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A REPORT ON EXPERIMENTS IN FUSION IN THE 'OFFICIAL' GERMAN MEDIA RESEARCH (AG.MA)

This paper describes a series of experiments carried out in the Federal Republic of Germany in 1984 which, in part, will continue until 1986. We call them 'experiments in fusion'.

Before we go into the objectives and the results of these experiments, we have to sketch out the background.

German media research, over the past 15 years, has taken in more and more media to accommodate the needs of practical media planning, with a suitable programme of results and exclusion to give a true intermedia analysis.

In Germany we are now faced with a situation where there is a steady growth in consumer journals, the introduction of new TV and radio programmes, and the emergence of new media. These are stretching the limits of our research tools, if they have not already burst at the seams.

Consequently we had to consider how to harmonise the intermedia data needs of media planning with the problem of surveying the growing market.

There was only one answer: To abandon the single-source principle in the study and to search for suitable means of combining sets of data gathered separately.

The discussions and planning sessions all led to the formation of a 'partnership model'. This is built up from the data acquired from separate samples using various measurement techniques. They were then merged, using a mathematical process suitable for intermedia planning.

The fixed blue-print of the partnership model shows the breakdown of the oral questioning into two tranches. One takes in the broadcast media performance with the best tool for this purpose - behaviour yesterday. The other tranche surveys the reading

FIGURE 1
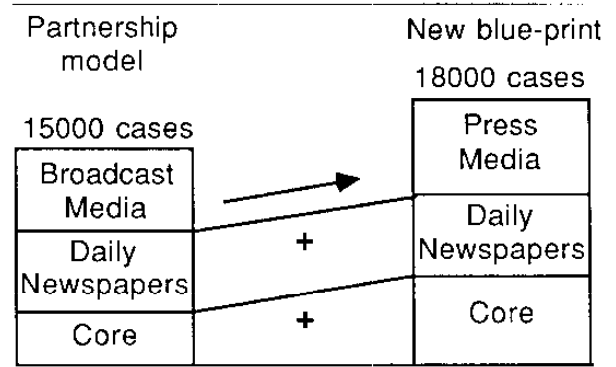
behaviour of consumer magazines through the proven methods. Daily papers and a raft of demographic data are included in both tranches, and are combined into a single data set by adding the two samples together.

The broadcast media tranche encompasses some 15,000 interviews, and the print media section takes in about 18,000.

For years, meters have been used in Germany to record TV consumption. The results from this method will be introduced into the data set of the partnership model from the 1987 Media Analysis, which will also give a unified level of findings for planning data and panel observation.
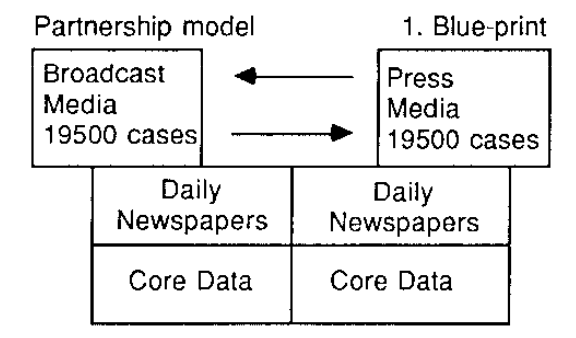
Experimental work has already been carried out to integrate these data. We do not wish to go into these experiments now, as they are not yet complete and they do not touch upon the welding together of separately-derived data. We concentrate here on a particular aspect of our partnership model. We confine our report to the experiments concerned with combining the separately-derived information of the two tranches into one data file.

It was decided early on, through prior knowledge and earlier experience, to

concentrate only on fusion processes to transfer the data.

The starting point of the experiment was an initial blue-print for the partnership model, which envisaged a reciprocal integration of the broadcast media data into the press media section, and the press media data into the broadcast media section.

FIGURE 2

Partnership model   1. Blue-print

Broadcast Media 19500 cases	Press Media 19500 cases
Daily Newspapers	Daily Newspapers
Core Data	Core Data

The experiments were laid out logically, so that a fusion of the press media data into a broadcast media section could be tested, as well as the amalgamation of the broadcast media data with the press media data section.

