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PROTOCOL: NEW TOOL FOR THE  
PRODUCT INNOVATION ARMADA

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PROTOCOL: NEW TOOL FOR THE PRODUCT INNOVATION ARMADA

C. Merle Crawford

The new product development process is all too frequently plagued by costly delays, cost overruns, products which don't sell well, and a general state of near battle between marketers who want better new products and R&D groups which are trying to provide them. These problems are being attacked by a wide variety of new management practices. One of the newest techniques is a document called a protocol. This article tells why it is desperately needed, and points out the problems in its development and use. Professor Crawford has been a member of the Marketing Department at The University of Michigan's Graduate School of Business Administration since 1965, following a ten-year career with Mead Johnson & Co. in marketing research, product management, and marketing management. He was the Charter President of the Product Development and Management Association.

## PROTOCOL: NEW TOOL FOR THE PRODUCT INNOVATION ARENA

In many companies today the new product frontier has become a battleground between marketing and R&D. This is not the usual communications interface problem, but rather one of outcomes:

1. New products are inevitably late -- sometimes just a bothersome month or so, but often a year or more.
2. The new items are almost always more costly than predicted -- and not just because of inflation.
3. The new products fail to sell well in the marketplace, or fail to meet economic goals. Studies show that new products often (1) do not solve user problems well enough or (2) do so but have other drawbacks which turn customers off.
4. R&D and marketing become engaged in a sparring match in which each blames the other for these misfires.

Observers find many reasons for these situations, but increasingly it seems the problem is indeed in R&D: they are working on the wrong product or in the wrong way. But, it is not the fault of R&D. It is the result of poor direction.

Consequently, we are now seeing one of the most dramatic redirections in the history of new products management: much more money is now being spent prior to R&D -- so much, in fact, that Booz, Allen, and Hamilton now reports the pre-R & D share of total new product expenditures to have risen from about 10% in the 1960s to over 20% today. Companies have doubled the share of monies allocated to ensuring that R&D is focusing on the right projects and progressing in the right directions. This new emphasis has taken several forms, such as:

1. Organizing to provide a manager of new products, a person who is responsible overall, in the name of general management, not

functionally or territorially loyal. This dimension of management includes miniaturization, with occasional overtones of entrepreneurship.

2. Providing that manager with a full statement of new products strategy -- delimiting strategic arenas for the new activity, setting appropriate goals, and stipulating various motivating and restraining policies for implementing the new product activity -- degrees of innovativeness, functional emphasis, mandatory precedence in market entry, etc.
3. Early market research in those strategic arenas, prior to ideation.
4. New emphasis on concept development, including generation, testing and enhancement.

These new approaches can be traced to two ideas which appear to be at the root of the cost/time/failure problem. First, R&D today is very costly to manage. It is highly technical, and increasingly long-term. Management cannot afford to be surprised at project outcome. At the same time, R&D is increasingly critical to the firm's marketplace competitiveness.

Second, managements today are often becoming disillusioned with the change they made ten or twenty years ago from technical-driven R&D to market-driven R&D. Ford Motor Company, for example, decided in 1973 that its car product planning function should move from engineering to marketing. In 1980 they moved it again, this time to a nonfunctional matrix stance. Unfortunately, giving the reins to marketing has not always resulted in better guidance for R&D.

The consequence, again according to BA&H, has been a reduction in the average number of new product projects needed to yield one marketable new product, from 58 in 1968 to 7 today! The other 51 projects, diversions of

time and money, are now eliminated before reaching the stage of technical development.

