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NEW PERSPECTIVES ON RISK MANAGEMENT: COMMENTS

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It is hard to take issue with an article that has as its laudable purpose "the search for principles." It also seems a bit unfair to concentrate critical attention on a single section of an article that provides a sweeping overview of many of the basic problems in insurance education. However, Denenberg and Ferrari sagely warn us that "terminology is no substitute for reality." Based on this slender justification, I would like to discuss the section of their paper titled "Actuarial Science versus Operations Research."¹

It will soon be apparent that any differences between the views that will be developed in this discussion and those of Denenberg and Ferrari will be largely semantic in nature. Nevertheless it seems appropriate to follow the authors' admonition and to join the search for "reality" even on pedantic issues.

Actuarial Science as Operations Research

Almost every review article and textbook in the field of operations research contains a lengthy section in which the

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¹ H. S. Denenberg and J. R. Ferrari, "New Perspectives on Risk Management: The Search for Principles," *Journal of Risk and Insurance*, Vol. XXXIII (1966), pp. 647-661.

definition of the subject is discussed. Zubay has provided readers of this *Journal* with some of these definitions and his list is easy to extend.² It appears that in all of these definitions operations research is not defined as a specific mathematical tool but rather it is pictured as a rational method of solving complex problems. The key attributes of operations research appear to be its emphasis on viewing an operation in its entirety rather than concentrating attention on component sub-operations, its emphasis on the use of quantitative methods, and its stress on the desirability of using an interdisciplinary approach.³ Operations research is not a quantitative tool in the same sense that linear programming, the analysis of variance, or the calculus of variations are such tools. Instead, in an operations research project, each of these tools, and many more, might be used in one coordinated attack on one complex problem.

Like operations research, actuarial science is rather difficult to define. Actuarial science is concerned with applying quan-

² E. A. Zubay, "Feasibility Study of Operations Research in Insurance," *Journal of Risk and Insurance*, Vol. XXXII (1965), pp. 325-336.

³ Many references could be given at this point. An especially readable one is by R. L. Ackoff and P. Rivett, *A Manager's Guide to Operations Research* (New York: John Wiley, 1963), p. 107.

titative methods to the solution of problems that arise in determining the price-benefit structure of an insurance product and in the management of insurance organizations. Indeed it would seem that "actuarial science" could replace "operations research" in most of the definitions of operations research, if the range of the problems considered is suitably restricted to the insurance field. A strong case can be made for classifying actuarial science as the first and perhaps the currently most highly developed application of operations research to business problems.

Actuarial Pioneering

Despite the mild objection to the Denenberg-Ferrari definition of operations research that was raised in the previous section, there is much in the section under review with which I agree. It is only a shade less than self evident that an education program directed solely to preparing students for actuarial examinations (or any other set of examinations) will have most of its intellectual excitement drained. It is hard to see how such a program could contribute to the development and advancement of actuarial science. A student of insurance should not dismiss too lightly the possible fossilizing impact of single minded concentration on examination success in insurance education programs. Nevertheless, even after acknowledging this threat of intellectual isolationism, it still appears that the authors have understated the work of actuaries in developing quantitative tools that are not traditionally within their professional domain.

Several topics within the general area of stochastic processes frequently appear on lists of specific tools used in operations research. For example, Markov chains and queuing theory are mentioned by Zubay.⁴ Yet collective risk theory, which

⁴ Zubay, *op. cit.*, p. 327.

was developed by Scandinavian actuaries, is one of the most complete and frequently applied topics in stochastic processes. Admittedly the contributions by North American actuaries to the development of this theory have been meager. Nevertheless, collective risk theory has been a subject for papers and discussions at meetings of the Society of Actuaries and it is covered in Part 10-I of the examinations of the Society.⁵

Model office computations have been made by actuaries for many years to trace the expected progress of blocks of business and to estimate the time incidence of earnings. Today such computations would be called operations research using deterministic simulation.

Bayesian statistics has developed very rapidly in the past decade. Because it provides a framework for blending past experience with current results in decision making, it has become understandably popular in collegiate business courses where classical statistics was played down for its failure to give sufficient weight to such experience. In the field of Bayesian statistics, as in stochastic processes, we will find interesting actuarial antecedents of current developments.

Credibility theory was developed by American actuaries before the theoretical framework for subjective probability and Bayesian estimation was complete. Yet credibility theory is an excellent example of a Bayesian approach to an estimation problem.⁶

⁵ P. M. Kahn, "An Introduction to Collective Risk Theory and its Application to Stop Loss Reinsurance," *Transactions, Society of Actuaries*, Vol. XIV (1962), pp. 400-425. It is very difficult to explain collective risk theory to a general audience. However, this paper by Kahn does a good job of avoiding abstraction for abstraction's sake and still presenting the material honestly.

⁶ A. L. Mayerson, "A Bayesian View of Credibility," *Proceedings of the Casualty Actuarial Society*, Vol. LI (1964), pp. 85-109. This paper does not give a complete review of the develop-

The difference approach to the actuarial problem of graduating experimental results was originally proposed by Whittaker with a pre-Bayesian justification.⁷ For some years this Bayesian foundation was suppressed because the quantification of past experience in the form of a prior distribution was viewed as a form of quackery by most statisticians. In recent years, with the mounting intellectual respectability of Bayesian statistics, Jones has shown how valuable insights into the graduation process may be gained by a Bayesian approach.⁸

Source of Innovation Inertia

Denenberg and Ferrari also suggested that the narrowness of traditional actuarial education may have contributed to "ultraconservatism" and "products and operations stagnation" in insurance. I would certainly join them in supporting modernization of the traditional actuarial education and examination program. Nevertheless, I would venture the conjecture that if the rate of innovation in insurance is disappointingly slow, the cause is more likely to be found in the tight legal framework within which the insurance industry operates rather than in any narrowness of actuarial education.

For example, sampling is frequently used in operations research and other research projects to obtain suitably precise

ment of subjective probability and Bayesian statistics. It does, however, provide a firm Bayesian foundation, to replace the previously vague basis, for credibility procedures. Mayerson points out the interesting earlier work by actuaries, especially by Arthur Bailey, in attempting to construct a basis for credibility procedures using Bayes' theorem.

⁷ E. T. Whittaker and G. Robinson, *The Calculus of Observations* (4th ed.; London and Glasgow: Blackie and Sons, Ltd., 1944).

⁸ D. A. Jones, "Bayesian Statistics," *Transactions, Society of Actuaries*, Vol. XVII (1965), pp. 33-57. See the first section of this paper for the history of the Bayesian foundation to difference equation graduation.

defined populations. It would seem that sampling might provide a low cost method for obtaining some of the accounting entries that are required for the annual statements of insurance companies. This idea has appeared frequently in actuarial literature. Campbell has reported on a large experiment using this idea.⁹ However, the rigid rules under which the assets and liabilities of insurance organizations must be valued and reported in the annual statement have effectively blocked major use of an idea that promises both economy and acceptable accuracy by reasonable standards.

