



# PREFACE

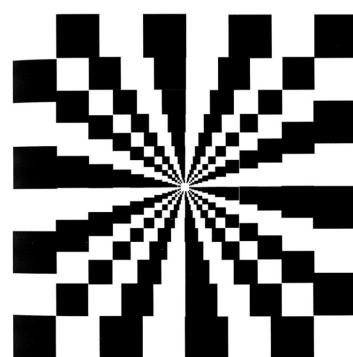
I've always wanted to compile a short handbook containing interesting ideas. I hope it inspires you to view the world differently every day.

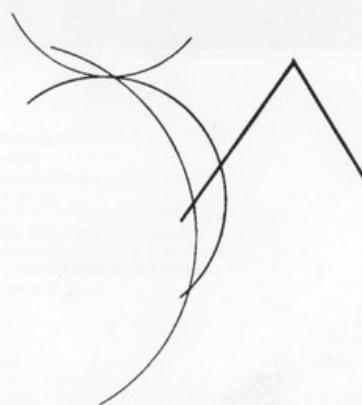
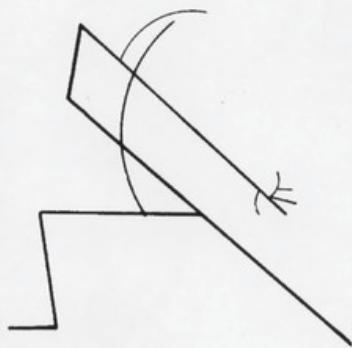
In good faith.

— Paul Asselin



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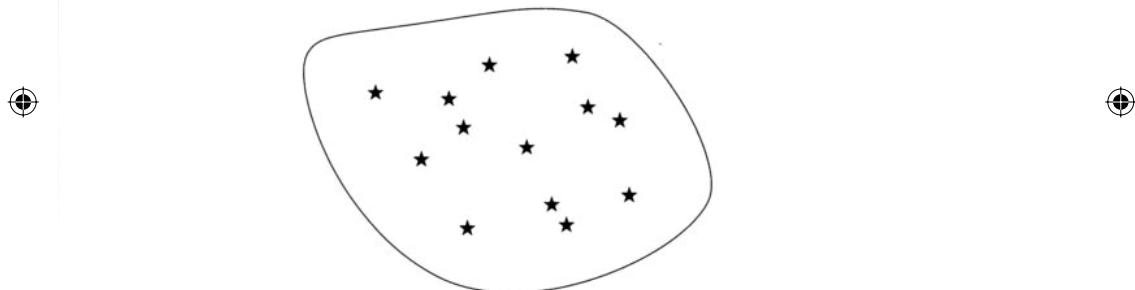


Wassily Kandinsky, "Dance Curves: On the Dances of Palucca" (1926)

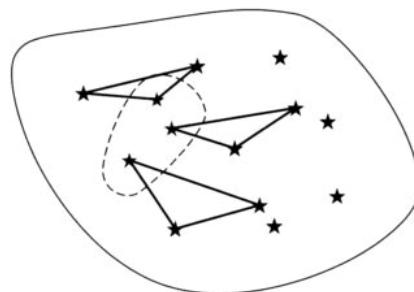


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**FIGURE 1-19** Imaginary map of all the physics formulas.



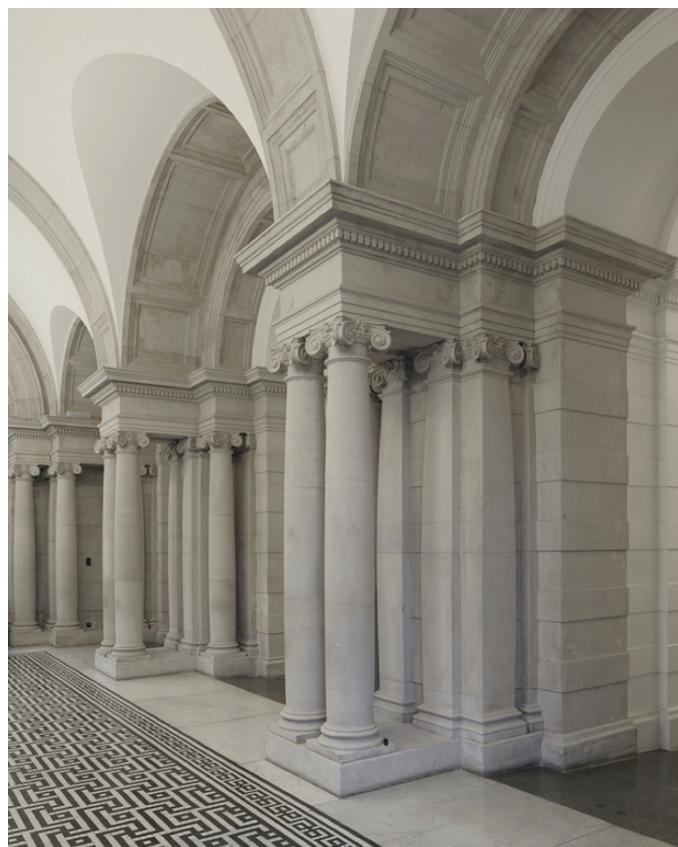
**FIGURE 1-20** Forgotten facts can be recreated by triangulating from known facts.

