Diversity in Television Programming: 
Comparative Analysis of Five Countries

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I. Introduction

This study is part of a joint research project, “Quality Assessment of Broadcast Programming”, involving the cooperation of scholars from Britain, Canada, Japan, Sweden and the United States, which the NHK Broadcasting Culture Research Institute has been funding since 1990.1

The concept of diversity has been much favoured in discussions of broadcasting in recent years, but, while everyone agrees that the concept is indispensable in the study of programming quality, no international agreement has been reached as to its meaning.

Blumler (1991) made a detailed study of various dimensions of diversity, but the terms he used differed from those used by Raboy (1991), Greenberg et al. (1991) and Leggatt (1991), and also from those used in previous studies (e.g. Dominick and Pearce, 1976; Litman, 1979 and Wakshlag and Adams, 1985).

It may be some time before there is any detailed agreement about “diversity”, but we believe that there is sufficient general understanding

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of the core concept to enable us to establish an operational definition that we can begin to verify. These are the circumstances in which we present this preliminary report on “diversity”.

In establishing a framework for the study, three issues had to be decided. First, we had to determine the terms to discuss diversity. As Blumler (1991) pointed out, diversity has a wide range of dimensions, including program genres, scheduling, viewpoints and formats (style and production values).

Our research focuses on program genres. We often hear criticism of the uniformity of broadcasting, and this most commonly refers to program genres. So, as the starting point of our study, we decided to look at the genres of daily programs. We believe that what is most needed today is a proposal for the verification of program diversity, which may lead to the verification of other dimensions of diversity in the future.

Second, we had to decide what to use as an index of diversity. On this issue, basic work had already been done (Kambara, 1992) and we have used his index of relative entropy in this study.

The third point to be settled was how to categorize the program genres. As has already been pointed out (Ishikawa, 1991), previous analyses have all used different methods of program categorization, and this has gravely affected interpretation of the results. In this joint project, the scholars from five countries, after detailed discussion, decided to adopt the categorization shown below, despite the fact that the fit is not exact for any one participating country.

Through our discussions, we came to understand that the program categories used in each country reflect the current state of that country’s television broadcasting. For example, in a country where a large number of dramas are broadcast, the genre of “drama” is subdivided into many categories, while in a country in which many light entertainment programs are broadcast, several categories of this genre are distinguished. We ignored these differences of detail in order to develop an international system of program categorization.

II. Method

The following is the method for our comparative analysis of the diversity of TV programming in five countries.
Period of analysis: March 2 to 8, 1992
Targeted time slot: 6:00 to 24:00
Programs: Programs more than 5 minutes long
Channels: A total of 26 major channels, in the five countries concerned. In all but one exceptional case, explained later, these were terrestrial channels.
(Materials actually used were those available to each scholar in this joint study, and therefore subject to regional limitations.)³

Japan (Greater Tokyo Area)
  NHK GTV  CX
  NHK ETV  ANB
  NTV  TX
  TBS

U.S.A. (East Lansing Michigan)
  CBS  Fox
  ABC  PBS
  NBC

England (London)
  BBC 1  ITV
  BBC 2  Channel 4

Canada (Montreal)
  CBMT  CIYM
  CBFT  CFJP
  CFCF  CIVM

Sweden (Lund)
  Kanal 1  TV 3
  TV 2  TV 4

Diversity index: Relative entropy

Entropy is expressed by the following formula:
\[ H = \sum -p_i \log_2 p_i \]

Where \( p \) indicates the probability of each category being selected. When there is no concentration of categories, \( H \) takes its maximum value \( (H = \log_2 N) \) where \( N \) is the number of categories. Relative entropy is calculated by dividing obtained \( H \) by \( H \)'s maximum value, and it ranges between 0 and 1.
III. Results

1. Proportion of Program Categories in Each Country and Relative Entropy (Vertical analysis)

The calculation of the diversity of each channel was based on the proportion of program categories: what we call vertical analysis. The analysis here is based on the weekday data. (Considerable differences in the programming on weekdays and weekends in each country led us to conclude that analyses of these data should be conducted separately.)

Figures 1 and 2 show the proportion of program categories for both the entire day and for prime time (7:00p.m.-11:00p.m.), on the weekday time table of each country’s broadcasters. A dot corresponds to 1%. The difference in each country’s programming ratio is apparent in such categories as TV Narrative (dramas), News/Current Affairs, Educational/Instructional, Hobby/Personal Interest and Children. In some cases we see a number of channels with a similar concentration of dots within the same country. This causes a problem of uniformity of programming. In some cases we see the broadcasters concentrating on certain categories, but there is a considerable difference among rivalry broadcasters as to which category
they choose to concentrate on. This results provides a little help for the audience for their range of choice.

