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# Measuring cultural diversity: a review of existing definitions

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*The author is responsible for the choice and the presentation of facts in this concept paper and for the opinions expressed therein, which are not necessarily those of UNESCO and do not commit the Organization*

## **Summary**

This research paper deals with the issue of defining and measuring the diversity of cultural expressions. Firstly, it proposes a three-dimensional definition based on a review of existing literature on the concept of diversity in a range of disciplines including biology, economics and sociology. Drawing on these methodologies, the paper then identifies the main variables to be used as well as the essential properties of a robust set of indices to assess the diversity of cultural expressions. Finally, it highlights a number of issues to be further discussed.

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## **Introduction – why a definition is a preliminary step towards measurement**

The almost unanimous approval of the UNESCO Convention on the Protection and Promotion of the Diversity of Cultural Expressions (20 October 2005) and its adoption by currently more than sixty countries could mark a dramatic turning point in the way cultural policies are considered. The Convention's aim to provide a solid framework for policies in favour of the diversity of cultural expressions makes it necessary to define both cultural diversity and the diversity of cultural expressions as objectively as possible. However, in the text of the Convention, both notions remain rather vague. The former 'refers to the manifold ways in which the cultures of groups and societies find expression' (Art.4) while the latter is not defined. Since cultural expressions are 'those expressions that result from the creativity of individuals, groups and societies, and that have cultural content' (Art.4), for the purposes of the paper, cultural diversity and diversity of cultural expressions will henceforth be used interchangeably.

A more precise definition of cultural diversity is therefore needed. As in the case of biodiversity, this is clearly 'more than matters for semantic wrangling' (McIntosh, 1967, p.392). Definitions of biodiversity have enabled researchers to discuss this concept in a way that is neither ambiguous nor arbitrary (Sugihara, 1982) and have given practitioners the means to balance goals in terms of diversity with the cost of promoting it (Weitzman, 1992; Solow et al., 1993).

The primary goal of a definition of cultural diversity should be to allow for its measurement. Furthermore, this measurement must be as objective as possible, so as to permit comparisons between countries as well as assessments of the evolution of diversity. From an academic perspective, this would be useful to carry out empirical research (Flores, 2006) but this is even more crucial for policy implementation. Two observations may be made here. Firstly, since the notion of cultural diversity covers many dimensions, there can be no single policy in favour of cultural diversity; instead, there will be policies that foster certain aspects of it, while sometimes harming others. Policies should then be carefully designed. Secondly, to measure the impact of policies it is necessary to evaluate them once they have been implemented; such assessment would also make it possible to improve or terminate them.

In this paper, I will (i) propose a three-dimensional definition of cultural diversity; (ii) explore the extent to which certain aspects of this definition have been taken into account in previous research on diversity (this will give us certain insights into the way the definition can be applied) and (iii) outline some proposals concerning the relevant variables and possible indices to measure cultural diversity. Finally (iv), by applying this definition I will highlight a number of issues that should be explored for policy-making purposes.

# 1. A three-dimensional definition of cultural diversity

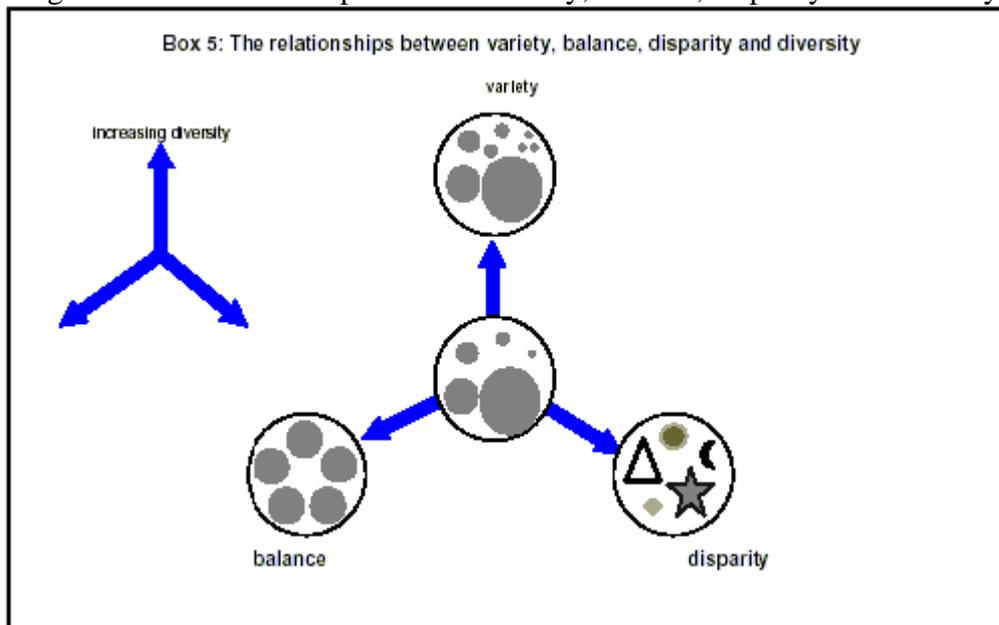
I propose to define cultural diversity as a three-dimensional concept. Firstly, any form of diversity is a mix of variety, balance and disparity. Secondly, a distinction should be made between supplied and consumed diversity, the latter being influenced by consumer tastes as well as by the nature of supply. Thirdly, cultural diversity relies on complex interactions between the diversity of producers, products and consumers.

## 1.1. A general definition of diversity: diversity as a mix of variety, balance and disparity

The first dimension of our definition will be: diversity is a mixture of *variety*, *balance*<sup>1</sup> and *disparity* (Stirling, 1998; Moreau and Peltier, 2004): all other things being equal, the greater the variety/balance/disparity, the greater the diversity (see fig.1).

To assess the diversity of any system (e.g. music production), this system must first be divided into different types or categories (e.g. titles, geographical origins, etc.). Variety corresponds to the number of different types. Balance represents the way every type is represented. It can be measured by the proportion for every type (e.g. the number of goods for every type that is produced or sold as compared to the total number of goods available). Disparity is the dissimilarity between existing types, for example between the farthest two types or for every pair.

Figure 1: The relationships between variety, balance, disparity and diversity



Source : Stirling, 1998, p.41

<sup>1</sup> For the purposes of this paper, the term 'balance' is used to convey the idea of the even spread of a product or form of expression, in the same way that 'evenness' is used by ecologists in the study of biodiversity. 'Balance' should therefore not be confused with 'equilibrium'.

To make this dimension clear, let us consider the evolution of music diversity on a French radio station. This station initially broadcasts around 100 different French pop songs. Five of these songs are played every hour while the others are broadcast far less frequently. Considering our first dimension, to increase diversity, we can increase either variety or balance or disparity. To increase variety, we can, for example, increase the number of different songs broadcast, from 100 to 150. To increase balance, we can reduce the number of broadcasts of the most broadcast songs and increase the broadcasts of the others. To increase disparity, we can choose to replace some of the French pop songs by songs of other styles which were previously not broadcast, for example Brazilian Bossa Nova or Pakistani Qawwali songs.

Every component of the first dimension appears to evolve independently from the other components. However, this is only true to a certain extent. They are, in fact, inextricably linked through the notion of diversity. In our example, if variety is increased, it will probably have an impact on balance since to broadcast more songs implies that, on average, each song will be broadcast less frequently. Furthermore, if you have only one Bossa Nova song broadcast only once a week, it is not the same as if there were many songs in this style, which were played more often. More generally speaking, to divide any system into categories, we must make assumptions about disparity even if we only seem to be interested in variety and balance (Stirling, 2007).

The first dimension of our definition of cultural diversity is rather simplistic and seems to apply to any kind of diversity. Indeed, it was first formulated by Stirling (1998) who works on technological diversity. Part or all of the components have also appeared in works on biodiversity (see 2.1.) as well as diversity of production (see 2.2.), finance (Markowitz, 1952), psychology (Junge, 1994) and communication theory (Shannon, 1948).

## **1.2. Supplied diversity, consumed diversity**

Beyond this general definition of diversity, cultural diversity has specific features. I rely on the assumption that cultural diversity is comparable to a form of diversity of production, particularly when assessed in the case of the cultural and media industries. For most cultural activities, there is production and then there is a market for that production in a broad sense, i.e. a place where supply meets demand. This is clearly the case for cultural goods and services and is also arguable for other cultural activities. In this case, in every market, you have two kinds of diversity: diversity as it is supplied by suppliers and diversity as it is accepted by demanders.

The second dimension of our definition of cultural diversity will therefore distinguish between *supplied diversity* and *consumed diversity* (Eaton and Lipsey, 1989; Van Cuilenburg and Van der Wurf, 2001).

Supplied diversity corresponds to the diversity of what is made available. Consumed diversity refers to diversity as it is actually consumed, thus depending on both consumer tastes and supplied diversity. Suppliers may be the creators or any intermediary actor. Likewise, consumers can be the audience or any intermediary actor in the supply chain, from a publisher to a retail outlet. The word ‘consumption’ must be understood in a very broad sense: a consumer does not necessarily pay for this consumption and the product is not necessarily destroyed afterwards.