Somewhat similar remarks may be made about the impact of Internal Revenue Service regulations on pension valuations. One of the objectives of pension valuations is to support business deductions for federal income tax purposes. Understandably the desire of the Internal Revenue Service for objective simplicity in valuation methods, actuarial assumptions, and in actuarial cost methods, inhibits actuarial innovation in this important field.

The heavy hand of the regulatory authorities on auto insurance rates and classification systems is well known to the readers of this *Journal*. The same reduction in management's freedom to innovate may be found in the tantalizing field of using the Markowitz model in investment portfolio selection.¹⁰

Summary

One must grant to the authors of a general review article the right to propose tentative definitions and to advance

⁹ G. C. Campbell, "Problems with Sampling Procedures for Reserve Calculations," *Journal of the American Statistical Association*, Vol. XLIII (1948), pp. 413-427.

¹⁰ "Panel Discussion—Operations Research," *Transactions, Society of Actuaries*, Vol. XVII (1965), p. D31. See especially the discussions of Shellard, pp. D333-D334, and Anderson, pp. D341-D348.

provocative conjectures. However, it is the concomitant responsibility of discussants of such papers to seek to sharpen the definitions and to question the conjectures. In this spirit, I would suggest the following:

(1) Operations research is not a quantitative tool. Instead it is a general method for approaching complex problems. Actuarial science seems to have the key attributes of operations research applied to insurance problems.

(2) Although the present actuarial education program should be modernized, many of the currently fashionable tools used in operations research are also used in actuarial science.

(3) If the rate of innovation of insurance is unacceptably low, the tight legal framework in which the insurance industry operates must take a significant part of the blame.

FURTHER COMMENT

W. H. RABEL*

It is always interesting to read the product of combined minds, and especially when it deals with a concept as interesting as a search for principles. The field of insurance education is indeed fortunate to have two individuals of the capability of Professors Denenberg and Ferrari (hereafter D-F), who have been able to receive suggestions from no less than thirteen other authorities and ostensibly to incorporate the suggestions into their work.

Any work can be evaluated fairly only in terms of what it purports to be. According to the authors, their article attempts "to focus on risk management in order (1) to help define the area of responsibility of the risk manager, (2) to evaluate the literature in the field, and (3) to chart some of the terrain that should be explored."¹ It is only fitting, therefore, that these goals form the basis upon which the merits of the work are

judged. This communication will be limited to a discussion of the first two, for anyone will agree that there is a great deal of unexplored territory.

Evaluation of the Literature

In the opening paragraph of their "review" article, D-F quote Shakespeare—"a rose by any other name. . ." A cursory reading of the article brings to mind another quote from the bard—"much ado about nothing." However, a more thorough reading will unearth several thought provoking ideas and questions and the authors are to be congratulated for making the "simpleminded transition of findings of another field" (p. 660), or for recalling important thoughts previously recorded but long since passed over and submerged in the dearth of subsequent but less illustrious articles and publications. To this extent, they meet the first objective set forth for themselves. For example, in a synopsis of an article by Rennie, the authors point out that the "risk manager" should apply techniques of operations research, systems analysis, and the theory of games so that he might be able to analyze, measure, and distrib-

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¹ Herbert S. Denenberg and J. Robert Ferrari, "A Review Article—New Perspectives on Risk Management: The Search for Principles," *Journal of Risk and Insurance*, Vol. XXXIII, No. 4 (December, 1966), pp. 647-661.

the firm's business risks in such a way as to achieve the firm's risk-reduction objectives (p. 650). Then they quote Houston and his interesting observation that the best designation of the responsibility of the risk manager would be that of pure losses (p. 656). Several other examples of scholarly work are cited, and the reader is assured (to some extent) that the risk-and-insurance field is not an academic wasteland.

Risk Manager's Authority

After a somewhat tedious discussion of the relationship between management and risk management, the authors draw from one of the classic writers in management thought, Henri Fayol, and they determine that his choice of terminology, "security," best fits the function that risk managers are supposed to be performing. It may be that the authors' choice was one of the most favorable possible for the discipline of risk management, but not because of the arguments for abandoning the traditional concepts that are set forth in the article. To allow those arguments to stand unrefuted would be to lay the seeds for undermining a concept providing tremendous potential growth for the field of risk management.

Basically, the arguments against the term "risk management" are advanced in two segments. First, the use of the term "risk" is unacceptable to the authors on a semantic basis. Second, they disagree with the definition traditionally assigned to "risk" on the grounds that when it is incorporated in the phrase "risk management" it is not completely descriptive of the "commodity" or "thing" that is managed by the risk manager.² Although the two arguments are almost inextricably intertwined in the article, an attempt will be made here to analyze each on its own

² Unless specified otherwise, reference to risk is intended to mean that "commodity" or "thing" managed or treated by the risk manager.

the reverse of the order mentioned.

The Activity of Risk Management

Contrary to what the authors state, generally and traditionally "risk" has not been defined as "uncertainty," but as "uncertainty concerning loss (or financial loss)." Denial by the authors of this definition is based upon the following three arguments: "(1) it fails to provide adequate recognition of the distinction between insurer and individual risk; (2) it fails to allow adequate separation of the quantitative and psychological elements of risk; and (3) it fails to recognize increased knowledge as a risk reducing device" (p. 654). The authors hasten to assure the reader that these arguments are the basis for more than idle exercises in semantics, so each argument will have to bear inspection if the reader is to be sure that his time was not wasted.

Before defending the traditional definition against the attacks of the article, perhaps a brief restatement and clarification of the definition would be fruitful. If risk is to be defined as uncertainty of financial loss, it should be understood that uncertainty is a psychological phenomenon; it can be defined as a psychological state of less than certainty.

Certainty is the result of complete knowledge, but it is not synonymous with the latter. Near certainty may exist for some persons when there is little knowledge, and by the same token, great uncertainty may exist for others when a great deal of knowledge is present. A rule may be formulated to the effect that when knowledge is increased a person is more certain (less uncertain) than he was prior to the increase, but he can never be certain until he has complete knowledge. Uncertainty, then, is not quantifiable in cardinal terms, but may be expressed in ordinal terms.

When an individual seeks to protect

himself against the psychological uncertainties resulting from exposure to loss, he may be said to be "managing" his uncertainty; the same terminology applies to large firms. Therefore, the term "risk management" is a reasonable one if risk is accepted as the term used to apply to psychological uncertainty of loss. It may be presumptuous to confine the term to the treatment of pure risk, and the complaint that individuals in other functional areas of business are also risk managers (except that they are managers of speculative risks) is a valid one.

But an exercise of logic, not semantics, is the object of this section. D-F are arguing to replace the traditional definition of risk with a definition that lends itself to use of quantitative measurement. Following is what is hoped to be a reasonable and academic rebuttal to their arguments, and then a further (and hopefully more persuasive) argument against the traditional definition will be advanced.

An Attack on the Traditional Definition of Risk

The authors assert that the traditional definition fails to provide adequate recognition of the distinction between insurer and individual risk. Their second assertion follows from the first and is a corollary to it: no separation of the quantitative and psychological elements of risk is allowed under the traditional definition. In answer to these complaints it should be noted that, as well as not being allowed, the possibility of such a separation is completely denied.

