that, even though he readily admitted to being a neophyte who didn't really understand all the issues or even the functioning of state government, Ventura's charm and "straight talk" started attracting votes away from Humphrey already in early September.

Let's examine this experience issue. Faced with a legal issue, would you prefer someone fresh out of law school, or an experienced lawyer? Similarly,

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faced with selecting a new leader to run a complicated state, would you prefer someone with limited experience in a suburb, or a proven person with considerable political experience? While 37% of the Minnesota voters clearly preferred the former, the evidence suggests that around 60% of the voters who voted preferred the warmth of experience in the governor's chair — either Coleman or Humphrey. As with the band illustration, Ventura won the election with 37% of the vote. In fact, the numbers used in the vacation example indicate what happened in Minnesota with percentages that roughly resemble the election outcome.

Immediately after he was elected, Ventura's popularity soared. Quickly it became easy to encounter a debate about whether he is an effective governor or an embarrassment. But, that is not the point. The issue is that on *Election Day* it is strongly arguable that Ventura was *not* the "true" choice of the voters. As with the skiing vacation, Ventura's election appears to manifest an anomaly of our voting procedure. Can elections lead to results which do not reflect the views of the voters? They most surely can.

1.1.3 Correct decisions

Making a "correct decision" is an important concern because decision procedures affect all aspects of our lives — from the more mundane concerns of a family, to the viability of the marketplace, to future economic development, and to the direction of our society. Decisions form such a vital part of our lives that, justifiably, considerable effort can and should be expended to ensure "correct decisions." This concern is particularly important for larger organizations, such as businesses or governmental bodies, because once made, strategic choices become exceedingly difficult to reverse.

As examples, imagine the complexities involved in relocating a factory, in introducing new forms of production, or in initiating a different governmental social policy. It is the enormous accompanying costs which tend to chisel strategic decisions into stone. Once made, even a mistake becomes difficult to reverse. Once made, decisions assume a life of their own where subsequent actions tend to modify the original. Faced with this reality, the initial choice must be the "correct" one.

1.1.4 Good information to confusion

About now, the reader might complain, "Of course. Nobody wants to screw up; everyone wants to make the right choice." I agree. But then, why is it that we can make very bad decisions?

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Our desire to make "good decisions" is manifested by all those good intentions captured by the enormous effort often directed toward analyzing the relevant information. A family planning an annual vacation may spend hours upon hours reviewing maps, brochures, and travel books. A firm considering new product lines or a bank reviewing its investment policies may form research units and employ expensive consultants. A governmental body, with its continual charge to shape the future of a political unit, may consult with professional groups and research institutes for valued input.

This thirst for data is particularly apparent in engineering firms where experiments are conducted to discover information about this or that metal in the construction of an airplane wing, or the value of this computer chip over that one. In politics, this need for information — well, maybe more accurately, the need for an appropriate political "spin" — is continuously on display during an election campaign when political parties can spend obscene amounts of money to get "their message" out to the voters, or to counter an opponent's "lies and damn lies." In the marketplace, information coming from market projections, sale and inventory figures, demand and supply are common inputs into a firm's decision process. This activity reflects the obvious; good decisions require excellent, complete, and current information.

After all this expense, after all this effort to collect correct information, what can be the outcome? Confusion; maybe total confusion reflecting the curse of the multidimensional nature of the acquired information.

Again, we know this can happen. Each of us probably can cite numerous examples where each alternative is "the best choice" with different criteria. On election day, for instance, we might ponder, candidate

- Anni proposes an attractive, strong mental health plan,
- Katri has a great foreign policy,
- Lillian has tremendous ideas about economic growth, but
- Martha has an innovative approach toward our environmental and social concerns,

so who should I vote for?

This confusion is why we need methods to help us decide. After all, whenever the information clearly identifies a unique "best" choice, then, except when mandated by law as in public elections, there is no need for decision procedures. The true purpose of these methods is to help us choose when faced with the uncertainty that all too often can materialize even with complete, reliable information. The purpose of decision procedures,

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then, is to help sort the informational complexity and conflict. But, which procedure? Is one method better than the others?

