

A Brief Personal History of Media Optimization

The author of this document, Bill Harvey, was involved in many of the major developments in this field, and so this history is written from the author's personal perspective. However, a more complete picture would require interviews with others so as to round out the total history of media optimization. In its present form, this document is solely intended for use in building internal consensus understanding within Next Century Media, and for cherrypicking by NCM's investment bankers in developing their own persuasive materials for prospective investors.

The idea of optimization derives from an engineering discipline called "Operations Research" and known as "OR". OR consists of a set of tools and approaches known respectively as "algorithms" and "heuristics". Algorithms are mathematical equations, while heuristics are fuzzier methods i.e. they are not equations. Both algorithms and heuristics are aimed at improvement in the operations of an organization.

"Optimization models" are a type of algorithm intended to provide the best possible solution to some problem facing an organization. Where the problem itself is so complex that finding the best possible solution could cost more than the benefit of doing so, the optimization models generally do not attempt to find the best possible solution, but instead seek to find extremely good solutions within reasonable cost and time parameters. This in fact is the more common situation. Although in the latter case what is sought is literally "improvement" rather than "optimization", these models are still conventionally called optimization models in all cases.

Media Optimization

The impetus to the application of optimization to media selection by advertisers and agencies came in the early 60s with the arrival of mainframe computers in the offices of the largest advertising agencies. These agencies found that they were initially utilizing the computer only for payroll, whereas the reasons for acquiring the computer included the belief that an agency could gain a competitive edge in attracting new business, and keeping clients, by spending their advertising dollars more cost effectively using the computer. Thus began the development of media optimization models.

All media optimization models require the input of media audience and cost data for all measured media vehicles, and the input of the brand's requirements in terms of budget, target audience, reach/frequency, types of programs/ publications not acceptable for non-quantitative reasons, and other factors. The model is a complex set of equations which considers all of this input, and outputs one or more "best schedules" within the budget constraint.

Within the guts of the model, all information about a particular media vehicle are generally reduced to a single number representing its cost:benefit value. A simplified example of such a cost:benefit value is the CPM (Cost Per Thousand household exposures to this media vehicle). A slightly less simplified example is the CPM Targets (Cost Per Thousand Target Audience exposures to this media vehicle). The model is designed to maximize value by selecting those vehicles with the lowest cost in relation to whatever parameter is to be maximized. The parameter to be maximized (e.g. Target Audience exposures) is technically known as the “objective function”.

The builders of media optimization models studied the way media planners and buyers conventionally selected media vehicles, and constructed their models to mirror these conventional procedures. In doing so, they sought to move from the heuristics being used by planners/buyers into the use of true algorithms instead.

Media Impact

Early modelers found that planners/buyers did not purely select vehicles with the lowest CPM Targets, nor could their selections be explained in terms of the audience and cost data supplied. When the modelers queried the planners/buyers to find out why the computer could not reproduce the media selections actually being made, it was discovered that planners/buyers were implicitly adjusting the quantitative data based on qualitative factors derived from their own experience.

For example, the early media models produced schedules using large amounts of radio and outdoor, two media types with low CPMs and low CPM Targets against a number of Target Audiences. However, in the real world, media planners had rarely used these media to such an extent, allocating much larger budget proportions to television, for example. This was because TV was believed to have far greater “impact” per exposure.

Unfortunately, there were no compelling data to support this belief. Instead, there were a number of one-time studies, often sponsored by the media themselves, showing conflicting results as regards relative media impact on commercial recall, sales, and other payoff measures. Studies sponsored by magazines, for example, tended to show magazine impact at parity with TV, while studies sponsored by TV tended to show TV having more impact than magazines, and so on.

In order for the modeling process to continue, the modelers requested that planners/buyers make their qualitative impact “hunches” explicitly quantitative in the form of “impact weights”. A typical system would equate a prime time network TV 60 second commercial equal to 100, and then other media would be given lower weights in relation to that. For example, a prime time network TV 30 second commercial might be given a weight of 75, a four color “bleed” page in a magazine might be given a weight of 70, and so on.