As pointed out previously, the problem created by risk is a psychological phenomenon whether it is an insurer that is uncertain about an adverse loss ratio or an individual who is uncertain as to whether or not his home will burn. Quantitative methods, which may be used by an insurer to predict deviation of actual

from expected loss ratios, are merely tools that may be used to reduce uncertainty. Predictability may be achieved and probabilities assigned to all deviations of actual from expected results.

However, assuming any probability except one or zero (that is, certainty), the uncertainty about the outcome based upon these probabilities is in the mind. Even though an insurer has enough exposure units so that he may use quantitative methods, it does not follow that uncertainty is a quantifiable concept. The only assertion that can be made about his state of uncertainty is that, all things remaining psychologically equal between himself and an insured, he has less uncertainty.

In lieu of the traditional definition, the phrases "dispersion of actual from expected" or "the probability that actual results will differ from expectations" are suggested and supported on the grounds that these definitions have a greater appeal for quantitatively oriented persons (p. 654). In proposing these alternatives, D-F completely overlook the fact that they exclude by definition all psychological implications of the term "risk" and therefore deny from the purview of the risk manager any unquantifiable uncertainties. Indeed, the very fear expressed by the authors—that the risk manager would be reduced to a mere technician or "minor functionary"—would be realized.

In an effort to support their definitions, the authors point out that the term "risk" has a prior definition in decision theory. The fact that the definition applied there would be useless in terms of the activities of most risk managers is apparently lost on the authors. As a final argument, they offer an unsupported generalization and maintain that the term "risk" is unacceptable to the behavioral scientists. Rather than ask D-F how long they have been speaking for the behavioral scientists, it

may be valuable to ask introspectively why the two arguments advanced by D-F are more than an exercise in semantics.

It is clear that the traditional definition of risk much more accurately describes the "commodity" treated in the function traditionally allocated to the risk manager than does the definition proposed by the authors. It is also clear that this definition is broad enough to accommodate not only the quantitative methods (which are merely a means of increasing knowledge) for treating risks, but the other methods as well. To change the terminology so that risk refers only to quantifiable situations is not justifiable if the phrase "risk management" is to continue to be used.

If the first two arguments were unacceptable because they offered inadequate substitute definitions, the third falls into that category because it attacks the traditional definition on spurious grounds. In a brief review of one of Snider's writings on risk, D-F point out that an example given by Snider would lead to the conclusion that, under the traditional definition, increased knowledge can lead to increased risk (p. 654). In intrepid fashion, D-F leave (to their own satisfaction) the traditional definition without a shred of academic respectability. However, in their efforts to oust the definition, they attack the wrong premise and draw spurious conclusions from their argument. The terminology used by Snider was incorrect, and therefore the traditional definition was unable to stand inspection. Had he been more careful in his selection of words, the definition unquestionably would have been supported.

The problem is that Snider, as most textbook writers, confused the words "worry" and "uncertainty." Worry implies a state of mental anguish, and, indeed, uncertainty often produces worry. By the same token, certainty (or less uncertainty) can

produce worry as well, and this is the case in Snider's example. The increased knowledge about the relationship between smoking and cancer did tend to increase worry on the part of the public. Nevertheless, it did reduce uncertainty, so "risk" was reduced. D-F were within grasp of the answer when they agreed that increased knowledge made the smokers insecure (p. 654). However, they failed to see the distinction between insecurity and uncertainty. It is interesting to note that, inherent in this final argument against uncertainty, there is a complete rejection of the security concept. Yet, at least four pages at the end of their article are devoted to advancing security as the "proper concept."

When speaking on functional or quantitative topics, most insurance scholars are fairly precise in their use of terminology. However, after entering the world of the behavioral scientist, and particularly the psychologist, they commonly become guilty of word substitution. As demonstrated above, the results can be most unfortunate and misleading.

If the authors were unconvincing in their case for abandoning "uncertainty of financial loss" as a definition of risk, their semantic arguments against the term itself are numerous and convincing. The fact that another discipline has already adopted the term and assigned to it another meaning should provide sufficient reason for its rejection. A semantic argument is no reason for abandonment of the "uncertainty" concept, however, even when taken in conjunction with their three arguments against its use. Instead, if the concept is to be abandoned, it is necessary to show that the term is inadequate for one or several reasons. For purposes of this communication, it will be sufficient to show that the risk manager has responsibilities outside the territory covered by the uncertainty concept.

It is clear that the risk manager's func-

tion is one of giving mental relief. However, that relief is not restricted solely to the treatment of uncertainties. On the contrary, there are many instances when the risk manager will be called upon to deal with certainties, and this is one good reason for calling the traditional definition incorrect. When the potpourri of other arguments and material found in the D-F article are considered, it is surprising that they never mentioned this inconsistency.

A New Concept

After having unsuccessfully attacked the traditional definition of risk, D-F suggest an alternative to the term and in essence introduce (or review) a different concept. Drawing from Fayol, the authors point out that the risk manager is supposed to be providing security to the firm. At the same time, recognition is given to the fact that the risk manager can make use of the quantitative and behavioral sciences as tools, and there is an implicit acceptance of the fact that the "commodity" managed is not quantifiable (p. 658). Once they tacitly admit that risk is a psychological phenomenon, the authors fail to give any persuasive arguments supporting their choice of security over uncertainty.

As was noted previously, uncertainty and insecurity are not the same thing; and they are not necessarily related, so that changes in one will concomitantly change the other. Insecurity may result from uncertainty, but the extent of the insecurity depends upon the nature of the uncertainty and its consequences. By the same token, either security or insecurity may exist under conditions of certainty with the extent of the insecurity depending upon the consequences resulting from the certainty.

Few persons would argue that the risk manager has no jurisdiction over insecurities arising from certainty situations. Thus, in view of the importance of some of the

examples which might be mentioned, the uncertainty definition would appear to be inadequate. On the other hand, provided that the pure versus speculative dichotomy is maintained, the term "security" describes perfectly the "commodity" being managed by the risk manager. He should handle all insecurities so that they are minimized or eliminated—thus maximizing security. To the extent that uncertainties are made to approach certainty in such a way as to improve the well-being of the firm, uncertainty is the commodity treated. However, it must be recognized that uncertainty is only one of the many items which may be handled by a risk manager.

Some of the lesser advantages of defining risk as "security" are covered briefly by the authors, but they fail to develop the implications of their choice further than a brief statement that the quantitative and behavioral sciences can be incorporated as tool areas and that it conjures up certain ideas such as security guards and night watchmen. The concept is a much more dynamic one, however, and is replete with possibilities for enabling the risk management community to obtain recognition as being one of the true functional areas.

The Security Function

A department that gives security to a company would, by definition, be an influential one, and it would be one which would need to interact completely with all others. Until this time, little has been written about the relationship between the pure and speculative risks faced by a firm. Rennie advanced an interesting idea when he noted that, to the extent that a firm's premiums change with the amount of pure risk it assumes, insurance against pure risk has a speculative nature. No one has yet completely explored the extent to which the state of the firm does or should dictate the selection of risk management

techniques.³ Each decision must depend upon and be linked with financial, marketing, production, and accounting decisions, and must reflect the philosophy of management. Since these factors are constantly changing, a risk management program must remain flexible in all its phases, including limits, coverages, and deductibles, to name a few.