However, consumed diversity should not be considered equivalent to *demanded diversity*. Demanded diversity corresponds to the level and nature of diversity that is desired by consumers independently of what is actually supplied, just as in neoclassical economic models demand exists independently of supply. Demanded diversity reflects consumer tastes but these tastes do not depend on what is actually available. Nevertheless, it is difficult to know what people would like to have in terms of diversity and far more reasonable to assume that supply has an influence on consumption and thus supplied diversity on consumed diversity.

### 1.3. Product, producer and consumer diversity

The third dimension of our definition of cultural diversity encompasses product, producer and consumer diversity (see Table1).

*Product diversity* refers to the diversity of the characteristics of products that can be goods or services, either supplied or consumed. *Producer diversity* means diversity of actors at every stage of the production and distribution process. The distinction between producer and product is not always obvious, especially for artists since they also benefit from marketing and communication. The products are generally linked to their creators, which is specific to cultural products. Producers are different from products insofar as they are able to change. Once a movie has been released, it cannot change; if another version of this movie is released, it is another movie. However, an artist can evolve but remains the same person.

*Consumer diversity* consists of the diversity of the people who obtain and consume products. Consumers are targeted by producers who encourage them to consume their products. Consumer diversity should not be confused with demanded diversity. While the latter is an economic concept that relies on the assumption of stable preferences that are independent of the nature and level of supply, the former aims to reflect the diversity of consumer tastes. Above all, consumer diversity is linked to diversity of cultural identities, beliefs and habits. It reaches far beyond economic issues.

Table 1: Product, producer and consumer diversities in the music industry

<b>Product</b>	Song: - Lyrics (notably language) - Music
	Grouping of songs (album/single/CD...)
<b>Producer</b>	Artist (performer/composer/author/...) (notably nationality)
	Publisher
	Producer
	Distributor
	Retail outlet
	Broadcaster
<b>Consumer</b>	Individual
	Grouping of individuals (ethnic/gender/...)

## 1.4. Summary

Given these three dimensions of diversity, I define cultural diversity as the variety, balance and disparity of products in the way they are made available and then consumed; of producers according to their potential market power and the way this power is expressed; and of the consumer as far as his tastes and different identities are concerned.

This three-dimensional definition of cultural diversity may appear somewhat complex but this is because the issue of cultural diversity is itself complex. A definition should only be considered a necessary first step to measuring cultural diversity. In the following section, I begin by demonstrating the importance of understanding previous research on diversity.

## 2. An overview of previous representations of diversity

In this section, I present an overview of previous research on diversity to show the extent to which our dimensions are based on a clear and complete definition. I will first consider the issue of biodiversity to show the pertinence of Stirling's definition (1998). I will then consider how economists have modelled the diversity of production, particularly through the study of the spatial model (Hotelling, 1929). Finally, I will provide an overview of the literature that deals expressly with diversity in cultural activities to show how approaches have evolved towards an even more complete and precise understanding of the issue.

### 2.1. Models on biodiversity and the first dimension of our definition of cultural diversity

Biodiversity has long been studied. It remains an important issue since biodiversity appears as endangered and arguably more threatened than ever before. In fact, most research on diversity owes much to biodiversity research and cultural diversity is no exception (Flores, 2006). Yet despite the extensive study, there seems to be no consensus regarding the definition of biodiversity. There would appear to be two kinds of approaches.

Following Simpson (1949), most research on diversity has attempted to measure both variety and balance while neglecting disparity. Simpsons' well-known index is as follows:  $1 - \sum_{i=1}^N p_i^2$ , with  $N$  the number of types (e.g. species) and  $p_i$  the proportion of the  $i^{\text{th}}$  type. This index, better known as the Hirschman-Herfindahl index in industrial economics, is sensitive to the different number of types and the relative proportions of these types. Many after him, notably biologists and statisticians, have followed this path (McIntosh, 1967; Patil and Taillie, 1982).

Other research on biodiversity, notably by economists, has focused on disparity at the expense of balance and variety (Weitzman, 1992; Solow et al., 1993). Weitzman proposes the following recursive index:  $D_w(N) = \max_{i \in N} \{D_w(N \setminus i) + d_{i, N \setminus i}\}$  with  $N$  the ensemble of types and  $d_{i, N \setminus i}$  the 'distance' (e.g. genetic) between type  $i$  and the rest of  $N$ . This index is used to measure the genetic distance between the farthest two of any sample of species. The use of

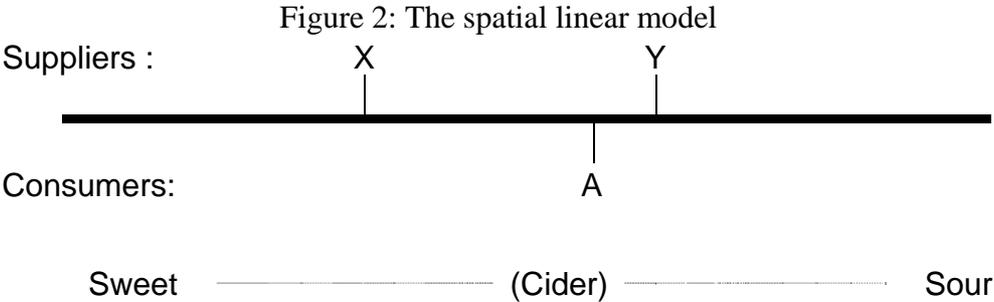
this distance shows that Weitzman is interested in disparity and makes no reference to variety or balance.

**2.2. The spatial linear model**

Many theoretical articles deal with diversity of production. Most deal primarily with the issue of whether the market provides the optimal level of diversity. Unfortunately, in so doing, they simply neglect the issue of defining and measuring diversity. For example, ‘representative consumer’ models generally assume that consumers prefer mixtures to consuming only one kind of product (Dixit and Stiglitz, 1977).

Despite its title, ‘Stability in Competition’ (Hotelling, 1929) is the first economic attempt to model diversity of production. Its influence remains very important – as shown in the 975 citations in the Social Citation Index between 1989 and 2002 (Thisse, 2002). It can be seen in the field of theoretical research on diversity of production where it has more or less explicitly asked the questions that have remained important for economists: Does the market provide enough diversity? Why should diversity be promoted? What is diversity? Hotelling’s text has inspired much theoretical research (see notably Lancaster, 1979; Salop, 1979) which nevertheless adopts a critical stance (Lerner and Singer, 1937; d’Aspremont et al., 1979). Moreover, it has often become an implicit reference for research beyond the theoretical, from applied theoretical research on diversity in the press (Gabszewicz et al., 2001) to research on biodiversity (Weitzman, 1992).

I present the original version of the model (Hotelling, 1929), which not only illustrates our definition of diversity to a certain extent but also paves the way for further research on defining and measuring cultural diversity



Source: Hotelling (1929).

Hotelling uses a horizontal line to represent the ‘Main Street in a town’ (1929, p.45). Customers and sellers are located on the street. In fig.2, there are two sellers, named X and Y and only one customer, named A, but in Hotelling’s model there are customers uniformly spread out along the street and the number of sellers can be increased. Whatever the number of sellers, they all sell the same product and compete through their sale prices and their location on the line. Consumers take into account this price and the distance they will have to walk to reach a seller. Thus, in fig.1, supposing that both sellers sell at the same price, A will buy from the nearest seller, Y.

Beyond the geographical metaphor, the line can be said to correspond to any characteristic of a product whenever this characteristic allows for ordering. Hotelling takes the

example of cider. The line represents a continuum of taste, from the sweetest to the sourest cider. We can then find every kind of consumer taste in between, from those who prefer it sour to those who prefer it sweet (p.54). In the same way, suppliers can be classified in relation to the cider they offer. Thus, in fig.1, X sells a cider that is sweeter than Y's. Moreover, since neither of these sellers is located at either end of the line, it is possible to obtain a cider that is either sweeter or sourer. Lastly, as previously mentioned, every customer intends to buy from the closest seller. This distance shows how far the chosen product is from the consumer's personal tastes.

This model potentially takes into account the three components of the first dimension of our definition of cultural diversity. Variety is represented by the number of different sellers – since every seller sells one and only one kind of cider – and the number of different consumers. Balance can be taken into account through the localisation of sellers and the distribution of customers all along the line. For any given distribution of customers, the repartition of market shares between the different consumed products will depend on the location of the sellers and the price of their products. As for disparity, it depends on the distance between sellers, a long distance corresponding to a high level of disparity.

The second dimension appears in a more ambiguous way. Supplied diversity can be observed through the number of sellers and their localisation. However, consumers' location on the line is given in advance and these consumers cannot move (p.45), which means that their tastes do not depend on supplied diversity. This would mean that demanded diversity is used rather than consumed diversity. The latter is only implicitly apparent insofar as the suppliers' market shares may vary.

As for the third dimension, there is no distinction in the original model between product and producer diversity since a producer offers only one product. However, only mathematical and conceptual complications prevent us from modelling the fact that a supplier offers numerous products. Moreover, consumer diversity is represented through the different consumer tastes. For example, Gabszewicz et al. (2001) use the spatial model to represent people with different political orientations. This consumer diversity is the rather implicit justification for promoting product diversity. This product diversity should allow customers to find goods that are not too far from their own preferences.