The modelers argued that, at least, media planner/buyer judgments would be out in the open and would be employed in a consistent manner through quantification into impact weights. This convinced a number of agencies to create their own sets of impact weights.

Harvey's agency, Grey, had all senior and junior media personnel each create a personal set of impact weights across media types, and studied the results. The results showed that even among senior media personnel, there were great differences in the patterns of impact weights assigned to different media.

Grey concluded that any optimization results could be produced by manipulating the subjective impact weights, so that an optimization model could be forced to agree with the actual media schedules that had been selected without optimization. This caused Harvey to conclude that new media measurements would be needed to provide objective impact weights before the real value of optimization could be realized.

Pioneering Media Optimization Models of the Early 60s

The first two models were created by BBDO and Young & Rubicam respectively.

BBDO's Linear Programming or "LP" model solved a set of equations to produce a final schedule which provided the maximum number of Target exposures weighted by the judgmental impact scores that had been input. Non-linear elements such as frequency discounts on certain media, and audience duplication among different media and among successive insertions in the same media vehicle, were cleverly handled by means of built-in statistical adjustment factors that tended to limit the model's initial tendency to build up too many insertions in the media vehicles with the lowest impact-weighted CPM Targets—an approach which would tend to limit the unduplicated reach of a schedule.

Y&R's High Assay Media Model ("HAMM") differed from BBDO's LP model by placing much more emphasis on the weekly performance of the media schedule. Magazines, for example, tend to accumulate their audiences over a period of weeks, and these patterns were estimated based on special tabulations of early Politz magazine audience surveys so as to deliver patterns of weight reflective of the seasonality of a brand's business.

The words "High Assay" in the name of the model placed emphasis on the value of targeting, and reflected the notion that a small percentage of customers actually represent a large percentage of total business opportunity for any marketer—and that a marketer's top priority is to find ways to identify and discriminately reach these high value target customers. This idea is resonant today in the Addressable Advertising Coalition.

Harvey was able to study these first two models through accounts that Grey shared with BBDO (General Electric) and Y&R (Procter & Gamble). Seeking to improve upon these pioneer models for Grey, Harvey queried outside suppliers such as MIT and the British Information Technology company CEIR, among others, and studied their proposals.

The CEIR model was called MediaMetrics, and was a further refinement of the BBDO LP model. It featured the ability to analyze the degree to which vehicles excluded from the final schedule were close to justifying inclusion, a parameter which CEIR called "sensitivity".

The MIT model, designed by Ithiel DeSola Pool, then a professor at MIT, was of a completely different nature from the prior models, and was called Simulmatics. Audience

data were used to create a simulated population, and the “Monte Carlo” method was used to simulate the exposure patterns among this population caused by the use of specific media vehicles.

The Monte Carlo method works as follows. Assume that a particular television program has a rating of 10.0, meaning that it reaches ten percent of the population in a single airing. In order to apply this to a simulated population, members of that population are assigned probabilities of per-telecast exposure to that vehicle.

Instead of every member of the simulated population having a .100 probability, probabilities were varied based on demographics, in line with Nielsen ratings across demographic groups for that show. For example, an adult woman 50+ in a household with many non-adults might be assigned a probability of .125 for a specific show, based on Nielsen (larger families and older people in general tend to watch more TV, and therefore have higher ratings for many shows).

In the Monte Carlo method, a random number between .000 and 1.000 is generated for every vehicle for every member of the simulated population. For example, let’s say that the random number generated for the adult woman 50+ just described, for the specific program, was .090. Since this number is below the .125 probability assigned for that simulated person for that show, that simulated person would be scored as having been exposed to that show. If the random number were .666, for

example, the simulated person would be scored as not exposed to that show. In general, any random number lower than or equal to the exposure probability results in an exposure, while any random number above the probability results in a non-exposure.

If multiple insertions in the same program across weeks were to be simulated, a simulated person scored as not exposed in one week could be scored as exposed in a different week.