In practice, the 1984 Media Analysis was divided into two parts, approximately equal to each other. All data relating to print media with longer issue life were suppressed in one part in order to transfer them from the other part. In the other part, all the detailed information on the broadcast media was extinguished while retaining general information (such as frequency by time slots) both for TV and radio. Thus both data sets are set apart by the presence and scope of the common characteristics. On the fusion of the print media with the broadcast media, section, the press media characteristics were absent. With the merging of the broadcast media data with the print media section into one data set, which we label recipient data, information covering the general

behaviour against that for the TV and radio broadcast media, namely usage frequency by time slots, was included.

This fact opened up the way for an additional test on the role of the common characteristics.

Taking the outcome of this test first, it was established that the merging of the broadcast media into the print media section is more successful; ie the presence of variables connected with the transferred characteristics is significant for a successful fusion. This gives the basic fusion character shown in Figure 1.

The modified blue-print for the partnership model, meanwhile, shows that the longer-life print media in around 18,000 interviews are represented in the current scope of the Media Analysis. The broadcast media were marshalled into a special tranche of about 15,000 interviews, with variable regional sampling. For detailed planning there are two data sets available for use, if one goes for the broadcast media or the print media sectors. The information on broadcast media can be transferred to the print media section, to give integrated intermedia figures.

Before the experiments took place, the Technical Commission of the Media Analysis Association (AG.MA) identified three problem areas.

OBJECTIVES OF THE EXPERIMENTS

(1) Verification of the fusion technique for the target objectives in the partnership model.

(2) Test the fusion process for suitability in practical use.

(3) Test particular problems in the fusion technique.

Accordingly, the experimental fusion objectives were divided into three major groups: the verification of the fusion technique for the target

objectives in the partnership model, tests of the fusion process for suitability in practical use, and tests for particular problems in the fusion technique. In the tender details to potential contractors for the experiments, all these problem areas were defined.

BIDS FOR FUSION

Base:
Analysis of correlations (factor analysis, cluster analysis, typology)

Base:
Analysis of dependent variables (variance analysis, regression analysis)

Research institutes:
Wendt
Median
Czaia

Research institutes:
B + N
Telescopie

The bids which were received on this tender broke down into two major groups for practical work on fusion. The difference between the two groups lay in the use of variables in the actual fusion process. Therefore the base for one group lay in cluster analyses - primarily typology. The respondents would be arranged in a multidimensional domain by these analyses and a suitable match for transfer sought in the other samples by a fix in this multi-dimensional sphere.

The other process stems from an analysis of dependent variables and as correlations, factor analysis and so on, and identifies both parties in the transfer through generally fewer, but with dependent variables with transfer characteristics.

Three bidders made a pitch in the first group, with two entrants in the second group. The Technical Commission decided to select one candidate from each group with the choice going to Friedrich Wendt in the first area and, for the other approach, B + N in Bad Soden together with its joint bidder Base-Line.

When it came to assessing the results, the Technical Commission of the Media Analysis Association (AG.MA) had the good fortune to be able to compare the outcome of the fusion processes with the original survey results in the Media Analysis. To assess the fusion, the following ground rule was established:

'Integrated data sets may not deviate from single-source data by a greater amount than in data sets derived from different samples.'

The first test applied to the results of the fusion met this point head-on: To what degree do the samples deviate from each other and how do these deviations fit into the two fusion processes?

General finding of the experiments

	Mean deviation in %		
	Reci-pient donor	*Wendt donor*	*B + N donor*
TV			
Maximum audience	0.35	0.35	3.04
Yesterday	0.70	0.57	1.19
Radio			
Maximum audience	2.18	2.24	3.29
Yesterday	0.33	0.35	2.21
Magazines (17 editorial groups)			
Gross maximum readership	1.65	1.39	8.41
Gross readers per issue	0.66	0.92	5.11

The sample taken by Wendt or B + N is labelled 'Recipient' and 'Donor' is the supplier of the data. The recipient and donor samples were compared.
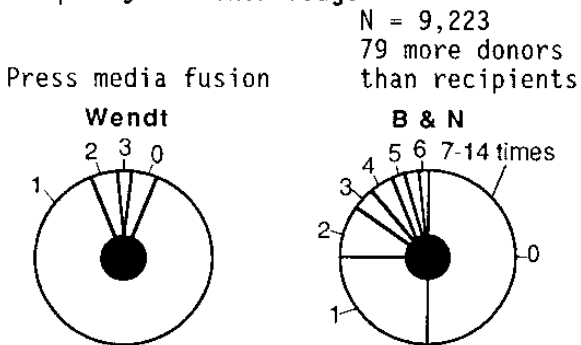
The comparison of Wendt - Donor and B + N - Donor respectively showed the

deviation in the results after the integration from the originally surveyed donor figures. The calculations gave the mean deviation for all time slots with TV and radio, and across 17 editorial groups in the magazine sector.

