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Economic Efficiency of Linguistic and Cultural Diversity

(Under the Direction of Arthur Snow)

When discussing the cultural impact of globalization, it is important to realize that economic phenomena play a role in shaping human behavior. The diversity of culture and language that we observe has been carved out by the choices that humans make.

Analyzing the costs and benefits of these choices leads to an understanding of why people are abandoning their unique cultural clusters to participate in the global economy.

Individuals leave their native cultures behind to learn English and to participate in the global economy to increase their economic well-being. The process of individual abandonment has external effects. Network and public good externalities may cause market failures. If market failures are present in culture and language, the efficiency of cultural abandonment is in doubt and there may be public policy changes that would enhance economic efficiency.

INDEX WORDS:     Cultural economics, Economic efficiency, Linguistic diversity,  
Cultural diversity

ECONOMIC EFFICIENCY OF LINGUISTIC AND CULTURAL DIVERSITY

by

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## CHAPTER 1

### INTRODUCTION

#### 1.1 BACKGROUND

When discussing the cultural impact of globalization, one encounters a vast amount of unsupported rhetoric and supposition. Economists, philosophers, linguists, and anthropologists maintain fervent views on globalization and its effect on culture. Economics is one of the most powerful forces shaping human behavior. In an increasingly global world, the cultural ramifications of economic processes cannot be ignored. The state of culture is defined and changed solely by the choices that humans make. It follows that if one is to understand the impact on culture resulting from globalization, one must study the marginal costs and benefits facing a rational agent and the social implications of the decisions that result.

Microeconomic theory is a powerful tool for deriving implications concerning the determinants of the current state of culture. When there is an encompassing consequence of globalization, such as the extinction of languages, economists can use cost and benefit analysis to understand why people choose to abandon their unique, independent cultural clusters to participate in the global economy. Like biological species, languages and cultures evolve and can also become extinct. Linguists have estimated that ten thousand years ago there may have been as many as twenty thousand languages spoken by a human population of around ten million.

Recent studies now estimate that there are only six thousand languages being spoken by an estimated 6 trillion people<sup>1</sup>. Because language is a direct indicator of a unique culture, this diminishing diversity of language implies that there is a diminishing diversity of culture. This, in turn, suggests an inverse correlation between population and language diversity and between language diversity and the technology that lets people communicate and travel over large distances. The recent reduction in the cost of communication and transportation devices has allowed people to become more adept at exchanging information, goods, and services over vast distances.

Linguists who believe that linguistic diversity is perpetuated by geographic isolation defend the connection between decreasing isolationism and loss of language. For example, Papua New Guinea is home to the highest concentration of languages anywhere due, in part, to its isolated and forbidding terrain. Papua New Guinea supports eight hundred and fifty languages<sup>2</sup> in a geographic area that is 452,860 square kilometers, which is less than half the size of Alaska. To put that number in perspective, consider that the United States and Canada combined currently have one hundred and eighty seven languages<sup>3</sup>. Furthermore, consider that of the one hundred and eighty seven languages present in Canada and the United States, one hundred and forty nine are no longer spoken by children<sup>4</sup>. Languages no longer learned as mother-tongue by children are beyond mere endangerment. Unless the demise of intergenerational transmission is somehow dramatically reversed, these languages are doomed to extinction.

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<sup>1</sup> Estimates obtained in conversation with Dr. Benjamin Blount, professor of Linguistics and Anthropology, on May 25th 2004

<sup>2</sup> Hale, Ken and Michael Krauss. 1992. Endangered Languages. *Language*. 68.1: 1-42.

<sup>3</sup> Hale, Ken and Michael Krauss. 1992. Endangered Languages. *Language*. 68.1: 1-42.

<sup>4</sup> Hale, Ken and Michael Krauss. 1992. Endangered Languages. *Language*. 68.1: 1-42.