The advantage claimed for the Simulmatics approach was that it was more granular, down to the level of individual people in individual households, so that the exposure patterns of alternative schedules could be more definitively studied. In particular, non-linear elements of reach, frequency, frequency distribution (the tendency for a minority of heavy viewers or regular readers, etc. to receive a disproportionate share of exposures from a particular medium), audience accumulation and duplication, could be more precisely dealt with.

The Simulmatics approach prefigured the “database marketing” and “relationship marketing” ideas of the 80s, and their further evolution into the “one-on-one marketing” ideas of the 90s.

Other media optimization approaches were also studied in the early 60s. These included incremental optimization, hillclimbing, and the brute force method.

Incremental optimization requires a database of individual respondent data or a simulated population, and places emphasis on maximizing unduplicated reach. It works by selecting one vehicle at a time, removing from the analysis the people reached by the first vehicle, and then analyzing which is the best vehicle based only on the remainder of the population left unexposed by that first vehicle. The process continues, analyzing the next vehicle to buy so as to most efficiently reach the population still not reached.

The method may also be applied using the concept of effective frequency, whereby a person is not considered reached until he/she is reached a specific number of times e.g. 3 times.

Hillclimbing randomly generates a large number of schedules and picks the best of these. Then it continues to randomly generate additional schedules until it finds one that “beats” the first selected schedule. It continues in this way until the user is satisfied that the system is not generating significantly better schedules often enough to justify continuation of the process.

A variation of hillclimbing, known as nonrandom hillclimbing, detects characteristics of winning schedules and then “climbs the hill” in the direction of these winning types of schedules, e.g. those with more daytime TV, or newspapers, or whatever type of schedule appears to be delivering the best results.

The brute force method generates all possible combinations of media vehicles and is generally impractical except where the number of vehicles can be pre-limited by judgment.

At Kenyon & Eckhardt (now Bozell, Jacobs, Kenyon & Eckhardt), working for Norm Hecht, Harvey conceived and designed two optimization models, one which was the first local media allocation model for deciding on an automated basis how much spot TV weight to buy in each market, and the other which attempted to use the agency’s advertising testing results, compiled under the leadership of Sy Lieberman and Ted Dunn, to create objective media impact weights.

Work on the second of these two models led Harvey to the conclusion that media impact weights could not be generically created so as to be applicable for all brands at all times, since the impact relationships among media would be influenced by the product category, the creative execution, the audience of the medium, the medium’s environment (e.g. the mood created, the credibility of the publication, etc.), and the payoff measure which the impact weight reflected.

For example, Schwerin studies in the 50s had established that food commercials produced higher recall and persuasion when exposed in comedy shows as compared to drama shows on the radio, while proprietary research in which Harvey was involved in the 70s showed that pain reliever commercials on TV gained impact in drama shows as compared to

comedy shows on TV. Clearly, impact relationships across media could be reversed for different product categories.

For another example, if the payoff measure were to be advertising recall, younger people are known to have better ability to recall, and so media with younger audiences would have an impact advantage. The resulting impact weights would be different from those that would be assigned if sales, for example, were to be the payoff measure.

The interweaving of all of these variables to produce different sets of media impact weights for different clients under different conditions led Harvey to consider the use of direct response measures as the best media impact weights for any specific client campaign. However, direct marketing at the time was in its infancy, was assumed to be limited to direct mail, and was not used by most major advertisers.

Harvey realized that if television could be made to have an interactive element, then major advertisers would employ direct marketing measures through interactive TV, thus supplying objective measures of media impact with which to optimize schedules based on initial tests. This was to set Harvey off in the direction of making TV interactive, so as to be more rationally optimizable.

Improved Media Optimization Models of the Later 60s and Early 70s

Harvey became Manager of the Applied Science Division of Interpublic in the mid-60s. This Division brought together media researchers and operations researchers to create systems to improve the effectiveness of media decisions for the clients of all Interpublic agencies. The systems were collectively known as Media Investment Decision Analysis Systems, or MIDAS for short. For someone with Harvey's interests, this was the place to be at the time. The leaders of the effort were Bob Coen, David Silverstone, and Larry Young, the first two media researchers and the third an operations researcher.