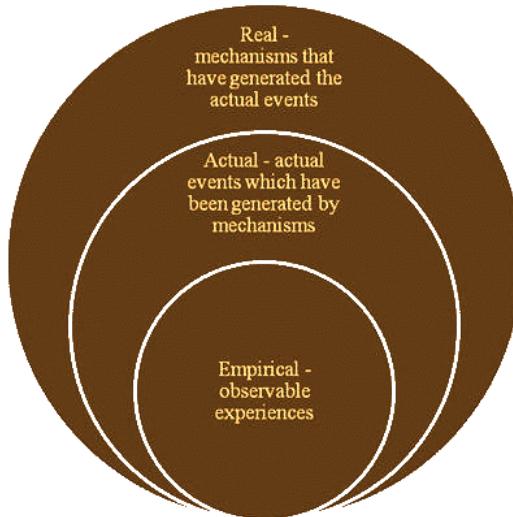


## Models

Models, all models, are simple relative to full-blown complex systems. They are really just analogies and metaphors for the behavior of the system. It is very important to do simple models, oscillator models of climatic behavior. Then, though, you add complexity, you build up the hierarchy, and you find out how each addition of incremental change alters the emergent properties of your answer, the results of your experiments. Through that process you are building up your understanding.

You are rendering your models more sophisticated, more real-life-like.





## Mental Models



### #Explaining



Hanlon's Razor – “Never attribute to malice that which is adequately explained by carelessness.”  
Related: [conjunction fallacy](#), [overfitting](#)

Occam's Razor – “Among competing hypotheses, the one with the fewest assumptions should be selected.”

Arguing from First Principles – “A first principle is a basic, foundational, self-evident proposition or assumption that cannot be deduced from any other proposition or assumption.”  
Related: [dimensionality reduction](#), [orthogonality](#)

Proximate vs Root Cause – “A proximate cause is an event which is closest to, or immediately responsible for causing, some observed result. This exists in contrast to a higher-level ultimate cause (or distal cause) which is usually thought of as the ‘real’ reason something occurred.”

*Gabriel Weinberg, “Mental Models I Find Repeatedly Useful”*



## #Modeling

Thought Experiment – “considers some hypothesis, theory, or principle for the purpose of thinking through its consequences.”

Related: [counterfactual thinking](#)

Scenario Analysis – “A process of analyzing possible future events by considering alternative possible outcomes.”

Related: [black swan theory](#)

Power-law – “A functional relationship between two quantities, where a relative change in one quantity results in a proportional relative change in the other quantity, independent of the initial size of those quantities: one quantity varies as a power of another.”

Related: [Pareto distribution](#), [Pareto principle](#), [diminishing returns](#), [premature optimization](#), [heavy-tailed distribution](#), [fat-tailed distribution](#), [long tail](#)

Normal Distribution – “A very common continuous probability distribution. Physical quantities that are expected to be the sum of many independent processes (such as measurement errors) often have distributions that are nearly normal.”

Related: [central limit theorem](#)



Sensitivity Analysis – “The study of how the uncertainty in the output of a mathematical model or system (numerical or otherwise) can be apportioned to different sources of uncertainty in its inputs.”