## ***2.3. Models on diversity of production in cultural and media industries***

### **2.3.1. Classification of models on diversity in cultural activities**

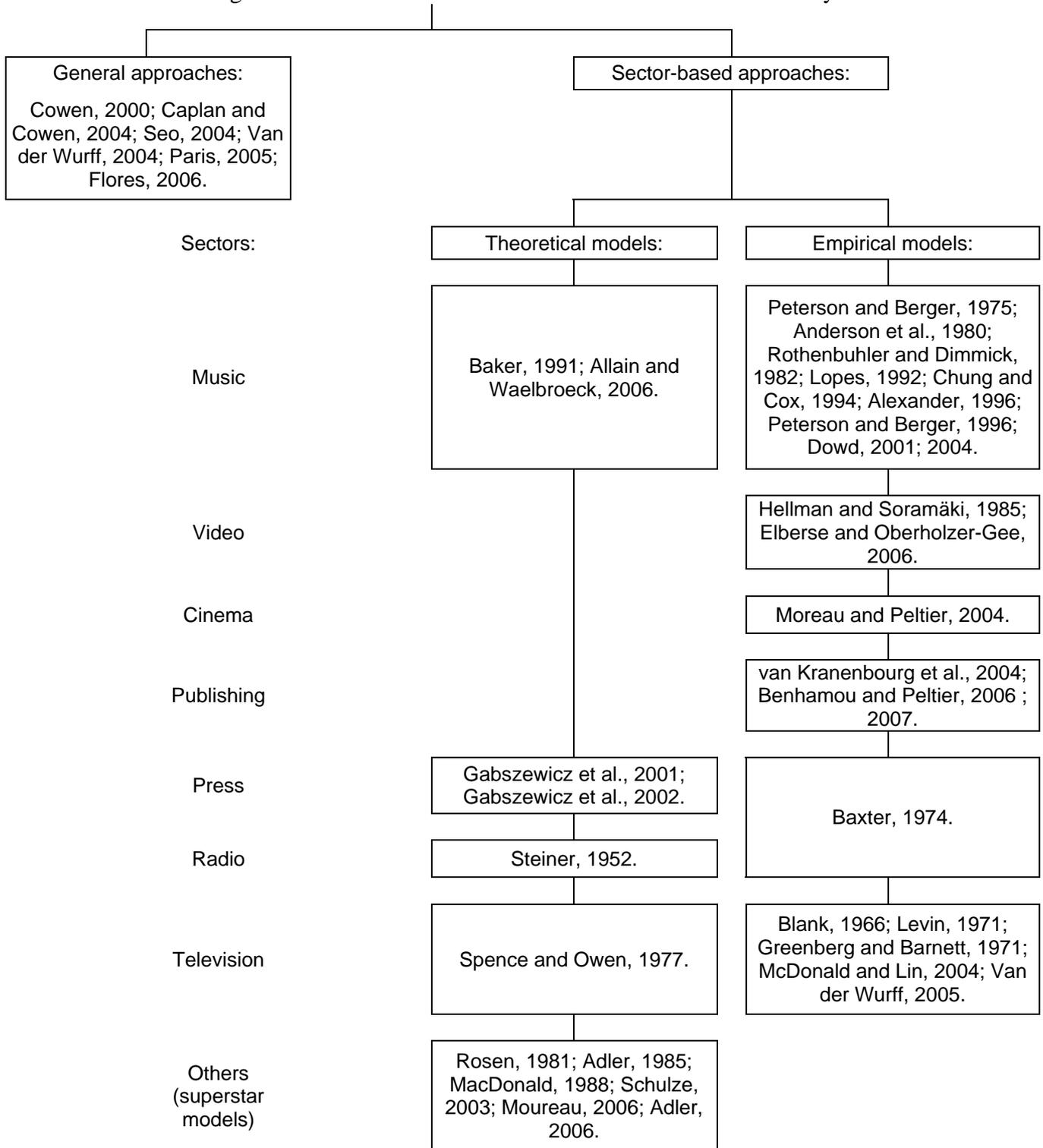
Diversity in cultural activities, particularly in the cultural and media industries, has been studied by researchers in many disciplines, from economics and communication studies to management and sociology. Figure 3 classifies this research.

I have first distinguished between general and sector-based approaches. The latter are focused on one or two sectors, aiming to explain how and/or why diversity has evolved in these sectors. They sometimes provide general conclusions or recommendations that go far beyond the particular sector but this is not their main focus. There are also broader studies that aim to describe and explain cultural diversity in general, for example through its links with globalization (Paris, 2005; Cowen, 2000; Caplan and Cowen, 2004). I have used two criteria to distinguish between sector-based approaches. First, I have classified them in terms of the

sector. Secondly, I have distinguished between theoretical and empirical models (Gibbard and Varian, 1978, p.665).

Theoretical models, like that of Hotelling (1929), try to reproduce the behaviour of economic agents, notably firms and consumers and the interactions between these agents. They are generally formalized with the use of mathematics but it is not a necessary condition. It is worth mentioning that I have included among them models on the superstar phenomenon (see 3.3). They could have arguably been included in general approaches since they offer conclusions that are applicable to numerous cultural expressions; however, these models are generally applied to sectors like performers (McDonald, 1988). Empirical models aim to find statistical correlations between variables in order to explain how some of these variables may influence diversity. I include in these models papers that rely more on the observation of data than on statistical verification, such as Peterson and Berger (1975). Empirical models concern many cultural and media industries, from music to television.

Figure 3: Classification of different models on cultural diversity



Models on diversity in cultural activities, particularly those that are sector-based, will now be considered in comparison with our three-dimensional definition of cultural diversity. This will allow us to ascertain its accuracy and comprehensiveness. These models will then lead us to consider how this definition should be applied (see 3.1.).

First of all, the third dimension appears very well represented and almost always in the same way: most sector-based models are interested in how producer diversity influences product diversity. The justification of the issue generally relies upon an assumed taste for diversity on behalf of the consumer. Steiner (1952) considers the extent to which the number of different broadcasters could influence the number of different types of programmes that would be produced. He also assumes that the listeners preferred different types of programmes. More recently and more precisely, Van der Wurff (2005) studies how producer diversity, through the number of channels, the concentration of channel ownership and the presence of a public channel, could influence product diversity in terms of types of programmes broadcast. He also compares this supplied product diversity to the consumed product diversity, which depends on consumer diversity.

### **2.3.2. From variety to a complete approach**

In contrast with the third dimension, the first dimension has not always been used in the same way. As we will see, much research, particularly less recent and theoretical texts, have relied on one component. Despite previous research combining the three components of this dimension, only recently have authors been able to combine all three effectively thanks to access to better data and a more solid theoretical background. Most theoretical approaches have considered only one component of the first dimension: variety (Steiner, 1952; Spence and Owen, 1977; Baker, 1991; Gabszewicz et al., 2001; Allain and Waelbroeck, 2006). Among these approaches, models influenced by Hotelling (1929) and those that focus on the superstar phenomenon can be considered as special cases.

Gabszewicz et al. (2001; 2002) are greatly influenced by Hotelling (1929). In their models, two newspaper and magazine publishers are located on a line that represents political opinions. Competition between these publishers takes place, in the 2002 version, in two phases: first, publishers compete in terms of the price of the newspaper. They then compete in terms of the price they charge advertisers, supposing that these advertisers also take into account the number of readers of the publication. In the 2001 version, before competing in terms of the price of their publication, publishers compete in terms of location on the line, which means that they choose the political opinion that is going to be expressed (Gabszewicz et al., 2001).

These models fail to take into account the three components of the first dimension of diversity. In the 2001 version, publishers compete through their location on the line but only disparity of expressed political views is affected. In the 2002 version, newspaper publishers can no longer move so that the only change in diversity may come from a decrease in variety when one of the publishers disappears because of the competition process. This failure is due to the fact that the spatial model (Hotelling, 1929) only *potentially* takes into account the three components of the first dimension of our definition of cultural diversity.

Models on superstars (see 4.2.) rely on two components of our first dimension: variety and balance. As such, they are an exception to theoretical models. The reason is that they are interested in concentration and that the greater concentration, the less variety and/or less balance.

Among empirical models, some are focused either on variety (Rothenbuhler and Dimmick, 1982) or on balance (Levin, 1971; Hellman and Soramäki, 1982; Alexander, 1996; Van der Wurff, 2005) or on disparity (Blank, 1966; Dowd, 2001).

### **Comparison between three detailed approaches based on the characteristics of products**

An economist (Alexander, 1996) and a sociologist (Dowd, 2001) have published studies on diversity in music production that should be compared. Both works focus on the American market. Both use the same variables: the songs' characteristics. Both rely on a sample of bestsellers. Lastly, Dowd (2001) uses data from 1955 to 1990 and Alexander (1996) from 1955 to 1988. However, their samples and most of their methodologies differ.

Alexander (1996) uses 30 songs per year for 33 years, which makes 990 observations. The written score of each observation is analyzed considering five binary variables: time and meter, form, accent, harmonic structure and melody. Since there are only two possible values for each variable, there are  $2^5 = 32$  different categories for the songs. Each year 30 songs are distributed in one matrix. In each element of this annual matrix, there is a percentage of all songs from that year. Alexander then applies a Shannon – or entropy – index to the percentages. Since the Shannon index measures variety and balance (Stirling, 1998) and there is no change in variety<sup>2</sup>, the index measures balance.