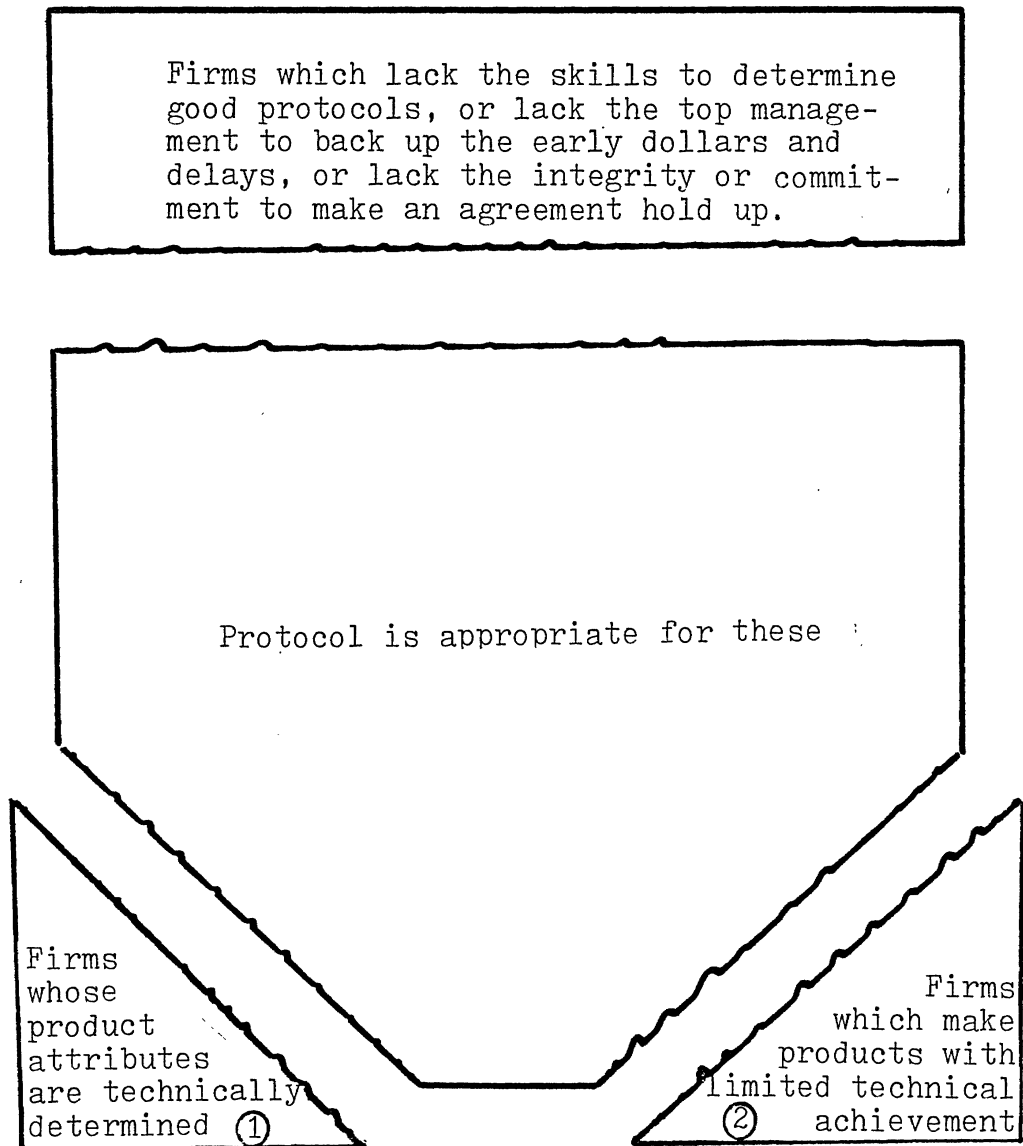
This article concerns one technique for better management of product operations, something still so new that it has received no publicity -- what I prefer to call the new product protocol. The protocol gives specific direction to R&D, based on what has been learned in the course of several pre-R & D activities -- especially strategy and concept testing. The protocol has the power, if properly used, to substantially reduce the time, cost, and misfire problems which so often confound new product operations. The prevention of these problems can take the fire out of interface strife between R&D and marketing.

#### More about the Problem

Before discussing the solution, however, let's look again at the problem which is producing this interest in early planning. First of all, some companies don't have it. There are cases where the customer/user has the ability to stipulate exactly what is wanted in a new product. The pharmaceutical firm involved in the creation of new prescription drugs, for example, serves a medical and scientific community which knows its problems very well. It needs diuretics which will remove body fluid without side effects. It needs chemicals to selectively stop cancerous cell destruction. It needs a synthetic insulin (see Figure 1).

These scientific breakthroughs may take longer than expected, but not because of inept direction to R&D. Not because technical dollars are being expended on useless attributes. Not because the new product doesn't actually work. On the periphery of such technical development there are disputes (and errors) over such matters as form and packaging. But these are not crucial to the success of the product.