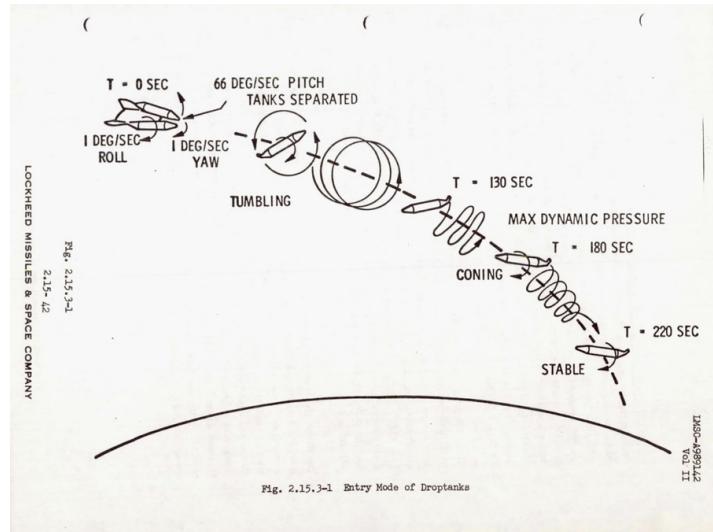
Cost-benefit Analysis – “A systematic approach to estimating the strengths and weaknesses of alternatives that satisfy transactions, activities or functional requirements for a business.”

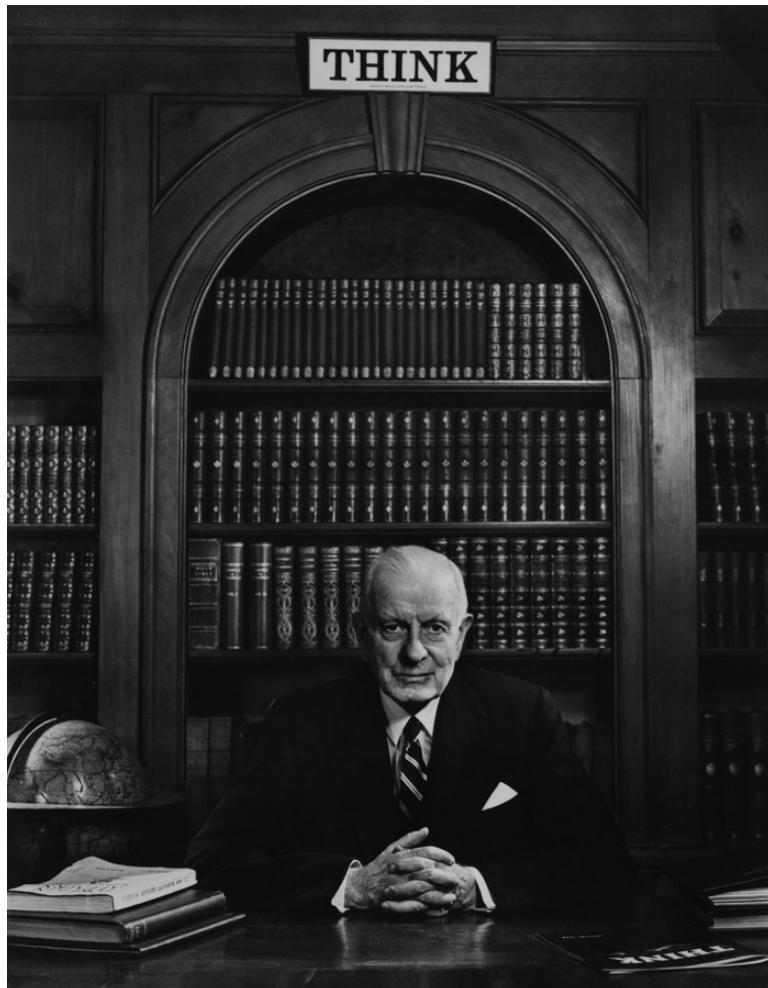
Related: [net present value](#), [discount rate](#)

Simulation – “The imitation of the operation of a real world process or system over time”

Pareto Efficiency – “A state of allocation of resources in which it is impossible to make any one individual better off without making at least one individual worse off.”









## #Reasoning

Anecdotal – “Using a personal experience or an isolated example instead of a sound argument or compelling evidence.”

Straw Man – “Giving the impression of refuting an opponent’s argument, while actually refuting an argument that was not advanced by that opponent.”