At Interpublic, Harvey arduously built by hand a 1000-person simulated population reflecting characteristics of demographics and media behavior drawn from Nielsen, Arbitron, Simmons, Starch, and other syndicated survey sources. Larry Young wrote an algorithm called SCANS (short for SCHEDULE ANALYSIS by Simulation) which utilized Harvey's simulated population, and selected media so as to focus exposures within the range of frequency taken to be the most effective for the particular campaign.

This was in effect an improved version of MIT's Simulmatics model, with more exactitude in matching data to syndicated sources, and with a new emphasis on controlling frequency.

The tendency for TV advertising to "pile up" frequency on 20-40% of the population was just becoming known, and drove this new emphasis. The resulting schedules tended to utilize more dayparts of television in combination with larger lists of magazines, as compared to the schedules which had been used prior to SCANS.

While at Interpublic, Harvey wrote a document called *The Influence of Commercial Environment Upon Communication*, a major “blue book” which compiled all available real media impact data existing at that time, and drew general conclusions from these. The blue book was widely circulated for many years to all Interpublic agencies and clients.

The group also created a process called a Total Media Audit which analyzed a brand’s media exposures for every medium used by the brand, at the county level, and then aggregated the data up to unduplicated TV markets and regions. Spot TV and in some cases spot radio were then recommended for use in specific markets where the audit revealed that media weight fell short of ideal as determined by the market’s sales data. The approach was heuristic rather than algorithmic in its optimization of geographic delivery. Use of this tool tended to shift budgets from 80% network TV/20% spot TV to 60% network TV/40% spot TV.

An important part of the Total Media Audit was the allocation of television exposures down to the county level. The Interpublic agency McCann-Erickson had special need to deal with county data in that their client Coca-Cola had over 500 bottlers who were assessed portions of the overall advertising budget based on the estimates of exposure delivery to their respective bottler areas.

However, there were no real, current data with which to accurately allocate network and spot TV exposures down to the county level. Instead, years-old coverage data were used to estimate these allocations, which were the same for every program on a given station, even though logic indicated that the geographic pattern of a program’s audience would vary as much as demographics were observed to vary program by program within station. The system which performed these estimates was called TVCRI, for Television County Rating Indicators. Part of Harvey’s job was to revise the TVCRI every time a station changed its power, tower height or location, added a retransmitter, or commissioned a special coverage study.

With sales data just beginning to become available by market through the computerization of warehouse withdrawals systems, Harvey recognized the importance of being able to accurately relate advertising delivery to sales results on precisely matched geographic areas. Interpublic’s Total Media Audit appeared to be making a major contribution in this regard, lining up advertising inputs with sales outputs.

However, Harvey was troubled that his own and others’ judgment estimates played such an important role in the process. It was clear that a better job could be done if real, current data could be obtained by finite geographic areas, rather than having to make estimates of such precise geographic delivery patterns.

As a result, Harvey joined the American Research Bureau, then known as ARB, and today known as Arbitron. He intended among other things to create a system of real data that would parallel the TVCRI estimating system. This became the Area of Dominant Influence or ADI. Nielsen quickly followed with the Designated Market Area or DMA system. Both the ADI and DMA divided the country into unduplicated TV markets, assigning counties to the market whose stations aggregated the highest viewing shares of that county’s homes.

The name “ADI” was offered by Ace Kellner, then VP Station Sales of ARB. The area definitions had been presaged by the Marketing Area created earlier by ARB by Roger Cooper and Jim Rupp, as well as by similar definitions created by Gus Priemer, then of P&G. The ADI added every-book measurement plus the analysis of spill-in and spill-out by individual spot audiences.

This grid of unduplicated markets then became the geographic sieve for analyzing each program’s audience delivery. It became possible to see that a spot on a Boston station delivered 30% of its audience into Providence, and so on. Now it was possible to compare advertising and sales data for the same pieces of geography without having to “make up” some of the underlying numbers.