Dowd's (2001) sample is even more limited. During an equivalent period, he only considers 110 observations. All his observations are songs that have been number one but they only account for 15% of all number ones during the period. Unlike Alexander (1996), he does not work directly on written music but transcribes the songs as they are recorded onto scores, which can lead to different results. Furthermore, he uses 29 generally continuous indexes to characterize every song. These indexes are linked to either melody, rhythm, chords, key or verse. Then for every index and every period – years are grouped in sub-periods of five years – he calculates a mean value of all songs. For each index and each song he measures to what extent the song deviates from the mean value. Finally, for each song he adds the absolute values of these deviations, calling the result a 'musical dissimilarity score'. This score corresponds to a measure of disparity. Notably, he uses these scores to compare any song with the others and to assess the impact of non-musical factors, such as the concentration of producers, on disparity.

Dowd's methodology appears far more accurate than Alexander's since he works directly on the recordings, uses many more indexes, most of which are continuous and at least not simply binary. However, both works only sample bestsellers, which means that a large share of all supplied and even consumed products are not studied. This is a necessary drawback of such a detailed approach.

A third and earlier paper by Anderson et al. (1980) also considers characteristics of songs. Once again, these are only a fraction of the total bestsellers, i.e. only 628 of the number ones in the USA from 1940 to 1977. However, Anderson et al. do not take musical characteristics into account but rather four variables: the record company, the musical genre, the type of performer(s) and the main theme of the lyrics. For each variable, each song

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<sup>2</sup> There are always 32 different categories and 30 songs in the sample.

belongs to only one category and there are about ten categories grouped in two to four meta-categories.

A certain form of disparity is taken into account but to a far lesser extent than in Dowd (2001). Songs that belong to different categories but to the same metacategory (e.g. a 'pop ballad' song and a 'rock ballad' song since both genres belong to the 'mainstream' metacategory) are closer to each other than songs that do not belong to the same metacategory (e.g. a 'rock ballad' song and a 'jazz' song). Anderson et al.'s (1980) approach is more in line with Alexander's (1996) since they consider the evolution of the spread of the songs in the different categories for each variable.

Other articles have used two components of the first dimension, such as variety and balance (Levin, 1971; Chung and Cox, 1994; McDonald and Lin, 2004) or variety and disparity (Peterson and Berger, 1975; van Kranenbourg et al., 2004)

There has been some research on diversity in cultural activities that have succeeded in considering the three components of the first dimension of our definition of cultural diversity (Greenberg and Barnett, 1971; Lopes, 1992). However, the most comprehensive studies are very recent.

The paper by Moreau and Peltier (2004) represents the first attempt to apply Stirling's (1998) definition to cultural industries, namely to an international comparison in the film industry. Their approach is built upon by Benhamou and Peltier (2006) who measure disparity but neglect international comparisons to focus on the French publishing industry. Elberse and Oberholzer-Gee (2006), in addition to the usual consideration of sales and the distribution of sales by title, also take disparity into account through the different characteristics of products.

### **2.3.3. From supply to a comparison of supply and consumption**

Models on diversity in cultural activities have also evolved for the second dimension of our definition of cultural diversity. As I demonstrate, after Steiner (1952) they have tended to focus either on supplied diversity or on consumed diversity. Comparison of both is only recent: it has methodological as well as, to some extent, political motives.

Early American studies on diversity of production in the cultural and media industries focused on television and radio. They set out to question the principles and efficiency of the regulation made by the Federal Communications Commission (FCC) in the United States of America<sup>3</sup> (Steiner, 1952; Blank, 1966; Greenberg and Barnett, 1971; Levin, 1971; Spence and Owen, 1977). This objective may explain why they focused on supplied diversity. The FCC regulates supply and does not deal with consumption and these researchers wanted to find out whether or not the FCC's allocation by of scarce resources such as the right to broadcast was efficient. Caplan and Cowen's (2004) general approach to cultural diversity also focuses on supplied diversity partly because of their interest in political questions. They explain that globalization allows for an expansion of choices made available to any consumer, in other words, a better allocation of resources.

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<sup>3</sup> The FCC is an American governmental agency in charge of regulating telecommunication, including radio and television.

There are also methodological reasons for focusing on supplied diversity. It is easier when studying on media to consider supply, i.e. what is broadcast, rather than consumption, i.e. what people listen to or watch. As a result, some contemporary research still only considers supply (McDonald and Lin, 2004).

### **Steiner's seminal work on diversity (1952)**

An American economist Peter O. Steiner's theoretical research on diversity on radio (1952) was the first study on diversity in cultural activities. In this paper he questions, like many to follow, the influence of regulation by the FCC.

He models the impact of market structure and notably competition on the variety of supplied product in terms of types of programmes. The radio stations are the suppliers. Steiner assumes that they maximize their audience since the higher their audience, the greater their ability to attract advertisers. This idea was mathematically formalized by Gabszewicz et al. (2001; 2002). The listeners are assumed to have diverse tastes: they differ in their preferred type of programme.

Instead of one global model, Steiner uses many parametric models with one or numerous periods. They allow him to illustrate, rather than to deduce, the behaviour of suppliers in terms of diversity.

His main conclusion is to distinguish between, on the one hand, diversity as it is supplied by radio stations and, on the other, diversity as it is demanded by listeners. A station may be tempted to copy a rival by broadcasting the same type of programme at the same time, rather than competing with a new type of programme even though there is an audience for the new programme. Moreover, both stations as well as listeners would be better off cooperating rather than competing. Such a mechanism may continue despite the entrance of new rivals.

This is what Steiner calls duplication (see 4.1.).

Some research on diversity in the cultural industries has focused solely on consumed diversity (Peterson and Berger, 1975; Anderson et al., 1980; Rothenbuhler and Dimmick, 1982; Hellman and Soramäki, 1985; Lopes, 1992; Chung and Cox, 1994; Alexander, 1996; Peterson and Berger, 1996; Dowd, 2001). The reason is that they study diversity through bestsellers, namely the products with greatest sales. The fact that these discs have been sold implies that diversity cannot be observed as it is supplied but as it is consumed. Peterson and Berger (1975) and Lopes (1992) therefore chose to work on titles that have been part of the weekly Top 10.

Once again there is a methodological reason for the choice of bestsellers because these are the products for which there is the most data through Billboard's weekly charts. Moreover, inaccuracies in large sales are marginally less important than inaccuracies in small overall sales. The choice is finally justified by the fact that these bestsellers set a target for other products (Dowd, 2001). In a way, producers (recording companies as well as artists) aim

to make their products look like the bestsellers. However, this justification is more questionable.

Except – once again – for Greenberg and Barnett (1971), it is only recently that research on cultural diversity has succeeded in taking into account both supplied and consumed diversities.

Theoretical models generally consider demanded diversity since they assume that demand does not depend on supply. Superstar models (Rosen, 1981; Adler, 1985; MacDonald, 1988) are different in this aspect as they compare supplied and consumed diversity. The reason is that they aim to explain why, despite a great variety in supply, there can be such an unbalanced consumption (see 4.2.).

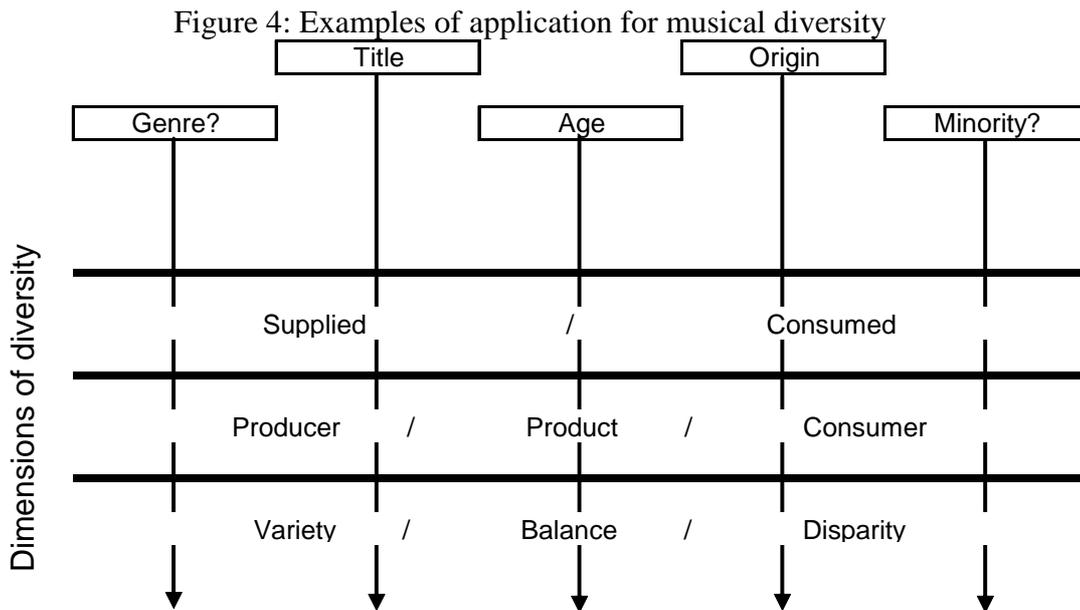
Although the distinction between supply and demand, or supply and consumption is an old one in research on cultural industries, empirical research on cultural diversity has only recently paid attention this distinction. Van Cuilenburg and Van der Wurff (2001) addressed this through the normative notions of ‘reflexive diversity’ and ‘open diversity’. The first notion suggests that supply should equal demand. However, the data used pertains to consumption rather than to demand. The second notion suggests that the diversity of ideas and points of view within the population should be well represented in media production. Moreau and Peltier (2004) as well as Benhamou and Peltier (2007) refer Van Cuilenburg and Van der Wurff (2001) to distinguish between consumed and supplied diversity but leave aside the normative – and hence somewhat restrictive – aspect. Elberse and Oberholzer Gee (2006) also make this distinction as they assess the influence of diversity of supplied DVDs on consumption.