Appeal to Emotion – “Manipulating an emotional response in place of a valid or compelling argument.”

Ad Hominem – “Attacking your opponent’s character or personal traits in an attempt to undermine their argument.”

Bandwagon – “Appealing to popularity or the fact that many people do something as an attempted form of validation.”

## #Influencing

Framing – “With the same information being used as a base, the ‘frame’ surrounding the issue can change the reader’s perception without having to alter the actual facts.”  
Related: [anchoring](#)



Cialdini’s Six Principles of Influence –

- Reciprocity (“People tend to return a favor.”),
- Commitment (“If people commit, they are more likely to honor that commitment.”),
- Social Proof (“People will do things they see other people are doing.”),
- Authority (“People will tend to obey authority figures.”),
- Liking (“People are easily persuaded by other people they like.”),
- and Scarcity (“Perceived scarcity will generate demand”).



Paradox of Choice – “Eliminating consumer choices can greatly reduce anxiety for shoppers.”

Veblen goods – “Types of luxury goods, such as expensive wines, jewelry, fashion-designer handbags, and luxury cars, which are in demand because of the high price asked for them.”



## THINKING ABOUT THE FUTURE

“What will happen when the natural resources we rely on become depleted? What do future economies look like? How might changes in healthcare impact the evolution of disease prevention?

Future-studies experts in industries such as energy, defence, finance, insurance, and politics task themselves with conceptualising these futures using sophisticated tools and models, applied with varying ends in mind. Some attempt to forecast future situations; others are used to troubleshoot multiple scenarios; and others still are employed to help expand the imagined range of possible futures. Though the methods themselves have proven to be productive, they’re rarely introduced beyond insular circles within industry and academia.”



*Elliot P. Montgomery & Chris Woebken, “Extrapolation Factory Operator’s Manual”*