Figure 1  
Firms Which Cannot Make Effective Use of a Protocol



① For example: frontier pharmaceuticals, many military items

② For example: some food items, many services

There are similar industrial examples. Dow Chemical will occasionally send technical people from R&D out to deal with users directly, to develop products which are then handed to marketing to sell. This is entirely feasible if customers can give the direction needed. There are also industries, such as biomedical instrumentation, where users actually develop prototypes which they give to manufacturers for cloning. The auto companies issue parts descriptions for bid so R&D at the supplier level is still primarily a process/cost problem, not a matter of product attributes.

At the other extreme, marketers occasionally can talk to consumers and literally develop the necessary product attributes in their offices. This was the standard mode of product development in the consumer packaged goods industry for many years. R&D in these firms often wasn't even called R&D -- food firms commonly have food kitchens to this day. Unfortunately, competition and the advancing state of technology are rapidly eroding this mode of development. The problems of time, cost and incorrect attributes are increasingly mentioned.

Most firms today function somewhere between these two extremes. The user cannot cite an attribute set which optimizes the manufacturer's situation, and neither can marketers. The conversation goes something like this:

Marketing: We're going to be needing a solar-powered version of our standard garage door opener, and soon.

Technical: How reliable must it be, should it be controllable from inside the house, should we incorporate the new electronics technology, should the collectors be separate from the home's already installed collector system, etc.?

Marketing: Well, you're the technical people -- look at those things and make some recommendation.

Technical: In other words, you don't know what you want?

Marketing: Cripes -- you gotta tell R&D exactly how to make anything. What do they do for a living? How am I supposed to know where the collectors should be located?

Technical: If we build an electronic system, you'll tell us it is too costly and breaks down. If we go electric, you'll tell us we live in the 1930s. Wherever we put the collectors you will tell us is wrong. Every time we guess, you second guess.

Marketing: O.K. Put the collectors only on the garage roof.

Technical: That probably can't be done.

The new product protocol, including the process used to develop it, represents an attempt to solve problems of this type, and in the process to reduce the frictions associated with unnecessary time and cost. (See Figure 2 for other versions of this problem.)

#### Definition

Webster's New World Dictionary defines "protocol" as:

1. An original draft or record of a document, negotiation, etc.
2. A signed document, containing a record of the points on which agreement has been reached by negotiating parties preliminary to a final treaty or compact.

A new product protocol is an agreement between three departments (marketing, technical, and general management) as to exactly what R&D is to achieve. Marketing agrees that, given the requested product, they will be able to market it successfully, and technical agrees that they can produce according to the protocol's terms within the requisite time and cost constraints. Exactly what characteristics the chosen attributes should have will be explained shortly, but Figure 3 shows a typical protocol, this one for a new type of bicycle. It results from four necessary ingredients: (1) preparation, through marketing research and concept testing; (2) negotiation between marketing and technical, with give and take on both sides; (3) agreement, via formal acceptance of the document; and (4) commitment.



Figure 2  
Some Common R&D Request Formats

| <u>FORMAT</u>                    | <u>MARKETING'S ACTION</u>  | <u>R&amp;D'S RESPONSE</u>  |
|----------------------------------|--|--|
| "You tell us."                   | Cites the market opportunity. Asks R&D for a good entry.   | They must do Market Research, and/or guess. Sometimes they "already know." Every prototype is rejected by marketing or the market place. |
| "Beat Competitor A."             | Cites chief competitor. Selects their Feature F. Requests product with improved F.                                     | Creates product with better F. But it lacks other features and has some objectionable features.  |
| "The Dream Product"              | Cites the Characteristics an ideal entry would have, and asks for it.  | Frustrates. Can't do it. Does its own trade-offs. Resents the criticisms of failure.   |
| "Tell 'em exactly what we need." | Cites the full details of a new product, feature by feature. Several pages of precise attributes. A true "spec" sheet. | Says "Why have R&D?". Marketing knows it all. Won't even try. No sense of role or contribution.  |

Figure 3

A Sample Protocol

A new bicycle for applying bicycle technology to the market of handicapped persons:

The new bicycle will have the following characteristics:

1. Utilize human power.
2. Utilize the frames, wheels, and power transmission mechanisms of our current Metro line.
3. The cost increase will not exceed 45 percent on a model-to-model comparison.
4. The Technology will not utilize electronic devices.
5. The net weight increase may not exceed 14 ounces.
6. The bicycle must function for a rider with either leg missing or useless.
7. The learning task for the rider must be manageable within two hours for the experienced bicyclist.
8. Parking and storing requirements must not change significantly from those on the Metro line.