To personalize this concern, suppose after you have been subjected to extensive medical tests, your doctor needs to determine the appropriate course of action. She believes that there is a 3/7 likelihood that everything is fine; the symptoms suggest that that tumor is benign, with the second option being that it is serious and an expensive dangerous operation is needed immediately, and the third that it is an anxious situation which needs to be monitored with care. Suppose the doctor's full list of options, with likelihoods, is

Likelihood	First Option	Second Option	Third Option
3/7	Benign	Serious	Anxious
2/7	Serious	Benign	Anxious
2/7	Anxious	Serious	Benign

Again, even if the information is as precise as medically possible, the conclusion is in doubt. How should the doctor decide her course of action? The largest likelihood, 3/7, indicates that nothing need be done. On the other hand, if options are compared pairwise, "serious" becomes the diagnosis.

This medical diagnosis illustration should seem familiar; it is just the pizza example where numbers of voters are replaced with "chance," or likelihood, of different possibilities. Rest assured that actual medical decisions involve more sophisticated decision processes comparing a variety of tradeoffs with a conservative emphasis. Nevertheless we should worry; will the actual process and procedure yield the correct answer? Rather than a game show where the excitement is centered on whether the big prize is behind door one, two, or three, the reward here is your health and well being.

As this medical example accurately suggests, any discussion about "decision procedures" also addresses the strengths and weaknesses of methods coming from a wide variety of areas. The reason is that decision procedures are just mathematical ways to combine conflicting facts into a convenient, summarized form. Consequently, related procedural cousins are all of those surveys and assessment procedures so commonly used to evaluate success in the classroom, different programs, and — well, often it seems like almost everyone and everything. Other kinds of associated methods are those economic tools such as "supply and demand" and other exotic sounding terms invoked by economists to explain the functioning of the market place.

Even more; by treating decision methods as tools to aggregate information into a simple, convenient form, other "procedural kissing cousins" include those statistical tools which tell us what books we should read, what

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movies we should see, which TV shows are the "best," how often we should floss our teeth or have sex, or, minutes after the polls close, project the winner of a national election. While not "decision procedures," all of these methods aggregate information into a convenient digestible size; they help rank the information needed to make decisions. And, their conclusions affect us. While the size of an audience watching a particular TV show is, at best, of idle curiosity to most of us, it is a vital input to determine the cost of commercials, or whether the show will survive the season. These statistical tools offer a careful reading of what voters want, what consumers will buy, what books will sell, how attitudes toward central issues of the day, such as entitlement programs, are changing. But, can the outcomes be misleading? Can they lead us astray?

1.1.5 Bad outcomes

After all information is gathered, decisions are made. And, what can be the result? *Bad outcomes.*

We know this can happen; most of us have suffered through at least one particularly unpopular election outcome which we might have labelled, perhaps in a loud and boisterous manner, a "mistake." This decision might involve the choice of a new director for a church group, or academic department, or social group, or the senator or governor of a state, or even the President of a country. After a particularly unpopular election outcome, this sense of frustration may be manifested by a flowering of tacky bumper stickers bragging

> *"Don't blame me, I voted for —"*

Maybe. But these bumper stickers blame the awful outcome on others. At times those "others" fully deserve a strong finger-pointing, or even raising, criticism. Quite often, however, this attitude is a mistake because it really wasn't their fault. The basic theme developed here is that maybe, just maybe, a more accurate bumper sticker reads

> *"Don't blame us; we are victims of a lousy election procedure!"*

I am not seeking a new scapegoat to explain away bad conclusions. Instead, this comment is a warning that the choice of the decision method can cause havoc. Unfortunately, even though care can be taken to gather accurate information, surprisingly little attention can be placed on the choice of the decision procedure. There is a sense that the choice of a procedure is

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not important; it is the information which plays the dominant role. What a major miscalculation. This is a mistake which can cause serious, expensive errors.

1.2 What does an outcome mean?

To illustrate that problems can occur, let me start with an example which involved US public sentiment over the possible Congressional impeachment of President Bill Clinton. One of the several times public emotion peaked was during the November 1998 Congressional elections.

From the perspective of the American television networks, this timing provided a particularly propitious opportunity. With public opinion polls perfected to astonishing degrees of accuracy,[1] and with the networks planning to send out armies of questioners to conduct "exit polls" in their competitive race to accurately predict the election outcomes minutes ahead of rivals, both the tools and the resources were in place to accurately sample the sentiment of the American public.