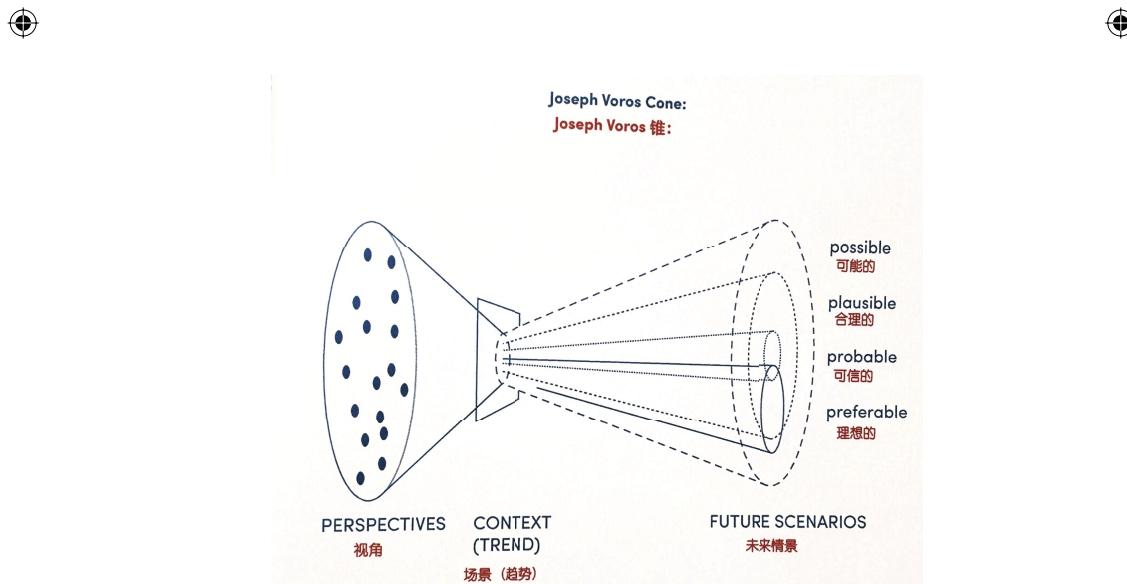




## THE PAST AS REFERENCE FOR THE FUTURE



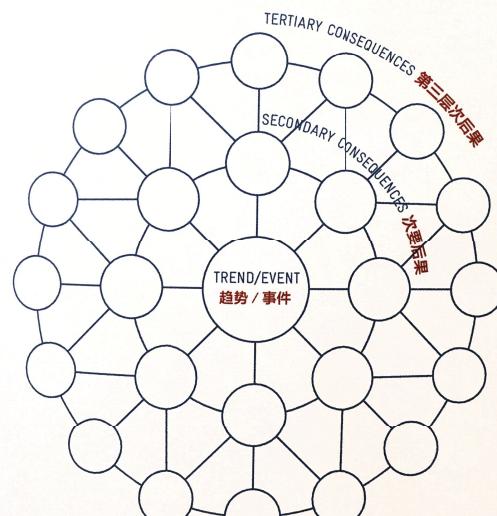
## FUTURES CONE





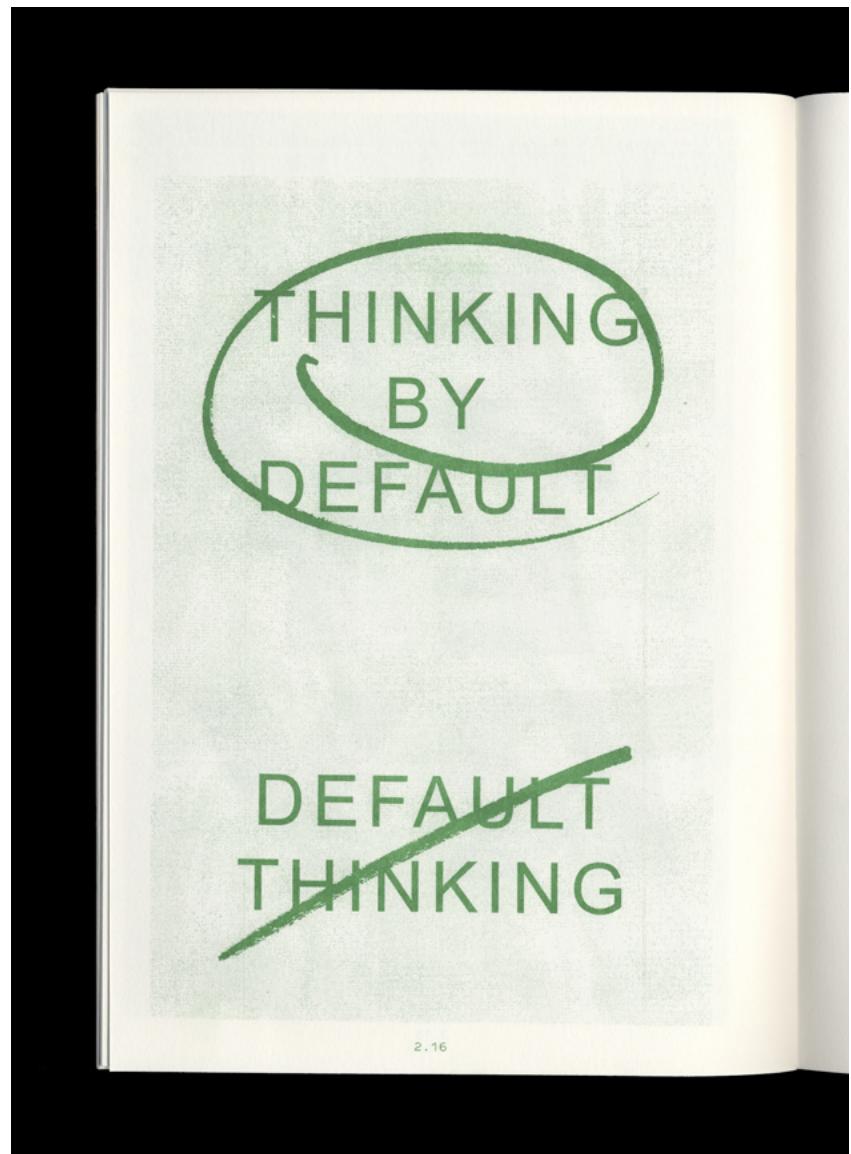
## FUTURES WHEEL

Futures Wheel Diagram:  
未来之轮图示



A methodology for identifying the potential consequences of trends and events.  
The scenario in question is placed at the center of the wheel, and direct, first-order consequences of that scenario are placed as spokes around that central issue. Next, indirect (second-, third-, and fourth-order) consequences branch out from direct consequences, thereby providing a web-like map of the implications of a future occurrence or condition.