### How Is The Protocol Developed?

Many companies use what they call new product specification sheets. But protocols are not specification sheets, at least in the form in which most specifications are written. In contrast to listing physical features, measurements, etc., the protocol lists the benefits to be delivered. This calls for a different procedure (see Figure 4).

#### 1. New Product Strategy

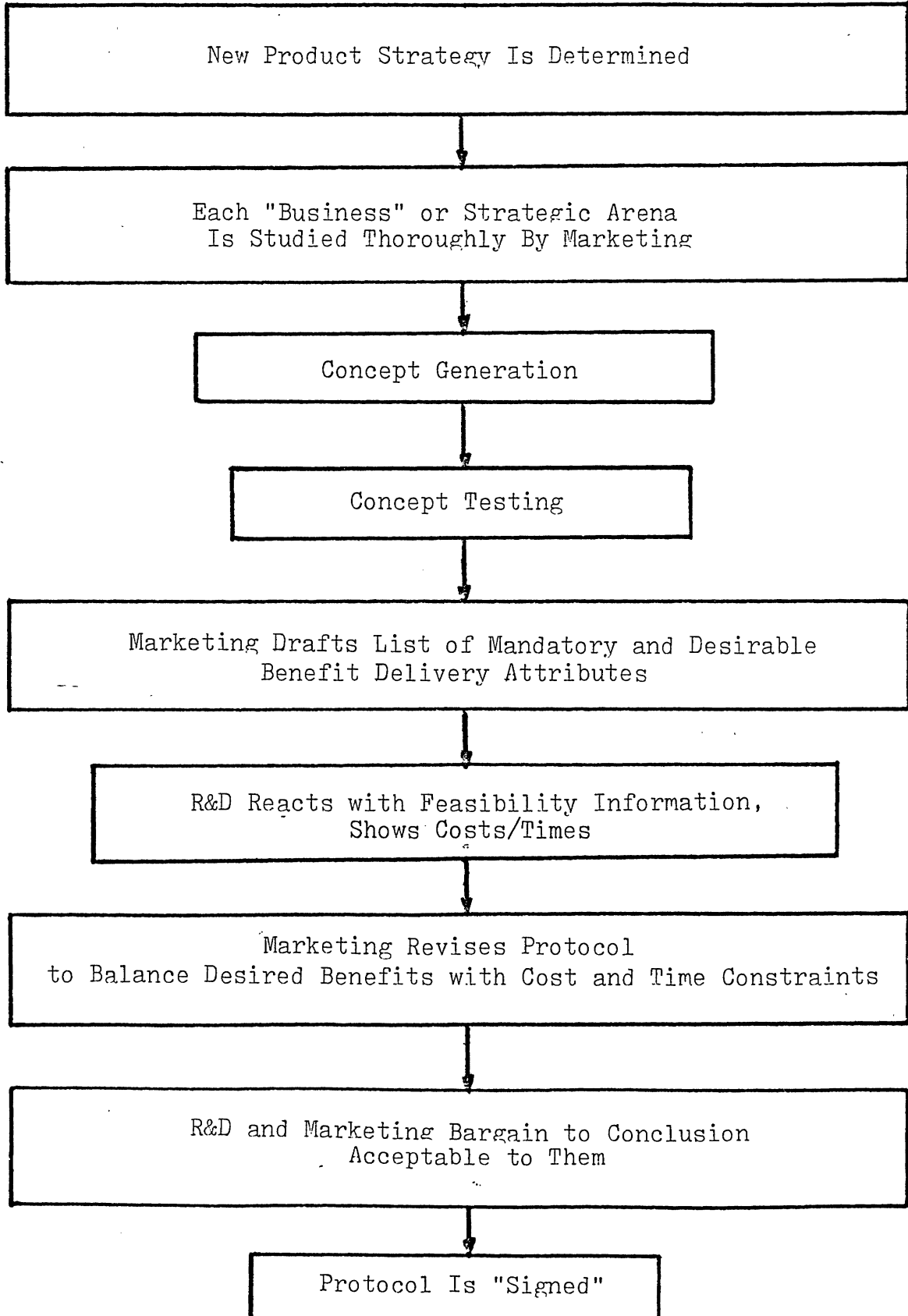
The first requirement is for a clear strategy to guide the team working on each new project. This statement should define the strategic arena (or "business") which the new product is to serve, the goals that the totality of new product activity in that strategic arena is to meet, and any applicable general guidelines the developers are to follow. For example, an abstracted new product strategy (sometimes called the product innovation charter) might be:

- The strategic arena is defined as the application of robotics technology to automotive assembly operations. (No products are stipulated at this time, just the technology which will be utilized and the customer or applications area.)
- The overall goals of this new product activity are to (1) establish our firm as one of the top three in this new industry, and (2) provide volume growth of at least 25% in that business each year for the next six years.
- Creative operations will utilize the following policies: (1) will depend primarily on frontier technology in the area of machine perception; (2) will be among the very first to introduce any innovation, and under no circumstances operate on a me-too basis; (3) will not attempt to advance the state of the art in this technology, just its unique application.

The format of these charters varies greatly, but the general content is becoming standardized. Consequently, all persons involved actually have a fair idea of the new product from the strategy alone, prior to any ideation.

Figure 4

The Process for Determining the New Product Protocol



## 2. Study/Generation/Testing

Once the strategic arena (the ball game, if you will) has been specified, thorough study of it is necessary, including marketing research, collection of secondary data, industry interviews, competitive analyses, etc, as well as a complete study of the technology half of the strategic arena -- in this case, robotics. The goal of all this research is to pinpoint the full exploitability of the chosen arena.

Once this factual base has been established, generation of new product concepts can begin. This step is specific to each firm's situation, but a concept must precede development. Concept is defined as a statement of attribute (form, technology, or benefit) positioned for a particular problem. Example: Robot shoulders with oval bearings will suffer less friction on the back cycle and thus retard burn-out. Another example: An ideal system would permit multiple perceptions and at the same time would permit internal self-programming of the robot, by allowing consideration of multiple alternatives at each decision point.

Whatever the concept -- and they vary from the simple one-sentence formats above to those of several pages -- it is pre-R&D. There is no product yet, and many key developments remain; in fact, the concept may not even be implementable, but it is a concept. And it should now be tested by exposure to those intended to be its beneficiaries. (Concept testing is also a rapidly developing field -- recall that it took the convergence of developments along several lines to produce the concept of protocol. Concept testing is now clearly operational, and in every field. Techniques vary from the intercept interview in a shopping mall to mini-conferences with technical experts. But the purpose is the same: Does this concept have merit? Is the problem cited in the concept real, and is the solution actually a solution, given that it can technically be done?)

Much concept testing today is actually concept development, wherein the original idea is modified to enhance its potential for development or its usability to the customer. Some call this concept enhancement, or concept elaboration.

The consequence should be a clear statement of concept (what we intend to create and how it relates to a problem someone has), appropriate to the chosen strategic arena, consistent with the overall new product strategy, and exploitable by current or acquirable capabilities.

### 3. Draft of Benefit Delivery Attributes

As stated, the protocol is not a specifications sheet -- it does not contain a list of dimensions or other physical characteristics the product is to have. A study currently underway at The University of Michigan suggests that about 63 percent of all firms claim to use some type of specifications sheet, but a protocol is critically different.

Most "spec" sheets do not help R&D, they bind it. They eliminate the opportunity for genuine creativity by telling R&D exactly what is to be developed. They say, "The spray tank is to be made of steel, and is to weigh 27 pounds," whereas if the request had been for a product which could easily be lifted from a floor position by the weakest assembly line worker, and which would be noncorrosive to water and common factory machine oils, R&D might have been able to come up with a fiberglass tank that offered other advantages impossible with metal.