As previously mentioned, methodological reasons play a role in taking into account both aspects of diversity. Data on supplied diversity is more easily accessible for the cultural industries, notably the film industry. There is, nevertheless, also more data on audiences for media. There are additional reasons for this evolution. The comparison appears even more important in relation to the UNESCO Convention. In a nutshell, politicians want to know how to improve supplied diversity in order to increase the resulting consumption. The spread of the Internet and digital technologies also play a role in this renewed interest in comparing supply and consumption (Elberse and Oberholzer-Gee, 2006). These technologies are said to favour democratization of production and an increase in choice (Anderson, 2006). It then becomes interesting to know whether or not supply is actually becoming more diverse and consumer behaviour is evolving towards diversification.

### **3. Ways to apply the definition**

#### ***3.1. Which variables apply to our definition? The main variables used so far***

Our definition of cultural diversity is still too general. It needs to be applied through variables which can then be assessed. Any cultural activity or particular approach to a cultural activity will involve the use of dedicated variables. The application of our definition through the use of appropriate variables suggests that each variable is a related to cultural diversity.



I begin by recalling the main variables that have been used so far to assess cultural diversity.

First, very simple variables concerning the variety of products, either supplied or consumed:

- Number of products available<sup>4</sup> (Levin, 1971; Baker, 1991; McDonald and Lin, 2004; Benhamou and Peltier, 2007)
- Number of new products (Moreau and Peltier, 2004; Allain and Waelbroeck, 2006; Benhamou and Peltier, 2007)
- Sales per capita (Moreau and Peltier, 2004; Benhamou and Peltier, 2007)
- Sales by product (Elberse and Oberholzer-Gee, 2006)

Producer diversity has been studied extensively, particularly to assess its impact on product diversity. The main variables have been:

- Number of different channels/stations/retail outlets<sup>5</sup> (Steiner, 1952; Blank, 1966; Levin, 1971; Greenber and Barnett, 1977; Moreau and Peltier, 2004; Van der Wurff, 2005)
- Number of channels by type of channel (Levin, 1971; McDonald and Lin, 2004; Van der Wurff, 2005)
- Sales by type of producer/distributor (Elberse and Oberholzer-Gee, 2006)
- Sales by type of retail outlet (Elberse and Oberholzer-Gee, 2006)
- Concentration of ownership for the channels (Van der Wurff, 2005)

<sup>4</sup> This refers to the sheer number of different products and not the number of different types of products. In this case, a title is used as a variable. Although it may seem simplistic, it is useful in assessing at least a part of cultural diversity.

<sup>5</sup> Here disparity is not taken into account, only variety in terms of numbers. There is no opposition between volume and variety since variety is often assessed through counting indexes.

As for product diversity, a more detailed approach should be developed to assess diversity. To do so, products must be grouped in relation to their characteristics. One of the most obvious groupings depends on the origin of, or the language used by, the products. Such products are thought to be closer one to each other than to other products because they come from the same place and because language reflects their common roots:

- Share of sales by origin/language (Elberse and Oberholzer-Gee, 2006)
- Share of new products by origin/language (Moreau and Peltier, 2004; Benhamou and Peltier, 2007)
- Matrix of linguistic distances between original language (Benhamou and Peltier, 2007)

Cultural products are often grouped according to genres. Products that belong to the same genre are supposed to share characteristics linked to their content:

- Number of products available by genre (Levin, 1971; Benhamou and Peltier, 2007)
- Share of novelties by genre (Benhamou and Peltier, 2007)
- Share of sales/audience by genre (Greenberg and Barnett, 1971; Van der Wurff, 2005; Elberse and Oberholzer-Gee, 2006; Benhamou and Peltier, 2007)
- Number of different available genres (Steiner, 1952; Greenberg and Barnett, 1971; Spence and Owen, 1977; McDonald and Lin, 2004; Benhamou and Peltier, 2007)
- Disparity of genre available (Blank, 1966)
- Share of broadcasting time per type of programme (Van der Wurff, 2005)

Some researchers adopt a more precise approach since they do not simply rely on existing taxonomies and classifications of genre but propose new ones, based on:

- Content characteristics (i.e. musical or cinematographic) of products (Greenberg and Barnett, 1971; Alexander, 1996; Dowd, 2001)
- Lyrical content (Peterson and Berger, 1975; Anderson et al., 1980)
- Type of interpret (Anderson et al., 1980)

Some have restricted their attention to bestsellers, perhaps because of a lack of data. It is preferable to work on the whole market or at least a large a sample as possible, not just bestsellers. The variables most commonly used that are linked bestsellers are:<sup>6</sup>

- Market share of top  $x$  (Moreau and Peltier, 2004)
- Market share of top  $x$  in sales by top  $y$  (Benhamou and Peltier, 2007)
- Number of different producers in top  $x$  (Peterson and Berger, 1975; Rothenbuhler and Dimmick, 1982; Lopes, 1992)
- Share of producers in top  $x$  (Peterson and Berger, 1975; Anderson et al., 1980; Rothenbuhler and Dimmick, 1982; Hellman and Soramäki, 1985; Lopes, 1992; Alexander, 1996; Dowd, 2001)
- Number of different products/artists in top  $x$  (Peterson and Berger, 1975; Rothenbuhler and Dimmick, 1982; Lopes, 1992; Alexander, 1996; Benhamou and Peltier, 2007)
- Share of top  $x$  by origin/language (Benhamou and Peltier, 2007)
- Share of sales by genre/artist (of a given genre) in top  $x$  (Anderson et al., 1980; Hellman and Soramäki, 1982; Lopes, 1992)

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<sup>6</sup> 'Top  $x$ ' refers to the  $x$  bestselling products (sometimes producers) over a period that can be a week, a month or a year.

Finally, there are miscellaneous variables used to classify diversity:

- Type of original/video diffusion (Elberse and Oberholzer-Gee, 2006)
- Age/date of production (Elberse and Oberholzer-Gee, 2006)
- Political opinions expressed by products (Gabszewicz, 2001; Gabszewicz, 2002)

These variables indicate what has been measured so far and what could be measured. Although they do not constitute an exhaustive list, they may reveal what is missing from current data on cultural activities. Whatever the chosen activity, the selection of relevant variables will be crucial. This selection depends on the aspects of diversity to be studied as well as on the availability of data.

### **3.2. Properties of a suitable set of diversity indexes**

Once the relevant variables have been selected, they are usually set in diversity indexes. The role of these indexes is somewhat controversial since they have to quantify something as qualitative as cultural diversity. Since particular caution should be taken when constructing these indexes, I suggest certain criteria to help choose an index or rather a set of diversity indexes. I propose several indexes on diversity rather than one that would aggregate every piece of information. A single index would actually eventually lead to a loss of information. To date, it seems that no such criteria exists for suitable properties of a cultural diversity index.

There are two kinds of properties. The first is rather general and could apply to indexes on almost any topic while the second is more directly linked to the issue of diversity and also easier to apply mathematically.

First, a suitable set of indexes should strive towards *completeness* (Stirling, 2007) in the sense that every dimension should be represented and as far as possible every component of all three dimensions. This leaves relatively open the way in which different dimensions should be combined or different components compared. A suitable set of indexes should also be *parsimonious* (Stirling, 2007) by relying on simple indexes. Similarly, it should be *transparent* (Stirling, 2007) insofar as the assumptions needed to build the indexes should be explicit. However, the values or classifications given by the set of indexes should not be too sensitive to a modification of parameters: it must be *robust* (Stirling, 2007). Given the available data, a suitable set of indexes should *not be too demanding* in terms of data necessary to build them. It should be noted that, to a certain extent, these properties can be contradictory, for example it is not that easy to obtain a set of indexes that are both comprehensive and not too demanding. Building any set of indexes will rely on a trade-off between these properties.

The second kind of property directly links to the definition of cultural diversity, notably to the first dimension. These properties may apply to the entire set of indexes or to a subset. First of all, if according to one variable all elements belong to the same type (i.e. variety equals one or there is no disparity or this is the most unevenly spread), every index linked to this variable should have a value equal to zero (Patil and Taillie, 1982; Stirling, 1998; McDonald and Lin, 2004; Stirling, 2007), and zero is the minimal value for any of these indexes. If we study diversity of consumed movies in a country and all these movies are nationally produced, then all indexes linked to origin are equal to zero. Of course, other

indexes linked to other variables may have a value different from zero, for example those simply linked to the number of cinema ticket sales.

