A Probabilistic Formulation of Murphy Dynamics as Applied to the Analysis of Operational Research Problems

William R. Simpson

Abstract

The author contends that the formulation of Murphy's Law as presently accepted in the open literature is useful only as a general statement of life patterns, but meaningless to the application of operational research problems. In fact, the direct application may be dangerously wrong.

A more satisfactory statement is that if anything can go wrong, it might. This formulation not only better fits the facts of life, but can lend itself to a mathematical formulation that can be used in the analysis of operational research problems. Such a formulation is presented based on a probabilistic model of operational realizations. Numerous examples of direct applications are cited.

1. Introduction

The classical formulation of Murphy's Law as proposed by Edsall Murphy[1] is as follows:

"If anything can go wrong it will."

. . . . . .

This also was thought to be a corollary of Murphy's Law at one time, but has been since grouped with several others to form the Generalized Uncertainty Principle (GUP) which states:

"Complex systems exhibit unexpected behavior."

While the behavior may be unexpected, it may not be unpredictable, as we shall see.

2. The first principle law of Murphydynamics

Consider the systems delineated in the introductory section of this paper. The event space may be taken as the sum of possible events. Consider the state variable in the jelly-bread problem:

1. Bread (type)
2. Jelly (type)
3. Potential energy (height)
4. Absence of gravity retardant

1 · Murphy, Edsall. *The Physical Universe.* Naples, Italy: Gross-Press, July 1723.

Consider also the events and their relative utilities as given in Table 2.

Table 2

Outcomes and Usefulness of Jelly Bread Experiment Events

Event	Qualitative Usefulness	Comments
1.	Nothing	Highest There is some conjecture as to the possibility of this event
2.	Fall to an edgewise	High Least mess, most edible result
3.	Falls jellyside up	Better than Nothing Potential edible result
4.	Falls jellyside down	Low Murphy prediction

...examined again, and the proportionality is replaced with a proportional equation:

4.1 Antropy

The proportionality constant (a) is termed antropy and is a measure of failure not connected directly with the main event, such as the failure of a backup system

when the primary system is still functional.[2], [3] ▪ ▪ ▪ ▪ ▪ ▪

5. Anergy and the laws of conservation

The mechanism of antropy manipulation is through the application of the conservation laws of Murphy dynamics. The concept of Anergy (A) was first introduced by Gall in his studies of the works of Parkinson and Peter. He felt he had achieved an understanding of the relationship between input effort to achieve an event and the dynamics of the event. By his definition:

"Anergy (A) is measured in units of effort required to bring about the desired change."

This can easily be stated in terms compatible with our terminology as...

FrameMaker generates the footnote numbers in   text and at the bottom of the page, and puts the insertion point at the bottom of the page where you   type the footnote.
You create the header and rule on a master page. They appear on each body page associated with that master page.
Notice the different para- graph formats and fonts. You set them up once and store them for use throughout the document.

2 · Gall, John. *Systematics.* New York: Quadrangle Press, 1977.

3 · Parkinson, C. Northcote. *Parkinson's Law and Other Studies in Administration.* Boston: Houghton Mifflin, 1957.

You control the spacing between letters, words, lines, and paragraphs.

FrameMaker automatically generates the section numbers. You just type the text.

FrameMaker generates the numbers for this list.

You also create the footer on the master page.

You create the rule that appears above and below this table on a reference page. You can then include those rules anywhere in the document.

Footnote numbers can be sequential or can start over on each page.

Type equations with FrameMathThis graphic is tied (anchored) to the text before it. As the text moves, the graphic moves.

This graphic was created with FrameMaker.

You determine the width and placement of automatically generated change bars.

Objects and text can be rotated.

You create reverse text by using spot color.