The initial finding demonstrates clearly, that the Wendt approach to fusion delivers no major shifts, as to be expected between samples. On the other hand, significant deviations emerged in the B + N process, particularly with TV, with radio 'yesterday' and with magazines.
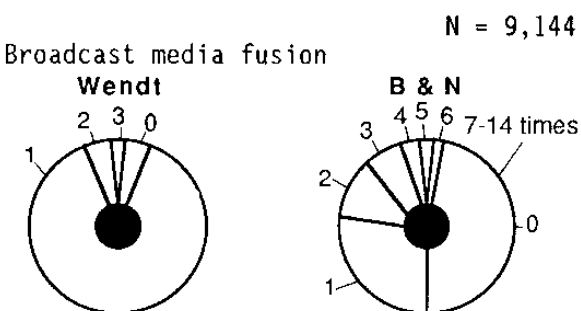
The Technical Commission of the Media Analysis Association (AG.MA) has examined the two different processes, as used by Wendt and B + N intensively.

Frequency of donor usage

N = 9,223
79 more donors
Press media fusion   than recipients

Wendt   **B & N**
2 3 0   5 6 7-14 times
                            4
1   3
                          2
                                        0

                          1

It emerges, therefore, that in the B + N process only about half the cases from the donor sample had their data passed over to the recipient data set, and the individual donors were heavily tapped - up to 14 times - for their data.

Frequency of donor usage

                                N = 9,144
Broadcast media fusion
Wendt   **B & N**
2 3 0   4 5 6 7-14 times
                            3
1   2
                                        0

                          1

In the Wendt fusion a 1:1 transfer is the norm. Only an extremely small portion of the donors was used up to three times.

The basic difference between the two processes is unaffected if more data are available on the transfer behaviour. The relationships are about the same for the fusion of the broadcast media with the print media section, as with the merging of the press media into the broadcast media section.

As a result of this finding - high relative deviations already in the global values and only about half the donor sample cases passing their data further on - the Technical Commission of the Media Analysis Association (AG.MA) decided not to pursue the B + N approach. It is not suitable for our needs. Straight away, the fact that only a part of the donor sample data was carried further was a decisive factor in rejecting the B + N process. The lower statistical representation coming through could cost less with other survey techniques, ie Roadstar with duplicated questioning of the same people. However this lower statistical representation is undesirable from the start.

We would now like to turn to the working of the fusion of the broadcast media data into the print media section. This restriction is imposed by the new blue-print of the partnership model, which only envisages such an integration.

The comparison of the most important results is shown in the following figures. The transferred results are shown in the 'Donor' column. The results following the fusion process are in the 'Fusion' column. The 'Recipient' column gives the results, as collected through the survey, but suppressed for fusion purposes.

Figure 3 shows the coverage of the gross maximum audience across all radio stations by time slots.

FIGURE 3
Broadcast media fusion

	Coverage maximum audience		
Gross radio	Donor %	Recipient %	Wendt %
Before 0700	80.2	78.5	77.7
0700 - 0800	89.9	87.8	88.5
0800 - 1000	79.4	75.6	76.5
1000 - 1200	73.6	71.1	71.1
1200 - 1400	82.1	80.3	80.8
1400 - 1600	66.7	64.5	65.0
1600 - 1800	72.8	71.5	70.1
1800 - 2000	57.0	54.9	54.9
After 2000	55.6	53.8	52.1

It can be seen from this comparison
that the results lie very close
together for all time slots. To
simplify the comparison, **Figure 4** shows
the relative deviations on the one hand
between the originally surveyed data,
ie the Recipient column to the Donor
column, and then fusion to the Donor
column. In other words, before and
after fusion.