Many organizations<sup>5</sup> would view the diversity of Papua New Guinea as an ideal example of the multicultural environment that countries should attempt to retain, in spite of the recent disappearance of cultures and languages. For example, the United Nations Educational, Scientific and Cultural Organization (UNESCO), has the following mission statement on their website:

The UNESCO Universal Declaration on Cultural Diversity, adopted by acclamation on 2 November 2001 by the General Conference at its 31st session, stresses forcefully the cultural issues raised by globalization and the need for Member States to firmly support the very principle of diversity. This was confirmed when the Declaration was adopted by the United Nations General Assembly... which also proclaimed 21 May "World Day for Cultural Diversity for Dialogue and Development."<sup>6</sup>

The fundamental reason for the disappearance of distinct cultures and languages is that people choose not to retain them. The survival of a language does not require more than a few hundred people. Sustaining a language requires that people continually desire to speak the language and wish for future generations to speak it. For this to occur, the benefits of language retention must exceed the costs. The recent trend of massive language extinction is proof that more and more people are abandoning their culture and language, and assimilating into a global culture.

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<sup>5</sup> These organizations include, among numerous others, Terralingua, NALI (Native American Language Institute), and SSILA (Society for the Study of Indigenous Languages of the Americas). These organizations are all actively involved in the study and maintenance of endangered languages.

<sup>6</sup> "Mission of the Culture Section." *Unesco* 28 April 2004. 15 May 2004.  
<[http://portal.unesco.org/culture/en/ev.php-URL\\_ID=11498&URL\\_DO=DO\\_TOPIC&URL\\_SECTION=201.html](http://portal.unesco.org/culture/en/ev.php-URL_ID=11498&URL_DO=DO_TOPIC&URL_SECTION=201.html)>

They recognize, for example, that learning English can be a profitable strategy for getting ahead in earnings, occupation, status and quality of life in a globalizing environment.

This thesis is primarily concerned with the implications for economic efficiency of decision-making by rational individuals regarding their choice of language and culture. From the individuals perspective, under what conditions is it rational to hold onto a native language and culture? Likewise, under what conditions is it rational to assimilate into a global culture? Most importantly of all, what do these choices imply for the efficient amount of cultural and linguistic diversity?

## 1.2 DEFINITIONS

To analyze culture, one must have a clear definition of the term. As culture encompasses a variety of human behaviors, a clear and concise definition is required. Culture is a way of life, especially the general customs, beliefs and language of a particular group of people at a particular time. Because language is an indicator of a distinct culture, this thesis will use the existence of a unique language as a proxy for the presence of a distinct culture.

As this paper will analyze the effects of globalization on the formation of cultural clusters, a clear and concise definition of that term is necessary as well. Globalization is a phrase used in a remarkable variety of contexts. To economists, globalization is generally thought of as the increasing internationalization of the production, distribution, and marketing of goods and services. This is a fairly narrow

definition, so this paper will use a broader definition that will be applicable to a wide variety of political, social, and environmental trends.

Globalization reflects the increasingly cheap flow of capital, labor and information across borders. Globalization and a reduction of transportation costs go hand in hand, which leads to greater accessibility of information, goods, and services internationally. People everywhere are able to get the things they want from all corners of the world at continually lower cost, and they have the ability to interact with and observe individuals in other countries who may have different cultural values. People also have the ability to travel and communicate at lower cost over greater distances, which leads to increasing exposure to other cultures.

### 1.3 STATEMENT OF THE PROBLEM

There is no doubt that cultural clusters exist. A good example of cultural clusters is the Native American tribes before European settlers explored North America. Another example is large metropolitan areas where people of the same ethnic group congregate in one area. Over time, the structure of the majority of these cultural clusters has evolved. Instead of predominately independent groups, commonly referred to as tribes, we now see minority cultural groups residing within a majority cultural group. These minority groups attain some of the same cultural characteristics of the majority and become dependent on the majority culture through trade and other interactions. In geographically isolated areas like Papua New Guinea, the Congo of Africa, and the rainforests of Brazil, tribal formations can still be found.

It is mainly in the industrialized areas of the world that cultural clusters have evolved into a different form.

It is clear that the new global economy has changed the incentives for rational agents to maintain distinctive cultural identities; the opportunity cost of remaining in an independent cluster has risen dramatically in the last century. As a result, many individuals have abandoned their native culture and language to adapt to this new global culture. This process appears to be self-propagating; the more people who abandon a particular culture and language, the more costly it becomes for the remaining members of that culture to maintain it. It appears inevitable that the abandoned culture and language will become endangered and eventually extinct. This process could result in a market failure that would lead to an inefficient number of distinct languages and culture.