Figures 3 and 4 show the relative entropy, the diversity index calculated from these proportion of program categories.

Regarding all-day program diversity (Figure 3) the highest value goes to broadcasters in Britain, followed by those in Sweden, Japan and Canada. U.S. broadcasters had the lowest index value.

Noticeable in Japan is the low value of diversity in NHK's Educational Service. This is because that channel is used exclusively for educational programs, well illustrating the rarity of a purely educational channel. Among Japanese commercial TV stations, TV Tokyo presents programming which has comparatively less concentration by category.

An overall look at Japanese TV stations reveals high proportions for the Hobby/Personal Interest and Variety/Show categories.

Three major networks in the United States have low program diversity as compared with the leading broadcasters of other countries: they tend to concentrate on dramas and/or Hobby/Personal Interest programs. The focus of Fox is similar to that of the major networks and its diversity value is also low. The diversity value of PBS is low but its programs concentrate on the categories, Hobby/Personal Interest and Children: the programming for children is a internationally recognizable characteristic of PBS.

Turning to Britain, the diversity of ITV is lower of other British stations, but it still stays high by international standard. The output of Channel 4 seems to reflect its defining characteristic, described in the Broadcasting Act, as "having originality." BBC 1 and BBC 2 both have a diversity of programs. While BBC 1 lays emphasis on News/Current Affairs, Sports, Variety/Show and Children, BBC 2's programming is rather more limited, concentrating on Documentaries, relays of parliamentary sessions and Hobby/Personal Interest. This tendency is reflected in the relative entropy measure.

As a whole, News/Current Affairs has a high proportion of programming and the proportion of dramas is comparatively low.

In Canada, high diversity can be observed in French-language broadcasting. Compared with CBMT (CBC's English-language broadcast) and CFCF (a leading English commercial broadcasting network), higher diversity can be observed for CBFT (CBC's French transmission) and CFTM (a leading French network of a commercial television). CIVM (a
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Figure 1: Proportion of Program Categories (Whole Day)

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Figure 2. Proportion of Program Categories (Prime Time)
Figure 3. Relative Entropy for Each Channel (Whole Day)

Figure 4. Relative Entropy for Each Channel (Prime Time)
provincially-operated public broadcaster with a specific educational mandate) emphasizes the News/Current Affairs and Educational/Instructional categories, giving it a low diversity value. This tendency resembles that of NHK's Educational Service.

As a whole, emphasis is on News/Current Affairs. The proportion of Variety/Show is the second highest, and children's programs are also abundant compared with the other countries.

Swedish broadcasters cover a wide range of programs; in general, their concentration on particular categories was the lowest. Since different stations emphasize different categories, a good balance is maintained both within each channel and across the channels.

When we focus on prime time, the concentration on particular categories increases for most stations.

In the case of Japan, the public broadcaster NHK concentrates on News/Current Affairs and Educational/Instructional, while commercial broadcasters emphasize Hobby/Personal Interest, Variety/Show, and Game. The exception is NHK's Educational Service. The channel somewhat expands its categories to include a wider range of target viewers during prime time, thus enhancing program diversity. As for the commercial broadcasters, the diversity value of TBS and NTV also increases slightly. As a result, the overall diversity of Japanese broadcasting in prime time is higher than that of the other countries.

TV programs in the United States are often criticized for their uniformity, and this analysis clearly verified that situation. The diversity value dropped considerably, with concentration on dramas clearly seen in the programming of every station except PBS.

In Britain, a strong concentration can be seen on dramas, documentary features and News/Current Affairs. It may be their tradition to broadcast these categories of TV programs during the evening and night viewing hours. But the degree of concentration is less than in the other countries.

In Canada, each broadcasting station has its own concentration category, such as dramas, films or News/Current Affairs, depending on its policy. In this general trend, CFTM's programming stands out for its comparatively low degree of category concentration. But the overall degree of diversity is not high.

Swedish broadcasters, on the other hand, do not concentrate on certain categories to attract a broader audience even during prime time. The diversity of nighttime programming continues to be as high as that of the
daytime, and balance among the categories is kept at a high level.