FIGURE 4
Broadcast media fusion

	Coverages maximum audience comparison	
Gross radio	Recipient donor	Wendt donor
Before 0700	-2	-3
0700 - 0800	-2	-2
0800 - 1000	-5	-4
1000 - 1200	-3	-3
1200 - 1400	-2	-2
1400 - 1600	-3	-3
1600 - 1800	-2	-4
1800 - 2000	-4	-4
After 2000	-3	-6
Relative deviation	2.18	2.24

The figure shows that the fusion
results do not deviate from each other
more strongly than anticipated in
survey results obtained from
independent samples. The same picture
emerges if comparisons are made between
the radio coverages 'yesterday' across
the separate time slots.

FIGURE 5
Broadcast media fusion

	Coverage yesterday		
Gross radio	Donor %	Recipient %	Wendt %
Before 0500	1.7	1.7	1.5
0500 - 0600	7.5	7.8	7.3
0600 - 0700	29.7	30.5	29.4
0700 - 0800	38.3	38.1	38.8
0800 - 0900	26.5	26.1	26.3
0900 - 1000	24.8	24.0	24.6
1000 - 1100	20.8	21.0	20.4
1100 - 1200	21.7	21.8	21.4
1200 - 1300	22.8	23.5	22.7
1300 - 1400	19.0	18.9	18.9
1400 - 1500	14.0	14.3	13.3
1500 - 1600	13.2	13.3	12.6
1600 - 1700	15.1	13.7	13.9
1700 - 1800	13.3	12.9	12.3
1800 - 1900	9.5	9.3	8.9
1900 - 2000	6.8	7.0	6.3
2000 - 2100	5.9	5.9	5.4
2100 - 2200	4.5	4.6	4.1
After 2200	4.9	4.4	4.6

In **Figure 5** we again have first the
sample results, and then the results of
the fusion are displayed. The very
close proximity of the results is also
reflected here.

What we have said about radio also goes
for TV.

If we compare the coverage of the
maximum audience with each other across
the time slots, then we have a high-
grade identity, which is confirmed in
the relative comparison.

FIGURE 6
Broadcast media fusion

| | Coverage maximum audience | | |
Net TV	Donor %	Recipient %	Wendt %
Before 1700	28.5	28.1	28.1
1700 - 1730	33.7	33.3	33.4
1730 - 1800	40.2	40.2	39.7
1800 - 1830	56.6	56.0	56.6
1830 - 1900	63.7	63.7	63.6
1900 - 1930	79.0	79.2	79.4
1930 - 2000	83.6	83.7	84.2

FIGURE 7
Broadcast media fusion

| | Coverages maximum audience comparison | |
Net TV	Recipient donor	Wendt donor
Before 1700	-1	-2
1700 - 1730	-1	-1
1730 - 1800	0	-1
1800 - 1830	-1	0
1830 - 1900	-1	0
1900 - 1930	0	1
1930 - 2000	0	1
Relative deviation	0.35	0.35

The same also applies for TV coverages 'yesterday'.

Here the fusion result, on average, shows a narrower deviation than between the two samples.

With this test, naturally, we cannot rest on our laurels. For a decision, we have to know if the fusion works sufficiently accurately to give media schedule figures in an intermedia context. As a result, we selected nine target groups evaluated against six different media schedules with a mixture of print and broadcast media (except for the sixth schedule).

FIGURE 8
Broadcast media fusion

| | Coverage yesterday | | |
Net TV	Donor %	Recipient %	Wendt %
Before 1700	7.4	7.3	6.9
1700 - 1730	10.0	9.1	9.3
1730 - 1800	13.2	12.1	12.3
1800 - 1830	24.1	23.0	23.6
1830 - 1900	29.3	28.9	29.3
1900 - 1930	48.0	48.2	48.5
1930 - 2000	50.9	50.8	51.4

FIGURE 9
Broadcast media fusion

| | Coverages comparison yesterday | |
Net TV	Recipient donor	Wendt donor
Before 1700	-1	-7
1700 - 1730	-9	-7
1730 - 1800	-8	-6
1800 - 1830	-4	-2
1830 - 1900	-1	0
1900 - 1930	0	1
1930 - 2000	0	1
Relative deviation	0.70	0.57