The networks wished to capture the American public's sentiment for the various options that Congress was discussing at the time. These alternatives ranged from impeaching President Clinton, to censuring or fining him a substantial amount of money. For each option and by majorities so large that each conclusion must be treated as "a conclusive opinion of landslide proportions," it was reported that

1. the American public did *not* want President Clinton impeached,

2. the American public did *not* want President Clinton censured, and

3. the American public did *not* want President Clinton fined.

What should we make of this information? What sensible interpretation about the American public opinion emerges from these poll results? It is reasonable to infer that the American public, at least on that November 1998 election day, did not want anything done to President Clinton. Perhaps the public had adopted a charitable "enough is enough; leave him alone!" attitude.

[1]The embarrassment suffered by all of the major television networks during the 2000 US presidential election, where they first predicted the state of Florida would be won by Gore, then retracted, then awarded it to Bush, and then retracted, proves that polls are not infallible. Nevertheless, as a predictive tool, this statement is correct.

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This analysis sounds reasonable, but as Peter Jennings of ABC News and the other network anchors cautioned, this data does not mean what it seems to mean. Instead, on that November election day, with a similarly large majority,

4. the American public *wanted* President Clinton punished in some manner.

This example has less to do with American politics than with the meaning of decision and information gathering procedures. The message is that outcomes of procedures need not mean what we think they do. Even if the outcome appears to provide overwhelming evidence in a particular direction, the true meaning could be something quite different.

But, why? Why can the outcome differ from what was intended? As we explore the source of the difficulties, the answers explain mysteries about a variety of other topics — including why some people seem to be more successful during discussions and debates within an organization.

1.3 Which procedure?

To explore why the choice of a procedure is critical in our quest for "correct decisions," separate the role of information from the consequences of a decision procedure. To do so, assume that all information relevant for a decision is gathered, and it is accurate. To promote confidence in this assumption, I try to avoid examples which allow a debate about whether this assumption is true. Consequently, my illustrations involve hypothetical and innocuous settings of, say, an election for the important post of president — but of an unidentified group. Other examples involve simple daily choices such as the selection of the beverage to accompany a meal.

While my vanilla flavor examples purposely avoid threatening liberals, conservatives, or moderates, let me emphasize that these examples most surely have counterparts which illustrate how *your* beliefs probably have been jeopardized or abused. Anywhere on the political spectrum, an example of an actual election probably can be found where "your side" lost unfairly. By "unfairly" I mean that your side lost not because of the voters' beliefs, mischief of election officials, or even ballots not punched hard enough to register a vote, but because of the subtle, hidden inadequacies of an election or decision procedure.

Remember, decision procedures are merely algorithms which count ballots in specified ways — they have no ideological, racial, or gender bias. If a procedure is flawed, it is equally discriminating against all groups. All that

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is required for a paradoxical, unjust outcome is an appropriate collection of opinions. Because opinions and coalitions shift so often, I can confidently assert that whatever your personal philosophy, examples of actual elections most surely exist where the choice of a procedure — not the information or general desires of the public — frustrated and wronged the goals of your side.

1.3.1 Milk, wine, or beer?

To illustrate what can happen, suppose thirteen people are selecting a party beverage. To enjoy the economy of buying in bulk, they agree to choose a common beverage. For notation, suppose four members of this group prefer milk first, water if milk is not available, and then beer. Represent this preference as

$$MWB$$

where the first letter of each beverage is used. Suppose the preferences of all thirteen party-goers are

Number	Ranking	Number	Ranking
4	MWB	2	MBW
2	WBM	4	BWM
1	BMW		

(1.1)

Table 1.1 contains all information relevant to make this decision, so which beverage should the group buy? If they use the standard plurality vote, the usual "show of hands" where each voter votes for his or her favorite alternative, the group's outcome is

$$MBW \quad \text{with the tally} \quad 6:5:2.$$

Without question, the favored alternative is milk.

Is it? Before running off to a beverage store to buy a keg of milk, maybe these party-goers should listen to the complaints of the lonely two "water-lovers." Rather than trying to dampen the proceedings, they argue that with so many alternatives each voter should vote for his or her top *two* choices. This "vote for two" approach, of course, is another commonly used election method. Moreover, since water did so poorly in the plurality election — it received a mere two votes! — it is reasonable to assume that the "water-lovers" are concerned only about electoral fairness.

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