#### 1.4 REVIEW OF THE LITERATURE

In the same way economic dialogue and the operation of economic systems function within a cultural context, the reverse is also true. Cultural relationships and processes can also be seen to exist within an economic environment and can themselves be interpreted in economic terms. To understand culture and its place in economics, one only need turn to the current literature. Culture as it is broadly defined here has not received much attention from economists. The majority of papers written by economists concerning culture have dealt with specific aspects of culture such as tangible market goods; these goods usually include paintings,

sculpture or plays. There are, however, a few economists who have dealt with culture in the broader context examined in this research. One such economist is Tyler Cowen.

Cowen has written extensively on the economics of culture. Three of his books, entitled *Commercial Culture*, *Creative Destruction* and *What Price Fame?*, discuss cultural economics. He has also presented many ideas specifically related to the effects of globalization on culture. In the *Hans L. Zetterberg Lecture for 2000*, he discusses the topic of culture in the global economy, concentrating on the idea of diversity of cultures. A fairly thorough analysis of the idea of cultural diversity in a global economy was presented at the lecture. Cowen came out against critics of globalization who claimed that the process is destroying diversity. Historically, Cowen claims, the periods of the greatest creative innovation and diversity were times of increased trade between groups. He also notes that the time referred to as 'the Dark Age' was a period of great isolation where trade between different cultural groups was very low.

To the critics of globalization who claim that it leads to a reduction in diversity, Cowen argues that there are several different notions of diversity that have to be considered. Cowen agrees that diversity across societies is decreasing as parts of the world are becoming more alike. Cowen uses the example that you can find a McDonalds in virtually every country in the world. He also claims that diversity within societies is increasing, as people are presented with more choices. When deciding where to go for dinner, more and more individuals have the ability to choose from a multitude of ethnic cuisines. According to Cowen, diversity has also been increasing over time. He states that people are producing more innovative ideas and

products. These new innovations mean that consumers have an increasingly diverse selection of goods and services to choose from. The last notion of diversity that Cowen discusses is the idea of operative and practical diversity. This notion is defined as how well people are able to take advantage of the diversity that is present. Now, more efficiently than ever, people can get on airplanes to go where they want, decide to listen to music with a different ethnic origin, or eat foods of various nationalities, all of which shows an increase in the ability to take advantage of diverse offerings.

Another economist who writes extensively about culture and economics is David Throsby. In his book, *Economics and Culture*, Throsby considers the economic dimensions of culture, and the cultural context of economics. *Economics and Culture* is a serious attempt to apply economic analysis to cultural issues. Throsby believes that the central question in any analysis of the cultural impact of globalization is how the increased flow of goods, services, symbols, information, and values between different ethnic groups intrudes on cultural diversity. While many people argue that the distinctive features of different cultures will disappear and be replaced by a universal set of cultural symbols, Throsby presents an alternative view. The pressure of powerful external forces that threaten to undercut the means by which people identify the unique characteristics of their cultural cluster and differentiate themselves from other groups may sharpen group members' resolve. This sharpened resolve could lead the cluster to resist homogenizing influences and to assert more strongly the symbols of their unique cultural identification.



One of the articles most applicable to this thesis is Edward Lazear's article "*Culture and Language*", which examines the role culture and language plays in economics.<sup>7</sup> Common language and culture facilitate trade between individuals. Lazear presents the hypothesis that agents have an incentive to cultivate different cultures and languages in order to obtain more trading partners. The value of assimilation for an individual from a minority culture into a majority culture is high, due to the increase in potential trading partners. A common culture greatly reduces costs, allowing individuals to trade with one another without intermediaries such as translators. Lazear also states that common culture allows trading partners to have common expectations and customs, which enhance trust between individuals.

Lazear provides empirical evidence that immigrants are most likely to be fluent in English when they live in communities that have a small proportion of individuals from their own native country. Individuals who are from poorly represented groups learn English quickly. Those from groups with a large proportion of the local population learn English more slowly. This is a rational response to the differences in the value of learning English across groups.

## 1.5 LIMITATIONS

Culture is not always contained in the art on the wall, or in the performances on stage. In fact, many aspects of culture do not even pass through the market system. This trait often makes culture a difficult subject for economists to analyze. This feature also makes it hard for economists to form welfare judgments about culture,

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<sup>7</sup> Lazear, Edward. 1999. Culture and Language. *The Journal of Political Economy*. 107.6.

and therefore to inform public policy. One of the largest impediments to economists' analysis of culture is the difficulty in placing an economic value on it. While culture can lead to the production of tangible items that pass through the market system and attain certain value, some aspects of culture remain either intangible, or only have value for members belonging to the cultural cluster. This feature of culture puts economists in a difficult position when trying to determine the value of culture. What is the cost of an extinct culture for the individuals who used to belong to it and for the rest of the world?