The term "security" precisely defines the purview of the risk manager; there is no question about his authority and it can appropriately be extended to cover the insecurity of the employee. Thus, every employee benefit plan should depend, at least for technical knowledge, upon the security department. And this jurisdiction should extend not only to group insurance and retirement plans, but to medical, rehabilitative, and even any

³This statement is made with due respect to the fact that implicit in Houston's discussion of decision theory is the idea that an individual's utility function is based upon the constraints with which he is faced. See also George L. Head, "Optimizing Property Insurance Deductibles," *Journal of Risk and Insurance*, Vol. XXXII, No. 3 (September, 1965), pp. 337-348, wherein recognition is given to the fact that deductibles must vary with the firm's situation.

psychiatric facilities which might be available to employees. It is clear that the security department would have to work closely with the personnel department in these matters, and indeed personnel may become incorporated into the security department. However, it is not the purpose of this communication to enter into the administrative function but merely to point out the areas of decision making authority.

Once the importance of security in areas beyond the "mere conservation of assets"⁴ is recognized, its image as something other than a section of the finance department becomes enhanced. The security department should maintain a body of knowledge that makes it pertinent to the well being of the firm as it interacts with entities outside itself, as its different departments interact, and as it interacts with its employees. Clearly then it will become a dynamic force and will earn for itself a place among recognized management functions.

⁴Russell B. Gallagher, in *Risk Management*, ed. H. Wayne Snider (Homewood, Ill.: Richard D. Irwin, Inc., 1964), p. 16.

FURTHER COMMENT

ROBERT I. MEHR* AND BOB A. HEDGES**

In their review article in a recent issue of this scholarly journal, Herbert S. Denenberg and J. Robert Ferrari (hereafter D-F) use as the text for their sermon the modified Shakespeare line that "a rose by any other name would smell the same [sic]."¹ (Shakespeare chose the words "as

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¹Herbert S. Denenberg and J. Robert Ferrari, "A Review Article—New Perspectives on Risk Management: The Search for Principles," *Journal*

sweet," but we have no objection to this attempt to improve upon Shakespeare.) They note the scientific correctness of this observation but reject it as being neither psychologically nor semantically useful. D-F could have chosen a more appropriate Shakespeare line as the text for their sermon, namely "There's small choice in rotten apples."

The text for our sermon also is taken from a Shakespeare line: "He uses his
of Risk and Insurance, Vol. XXXIII, No. 4 (December, 1966), pp. 647-661.

folly like a stalking-horse and under the presentation of that he shoots his wit.”

Neither Risk Nor Management

A thesis of the D-F article is that “risk management as presently preached and practiced often is neither ‘risk’ nor ‘management.’”² And D-F remind those who use words too freely (e.g., risk management) of the sad fate of Humpty Dumpty, whose words meant just what he chose them to mean, neither more nor less. They imply that there was a causal relationship between Humpty Dumpty’s use of words and his great fall, an observation blatantly offered without documentation or scientific proof, and one that cannot be substantiated.

While D-F do explain why they consider that risk management as presently preached and practiced is not often management, they fail to indicate why they believe that something other than risk is “not being managed” in the alleged risk management process. Is the management of security (the concept favored by D-F) different from the management of risk? Are the tools of security management different from those of risk management: risk retention, loss prevention and control, risk transfer, and risk reduction and control? If so, D-F have failed to demonstrate any difference. One does not have to deal with all risk to be engaged in the practice of risk management.

D-F argue that “there are good reasons for calling a rose a rose and a spade a spade” but they seem to find equally good reasons for not calling a risk a risk. Among these reasons are that risk implies too much, it is inherently vague, behavioral scientists (unnamed) deplore the term, and public relations men find it suggestive of an unfavorable condition. So should the subject be re-named? Lincoln is said to have remarked as follows: “If you call a tail a leg, how many legs has

² *Ibid.*, p. 648.

a dog? Five? No, calling a tail a leg don’t [sic] make it a leg.”

The necessity of having a dichotomy of pure and speculative risk in order to identify the interest of the “risk manager” appears to disturb D-F. We look upon pure and speculative as polar concepts, and would not argue for their retention except for their conceptual usefulness. We do not view any risk as being completely pure in the sense that only loss can result. For example, if the probability of the total destruction of a given building during a one-year period is 2 percent, and the value of that building, if it is still standing at the end of the year, would be \$100,000, then the building is worth \$98,000 at the beginning of the year, ignoring rental value. If the building is destroyed, the loss is \$98,000. If the building is not destroyed, the gain is \$2,000. In this sense, all risks are speculative.

In spite of the fact that by definition there can be no pure risk, the concept is a useful one in delineating the responsibilities of the risk manager. (By definition there can be no void contract, but the concept of the void contract is useful to the legal profession.) With respect to the use of words, “‘the question is,’ said Humpty Dumpty, ‘which is to be the master—that’s all.’”³

We return to the second part of the D-F thesis that “risk management as presently preached and practiced often is neither ‘risk’ nor ‘management,’” and, to paraphrase Humpty Dumpty, when D-F use a word it means just what they choose it to mean, neither more nor less. But, unlike Humpty Dumpty, when someone else uses a word, D-F insist that it means something other than what the user chooses it to mean: either more or less. “‘It’s very provoking,’ Humpty Dumpty

³ The authors of this commentary disagree on the virtues of the “static-dynamic” classification system, so discussion of its merits (?) is omitted.

said after a long silence, 'to be called an egg—very.'

The Firing Range

D-F in their "search for principles" criticize a collection of topics (or ideas, or something or other) in risk management. In general the salvos fired were on target but some of their shots hit other things, and their remarks make it clear that these other hits were not necessarily "stray" or random effects. Presumably the wide range was necessary for D-F to achieve their announced "new perspectives." Although a full evaluation of their comments should deal with both their announced and unannounced targets, we will limit our return fire to those items which they include in their conclusions.

Because the brunt of the D-F attack fell on the writings of "risk management academicians," a general comment on the documentation offered is in order. D-F really dealt with only four publications in "risk management": Mehr and Hedges,⁴ Williams and Heins,⁵ Snider,⁶ and one of Rennie's articles.⁷ Although other articles were mentioned, they were not really the subject of the D-F commentary. "The recent trilogy of text books on the subject" (was Snider's collection a text book?) plus "a provocative article by Rennie" form an inadequate base upon which to make the broad sweeping conclusions found in the D-F article, even under the guise of new perspectives or in the search for principles. According to Samuel Johnson, the two most engaging powers of an author are "to make new things familiar, and

⁴ Robert I. Mehr and Bob A. Hedges, *Risk Management in the Business Enterprise* (Homewood: Richard D. Irwin, Inc., 1963).

⁵ C. Arthur Williams, Jr., and Richard M. Heins, *Risk and Insurance* (New York: McGraw-Hill Book Company, 1964).

⁶ H. Wayne Snider (ed.), *Risk Management* (Homewood: Richard D. Irwin, Inc., 1964).

⁷ Robert A. Rennie, "The Measurement of Risk," *Journal of Insurance*, Vol. XXVIII, No. 1 (March, 1961), pp. 83-91.

familiar things new." D-F have done neither.