Indexes can also be monotonic functions of variety (Patil and Taillie, 1982; Pielou, 1975; Stirling, 1998; 2007), balance (Patil and Taillie, 1982; Stirling, 1998; 2007) or disparity (Weitzman, 1992; Solow et al., 1993; Stirling, 1998; Stirling, 2007). For example, if more discs are sold, meaning an increase in consumed products, this should increase diversity. However, it should be noted that this is only a *ceteris paribus* result since this increase in sales might affect diversity for other variables (e.g. in terms of origin) or for other dimensions of diversity.

There are other properties that seem less crucial. Some authors want any diversity index to be equal to one at its maximum (McDonald and Lin, 2004, p.106). Other suggest that the indexes should be easily combinable with other relevant properties of the system (Stirling, 2007) in order to facilitate trade-offs with other properties such as efficiency.

### **3.3. An example of a set of indexes: the case of music diversity in the French record industry**

In this section, I present a set of indexes I used in Ranaivoson (2007) to examine the level and the evolution of cultural diversity in the music industry first for sales of recordings and then for broadcasting. The aim of the paper was to investigate the influence of quotas for French language songs. It concluded that these quotas may have helped promote French products. They have led to a concentration of consumption on French products and producers and of sales on an even more restricted set of titles.

The set is given as an example more than as model (see Table 2) and includes a number of flaws that I will discuss.

Most variables I use are common to previous research on cultural diversity, such as sales per capita or the market share of distributors. However, they are often more detailed than in previous research. To assess producer diversity, I consider supplied diversity through the share of distributors in all distributed titles and consumed diversity their market shares as well as through independent distributors' or supermarkets' market share. In addition, I use several indexes for analysing diversity in broadcasting that measure innovation as well as concentration by title.

All these variables result in more than 23 indexes<sup>7</sup>. Most are linked to balance. This is due to the particular feature of music diversity in France, namely that imbalance is the main threat. Disparity may seem neglected; there is notably no index here that only measures disparity. This is mainly due to methodological problems in defining the indexes to measure it (Moreau and Peltier, 2004). In fact, disparity is only considered with distributor diversity

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<sup>7</sup> Some of these indexes summarize many indexes in order to make the table clearer. Thus the index 'Number of new discs/albums' covers two indexes, 'Number of new discs' and 'Number of new albums'. As for 'Share of titles broadcasted more than  $x$  times', it includes 'Share of titles broadcasted more than 400 times', 'Share of titles broadcasted more than 200 times' and 'Share of titles broadcasted more than 100 times'.

because majors are considered closer one to another than to any independent distributor, and reversely.

Indexes are more balanced between supplied and demanded diversities, with 13 indexes devoted to the former, including indexes related to radio, and 10 to the latter, including indexes related to bestsellers whereas 16 indexes are related to product and seven to producer diversities. Consumer diversity was not included as it was not pertinent to the issue of overrepresentation and concentration.

The set of indexes may not seem to be particularly parsimonious due to the large number of indexes. However, every index in the set is as simple as possible. Problems in terms of transparency and robustness are more likely to arise because of issues of data quality. The availability of data also constrained the building of indexes.

As for the second kind of property, the set does not always respect the given conditions. Some indexes are not necessarily partial indexes of cultural diversity but all indexes provide information on the level and evolution of this diversity. For example, the average weekly rotation rate is negatively correlated since the higher the rate, the lower the level of variety, all else being equal. Some other indexes are not linearly correlated with cultural diversity. Such is the case for the market share of the French repertoire. When it is sufficiently low, does the increase induce an increase in diversity by origin? However, this is no longer the case as soon as some threshold is reached.

Table 2: Distribution by component of the dimensions of the set of indexes used in Ranaivoson (2007)

	Variety	Balance	Disparity
<b>Supplied diversity</b>	- Share of distributors in all distributed titles [producer]		
	- Number of new discs/albums [product]	- Share of French new titles [product]	
		- Share of available titles of French ‘variété’ [product]	
		- Share of investment for French-speaking artists [producer]	
		- Share of the major companies in broadcasted titles/diffusions/’ contacts’/advertising [producer]	
		- Mean weekly rotation rate of French-speaking titles [product]	
		- Share of French-speaking artists/titles/diffusions/entries in play-lists on the radio [producer/product]	
		- Share of new titles on the radio [product]	
		- Share of entrances in play lists among new /all titles [product]	
		- Share of titles broadcasted more than $x$ times [product]	
		- Share in broadcasting of titles broadcasted more than $x$ times [product]	
- Share of the yearly top 100 amongst all broadcasts [product]			
<b>Consumed Diversity</b>	- Market share of distributors among distributed titles [producer]		
	- Share of producers among titles in top 200 albums/top 150 singles [producer]		
		- Market share of super- and hypermarkets [producer]	
	- Number of sold discs [product]	- Number of certified discs [product]	
		- ‘Weight’ of certified discs compared to total sales [product]	
		- Market share of bestsellers [product]	
		- Share of French language titles among bestsellers [product]	
		- Market share of French repertoire [product]	
		- Market share of French ‘variété’ [product]	

The overview of variables used so far as well as of the properties of a suitable set of diversity indexes is designed to offer suggestions as to how diversity can be measured. Having said this, each sector and each country may need to adapt tools and thus may need an inductive approach to building a set of indexes, particularly because of the way data is built.

## **4. Some issues to be investigated**

To conclude, I will highlight issues that should be addressed in relation to cultural diversity. I aim to show that the definition of cultural diversity is more than a semantic precision or a basis for its measurement. This definition should also provide us with a greater understanding of the issues at stake for cultural diversity.

### **4.1. The issue of duplication/standardisation**

Steiner defines duplication as ‘whenever two or more stations are simultaneously producing the same program type’. (1952, p.199) Although originally applied by Steiner to the case of broadcasting, duplication is a far more general notion. It has two important aspects. First of all, duplication concerns supply and not consumption, even though it has an impact on consumption. Secondly, duplication is a two-sided phenomenon. On the one hand, the supplied menu of choice increases and, on the other, this increase concerns a type already well supplied. As a result, the apparent increase in diversity could hide what is, in fact, a decrease. Both aspects can be summarized in the following definition that draws on Steiner’s concept: duplication refers to the case when an increasing of supplied variety according to variable  $x$  leads to a decrease in balance according to variable  $y$  with no impact on disparity according to variable  $y$ .

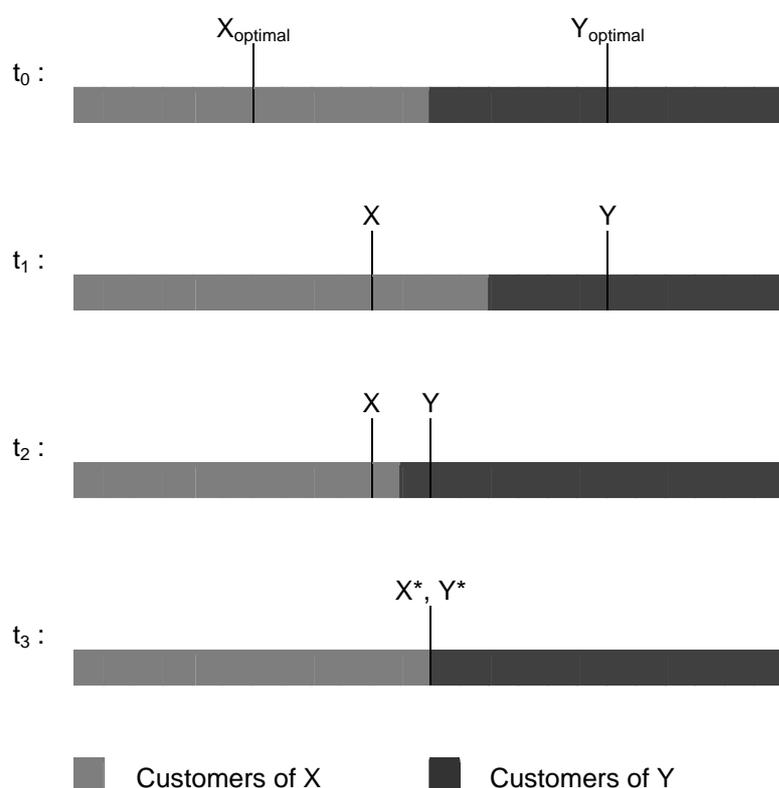
For example, let us consider the number of  $x$  new discs and their  $y$  origin on the American recording market where most of the distributed discs are nationally produced. When a new disc is produced in the USA, this induces at the same time an increase in  $x$  and a decrease in  $y$ . This production is added to the number of new products available but it makes the national production even more dominant at the expense of supplied diversity in terms of origin. Disparity does not seem to be modified. However, as previously mentioned, all three components are closely linked and, in this case, greater imbalance may cause the average ‘distance’ between supplied products to decrease.

The duplication argument may stem back to Hotelling (1929) since he concludes that producers tend to produce standardised products. Indeed, producers want to obtain the greater market share and, to do so, they aim to produce the product that best fits the tastes of the average consumer. As such, they fail to cater for the consumers at both ends of the margin.

Let us return to the spatial linear model. Since every consumer buys only one product and wants to buy from the closest producer, the optimal situation for the consumer is that which reduces the average distance to the closest producer. Thus, the optimal spreading of the producers is when both sellers are located at respectively the first and the third quarter of the street (see fig.5).