2. Relative Entropy of n−1 Channels (horizontal analysis)

The horizontal analysis of the time table is designed to analyze how much each station has contributed to supplying greatest range of choice to its viewers. In practice, we conducted the following calculations to analyze all-day and prime time programming:

* Calculation of overall diversity of all \( n \) channels in each country concerned.
* Then subtract one channel at a time and make the same calculation of the diversity for \( n-1 \) channels, in order to see the change in the diversity index.
* Repetition of the above operations for each station. (See Figures 5 and 6)

The study shows that in each country, public broadcasting contributed to diversity. That is, calculation without public broadcasters resulted in lower relative entropy. Commercial stations contributed little to the general diversity in prime time, although their contribution to diversity could be observed to some extent in the analysis of all-day programming. Stations with a specifically stipulated nature (such as Britain’s Ch.4 and Quebec’s educational broadcaster) or late starters (such as Fox) sometimes contributed to overall diversity by attempting unique or alternative programming. However, in this analysis, the numerical values are affected by the total number of the stations, so in the cases where many stations are involved, the change in the values did not appear very clearly.

IV. Discussion

(1) The significance of this study lies in its effort to examine the feasibility of analysis with program diversity indices. It has been confirmed that the Relative Entropy Index satisfactorily met our needs. This index is influenced by the number of program categories and the degree of concentration in certain categories. In this sense, there is room for further discussion on the number of categories to be used for the analysis and the method of establishing categories. It is a difficult task to establish common categories for international use. But once the significance of this
Figure 5. Relative Entropy of n-1 Channels (Whole Day)

Figure 6. Relative Entropy of n-1 Channels (Prime Time)
type of study is recognized, progress will be made in the sophistication of classifying broadcast programs. In this study, categories such as Theatrical Narrative, Religion and Minority did not function satisfactorily.

(2) This study showed the effectiveness of vertical analysis in international comparisons. We believe that the accumulation of such data makes possible the evaluation of broadcasting activities by international standards. This method also enables the analysis of a station’s programming from the historical viewpoint. It may become possible to study and clarify transitions in programming over time.

(3) The horizontal study produced interesting results, although there is a certain limitation. Differences in the mandate and source of revenue of each station is excellently reflected in the index. The only problem is that this method is affected by the number of channels in each country. That is, the more channels are involved, the lower the index sensitivity becomes.

Notes

1. In this study, a uniform methodology was adopted before scholars in each country started to collect data. In addition, each scholar conducted an analysis of his own country’s programming, as part of this project. For example, Litman’s report carried in this issue gives the American part of this project. Swedish report also is included in this issue and Raboy (1993) presents Canadian report on this matter.

2. The characteristics of broadcasting stations in each country involved is as follows:

   **Japan**
   
   NHK GTV—General Service of public broadcaster, NHK
   
   NHK ETV—Educational Service of public broadcaster, NHK
   
   (NHK, Nippon Hosou Kyokai = the Japan Broadcasting Corporation)

   NTV, TBS, CX, ANB and TX—Key stations of commercial broadcasting networks

   **U.S.A.**
   
   ABC, CBS, NBC and Fox—Commercial networks
   
   PBS—Public broadcaster

   **U.K.**
   
   BBC 1 and BBC 2—Public broadcaster
   
   ITV and Channel 4—Commercial broadcasters

   **Canada**
   
   CBMT—English-language station owned and operated by the publicly-owned national broadcasting service, CBC
   
   CIFF—English-language station affiliated with the privately-owned national CTV network
   
   CBFT—French-language station owned and operated by the publicly-owned national broadcasting service, CBC
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CFTM — French-language station, flagship of the privately-owned TVA network, operating in Quebec
CFJP — French-language station, flagship of the privately-owned TQS network, operating in Quebec
CIVM — French-language station publicly owned and operated by the provincial, educational broadcasting service, Radio-Québec

Sweden

Kanal 1 — A tax and license-funded nationwide public service channel
TV 2 — A public service channel operating regionally
TV 3 — A commercial channel broadcast via satellite. Because of the ethical regulations concerning e.g. commercials directed towards children, TV 3 was not allowed to broadcast in Sweden. Consequently, the channel's owner decided to broadcast via satellite from their station in London. After discussion, this channel also was included in the analysis with the suggestion of Swedish scholars because of its importance to the overall Swedish television environment.
TV 4 — A commercially financed channel. This channel, however, is operating under some public service restraints, which is the sole condition for their right to terrestrial broadcasting.

3. Relative entropy here is based on proportions of time allocated to each genre. Hills and Rosengren calculated relative entropy based on proportions of program items in each genre in their Swedish analysis. Methodological discussion has been very interesting, but we have not yet reached conclusion.

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