The Snider book was a volume in the Huebner Foundation lecture series, and, as has been the practice in that series, most of the contributions (in this case ten of twelve) were by practitioners, not academicians. D-F may have assumed that the selections the academician-editor made of topics and lecturers represented an "insurance academicians'" views of "risk management" and therefore put that book on the same footing as the others. But surely the context in which the lectures were given and the availability of businessmen willing to deliver them must have been strongly deterministic of that book's content.

The works D-F commented upon were not the only writings in "risk management" available to them. Assuming one excludes the American Management Association publications as not being by "academicians," there have still been other articles and these will be referred to here as the occasion arises.⁸ Inasmuch as the D-F article was intended as a commentary on the work and thinking of "risk management academicians" in general, it should have included these other works in its survey of the field.

Now, let us consider each of the conclusions reached by D-F.

Use of "Other" Sources

The first of the D-F conclusions was that "the neglect of the literature of management, of actuarial science, and of decision theory . . . suggests that risk management academicians have ignored the literature of other fields and the tools that should be readily available." This statement is partly a claim of fact (neglect of writings of the kind mentioned) and partly a conclusion (that, therefore, it is

⁸ Robert A. Rennie is claimed by us as one of the "academicians" at least as far as his work in "risk management" is concerned.

problem that they have ignored other relevant fields and have failed to use analytical tools). Neither part of this statement is supported by the evidence.

With respect to decision theory:

(1) Other articles not mentioned by D-F use some decision theory explicitly. For example, from 1960 through 1965, four articles appeared in this *Journal* on the subject.⁹ And Greene's second chapter in his *Risk and Insurance* includes the basics of decision theory.¹⁰

(2) Two of the four authors of the articles just mentioned were Williams and Hedges. As these articles appeared before their books, it is evident that they were aware of decision-theory literature. It is unrealistic to believe that they would ignore it in their books. In Williams and Heins (hereafter W-H), pages 22-37 and 59-69, particularly the latter, the principal elements of decision theory are set forth. Mehr and Hedges (M-H) also relied on decision-theory concepts and methods. (See their pages 16-25, 256-65, 337-51, and 381-82.) As for the literature, both books cite the well-known Schlaifer and Luce-Raiffa books, among others.

With respect to actuarial science:

(1) It can be difficult to distinguish actuarial science from decision theory in the risk management context. Both use probability theory and discounting procedures. Also both consider questions of

⁹ George L. Head, "Optimizing Property Insurance Deductibles, A Theoretical Model for the Corporate Buyer," *Journal of Risk and Insurance*, Vol. XXXII, No. 3 (September, 1965), pp. 337-48; Mark R. Greene, "Application of Mathematics to Insurance and Risk Management," *Journal of Insurance*, Vol. XXVIII, No. 1 (March, 1961), pp. 93-104; Bob A. Hedges, "'Proper' Limits in Liability Insurance—A Problem in Decision Making Under Uncertainty," *ibid.*, Vol. XXVIII, No. 2 (June, 1961), pp. 71-76; C. Arthur Williams, Jr., "Game-Theory and Insurance Consumption," *ibid.*, Vol. XXVII, No. 4 (December, 1960), pp. 47-56.

¹⁰ Mark R. Greene, *Risk and Insurance* (Cincinnati: South-western Publishing Company, 1962).

"values" or "utilities." Indeed, a perusal of actuarial proceedings suggests that actuaries discovered decision theory before the decision theorists did.

(2) Certainly both W-H and M-H use probability and concepts of value and "expected value." And these authors are and were acquainted with at least the basic aspects of actuarial procedures. Other "insurance academicians" have also used them: D-F noted Houston's extensive article;¹¹ Houston also had an earlier one,¹² and there have been other articles in which "insurance academicians" have employed actuarial theory.¹³

(3) The evidence is that the "risk management academicians" have not neglected the fields of actuarial science if "to neglect" means "to disregard or to omit." But if the sense is "to slight," then the question arises of how much is appropriate. D-F may well disagree with W-H and M-H as to how much is enough.

(4) The question may be one of quality rather than quantity. D-F suggested, for example, the trichotomy of "certainty, risk, and uncertainty" which they found in decision theory. This division is little different from Frank Knight's, which M-H specifically rejected (pages 11-12).

The basic question is what is to be used from actuarial and decision theory. For any theory to be used, it must be established and organized, and its relationship

¹¹ David B. Houston, "Risk, Insurance, and Sampling," *Journal of Risk and Insurance*, Vol. XXXI, No. 4 (December, 1964), pp. 511-38.

¹² David B. Houston, "Risk Theory," *Journal of Insurance*, Vol. XXVII, No. 1 (March, 1960), pp. 77-82.

¹³ These articles are too numerous to cite. Again taking the period 1960-65, and using just this *Journal* (including its predecessor titles), one finds academicians had articles involving actuarial theory in the following numbers: June, 1960; March, 1961; June, 1961; September, 1961; December, 1961; September, 1962; December, 1962; March, 1963; June, 1963; June, 1964; September, 1964; December, 1964; March, 1965; June, 1965; September, 1965; December, 1965.

to the problems at hand identified. While decision and actuarial theory are established and organized, the specific ways in which they relate to "risk management" problems are not. In other words, perhaps other useful tools for risk study "should be available" (as D-F put it) in decision and actuarial theory, but exactly what they are and just how they can be used is not yet clear.

With respect to "other fields:"

(1) D-F claim that evidence "suggests that risk management academicians have ignored [a stronger word than neglected] the literature of other fields." The field which is not "other" here apparently is "risk-and-insurance," strongly hyphenated. However, it is not clear just what fields are "other" fields. A footnote at this point states that, for over twenty years, Prosser's basic text on tort law was ignored by "insurance text writers." D-F wildly assert "Even Kulp, the master specialist of casualty insurance, was apparently unaware of Prosser . . ." We suggest that a conclusion that Professor Kulp was unaware of Prosser's work on torts because it was not cited in the Kulp book would be no different than a conclusion that D-F are unaware of the science of logic because they are guilty at this point of a fallacy. Perhaps D-F are using sophistry. (It is interesting to note that the book that broke the twenty-year spell was the first "risk management text," M-H, followed by W-H. And for what it is worth, Mehr was aware of Prosser when the first edition of his *Principles of Insurance* was being written more than fifteen years ago, although Prosser was not cited there.)

(2) The M-H and W-H books were based on the methods of economics. The M-H text used business finance extensively, with a concomitant reliance on accountancy. In W-H, one finds much

from social welfare. Both books also use historical methods.

(3) How can anyone write in "insurance" or "risk" and not use "other" fields? Neither insurance nor risk is a "discipline." Both are phenomena, or abstractions from phenomena. The study of phenomena takes the tools of one or more disciplines, otherwise there can be nothing except jumbled description. (Organized description requires organization principles taken from somewhere.)

With respect to management material:

(1) The real complaint from D-F seems to be that management literature has been ignored and that a management orientation has been lacking in "risk management" writings, at least in the M-H, W-H, and Snider books.