The target groups are:

(1)   Total
(2)   Men
(3)   Women
(4)   Housewives, 20-49 years old
(5)   Housewives, 20-49 years old, with a net monthly household income of DM 2,000 and more
(6)   Housewives, between 20-49, with children up to 14 years old
(7)   Men, heads of households, 20-49 years old

FIGURE 10
Target group : Total

Schedule	Coverage %		Exposures %		Average exposures	
	Original	Wendt	Original	Wendt	Original	Wendt
1	89.0	89.6	367.50	369.58	8.6	8.6
2	93.8	94.4	1,075.21	1,085.38	23.8	23.8
3	93.5	94.1	882.01	887.61	19.6	19.6
4	95.4	95.5	528.45	532.32	11.5	11.6
5	78.2	79.2	303.03	303.13	8.1	7.9
6	34.2	34.2	55.26	55.26	3.4	3.4

(8) Men, heads of households, 20-49 years old, with a net disposable household income of DM 2,000 and more
(9) Men, heads of households, 20-49 years old, whose occupations cover proprietor or manager of a company, self-employed professional, small to medium-sized self-employed, farmer, senior executive or civil servant/ government employee.

Figure 10 shows initially an overview of the total target group for all six media schedules. This is essentially so that such an overview gives the opportunity to see how close the coverage and exposures in millions and the average exposure per reached individual lie to each other.

As the media schedules are appropriate to varying degrees for the various target groups, we will confine ourselves to three examples.

The first example is concerned with Media Schedule No.1, which consists of radio and TV programme journals and TV insertions, for the total target group.

It can be seen that the fusion gives an insignificantly higher coverage and slightly more exposures in millions, but for average exposure it gives the same result.

FIGURE 11
Media schedule 1 : Print + TV

Media	Number of insertions
'Tandem' (Hörzu and Funk-Uhr together)	5
Bild und Funk	5
Gong	5
ZDF, average half-hour	24
ARD, average half hour	8

FIGURE 12
Media schedule 1 : Total target group

	Original	Fusion
Coverage (%)	89.0	89.6
Exposures (million)	367.50	369.58
Average exposures	8.6	8.6

But what is of interest above all? What does the exposure distribution look like?
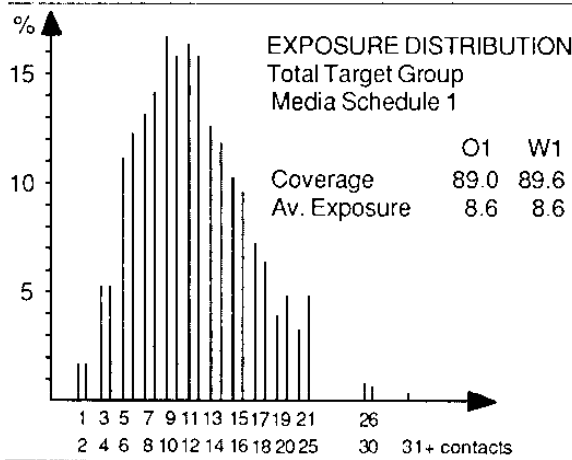
FIGURE 13

Figure 13 demonstrates that the distributions of exposures, as derived from the original survey and fused data, produce practically identical curves.

It could be said that for the 'total' target group this is no particular surprise. To counter this argument, we can show the results for the target group of housewives, 20-49 years old, with a net monthly household income of DM 2,000.00 and more.

FIGURE 14
Media schedule 2 : Print + TV (Women)

| Media	Number of insertions
Magazines	
- Package combination 4 (Quick, Neue Revue, TV Hören und Sehen, Fernsehwoche)	10
- Burda combination (Bunte; Bild + Funk)	19
- Brigitte	5
- Für Sie	5
- Freundin	5
- Journal für die Frau	5
TV ARD average half-hour	30
ZDF average half-hour	30

In Figure 15 are the figures for Schedule 3, which incorporates magazines and TV.

FIGURE 15
Media Schedule 3 : Target group:
Housewives, 20-49 years old,
net household income DM 2,000+

	Original	Fusion
Coverage (%)	94.3	95.1
Exposures (million)	149.10	153.49
Average exposures	18.9	19.3

Coverage, exposures and average exposures deviate only insignificantly from each other, but the exposure distribution curves (Figure 16) match absolutely identically.