## The Psychology of Human Misjudgment by Charles T. Munger

1. Reward and Punishment Superresponse Tendency  
To persuade, appeal to interest and not to reason.  
Never, ever, think about something else when you should be  
thinking about the power of incentives.

Case in point with an example:

Military and naval organizations have very often been extreme in using punishment to change behavior, probably because they needed to cause extreme behavior. Around the time of Caesar, there was a European tribe that, when the assembly horn blew, always killed the last warrior to reach his assigned place, and no one enjoyed fighting this tribe.

2. Liking/Loving Tendency

One very practical consequence of Liking/Loving Tendency is that it acts as a conditioning device that makes the liker or lover tend:

- . to ignore faults of, and comply with wishes of, the object of his affection,
- . to favor people, products, and actions merely associated with the object of his affection (as we shall see when we get to “Influence-from-Mere-Association Tendency, and
- . to distort other facts to facilitate love.





### 3. Disliking/Hating Tendency

Born into man, this driving tendency remains strong. Thus, we get maxims like the one from England:  
“Politics is the art of marshalling hatreds.”

Disliking/Hating Tendency also acts as a conditioning device that makes the disliker/hater tend to:

- . ignore virtues in the object of dislike;
- . dislike people, products, and actions merely associated with the object of his dislike, and
- . distort other facts to facilitate hatred.

Distortion of that kind is often so extreme that misognition is shockingly large. When the World Trade Center was destroyed, many Muslims immediately concluded that the Hindus did it, while many Arabs concluded that the Jews did it. Such factual distortions often make mediation between opponents locked in hatred either difficult or impossible. Mediations between Israelis and Palestinians are difficult because facts in one side's history overlap very little with facts from the other sides.



### 4. Doubt-Avoidance Tendency

The brain of man is programmed with a tendency to quickly remove doubt by reaching some decision.

So pronounced is the tendency in man to quickly remove doubt by reaching some decision that behavior to counter the tendency is required from judges and jurors. Here, delay before decision making is forced. And one is required to so comport himself, prior to conclusion time, so that he is wearing a “mask” of objectivity.





##### 5. Inconsistency-Avoidance Tendency

The brain of man conserves programming space by being reluctant to change, which is a form of inconsistency avoidance. We see this in all human habits, constructive and destructive.

“An ounce of prevention is worth a pound of cure.”

##### 8. Envy/Jealousy Tendency

Envy/jealousy is extreme in myth, religion, and literature wherein, in account after account, it triggers hatred and injury. It was regarded as so pernicious by the Jews of the civilization that preceded Christ that it was forbidden, by phrase after phrase, in the laws of Moses. You were even warned by the prophet not to covet your neighbor's donkey.

Many big law firms, fearing disorder from envy/jealousy, have long treated all senior partners alike in compensation, no matter how different their contributions to firm welfare.

“It is not greed that drives the world, but envy.”



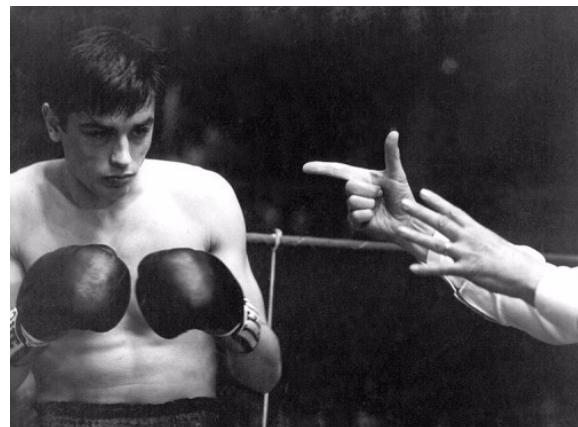


#### 9. Reciprocation Tendency

The automatic tendency of humans to reciprocate both favors and disfavors has long been noticed as it is in apes, monkeys, dogs, and many less cognitively gifted animals. The tendency facilitates group cooperation for the benefit of members.

One interesting mental exercise is to compare Genghis Khan, who exercised extreme, lethal hostility toward other men, with ants that display extreme, lethal hostility toward members of their own species that are not part of their breeding colony. Genghis looks sweetly lovable when compared to the ants. The ants are more disposed to fight and fight with more extreme cruelty.

"You can always tell the man off tomorrow, if it is such a good idea."