(2) The charge simply was improperly levied as far as the W-H book is concerned. Even though D-F admitted that some reference to management appeared in the W-H book, that admission was inadequate. The risk management portion of that book is full of management references—not only in Chapters 5 and 6, as noted by D-F, but also as much or more in Chapter 1. Fayol's nomination of "security" as one of the basic functions of management—a nomination to which D-F gave considerable emphasis, is quoted and discussed, as are concepts from Frederick Taylor and others.

D-F complained: "Williams and Heins still preferred to proceed for the most part in the traditional manner of emphasizing the technical aspects of insurance from the point of view of the risk manager."¹⁴ The W-H text was entitled *Risk Management and Insurance*. It was clearly designed as a text in both subjects. That was the strategy of the authors. They wrote a book for live use in real courses. It may or may not have been

¹⁴ *Op. cit.*, p. 653.

what D-F want, but that certainly is a different question than how academicians have understood or treated "risk management" itself.¹⁵

(3) The M-H text is another story. "Management" meant something different to Mehr and Hedges than it did to D-F (and probably W-H). This point is taken up later. Meanwhile, in the sense that D-F used the term (see below), it is true that the M-H text neglected "management" and management literature. Almost all of its few references to the relationship between "risk management" and other management dealt only with the ways in which the aims and activities of other managers in the business would or should affect risk management decision or operations.

(4) The Snider book includes considerable material on management in the D-F sense. Over half of Gallagher's lecture dealt with it, as did much of the material by Parrett, Austin, and O'Shaughnessy. Finally, at least five of the eight other lectures contained specific mention of one or more aspects of the relationship between "risk management" and other management.

When one looks beyond these three books for other use of management literature or viewpoints in writings on risk management, one encounters practitioners more frequently than academicians.¹⁶ However, work by academicians has also appeared.¹⁷

¹⁵ Even Mehr and Hedges, who intended to write only about "risk management," felt the practical necessity of including nearly 200 pages on insurance coverage, covers, law, company operations, and so forth.

¹⁶ In this *Journal* have been the following: Oricon M. Spaid, "The Calculated Risk in Business," Vol. XXX, No. 2 (June, 1963), pp. 245-55; James Cristy, "Organizational Problems in the Control of Risk of Accidental Loss and Management of Employee Benefit Plans," Vol. XXX, No. 1 (March, 1963), pp. 47-52.

¹⁷ Bob A. Hedges, "Functions and Roles in Risk Management" and "The Problem of Principles in Risk Management," *Annals* (Society of

D-F's second comment on management concerns the place of "management" in "risk management." This, of course, depends upon what "risk management" means or should mean. It is possible, for example, that the "management" part of "risk management" retains no more of the normal meaning than either the "pig" or "guinea" in "guinea pig," or the "insurance" in "social insurance." "Risk management" is a term for which no one has admitted paternity, and which hardly anyone professes to like. Yet it hangs on, apparently for lack of the ability of anyone to provide something else which authors and practitioners dislike less. "Risk and loss control" has been suggested in addition to the Fayolian idea of the security function.¹⁸

Meanwhile, the term "risk management" has stuck (like a burr under the saddle?), and D-F, like nearly everyone else, use it. But they believe the "management" part ought to mean something in particular. Specifically, they complain, "The insurance . . . academician concentrates on the technical and substantive side of risk management. He neglects, or even completely ignores, the procedural or adjectival aspect of the management ingredient of risk management. In other words, he eliminates important management considerations from his analysis."¹⁹

C.P.C.U.), Vol. XVIII, No. 3 (Fall, 1965), pp. 237-46, and Vol. XVII, No. 2 (Summer, 1964), pp. 179-87; H. Randolph Bobbitt, Jr., "Risk Management," *ibid.*, Vol. XIV, No. 2 (Summer, 1961), pp. 143-62; Robert A. Rennie, "Fundamentals of Risk Management," *Proceedings of the Twelfth Annual Insurance Conferences* (Columbus: Ohio State University Publications, College of Commerce Conference Series No. C-143, 1961), pp. 3-14.

¹⁸ See, e.g., *Identifying and Controlling the Risks of Accidental Loss*, Management Report No. 73, American Management Association (New York: the Association, 1962); Donald L. MacDonald, *Corporate Risk Control* (New York: The Ronald Press Company, 1966).

¹⁹ *Op. cit.*, p. 648.

Then, later: "It may be this [procedural] managerial function should be assumed by other managers. This is a question, however, that should be answered on its merits and has been ignored by emphasis on the risk manager as technician or master specialist."²⁰

We comment as follows on these remarks:

(1) D-F "used the words "substantive" (or "technical") and "adjectival" (or "procedural"). These words seem to indicate the necessary order of attack on this new subject: it would seem the "substantive," or substance, must come before any "adjectival," or modifying, material can be applied to it.

(2) "Let the shoemaker stick to his last." Those of us who were trained in economics and finance will do well to work principally in the areas of our subject matter, which seem to have to do with the nature, causes, effects, significances, and other operational (technical) and substantive aspects of risk in the business firm (or other organization). As we succeed in establishing these substantive aspects of risk-management, then there will be reason for specialists in procedural management to try to figure how to make use of them. (The mathematics, the physics, and the electronics of computer operation came first; only after these had proceeded to the point where they provided something to use did procedures for using them begin to be developed.)

(3) There is more than one definition of "management." Consider, for example, the six business functions given by Fayol and cited by D-F and W-H. Although Fayol made "managerial activities" only one of the six, with both "financial" and "security" (what is the adjective?) separate, there are those who would identify "management" (or "administration") as

the process of getting the other five activities accomplished. Students of management as such have worked hard and rather successfully at extracting from the various "functions" of production, marketing, finance, and so forth, the common elements or processes required for getting any and every one of them performed, and they have said that this is their subject matter. This would mean that the subject matter of "management" is "procedural" and "adjectival."

A natural outcome of this approach has been an implication (and sometimes an explication) that substantive matters, being peculiar to only some parts of "management" and therefore not found in most of "management" are therefore not "management." Or, taking a less drastic position: scholars who talk and write about things they call "financial management," "credit management," "personnel management," and so forth, are misusing or misapplying the term "management" unless they include procedural matters in their study.

"Financial management" must include such topics as "how to organize so as to cope with bankers and brokers;" "how to obtain communication between financial men and accountants, production men, merchandisers, and so forth;" "systems for handling the receipt, holding, and disbursement of funds;" and "functions of the controller, treasurer, financial vice president, president, finance committee, board of directors, division managers, and so forth, with respect to the raising, holding and disbursement of funds."

But to this appraisal, the people who make "finance" their special study generally reply, "Not so. Our problems are to decide what the business financial organization is, or should be, trying to accomplish, and what resources other than personnel are necessary and available for accomplishing that objective. The specialists in organizational theory

²⁰ *Ibid.*, p. 650.

deal with the behavioral aspects; the specialists in money and funds deal with the economics. The practitioners have the responsibility for taking the ideas of the management specialists and those of the financial specialists (for example) and putting together a specific organization to accomplish a specific financial job." We subscribe to this concept.