Most specification sheets are either developed so late in the R&D process that they offer little help to creative development, or so early that nontechnical people in marketing are being required to make technical decisions based on entirely inadequate knowledge. Marketing may know that

spray tanks are always metal and they may consider it creative to stipulate the particular metal -- in this case, steel. But they lack the perspective to back off and study containerization as a technology, and they lack understanding of possible alternative materials for that purpose.

In effect, then, the typical new product specification sheet doesn't guide R&D, it precludes both research and development. No wonder there is a gulf between R&D and marketing. If marketing doesn't get specific, R&D wonders what is wanted; and if marketing does get specific, R&D claims they're being handcuffed. The answer, of course, lies in giving R&D what they really need -- the benefits that the item is to deliver to the customer. The task is to call for the problem solution, and then let the mode of that solution be determined by those who can best do it. Benefits are attributes too, benefit attributes, so a protocol is to contain a clear statement of any and all benefit attributes the new item must have.

The attributes may be suggested positively (e.g., the new vehicle is to deliver at least 45 miles per gallon of regular gasoline) or negatively (e.g., the container must not leak any fluid, regardless of the temperature). On rare occasions they may be physical or functional attributes, rather than benefit attributes, but only if required by forces beyond the control of new products management. For example, it may be necessary to stipulate that the furthest extension of a robot's arms be no more than eleven feet, if it is known that virtually all installations will be in operations where that width dimension is standard. It may be that the grasping mechanism will be "spec'ed" as hydraulic, if the firm's repair facilities are totally dedicated to hydraulic and no flexibility is possible. But these are all exceptions -- and since they reduce the creative potential in R&D and thus constitute a cost, there should be a clearly compensating benefit in each case.

The hypothetical protocol for a bicycle, given in Figure 3, is highly simplified relative to those one would expect in the industrial examples above, but is probably quite complete for a consumer product. Some packaged goods protocols may be even briefer. Note that the bicycle protocol does not say that the material must be a certain type of steel, it does not call for pedals with special foot grasping dimensions, it does not specify electrical or mechanical power source. It does present a very tight set of demands about benefits, and it does call for integration with other products and technologies used by the firm. Every single one of these demands should be the result of careful market study and strategic planning -- they are essential, mandatory.

The bicycle protocol does not stipulate how each of the required characteristics is to be achieved. And it is not cluttered with casual desires and preferences on the part of the marketers or product planners who prepared it.

The marketing group has declared a willingness to live with whatever meets that protocol. They will market, eagerly and successfully, the item they have asked for. As of now, they will not promise to market anything which fails to meet that protocol, though of course they will remain open to negotiation as new information is developed.

An addendum may state additional desires, those aspects (even features) which are considered desirable for marketing purposes, and it may state aspects about which marketing has no preference whatsoever. The latter are often consequential, particularly if R&D people do have preferences, because no time need be spent arguing about them.

#### 4. Reaction by R&D

Up to this time, the smart product planner has been involving the firm's technical experts in the protocol development. But R&D's role has been input,



not decisions. The next stage calls for an official reaction from the technical side of the business. R&D must clearly delineate those benefit delivery attributes which are not technically feasible or are impossible within the present state of the art. They show the problems, times, and costs associated with the attributes which are feasible. They only promise to deliver benefits which can be delivered, within the constraints of current resources, other projects, and the new products strategy. They indicate any area where breakthrough is required, and any degrees of unpredictability.

In return for a protocol which gives them freedom to practice creative innovation, R&D must abandon the practice of refusing to make promises or couching promises behind technical "if's" or "maybe's." They must know their technological capabilities well enough to make promises. If a new products strategy is predicated on metals technology, and R&D doesn't have the ability to predict creativity in that technology, then either the capability should be strengthened or the strategy should be redirected away from it.

Readers will quickly point out that R&D can reach the point at which they're doing nothing but the work required to make these promises. And if R&D had to promise every item on the typical specification sheet today, the system would break down. But that is the very reason why the protocol should contain only the mandatory attributes -- and as few as possible. Too many mandatory attributes signal that marketing has not done its job.

Some firms budget for pre-protocol R&D, knowing that it may be necessary; but if the original strategic arenas have been selected knowingly, R&D personnel will probably be ready to make most of the required promises quickly.