FIGURE 16
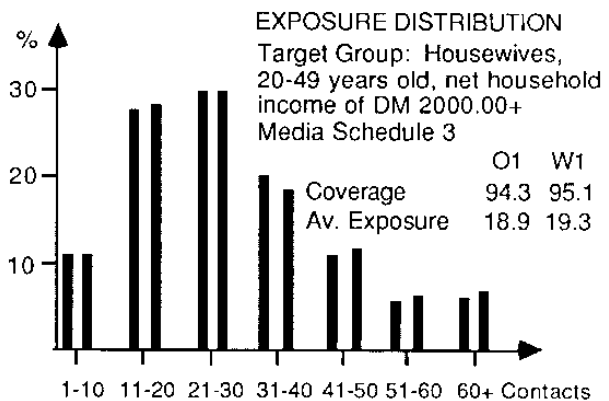
We have a similar finding for Media Schedule No.4, constructed for the target group of men, heads of households, 20-49 years old, with a net household income of DM 2,000 and more.

This schedule includes magazines with a predominantly male readership, TV advertising in the first and second channels, and nine radio channels. Here also there are only slight

FIGURE 17
Media Schedule 4 : Print+TV+Radio/Men

Media	No.of inser- tions	Media	No.of inser- tions
Spiegel	12	ARD ave.1/2hr	12
Stern	7	ZDF ave.1/2hr	24
Capital	6		
Impulse	4		
Auto-Mot-Sport	6	Radio 30"	
Schön.-Wohnen	2	Bremen	20
Playboy	5	NDR	6
Geo	5	Hessen 3	20
Bild der Wiss.	2	SDR 1	15
Penthouse	2	Südwest 1	20
Wirtschaftsw.	1	Saar	20
		Bayern 3	12
		Berlin	20
		RTL	20

deviations between the original and the
fusion structures. The number of
exposures and the average exposures,
after fusion, lie slighty below the
originally surveyed levels.

FIGURE 18
Media schedule 4 : Target group:
Men, heads of households, 20-49 years
old, net household income of DM 2,000+

	Original	Fusion
Coverage (%)	96.4	96.7
Exposures (million)	96.13	93.26
Average exposures	13.0	12.5

The exposure distribution shows a very
similar, almost identical, picture.

FIGURE 19

EXPOSURE DISTRIBUTION
Target Group: Men, heads of households,
20-49 years old, net household income of DM 2000.00+
Media Schedule 4

	O1	W1
Coverage	96.4	96.7
Av. Exposure	13.0	12.5
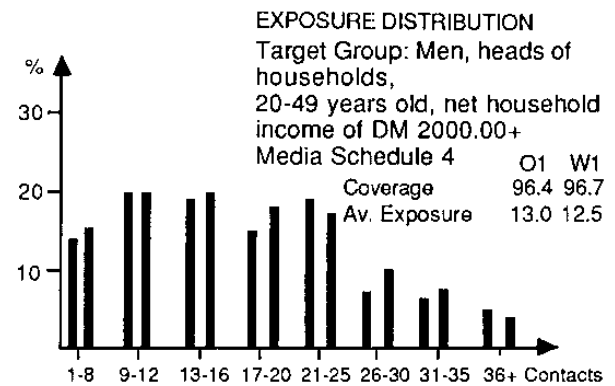
As a result of this finding, the
Technical Commission and the Working
Party of the Media Analysis Association
(AG.MA) decided that the fusion itself
with the fusion process on offer is, in
principle, suitable for the purpose,
and that it should be introduced into
the partnership model.

Accordingly the green light was given
at the Members' Meeting in the autumn
of 1984 for the partnership model to be
extended. The few remaining problems
of fine detail, which were still open
questions emerging from the
experiments, would be covered by
further experimentation during 1985 to
refine the process.

These problem areas cover the role,
scope and weighting of the common
characteristics; consideration of
different degrees of representation
with disproportional samples; and the
so-called smoothing effect observed
where the fusion of distorted
distributions tends to give a normal
distribution.

At the time of writing, the results of
the fine-tuning experiments are not
available, but all the indications show
that these problems are soluble.