(4) We reject the singular definition of management implied in the D-F thesis that management "is getting things done through people" and accept as an equally useful definition that management "is the art of using resources to achieve organizational goals." We cannot accept the narrow view that any study which does not include the procedural aspects of management should not be called "something-management" (for example, financial management, or even risk management). When one analyzes the game of football, one discovers that its most general and fundamental techniques are those of blocking and tackling. But contemporary quarterbacks do as little blocking and tackling as possible. Would D-F argue that those who learn to do whatever it is that modern quarterbacks are doing are learning something other than "football"? Do not specialized managerial duties exist that are different from those of other members of the management team?

D-F criticize risk management writings for concentrating on these duties and not paying enough attention to the ways in which the specialized duties relate to over-all organizational objectives and to the duties of "general" management. A case can be made that until the content of the "risk management" responsibilities is known, it is difficult to interrelate them with other responsibilities and futile to attempt to determine where in a management hierarchy the risk manager's responsibilities should be laid. D-F made it clear that they did not believe the

"action or process" of "risk management" has been well identified (unless its identity is "nothing"). Indeed, they expressed doubt as to whether it could ever be identified despite the attention "that has already been heaped on the 'technical' side of "risk management."

We conclude that there is much to do on the "risk" side of "risk management" before its ability to serve societal or organizational purposes can even be demonstrated, let alone established. The D-F conclusion read "the corporate risk management function will not be understood or effectively executed without the same attention to management that has already been heaped on the technical!" Our conclusion does not dispute that portion of this statement which deals with "effectively executed." It does disagree, however, with that part which makes "understanding" also depend on procedural matters. To understand that the steps in risk management are (1) setting of over-all organizational goals, (2) determination of what these goals mean with respect to dealing with "risks" or various subsets thereof, (3) analysis of the risk problems to be dealt with, (4) selection of means for dealing with these risks in line with organizational objectives, and (5) follow through on the means selected, does not require settling the questions of "who does what," that is, of procedures.

Another D-F complaint is that writers in the "other" fields have ignored risk management. Given that the first full book on the subject is less than four years old, this is hardly surprising. However, the *Financial Handbook* of 1964 contains a chapter on risk management, and Jerome B. Cohen, Associate Dean, Bernard M. Baruch School of Business and Public Administration, the City University of New York, and Sidney M. Robbins, Professor of Finance, Graduate School of Business, Columbia University, discuss

risk management at some length in *The Financial Manager*.²¹ They write: "It is perhaps fitting that a book devoted to an appraisal of the functions of the financial manager should close with a chapter on risk management, because its implications to the formulation of effective programs and logical decision-making, and indeed the relationship of the area to the overall responsibilities of the financial manager, have only *recently become apparent* [italics supplied]." ²²

A systematic look at other recent works might turn up much more material of this kind.

²¹ Jerome B. Cohen and Sidney M. Robbins, *The Financial Manager* (New York: Harper and Row, 1966), Chapter 29.

²² *Ibid.*, pp. 987-988.

AUTHORS' REPLY

HERBERT S. DENENBERG AND J. ROBERT FERRARI*

The article under review¹ was written originally for the dual purpose of expressing our views and inspiring additional dialogue on the subject of risk (security?) management. The first objective was accomplished when the article was submitted for publication, and, subsequently, the efforts of four reviewers satisfied the second.

Dr. Hickman is to be commended for his instructive views on the relationship between actuarial science and operations research. Indeed, his ideas suggest the approach one might take to attract able

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¹ Herbert S. Denenberg and J. Robert Ferrari, "New Perspectives on Risk Management: The Search for Principles," *Journal of Risk and Insurance*, Vol. XXXIII, No. 4 (December, 1966), pp. 647-61.

We agree with the D-F conclusion that balance in the use of quantitative and qualitative approaches should be sought, recognized, and appreciated by insurance educators. Furthermore, we accept the D-F assertion that "scholarly journals are offering increasing evidence that nonsense can appear in either quantitative or qualitative form," and we look upon the publication of their own article as part of the evidence.

Samuel Johnson said, "Attack is the reaction. I never think I have hit hard unless it rebounds." Mehr and Hedges have the same feeling.

students of operations research to the actuarial profession. Nevertheless, they do not remove the incompatibility of actuarial science, with its emphasis on problems of the insurer, and risk management, with its emphasis on problems of the insured.

The Rabel review both defended the traditional definition of risk as "uncertainty concerning loss," and espoused the virtues of security as being a term that "describes perfectly the 'commodity' being managed by the risk manager." We welcome the additional support for "security management" but wish to comment on Rabel's view of risk.

Rabel prefaces his specific remarks by stating that "any work can be evaluated fairly only in terms of what it purports to be." This is a well-intended gesture probably to suggest that he will assess the article *only on the basis of the stated purpose*. But the over-all evaluation of a

work must include its impact, sometimes abused smoking-cancer example. However, instead of backing up for reconsideration of his original premise, Rabel introduces "worry" to explain the increased mental anguish that can be observed in certain situations when knowledge is increased. Thus, he labels observable behavior as worry and retains a concept of uncertainty that cannot describe behavior that is frequently observed.

As for the specific discussion of terminology and concepts, Rabel misunderstood us if he thought we were suggesting that risk be defined so that the risk manager would deal only with quantifiable phenomena and not psychological behavior. We simply want a risk to be called a risk (or objective phenomena objective), uncertainty to be called uncertainty (or subjective phenomena subjective), and then both aspects of the problem can be treated in the most appropriate manner. To view risk as uncertainty disallows this distinction.

Rabel also becomes entwined in the dilemma of dealing consistently with the effect of increased knowledge when risk is defined as uncertainty. He attempts to establish a relationship by stating "a rule may be formulated to the effect that when knowledge is increased a person is more certain (less uncertain) than he was prior to the increase." We suggest that Rabel sets forth a rule that almost everyone violates quite frequently. In other words, this is a rule that simply does not predict human behavior. Here is another justification for distinguishing between risk and uncertainty, the advantage being that those objective measures that allow increased predictability with increased information can be kept separate from whimsical psychological reaction to increased knowledge.

Rabel himself sees the flaws in his rule, making particular reference to the much-

² A recent example is Carlton Koons' *The Origin of Races*, which purported to be a scientific and well-documented treatise on anthropology but which became something of a sociological and political bombshell because of findings that implied evolutionary inferiority of the negroid race.

work must include its impact, sometimes abused smoking-cancer example. However, instead of backing up for reconsideration of his original premise, Rabel introduces "worry" to explain the increased mental anguish that can be observed in certain situations when knowledge is increased. Thus, he labels observable behavior as worry and retains a concept of uncertainty that cannot describe behavior that is frequently observed.

Surprisingly, he ignores the concept of "regret," that is, the dissatisfaction that one will experience after an event has taken place because a more optimal course of action was not pursued. The difference between the outcome achieved and the best outcome possible indicates the amount of regret. Regret may be readily applied to risk management where potential regret is undoubtedly reduced by buying insurance. The regret resulting from the occurrence of a loss following a decision to not buy insurance will generally exceed the regret resulting from the purchase of insurance for a period during which no losses occur.

We recommend that Rabel drop his rule and preserve uncertainty to describe the aggregate psychological impact of a problem whether it be the result of worry, regret, or other subjective reactions.