CEIR then owned ARB, and Harvey persuaded CEIR to create an optimization model which started from gross rating point (GRP) goals by ADI, then backed into how many GRPs to actually buy in each market so that the effects of spill-in and spill-out could be exploited. For example, if the goal is 100 GRP in Boston and 100 GRP in Providence, because of spill from each market to the other, buying 90 GRP in Boston and 75 GRP in Providence will actually deliver about 100 GRP in each of these markets. This obviously saved the advertiser considerable money. As a result, the ADI became “the most widely used marketing tool in the world” according to *Sales & Marketing Management* magazine.

While at Arbitron, Harvey also participated with Arbitron CEO Peter Langhoff in a study of radio impact, the development of massive customized spot TV postevaluation systems for P&G and Bristol-Myers, the development of the ARBAR system for merging audience and commercial monitoring data, the SNAP spot TV allocation/“network fill” system, and numerous other tools related to media optimization.

Working at C.E. Hooper later in the 60s, Harvey assembled NBC, Columbia Pictures, and four of the top ten agencies to create The Hooper TV Commercial Impact Index, a study of presence in room during commercials and recall of commercials, based on the robust coincidental method extended to collect media impact data. The study utilized an unprecedented sample of 250,000+ telephone interviews and was therefore the largest study of media impact in history.

In the late 60s and early 70s, Harvey was Executive Vice President of Brand Rating Research Corporation, suppliers of Brand Rating Index, the first singlesource product/media syndicated service, today mirrored by MRI and Simmons in the U.S. and by others in many other countries. These services measure media usage, demographics, geographics, psychographics, and product/brand usage, among an annual sample of people, so as to be able to cross-analyze any characteristics against one another.

In concert with the Advertising Research Foundation, the BRI sample was turned into a simulation and optimization model called first COMPASS and then later called COUSIN. 16 of the top 20 agencies met monthly to refine and utilize this model. Underpinned by the 20,000 annual BRI sample, this model was a refinement of the MIT Simulmatics and the later Interpublic SCANS models. It utilized a combination of Monte Carlo and incremental optimization approaches.

In order to improve media impact data availability to the industry, BRI CEO Norton Garfinkle and Harvey added questions to the BRI questionnaire measuring dimensions of magazine editorial environment influence upon advertising communications, and experimented with the collection of brandswitching information as a media impact measure.

Harvey created the first online radio planning system SONAR (System for the ONline Analysis of Radio) which became part of the suite of Telmar systems. This was not a true optimization algorithm but rather a set of heuristics. SONAR became available online in 1971 via the original extremely slow modems.

With BRI consultant Sid Mehlman, formerly of Benton & Bowles, Harvey conceived the Storyfinder model in 1971. Harvey later sold this model to IMS in the 70s. The model optimizes sales presentations by media to agencies, using syndicated databases such as today's MRI and Simmons. Storyfinder has been widely emulated and has become the most used computer system by the magazine industry.

Media Optimization Systems of the 70s and 80s

In general, media optimization played a diminished role during this period in the U.S., while the 60s media optimization developments in the U.S. moved offshore and were emulated and refined in Europe and South Africa.

The big development of this period in the U.S. was the shift to supermarket scanner data. Scanner data provided the hard sales results that had previously been only a dream, and were available on a daily basis for those inclined to react that quickly. As a result of the compelling nature of this datastream, attention to other matters was occluded.

Agency research departments shrank, as did advertiser investments in consumer research by any means other than scanner data. Where consumer verbal responses were still sought in order to explain the "why" of the scanner sales data, advertisers began to fall back on small-sample focus group techniques as a replacement for full-scale quantitative surveys. These trends are still operating today, and tend to work against the success of marketers, since focus groups are a dangerous replacement for real research. But the reliance on scanner data psychologically mitigates against consideration of higher quality survey methods.