## 5. Negotiation

Reactions by R&D to the proposed protocol lead to the heart of the protocol system -- negotiation between the two major groups on any attribute which R&D says cannot be met, or can be met only at a cost or time which marketing or top management feels is unacceptable. At this point one of four things must transpire:

1. Unachievable attributes are abandoned. This is done only after a reiteration of the concept testing process and a review of market data. Abandonment is rarely feasible, although weak marketing departments may accede key values, regretfully.
2. Attributes are traded off. If the item is to lose a characteristic related to, say, user cost reduction, then a different unique benefit must be added. This, too, usually leads back into concept testing, or at least careful restudy of the data file.
3. R&D capability is altered. Technologies can be bought in the marketplace, upstream and downstream coupling can access new skills, and technologies may be "rented" from research suppliers such as universities. Such acquisitions increase cost, but may be preferable to accepting any of the attribute alterations above.
4. The project is side-tracked or abandoned. As stated above, the practice today is to clear out unacceptable projects much earlier, prior to R&D if possible, and this is where it happens.

## 6. Protocol Acceptance

At this point a modified protocol is officially accepted by both marketing and R&D. This is clearly not just a symbolic act, however. It culminates a process where four things have happened:

1. Preparation: the full scope of research concept testing and R&D assessment.
2. Negotiation: including full disclosure of needs and capabilities.
3. Agreement: indicating that all parties understand and accept the demands of the other side.
4. Commitment: joint determination that the protocol is both desirable and attainable. All disagreements which occasionally operate to scuttle commitment have surfaced and been handled in one way or another.

Bargaining is reopened, of course, whenever (1) exogenous variables change or (2) technical closure occurs. If a government ruling alters the situation or if a competitor moves in unexpectedly, the protocol must be reviewed. And if subsequent R&D indicates major uncertainty or significant cost variances not previously expected, it is best to stop and conduct a review. To proceed with a protocol which cannot be met, just because one of the parties is reluctant to admit an estimating error, is simply poor management. Yet, in the past there has often been no mechanism for disclosure. Commitment to protocol forces such reconsideration, because management has the right to expect commitment to and fulfillment of the protocol unless it is revised.

Few frustrations are greater than those of a marketer trying to market a new product whose key differentiating feature has been altered or abandoned altogether by unsuccessful R&D, or those of R&D when presenting a new product, only to be told that conditions have changed slightly and the product is no longer quite appropriate . . . "did we neglect to tell you about that?"

Summary of How Original Problems Are Solved by the Protocol

It was stated at the beginning of this article that there are four problematical outcomes that are common in relationships between R&D and marketing. First, new products are often late, usually because someone was trying to do what he did not have the capability to do, or because resources were moved to another project. Both actions are deterred by good protocols.

Second, new products are typically more costly than expected. This results from inability to predict technical outcomes, or misunderstandings about cost forecasting. The protocol process permits R&D to make much sounder cost forecasts, and provides a basis for considering cost changes in protocol revision.

Third, products often don't sell well in the marketplace. This is the direct result of (1) marketers who don't do their homework (e.g., who fail to determine what is needed) or (2) R&D's failure to provide solutions to problems. Both of these failures are directly addressed by the protocol system.

Lastly, there seems to be constant sparring between R&D and marketing. Although some of this is simply a matter of personalities or the natural friction between any two disciplines, most of it is entirely inexcusable. It results from poorly developed requests by marketing, and poor promises by R&D: failures of communication or understanding; failure to explain. The protocol system is also designed to address those two problems. Poor or disappointing performance breeds disrespect. Meeting reasonable goals builds it. Marketing must accept the responsibility for knowing the marketplace so well that it can devise profitable protocols. R&D must accept the responsibility for predicting and assuring technical performance, and for telling management when it cannot do so. In return, technical staffs must know when their job is done,

and evaluation systems can be devised to assess only the essential characteristics.

### Caveats

Inappropriately instituted, the protocol system can be troublesome. In fact, there are eight factors which can spell the difference between success and failure.

First, the system requires a top management (corporate or division) which is willing and able to support the new level of pre-R&D time and dollars. Although the total time and dollar outlay is significantly reduced, there are early costs which may situationally or philosophically be difficult to handle.

Second, the system requires a new products strategy. Many inappropriate new product concepts are screened out by an effective strategy, because developing one requires agreement on exploitable markets and technologies prior to consideration of specific concepts. It prepares the organization for the type of commitment a protocol demands.