However, sellers tend to ‘crowd together as closely as possible’ (Hotelling, 1929, p.53). Figure 5 illustrates how a situation that is optimal from the consumer’s point of view may degenerate into an unsatisfactory one. The optimal location is chosen arbitrarily as a point of departure<sup>8</sup>. It is by no means an equilibrium, since the situation does not remain the same. Quite on the contrary, it seems easy for any producer to increase its market share at the expense of its competitor. At  $t_1$ , seller  $X$  comes closer to its competitor.  $Y$  then reacts in  $t_2$  by also moving closer to  $X$  towards the middle of the street. In the end,  $X$  also moves towards the middle of the street. At  $t_3$  equilibrium has been reached since no seller wishes to move away from the centre.

Figure 5: Illustration of the 'crowding' process



Such a situation might be preferable from the point of view of the consumers located in the middle of the street. However, it clearly disadvantages consumers at both ends. Moreover, it does not even improve the producers’ situation. At  $t_0$  and  $t_3$  every producer obtains the same market share so that the consumers are on average worse off, even though the producers are not in a better situation. Hotelling also adds that increasing the number of producers would change little or nothing since new entrants would also tend to move towards the middle of the street.

Hotelling’s model and results have been the subject of much criticism (Chamberlin, 1933; Lerner and Singer, 1937; d’Aspremont et al., 1979; Lancaster, 1979; Salop, 1979), yet they have been continually applied. In the case of cultural diversity, Hotelling’s metaphor is very useful in describing the issue of duplication and standardization. Applied to our case, this metaphor would mean that it would be socially preferable for producers to offer a supply

<sup>8</sup> The initial location does not influence the final result in Hotelling’s model.

disparate enough to cater for consumers with very different tastes. However, producers compete through imitation and end up supplying products that are very similar. As a result, although there may seem to be an increasing variety of cultural goods and services, even more of them target the average consumer and are they and are therefore even more alike.

The relevance of this very striking metaphor needs to be verified in the case of cultural activities. Thus far, it has been used mainly for the media, particularly radio (Steiner, 1952) and television (Blank, 1966; Levin, 1971; McDonald and Lin, 2004; Van der Wurff, 2005).

Steiner's theoretical model produces results similar to those found by Hotelling: producers tend to produce the same type of programmes at the expense of listeners who would prefer other types to be produced. As in Hotelling, the producers would be better off sharing consumers rather than competing by producing the same type of programme and thus neglecting a part of the potential audience. New entrants also tend to copy to a certain extent what the incumbents offer in terms of programming.

Empirical research on diversity on television accounts for this notion of duplication; however, it mainly examines how an increase in competition, i.e. in the number of channels available, can lead to greater diversity and further duplication. Blank (1966) finds that an increase in the number of different channels leads to an increase in duplication, but not in diversity. However, for McDonald and Lin (2004) an increase in competition brings greater diversity. Advocating a third, intermediary position, Levin (1971) and Van der Wurff (2005) both find that this increase leads to duplication but also to a certain increase in diversity. They also agree on the fact that the presence of state-funded television allows diversity to increase.

## **4.2. *The superstar phenomenon***

A second issue that I propose to investigate by using our definition of cultural diversity is the superstar phenomenon. Superstars are products and producers that succeed in stimulating a great deal of consumption and attracting an even greater deal of attention. In other words, the superstar phenomenon corresponds to an increase in consumed variety of variable  $x$  that leads to a more uneven spreading of variable  $y$  without enhancing consumed disparity of  $y$ .

This phenomenon has been studied extensively in economics. Rosen (1981) and Adler (1985) have sought to explain, based on different assumptions, why consumption concentrates on a few products despite supplied diversity and diversity of consumer tastes. From the point of view of cultural diversity, superstars may be seen to contradict the notion of diversity. It is then worth considering why there is this concentration of consumption and to what extent it is connected to supply.

A related issue is the influence of producer diversity on product diversity. Superstars may be a way for incumbents to build entry barriers, especially when coupled with a proliferation of supplied products. Entry barriers are more likely to occur in markets characterized by product differentiation and economies of scale (Bain, 1956), both of which benefit superstars.

### **4.3. On the relation between producer diversity and product diversity: Cyclical account Vs Open system account**

The influence of producer diversity on product diversity is central in much economic research on diversity of production. It has also been analyzed in the case of the diversity of cultural expressions.

A compelling controversy among music sociologists has opposed advocates of the ‘cyclical account’ (Peterson and Berger, 1975; Rothenbuhler and Dimmick, 1982) and proponents of the ‘open system account’ (Lopes, 1992; Dowd, 2001; 2004). According to the former, producer concentration hinders innovation because the major companies and their executives are characterized by their conservatism, whereas vertical integration allows them to restrict competition (Peterson and Berger, 1975). However, innovation is a necessary condition for diversity (Peterson and Berger, 1996). As such, when there is greater concentration in the recording industry, which is the case from the 1950s and onwards at least for the USA, there is also less diversity.

According to proponents of the ‘open system account’, there may be further concentration but the majors decentralize their production and organize internal competition (Dowd, 2001). More specifically, the major companies deal with finance and distribution, leaving their labels to deal with production, and readily associate with independent producers (Lopes, 1992). As a result, there can be both higher concentration and greater diversity.

Alexander’s (1996) results fall between both explanations. Indeed, when examining the record industry, he finds that ‘when industry concentration is very high or very low, product diversity is reduced’ (p.174). Between both levels of concentration, diversity is rather high. However, in his paper Alexander does not describe the mechanisms that lead to this statistical result.

## **Concluding remarks**

At the beginning of this paper, I provided a three-dimensional definition of cultural diversity that aims to provide a clearer understanding of not only this complex notion but also how it is to be assessed through numerous cultural activities.

To substantiate the validity of this definition, I reviewed existing literature and demonstrated how it builds on research on the diversity of cultural expressions but also on diversity of production and biodiversity. Furthermore, I discussed a number of the key variables and indexes used to assess diversity.

This definition can be applied through variables that must be combined into indexes. To do so, in the third section I presented a selected list of variables that have been used to assess cultural diversity, then highlighted the main properties of a reliable set of indexes on diversity of cultural expressions before drawing on the example of a set used to assess diversity of music production in the French market.

Finally, I pointed out three important issues linked to cultural diversity, particularly questions of homogenization, duplication for supply and the superstar phenomenon for consumption. These issues examined the influence of producers' strategies as well as the influence of competition and concentration on cultural diversity.

Needless to say, many questions are yet to be explored.

- Is every component of our definition of cultural diversity, such as consumer diversity, relevant?
- How can other social sciences and humanities improve our definition?
- What are the key dynamics of cultural diversity? I suggest that, on the one hand, cultural diversity, like biodiversity, must be preserved and then protected. Protection is the aim of many cultural policies whether they deal with heritage or languages. On the other hand, unlike biodiversity, cultural diversity also relies on innovation.

To what extent do protection and innovation support each other? Of course one can argue that, as for cultural expressions, we are standing on the shoulders of giants; that for example artists can create what they create only because there has been previous work before. Moreover, protection is made easier when a cultural activity gains recognition because of its reuse in a new form. However, both dimensions can be contradictory, particularly because protection as well as promotion of innovation may be financially costly and a trade-off may become necessary.

Finally, how should policies take into account both our definition of cultural diversity and its dynamics?

## Bibliography

- Adler M. (1985), 'Stardom and Talent', *The American Economic Review*, 75:1, 208-212.
- Adler M. (2006), 'Stardom and Talent' in Ginsburgh, Victor A. and Throsby, David, *Handbook of the Economics of Art and Culture, Volume 1*, Elsevier B.V.
- Alexander, P. J. (1996), 'Entropy and Popular Culture: Product Diversity in the Popular Music Recording Industry', *American Sociological Review*, 61:1, 171-174.
- Allain, Marie-Laure, Waelbroeck, Patrick (2006), 'Music Variety and Retail Concentration', *Working Paper ESS-06-06*, ENST.
- Anderson, Bruce, Hesbacher, Peter, Etzkorn, K. Peter and Denisoff, R. Serge (1980), 'Hit Record Trends, 1940-1977', *Journal of Communication*, 30:2, Spring, 31-43.
- Anderson, Chris (2006), *The Long Tail. How Endless Choice is Creating Unlimited Demand*, Londres: Random House Business Books.
- d'Aspremont, C., Gabszewicz, Jean Jaskold, Thisse, J.-F. (1979), 'On Hotelling's "Stability in Competition"', *Econometrica*, 47:5, Sep., 1145-1150.
- Bain, Joe (1956), *Barriers to new competition*, Harvard University Press, Cambridge Mass.
- Baker, Alan J. (1991), 'A model of competition and monopoly in the record industry', *Journal of Cultural Economics*, 15:1, June, 29-54.
- Baxter, William F. (1974), 'Regulation and Diversity in Communications Media', *The American Economic Review*, 64:2, Papers and Proceedings of the Eighty-sixth Annual meeting of the American Economic Association, May, 392-399.