Relatively simple and less costly media optimization systems continued to be offered in the U.S. and were used on an everyday basis through online and PC-based applications offered by IMS, Telmar, and MSA. The emphasis on accuracy gradually disappeared, and users were trained more in how to use the computer than in how to assess whether the underlying models were accurate or not.

Harvey himself took a break from focusing on optimization during this time frame. Instead his focus became new media. Through most of the 70s, he consulted on new electronic media initiatives such as QUBE, cable advertising, new forms of direct marketing (database, relationship, curriculum), and the original pioneering work in the development of audiotex (computerized telemarketing both inbound and outbound). All of these were approaches he believed would add to the ability to actually measure media impact as part of the process of marketing and advertising, and which would therefore some day allow him to double back to improved media optimization armed with real impact data.

Later in the 70s Harvey returned to optimization. Now that scanner data were available, it seemed insufficient to do media optimization merely against exposures. Why not create an optimization system which would optimize sales, rather than just optimizing the most exposures (weighted by various dimensions of value)?

The original work on the media optimization system to maximize sales was spurred by a consulting assignment from CPC International (Hellman's Mayonnaise, Skippy Peanut Butter, etc.). Harvey analyzed several years' worth of sales and audience data by market for five top brands. This led to the surprising conclusion that marketers were overspending in certain markets and underspending in others.

The markets which tended to receive excessive advertising weight were those where the brand sales per capita (BDI, or Brand Development Index) was highest. These markets were "topped-out" and further increases in advertising did not add to sales. On the other hand, markets where the BDI was rapidly increasing ("fastgrowth markets") were receiving insufficient advertising support. More weight added to the latter markets made a difference, where adding the same effort to the high BDI markets made no difference.

Harvey was allowed by CPC International to reveal these findings in his newsletter, where they were picked up by the Association of National Advertisers. ANA invited Harvey and his colleagues, then including Arch Knowlton, formerly of General Foods, to present their findings to the industry. This resulted in increased awareness of the desirability of "Momentum Marketing", or adding advertising weight to fastgrowth markets. This phenomenon added to the economic growth of growing markets and helped many of the Southern tier of U.S. cities to consolidate their gains into major market status during this period.

The First Opti*Mark

Harvey began to hone this idea into a new optimization model called Opti*Mark. Working with Time Inc., which at the time owned warehouse withdrawal and scanner sales measurement systems under the name SAMI, Broadcast Advertiser Reports (which later became part of Arbitron), ANA, MSA and others, Harvey developed Opti*Mark as the first media optimization model to maximize sales rather than exposures. "Opti*Mark" was a contraction of the phrase "Optimized Marketing".

The first Opti*Mark system recognized the S-curve as the underlying shape of a brand's sales growth market by market. Markets at the beginning of growing a brand and those which had brought the brand to its highest potential were not fruitful places for heavy-up of advertising, while markets in between these two conditions were the best places to put incremental advertising weight, because that's where advertising made the most difference. Return On Investment (ROI) would be maximized by identifying where the next ad dollar would make the most positive difference in sales—and this is what the first Opti*Mark was designed to do.

Increases in advertising were analyzed against increases in sales to identify the markets where the change in advertising made the most positive *difference*, and then these markets were allocated increased support.

In addition, the model studied where advertising was having the most positive effect to detect if certain media types were being more prevalently used in those markets/counties, in the hopes of finding outstanding media types in terms of sales performance for a given brand at a give time. It turned out that the model did identify certain media types as more effective—and different media types were most effective for different brands at different times. The first Opti*Mark automatically identified these media types and then automatically modified the recommended media schedule to make more use of these media types for the relevant brand.

Another influence began to permeate Harvey's work during the early 80s. Harvey had much earlier observed that non-rational aspects were important in getting optimization models used—specifically their ease of use and the “sexiness” of their onscreen displays. Now around 1980 Harvey met Dave Davison, whose company Iconix was co-located with an unknown company called Apple in Cupertino, California. Iconix was the first to base a business around the idea of creating large-screen computer displays with touchscreen control for executive “War Rooms”, in which icons would be used in place of text. This idea had actually originated with Xerox in Palo Alto.