Third, it requires competent people on both sides of the table. Marketers must be able to draft protocols and R&D must be able to predict whether fulfillment is feasible. Even more important, the proper testing of concepts requires that marketers think in marketing strategy terms long before marketing planning time. A good concept study requires decisions on market target and product positioning. These cannot be changed willy-nilly later, because the protocol was built directly on the test results. Some product planners have gone so far as to prepare a mock advertisement or selling piece as a basis for the protocol negotiation.

Fourth, there must be no gamesmanship. If either side deliberately builds in escape clauses, the effort is defeated. So the approach is inappropriate for organizations drowning in political intrigue. There must be trust as parties approach the negotiating table.

Fifth, similarly, there must be integrity in implementing the protocol. The approach requires that all parties want to live by the agreement, in spirit. Any protocol can be broken by clever people, if they want badly enough to break it. Exogenous variables never hold completely still. Not all benefits can be quantified. Personnel change. But it is a mechanism for getting better inputs, directions, and understanding. It guarantees nothing. People make it successful.

Sixth, the system can drown in detail. Mandatory benefit delivery attributes should be kept to the minimum. No laundry lists are allowed. The multipage specification sheets sometimes developed for technical products are not protocols. Insecure persons who don't want the system in the first place know that a good tactic is to push constantly for more and more detail.

Seventh, caution must be exercised to see that the protocol contains mostly benefits, not features. Company policy or executive preference may intrude to the extent of requiring particular features, but hopefully only with the full awareness of all parties, including the executives. If the general manager wants every new product to eventually be marketable overseas, so be it. Protocols should be written accordingly. But preferences such as these should really be addressed in the strategy-setting phase.

Eighth, there are situations where no protocol should be written. One example is where the research is essentially a basic program, not designed to yield products per se. There was no need for a protocol (as described here) for Du Pont's Kevlar program, but the appearance of that unique material

probably triggered a series of protocols, each attempting to exploit it in various strategic arenas (applications).

Another area where protocols are difficult if not impossible is where the products produced are not designed to solve problems or meet particular needs, but instead are intended for pleasure -- toys, new Broadway musicals, aesthetic products, etc. In these, the essential benefit attributes cannot be stipulated in advance, concept testing is not feasible, and thus marketing cannot promise to market the creation. Product testing becomes the key step, and firms engaged in producing these types of products have occasionally tried to develop protocols for activities after the early product testing stage.

Lastly, there are rare cases where the user/consumer cannot communicate needs and desires. There may be competitive reasons, simple physical limitations, refusal to take the time and effort for self-analysis, or the necessary marketing research may be extremely costly. If the user will not, or cannot, cooperate, it is difficult to anticipate concepts or to test concepts -- unless, of course, the need is so basic to the user system that it can be anticipated (biological needs, for example).

This means that protocols have been used most in industrial markets where customers can most easily be reached and can most clearly and completely indicate their needs. The lower failure rates in industrial markets probably reflect this fact. Unfortunately, protocols are most difficult in consumer-driven markets, where they are most needed.

#### Summary

This presentation has tried to do four things. First, the problem situation so often faced in new products operations -- time and cost overruns,

products which don't sell, and interface friction between functions was described and elaborated. Then the concept of protocol was introduced -- a new way of communicating between marketing and R&D which apparently offers solution to those problems, if implemented properly.

Third, the method for developing a protocol was outlined, showing how it is tied to overall new product strategy statements. It was noted that the process of protocol development requires a much earlier involvement by the marketing research department, the generation of proposed protocols, and subsequent negotiation leading to agreement by all parties on what will be done.

Lastly, there was a warning that the protocol system will not fit all situations, and that it puts significant demands on top management as well as on R&D and marketing. Many people cannot handle the tough challenge of a protocol. Some firms cannot develop protocols, and in some rare situations they are not needed.

Most important, it should be noted that the protocol discussed here is clearly differentiated from:

- + Specification sheets, which list necessary new product features.
- + Specification sheets without substance -- guesswork, or want lists, without the requisite research and analysis.
- + The absence of specification sheets, which results in situations where either marketing or R&D can default with impunity.