We wish to make it clear to all readers of this *Journal* that we do not concede the validity of the basic arguments made in the Mehr-Hedges (M-H) communication. However, we think the arguments are sufficiently developed in their communication and our original review so that all points of conflict need not be discussed in this reply. To avoid possible misunderstanding, however, we feel that it is necessary to elaborate on several issues raised by the M-H review.

The basic nature of their comments in general can be illustrated by their treatment of our remark that for over twenty

years Prosser's text on tort law was ignored by "insurance text writers."

M-H comment as follows on this observation:

D-F wildly assert 'Even Kulp, the master specialist of casualty insurance, was apparently unaware of Prosser . . .' We suggest that a conclusion that Professor Kulp was unaware of Prosser's work on torts because it was not cited in the Kulp book would be no different than a conclusion that D-F are unaware of the science of logic because they are guilty at this point of a fallacy. Perhaps D-F are using sophistry. (It is interesting to note that the book that broke the twenty-year spell was the first "risk management text," M-H . . .).

Like most of M-H's comments, their observation is cute and clever, and superficially logical and relevant. But upon careful analysis, M-H are found to be—as usual—"all wet."

First, M-H claim that theirs was the first insurance textbook to cite Prosser in 1964. In fact, Mowbray and Blanchard's text (both the fourth and fifth editions in 1955 and 1961, respectively) cited Prosser long before M-H. We claim risk management authors are not familiar with the literature of management. M-H are apparently not even familiar with insurance literature.

Second, M-H claim the assertion that Kulp was unaware of Prosser is one "wildly" put forth. If they had taken a look at Kulp's bibliography (which they apparently did not do, just as they apparently have not looked at Mowbray and Blanchard's either), they would see why it can fairly be concluded that Kulp was in fact unaware of Prosser's text. In his third edition of 1956, Kulp cited only three tort textbooks—Bigelow's *Law of Torts*, published in 1907, Shearman and Redfield's *A Treatise of the Law of Negligence*, published in 1913, and Thompson's *Commentaries on the Law of Negligence*, published in 1910-14.

Kulp cited these three outdated, if not obsolete, tort texts and failed to cite Prosser, whose first edition appeared in 1941. Prosser was only one of many more recent tort textbooks that might have been cited by anyone familiar with legal bibliography—at least its development after 1914. Prosser is singled out because it is universally regarded as a legal classic, the bible of the student of tort law, and perhaps one of the best legal treatises ever penned. Surely, it is not unfair to conclude that a writer, who cited three tort texts published in 1907, 1913, and 1910-14, and fails to cite the classic text, is not aware of the legal literature relating to his field.

Kulp could be excused for not citing Prosser in his revised edition of 1942. The first edition of Prosser appeared in 1941 (the second in 1955, and the third in 1964). But in 1956, Kulp merely cited the same three tort texts cited in his 1942 edition.

Mehr, for reasons best understood by him, felt impelled to add the following to M-H's discussion of the Kulp bibliography: "And for what it is worth, Mehr was aware of Prosser when the first edition of his *Principles of Insurance* was being written more than fifteen years ago, although Prosser was not cited there." The well-informed reader might read the discussion of torts in *Principles of Insurance* and draw his own conclusion.

M-H should be commended on their frankness in discussing legal bibliography on at least one point. In the preface to their book on *Risk Management in the Business Enterprise* they have the following statement on their chapter on liability exposures:

Professor Robert N. Corley read and threw away our first draft of Chapter 7, bringing from us an initial reaction well-expressed by the lines from King Henry VI: "The first thing we do, let's kill all the lawyers."

It is unfortunate, but apparently Professor Corley did not see the second draft of Chapter 7 or the rest of the textbook.

M-H elsewhere continue to strive valiantly to show that risk management text writers have not “ignored the literature of other fields and the tools that should be readily available.” For example, M-H claim that they “relied on decision-theory concepts and methods.” They invite the reader to four sections of their book, including pages 16-25. There they belabor a series of “precepts”—“Never play with more money than you can afford to lose . . . Don’t risk much for little . . . Consider the odds.” Then they proceed to belabor the obvious in excruciating detail with such profound lessons of life as: “The team that is one touchdown behind in the final minutes of the last quarter can better afford the risk of interception by throwing the ball than can the winning team, which should play out the clock conservatively. On the other hand, the team that is three touchdowns ahead can afford to be generous in the use of third and fourth strings during the closing minutes of the game (p. 17).” M-H’s football is almost as profound as their observations on risk. And they even try to pass this material off as “decision theory.” Surely, M-H’s attempt to pass such material off as “decision theory” proves exactly what they seek to deny.

M-H display their characteristic grasp of other fields of literature again in their discussion of the charge that “other” fields have ignored risk management. They first conclude that “Given that the first full book on the subject is less than four years old, this is hardly surprising.” They then take another tack by citing a book by Cohen and Robbins, the *Financial Handbook* of 1964, which contains a chapter on risk management. They conclude: “A systematic look at other recent works might turn up much more

material of this kind.” Thus, M-H seek to establish that “other” fields do not ignore risk management by a three step argument: (1) it’s not surprising “other” fields ignore risk management; (2) other fields don’t ignore risk management because there is a chapter on this subject in at least one book; and (3) if other books in other fields were systematically examined, risk management references might be discovered. Here again, M-H publicly proclaim their ignorance of risk management-related material. We sought to prove risk management authors neglect material in other fields. M-H deny this, but in the process repeatedly proclaim their own ignorance of related literature.

M-H offer a confusing example to demonstrate that all risks are speculative. The confusion arises because they fail to point out that they are really comparing market or book values with expected values. In effect, they claim that since a building with an expected value of \$98,000 (a building worth \$100,000 with a probability of not being destroyed of .98) will be worth \$100,000 at the end of the year if destruction does not occur, and that there is thus a gain of \$2,000. But this is an artificial “profit” derived by comparing real and expected values. If this building could have been sold at any time during the year for \$100,000, there is no gain to be derived during the year because the building had a calculable expected value of \$98,000. More appropriately and in comparable terms, it was worth \$100,000 at market value at the beginning of the year and \$100,000 at market value at the end of the year. Additionally, if the probability of destruction within a year remains the same, the expected value at the end of the year (beginning of the next year) is still \$98,000. In both cases, comparable values indicate no gain.

M-H seem to have hit the nail on the head with their football analogy based on the observation that quarterbacks do

little blocking or tackling even though these are the most general and fundamental techniques found in the game. Aside from the fact that the term “football” is not descriptive of the modern version of the game, the analogy has an added application overlooked by M-H. We presented arguments in our original paper that implied the risk manager is now doing too much blocking and tackling (technical activities) and not enough quarterbacking (managerial activities).

M-H complain that the recent trilogy

of textbooks on risk management do not “form an adequate base upon which to make the broad sweeping conclusions found in the D-F article” We would have thought risk management textbooks would reflect the literature of the field and display familiarity with recent developments. Apparently, M-H do not think the current risk management texts display familiarity with the literature of risk management. Surely, M-H are entitled to speak for their text and we do not hesitate to accept their conclusion.

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