#### 10. Influence-from-Mere-Association Tendency

Advertisers know about the power of mere association. You won't see Coke advertised alongside some account of the death of a child. Instead, Coke ads picture life as happier than reality.

The proper antidotes to being made such a patsy by past success are:

- . to carefully examine each past success, looking for accidental, non-causative factors associated with such success that will tend to mislead as one appraises odds implicit in a proposed new undertaking, and
- . to look for dangerous aspects of the new undertaking that were not present when past success occurred.



#### 11. Simple, Pain-Avoiding Psychological Denial

We have a habit of distorting the facts until they become bearable for our own views.

#### 12. Excessive Self-Regard Tendency

We all commonly observe the excessive self-regard of man. He mostly mis-appraises himself on the high side, like the ninety percent of Swedish drivers that judge themselves to be above average.

Also extremely counterproductive is man's tendency to bet, time after time, in games of skill, like golf or poker, against people who are obviously much better players. Excessive Self-Regard Tendency diminishes the foolish bettor's accuracy in appraising his relative degree of talent.

#### 13. Over-optimism Tendency

About three centuries before the birth of Christ, Demosthenes, the most famous Greek orator, said, "What a man wishes, that also will he believe."





#### 14. Deprival Superreaction Tendency

The quantity of man's pleasure from a ten dollar gain does not exactly match the quantity of his displeasure from a ten-dollar loss. That is, the loss seems to hurt much more than the gain seems to help.



#### 15. Social-Proof Tendency

The otherwise complex behavior of man is much simplified when he automatically thinks and does what he observes to be thought and done around him. And such followership often works fine.

Psychology professors love Social-Proof Tendency because in their experiments it causes ridiculous results. For instance, if a professor arranges for some stranger to enter an elevator wherein ten "compliance practitioners" are all silently standing so that they face the rear of the elevator, the stranger will often turn around and do the same.





#### 16. Contrast-Misreaction Tendency

Few psychological tendencies do more damage to correct thinking. Small-scale damages involve instances such as man's buying an overpriced \$1,000 leather dashboard merely because the price is so low compared to his concurrent purchase of a \$65,000 car.

A particularly reprehensible form of sales practice occurs in the offices of some real estate brokers. A buyer from out of the city, perhaps needing to shift his family there, visits the office with little time available. The salesman deliberately shows the customer three awful houses at ridiculously high prices. Then he shows him a merely bad house at a price only moderately too high. And, boom, the broker often makes an easy sale.

One of Ben Franklin's best-remembered and most useful aphorisms is "A small leak will sink a great ship". The utility of the aphorism is large precisely because the brain so often misses the functional equivalent of a small leak in a great ship.



#### 19. Use-It-or-Lose-It Tendency

All skills attenuate with disuse. The right antidote to such a loss is to make use of the functional equivalent of the aircraft simulator employed in pilot training. This allows a pilot to continuously practice all of the rarely used skills that he can't afford to lose.







## Nelson Rules

Nelson rules are a method in process control of determining if some measured variable is out of control (unpredictable versus consistent).

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Rule #	Description
1	One point is more than 3 standard deviations from the mean.
2	Nine (or more) points in a row are on the same side of the mean.
3	Six or more points in a row are continually increasing (or decreasing)
4	Fourteen (or more) points in a row alternate in direction, increasing then decreasing.
5	Two (or three) out of three points in a row are more than 2 standard deviations from the mean in the same direction.
6	Four (or five) out of five points in a row are more than 1 standard deviation from the mean in the same direction.
7	Fifteen points in a row are all within 1 standard deviation of the mean on either side of the mean
8	Eight points in a row exist, but none within 1 standard deviation of the mean, and the points are in both directions of the mean.

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**Problem Indicated**

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One sample is grossly out of control.

Some prolonged bias exists.

A trend exists.



This much oscillation is beyond noise.



There is a medium tendency for samples  
to be out of control.

There is a strong tendency for samples  
to be slightly out of control.

Within 1 standard deviation,  
greater variation is expected.

Jumping from above to below whilst missing  
the first standard deviation band is rarely random.





## The Moscow rules

The Moscow rules are rules-of-thumb said to have been developed during the Cold War to be used by spies and others working in Moscow.