- Benhamou, Françoise, Peltier, Stéphanie (2007), 'How should cultural diversity be measured? An application using the French publishing industry', *Journal of Cultural Economics*, 31, 85-107.
- Blank, David M. (1966), 'The Quest for Quantity and Diversity in Television Programming', *The American Economic Review*, 56:1/2, Mar., 448-456.
- Caplan, Bryan, Cowen, Tyler (2004), 'Do We Underestimate the Benefits of Cultural Competition?', *The American Economic Review*, Papers and Proceedings of the One Hundred Sixteenth Annual Meeting of the American Economic Association San Diego, CA, January 3-5, 2004, 94:2, May, 402-407.
- Chamberlin, Edward H. (1933), *The Theory of Monopolistic Competition*, Harvard University Press, Cambridge, Mass.
- Chung, Kee H., Cox, Raymond A. K. (1994), 'A Stochastic Model of Superstardom: An Application of the Yule Distribution', *The Review of Economics and Statistics*, 76:4, 771-775.
- Cowen, Tyler (2000), 'Culture in the Global Economy', *The 2000 Hans L Zetterberg Lecture*.
- Dixit, Avinash K., Stiglitz, Joseph E. (1977), 'Monopolistic Competition and Optimum Product Diversity', *American Economic Review*, 67:3, June, 297- 308.
- Dowd, Timothy J. (2001), 'Musical Diversity and the U.S. Mainstream Recording Market, 1955-1990', English version of (2000), 'Diversificazione Musicale e Mercato Discografico negli Stati Uniti, 1955-1990', *Rassegna Italiana di Sociologia*, XLI:2, 223-263.
- Dowd, Timothy J. (2004), 'Concentration and Diversity Revisited: Production Logics and the U.S. Mainstream Recording Market, 1940-1990', *Social Forces*, 82:4, June, 1411-1455.
- Eaton, B. Curtis, Lipsey, Richard G. (1989), 'Product differentiation', in Schmalensee, Richard, Willig, R.D. (ed.) *Handbook of Industrial Organization, Volume II*, Elsevier Science Publishers B., V, 952-1009.
- Elberse, Anita, Oberholzer-Gee, Felix (2006), 'Superstars and Underdogs: An Examination of the Long Tail Phenomenon in Video Sales', *Harvard Business School Working Paper Series*, No. 07-015.
- Flôres Jr., Renato G. (2006), *The diversity of diversity: further methodological considerations on the use of the concept in cultural economics*, September 15, 2006 Version.
- Gabszewicz, J., Laussel, D. and N. Sonnac (2001), 'Press Advertising and the Ascent of the "pensée unique"?'', *European Economic Review*, 45, 645-651.
- Gabszewicz, J. J., Laussel, D., Sonnac, N. (2002) 'Concentration in the press industry and the theory of the "circulation spiral"', *CORE Discussion Paper*, No 64.
- Gibbard, A., Varian, H.R. (1978) 'Economic models', *The Journal of Philosophy*, 75:11, 664-677.
- Greenberg, Edward, Barnett, Harold J. (1971), 'TV Program Diversity—New Evidence and Old Theories', *The American Economic Review*, 61:2, Papers and Proceedings of the Eighty-Third Annual Meeting of the American Economic Association, May, 89-93.
- Hellman, Heikki, Soramäki, Martti (1985), 'Economic Concentration in the Videocassette Industry: A Cultural Comparison', *Journal of Communication*, 35:3, Summer, 122-134.
- Hotelling, Harold (1929), 'Stability in Competition', *The Economic Journal*, 39:153, Mar., 41-57.
- Junge, K. (1994), 'Diversity of Ideas About Diversity Measurement', *Scandinavian Journal of Psychology*, 35, 16-26.
- Lancaster, Kelvin (1979), *Variety, Equity and Efficiency: Product Variety in an Industrial Society*, New York: Columbia University Press.
- Lerner, A. P., Singer, H. W. (1937), 'Some Notes on Duopoly and Spatial Competition', *The Journal of Political Economy*, 45:2, Apr., 145-186.

- Levin, Harvey J. (1971), 'Program Duplication, Diversity, and Effective Viewer Choices: Some Empirical Findings', *The American Economic Review*, 61:2, Papers and Proceedings of the Eighty-Third Annual Meeting of the American Economic Association, May, 81-88.
- Lopes, Paul D. (1992), 'Innovation and Diversity in the Popular Music Industry, 1969 to 1990', *American Sociological Review*, 57:1, Feb., 56-71.
- Markowitz, Harry M. (1952), 'Portfolio selection', *The Journal of Finance*, VII:1, March, 77-91.
- McDonald, Daniel, Lin, Shu-Fang (2004), 'The Effect of New Networks on U.S. Television Diversity', *The Journal of Media Economics*, 17:2, 105-121.
- McDonald G. (1988), 'The Economics of Rising Stars', *American Economic Review*, 78:1, 155-166.
- McIntosh, Robert P. (1967), 'An Index of Diversity and the Relation of Certain Concepts to Diversity', *Ecology*, 48:3, May, 392-404.
- Moreau, François, Peltier, Stéphanie (2004), 'Cultural Diversity in the Movie Industry: A Cross-National Study', *The Journal of Media Economics*, 17:2, 123-143.
- Moureau, Nathalie (2006), 'Société de l'information et modèles de star system', *Hermès*, 44, 183-189.
- Paris, Thomas (2005), 'Diversité culturelle et mondialisation', in T. de Montbrial and P. Moreau Defarges (eds), *Ramses 2005. Les faces cachées de la mondialisation*, Paris: Dunod.
- Patil, G.P., Taillie, C. (1982), 'Diversity as a Concept and its Measurement', *Journal of the American Statistical Association*, 77:379, Sep., 548-561.
- Peterson, Richard A., Berger, David G. (1975), 'Cycles in Symbol Production: The Case of Popular Music', *American Sociological Review*, 40:2, Apr., 158-173.
- Peterson, Richard A., Berger, David G. (1996), 'Measuring Industry Concentration, Diversity, and Innovation in Popular Music', *American Sociological Review*, 61:1, Feb., 175-178.
- Pielou, E.C. (1975), *Ecological Diversity*, New York: John Wiley.
- Ranaivoson H. (2007), 'How to support cultural diversity in the cultural industries ? The Case of the French Music Industry', *Conference of the ESA (European Sociological Association) Research Network. New Frontiers in Arts Sociology: Creativity, Support and Sustainability*, Lüneburg, March/April.
- Rosen, Sherwin (1981), 'The economics of superstars', *American Economic Review*, 71:5, 845-858.
- Rothenbuhler, Eric W., Dimmick, John W. (1982), 'Popular Music: Concentration and Diversity in the Industry, 1974-1980', *Journal of Communication*, 32:1, Winter, 143-149.
- Salop, Steven C. (1979), 'Monopolistic Competition with Outside Goods', *Bell Journal of Economics*, 10:1, Spring, 141-156.
- Schulze, Günther G. (2003), 'Superstars' in Towse, Ruth (éd.), *A Handbook of Cultural Economics*, Edward Elgar Publishing Limited, Cheltenham.
- Seo, Sangho (2004), 'Diversity in Media Content: an Agenda for Diversity Research in Media Industries', *6<sup>th</sup> World Media Economics Conference*, Centre d'études sur les medias and Journal of Media Economics, May 12-15.
- Shannon, C.E. (1948), 'A Mathematical Theory of Communication', *The Bell System Technical Journal*, 27, 379-423.
- Simpson, E.H. (1949), 'Measurement of Diversity', *Nature*, 163, April 30, 688.
- Solow, Andrew, Polasky, Stephen and James Broadus (1993), 'On the Measurement of Biological Diversity', *Journal of Environmental Economics and Management*, 24, 60-68.
- Spence, Michael, Owen, Bruce (1977), 'Television Programming, Monopolistic Competition, and Welfare', *The Quarterly Journal of Economics*, 91:1, 103-126.

- Steiner, P. O. (1952), 'Program Patterns and Preferences, and the Workability of Competition in Radio Broadcasting', *The Quarterly Journal of Economics*, 66:2, 194-223.
- Stirling, Andrew (1998), 'On the Economics and Analysis of Diversity', *SPRU Electronic Working Papers Series*, 28.
- Stirling, Andrew (2007), 'A General Framework for Analyzing Diversity in Science, Technology and Society', *SPRU Electronic Working Paper Series*, accepté pour publication dans *Journal of The Royal Society Interfaces*.
- Sugihara, George (1982), 'Diversity as a Concept and its Measurement: Comment', *Journal of the American Statistical Association*, 77:379, Sep., 564-565.
- Thisse, Jacques-François (2002), 'Hotelling Harold. "Stability in Competition"' in Greffe, Xavier, Lallement, Jérôme, de Vroey, Michel (éds), *Dictionnaire des grandes œuvres économiques*, Paris : Dalloz.
- Van Cuilenburg, Jan, Van der Wurff, Richard (2001), 'Impact of Moderate and Ruinous Competition on Diversity: The Dutch television Market', *The Journal of Media Economics*, 14, 213-229.
- Van der Wurff, Richard (2004), 'A helical model of media competition, innovation and performance', *6<sup>th</sup> World Media Economics Conference*, May, pp. 12-15.
- Van der Wurff, Richard (2005), 'Competition, Concentration and Diversity in European Television Markets', *Journal of Cultural Economics*, 29, 249-275.
- Van Kranenburg, Hans, Hagedoorn, John, Pennings, Jacqueline (2004), 'Measurement of International and Product Diversification in the Publishing Industry', *The Journal of Media Economics*, 17:2, 87-104.
- Weitzman, Martin L. (1992), 'On Diversity', *The Quarterly Journal of Economics*, 107:2, May, 363-405.