Harvey and Davison so impressed General Foods with the combination of ideas that GF acquired the first Opti*Mark model lock, stock, and barrel. The model was further developed by GF but the name “Opti*Mark” was not of interest, and so this name reverted to Harvey's use.

Meanwhile the unknown Apple company took the icon idea to its natural extension and created the Apple computer brand based upon it. Another unknown, Bill Gates, would later create Windows in emulation of the same icon idea. Dave Davison became consultant to the Secretary of Defense Cap Weinberger and helped create icon-based “Tactical Operation Centers” (TOCs) for the U.S. Army. Within the U.S. military these icon-based displays would become a standard in all branches of the armed services, including the “dashboards” of advanced military aircraft and tanks. Harvey decided that “Sexy Dashboards” would always be a feature of his optimization systems from that point on. Subsequently, the U.S. Army became a consulting client to Harvey's company, New Electronic Media Science, Inc.

In the early 80s, Vitt Media, then the leading independent media buying service, asked Harvey's company to consult on the development of the Williams Media Planning Model (WMPS), an optimization system which used a client questionnaire to specify all of the relevant goals and considerations to be used in media selection. Since similar media optimization systems existed by this point in all of the media centers of the world, in order to create relevant differentiation, Harvey spurred the creation of the Media Impact Data Bank (MIDB), a compilation of the world's resource of media impact studies. MIDB helped Vitt sell WMPS usage to its clients because the collected wisdom of the race as regards media impact was now in one place to aid clients in fillin out the WMPS questionnaire with more than purely subjective “gut feel” scores.

In the mid-80s, Harvey's company consulted for R.D. Percy, whose unique passive peoplemeter utilized infrared radiation to detect people's presence in the room with a playing TV set independent of the need for buttonpushing by peoplemeter respondents. This provided a measure of commercial audience as opposed to program audience, which had always been used as a surrogate for commercial audience. Percy was yet another attempt to provide definitive media impact data, the missing link in true media optimization.

In the late 80s, Arbitron commissioned Harvey's company, now greatly augmented by the presence of Len Matthews, to build utilitarian optimization systems around their ScanAmerica service, which was the first to use scanner and peoplemeter measurements upon the same probability sample.

Both the Percy and ScanAmerica efforts were, like the AGB peoplemeter (the first peoplemeter to be used in the U.S.), unable to sustain the burn rate necessary to displace the powerful Nielsen monopoly on the measurement of television audiences in the U.S.

Meanwhile, the refinements of databases and optimizers in Europe were catching up to the U.S. state of the art.

Media Optimization in the 90s

Harvey's consulting company New Electronic Media Science, Inc. had through the 80s focused almost entirely on new media, becoming the leading new media strategic consultancy worldwide, working on various new media trials with several hundred companies including most of the top buyers and sellers of media.

In the early 90s, triggered by a relationship with IBM, NEMS took a back seat while a new company, Next Century Media, was born. NCM's Mission is to provide the underlying software and services to optimize new media, especially addressable marketing communications through television and computer screens worldwide.

Through an exclusive licensing arrangement with Groupe Bull, NCM through the early and mid 90s has developed an extensive software system—today's *Opti*Mark*—capable of:

- delivering addressable commercials through all forms of TV, radio, and cyberspace communications

- measuring the clickstream of TV and cybermedia so as to replace the surveying or metering of samples with the actual unbiased measurement of full census counts of total user populations; this component is called *The Interactive Index*

- databasing the longitudinal profiles of users, and their responses, so as to maximize the success of marketing communications directed to them, while maximizing their satisfaction with the communications sent them

- automatically optimizing the process

- allowing users to stay in touch with all aspects of the process through simple to use and “sexy” *Dashboards*

- being able to provide some degree of this total service for analog TV, and focused on furnishing the complete service wherever there is digital set top box deployment.

This ambitious effort brings back together Harvey's long-running interests in optimization, new media, and improved media measurement.