### Rule #    Description

1. Assume nothing.
2. Never go against your gut.
3. Everyone is potentially under opposition control.
4. Do not look back; you are never completely alone.
5. Go with the flow, blend in.
6. Vary your pattern and stay within your cover.
7. Lull them into a sense of complacency.
8. Do not harass the opposition.
9. Pick the time and place for action.
10. Keep your options open.

### ADDITIONS

- x. What can go wrong, will go wrong, and at the worst possible moment.
- x. Any operation can be aborted. If it feels wrong, it is wrong.
- x. Maintain a natural pace.
- x. Build in opportunity, but use it sparingly.
- x. Float like a butterfly, sting like a bee.
- x. There is no limit to a human being's ability to rationalize the truth.
- x. Technology will always let you down.
- x. Once is an accident. Twice is a coincidence. Three times is an enemy action.
- x. Do not attract attention, even by being overly careful.





## Celine's laws

Celine's Laws are a series of three laws regarding government and social interaction attributed to the fictional character Hagbard Celine from Robert Anton Wilson's and Robert Shea's Illuminatus! Trilogy.

### CELINE'S FIRST LAW

National Security is the chief cause of national insecurity.

Reflecting the paranoia of the Cold War, Celine's First Law focuses around the common idea that to have national security, one must create a secret police. Since internal revolutionaries and external foes would make the secret police a prime target for infiltration, and because the secret police would by necessity have vast powers to blackmail and intimidate other members of the government, another higher set of secret police must be created to monitor the secret police. And an even higher set of secret police must then be created to monitor the higher order of secret police. Repeat ad nauseam.



### CELINE'S SECOND LAW

Accurate communication is possible only in a non-punishing situation.



Everyone who labors under an authority figure tends to lie to and flatter that authority figure in order to protect themselves either from violence or from deprivation of security (such as losing one's job). In essence, it is usually more in the interests of any worker to tell his boss what he wants to hear, not what is true.

### CELINE'S THIRD LAW

An honest politician is a national calamity.

While a dishonest politician is interested only in bettering his own lot through abusing the public trust, an honest politician is far more dangerous since he is honestly interested in bettering society through political action, and that means writing and implementing more and more laws.

Quis custodiet ipsos custodes?

*Who will guard the guardians?*







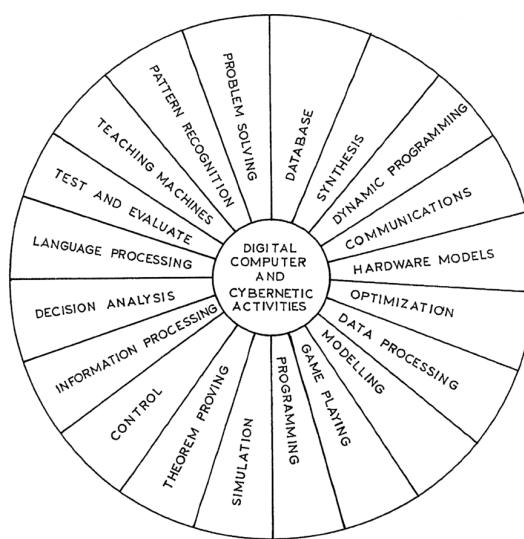
## THE CYBERNETIC HYPOTHESIS

"We can imagine a time when the machine of governance would replace - for better or worse, who knows? - the insufficiency of the minds and devices of politics that are customary today."

- Father Dominique Dubarle, *Le Monde*, December 28th 1948

"There is a striking contrast between the conceptual refinement and dedication characterizing scientific and technical reasoning and the summary and imprecise style that characterizes political reasoning... One even asks oneself whether this is a kind of unsurpassable situation marking the definitive limits of rationality, or if one may hope that this impotence might be overcome someday and collective life be entirely rationalized."

- An encyclopedist cybernetician writing in the 1970s





- 1 Good Design Is Innovative
- 2 Good Design Makes a Product Useful
- 3 Good Design Is Aesthetic
- 4 Good Design Makes A Product Understandable
- 5 Good Design Is Unobtrusive
- 6 Good Design Is Honest
- 7 Good Design Is Long-lasting
- 8 Good Design Is Thorough Down to the Last Detail
- 9 Good Design Is Environmentally Friendly
- 10 Good Design Is as Little Design as Possible

10 Principles  
of Good Design  
by Dieter Rams