From an historical standpoint, in terms of the development of media optimization systems, Opti*Mark differs from the media optimization systems which preceded it (including the European 60s-style "optimizers" now returning to popularity in the U.S.), in the following significant respects:

- those earlier and current European systems—let us call them "traditional optimizers"—are focused on traditional media, Opti*Mark is focused on new media
- traditional optimizers use only syndicated survey data, Opti*Mark uses the latter as secondary, and uses its own clickstream data as primary
- *traditional optimizers do not bring with them the capability of delivering addressable commercials, Opti*Mark does*
- Opti*Mark looks at the world in terms of individual consumers, each with a profile that grows and therefore the system learns over time how to better convert these individuals into loyal customers of client brands; traditional optimizers see only grossed up survey numbers, cannot conduct one-on-one marketing
- Opti*Mark is designed to create a win/win/win among advertisers, media, and consumers, while traditional optimizers serve only the advertisers
- In serving the advertisers, traditional optimizers optimize only potential vehicle exposure, while Opti*Mark optimizes real commercial exposure, nonswitchaway from commercials, response to commercials, minimizing cost per lead and cost per sale, maximizing Return On Investment (ROI) not merely potential vehicle exposure
- Opti*Mark therefore brings about a new marketing communications medium, combining the advantages of direct mail and television. Today the industry has gathered behind this effort and is calling the new medium "Addressable Commercials".

(The new medium actually goes much beyond the current name for it. But the name is useful in that it avoids reference to Interactive TV, currently suffering from the black eye given it by overhyped and economically unviable experiments conducted mostly for their impact on Wall Street during the early and mid 90s. NCM had gone on record through its newsletter before these experiments began, predicting this outcome.)

From a purely technical standpoint, Opti*Mark adds some new features not found in earlier optimization technologies:

- **VALIDITY** is the world's first Deductive Object Oriented Database system, which means that it is the first type of database that can logically deduce new insights from its data. NCM has an exclusive worldwide license in perpetuity to utilize VALIDITY for new media. This gives Opti*Mark more of a "thinking" quality than traditional optimizers. This edge will gain in importance as the new media continue to roll out and produce vast amounts of new and complex clickstream data to analyze and understand. VALIDITY will speed up the ability of Opti*Mark users to adapt to change. Its technical impact is to reduce human

intervention time, as changes to advertiser decision rules are shown to be desirable by trends in the data.

- Opti*Mark utilizes content coding on programs, commercials, and individuals, using hundreds of emotive dimensions to characterize these elements. These dimensions were derived from decades of analysis of media and marketing data. This underlying web of relationships helps predict and explain patterns in the new data, accelerating the ability to optimize results.
- Opti*Mark creates its own data via the clickstream. No optimizer has ever had such capability to add new data. These new data include response as well as exposure measures.
- The *Custom Menus* system within Opti*Mark functions to increase viewer satisfaction, while providing the same kind of data (which viewers are present in the room with the TV set) that would be derived from peplemeters. Again, no optimizer has ever had such capability to add new data.

Future History

If successful, NCM through the Addressable Advertising Coalition will set up the first addressable commercial testbeds. This will be linked to large national advertiser buys of spot cable (not as targetable as addressable commercials, but more targetable via Opti*Mark than any other use of TV by advertisers to date).

In this process, NCM will:

- place Dashboards in major buyer side entities
- gain pivotal control of the clickstream via setting the de facto Standard, and through the Your Choice TV sponsoring of software interfaces with all set top box manufacturers
- be the first to aggregate and certify clickstream data working with top research companies in each country
- deflate potential competition by speed to market, superior relationships driving substantial advertising deals, deeper understanding, and paying royalties to clickstream providers
- make both network and spot capable of addressable commercials (broadcast and cable TV, radio, cyberspace especially broadband)

Despite the potential to capture a far larger share of total activity, the NCM financial projection has always been based on an ultra-conservative assumption that competition will arise and take away 80% of NCM's potential market. If capitalization is swift and therefore allows speed to market, the actual NCM share could be far higher.