When trying to place an economic value on culture, some economists have suggested contingent valuation as a means of estimating how much people value their culture. This approach is often suggested as a means of valuing the environment or other goods that do not pass through a market system. The contingent valuation approach asks individuals how much their culture is worth to them. This provides information on the individual's willingness to pay to retain his culture. However, when economists attempt to infer value, they prefer evidence based on actual market behavior. The fact that contingent valuation is based on what people say they would do, as opposed to what people are observed to do, is the source of its greatest weaknesses. Advocates of the contingent valuation method believe that even casual applications can produce results reliable enough to be used as the basis for public policy. Whether economists should rely on contingent valuation to provide an estimate of the value of non-market goods is currently the subject of academic debate, with many proponents and opponents.

Whether cultural diversity should even be a goal is another question that economists seem ill-equipped to handle, for the very same reason. From an economic view, diversity could be detrimental or it could be beneficial. If everyone shared the same language, transaction costs would be greatly reduced. However, it would be difficult to argue that one common culture throughout the world is better than a multicultural environment. Many economists agree that there is an inherent economic value of diversity. A loss of diversity implies a loss of cultural capital.

## 1.6 SIGNIFICANCE

Cultural and linguistic diversity is currently going through a dynamic process. Opponents of globalization often bemoan the loss of diversity that results. It is fundamentally up to individuals to retain or abandon their unique culture. As globalization proceeds, the incentive to retain a given minority culture changes for the individual. The individual is presented with new costs and benefits attached to the choice they are presented with. Understanding these choices and analyzing the externalities associated with linguistic and cultural diversity, will lead to a clearer understanding of the optimal diversity of culture and language in a globalizing environment.

## CHAPTER 2

### EXTERNAL EFFECTS

The notion of non-pecuniary externalities began with Arthur Pigou, who argued that such spillover effects could affect the socially optimal allocation of resources. Economists are concerned about externalities because they prevent the attainment of a welfare ideal called Pareto optimality. Externalities are present when the utility of an individual depends not only on the goods and services the individual consumes, but also on the activity (production or consumption) of some other individual. The distinguishing feature of an externality is interdependency that occurs outside the price system between two or more individuals.<sup>8</sup>

It is necessary to distinguish between marginal and infra-marginal externalities, potentially relevant and irrelevant externalities, and Pareto-relevant and Pareto-irrelevant externalities. Marginal externalities occur when a small change in the action of one individual will change the utility of another individual. Infra-marginal externalities arise when incremental changes in one individual's action does not change the affected party's utility; however, the total effect of the individual's action does affect the other party's utility. Externalities are potentially relevant when the activity generates a desire on the affected party to modify the behavior of the party taking the action. An externality which produces no such desire is defined as

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<sup>8</sup> When an externality occurs outside the price system, the externality has not been fully compensated and is not internalized.

irrelevant. The externality is Pareto-relevant if the extent of the activity may be modified in such a way that the externally affected party can be made better off without the acting party being made worse off.

## 2.1 NETWORK EFFECTS

Clustering into a large common culture results in indirect network effects, which can also be thought of as a type of external economies of scale. External economies of scale help explain the clustering of economic activity due to specialized markets for inputs, forward and backward linkages in the production process, and the quick diffusion of ideas, technology and information. External economies of scale are generated by the presence of highly specialized markets for labor and inputs caused by a cluster of firms being able to attract and support low-cost suppliers. There is also the existence of a labor force with knowledge and skills that are attractive to firms. External economies of scale are also present where knowledge spillovers occur and information flows among economic agents in the cluster, mainly by interaction. These indirect network effects are market-mediated, making them pecuniary externalities. The market outcome achieves the same result that would be reached if all the external effects were internalized.

Direct network effects lead to potential, marginal, Pareto-relevant externalities. Direct network effects are usually generated through a physical effect of the number of participants on the value of an action. In the case of a network of English speakers, there is direct interaction, rather than a physical connection as is the

case with the Internet or a telephone network. When an individual chooses to learn English, they are exerting a positive externality on those already participating in the language network. By choosing to learn English, the individual increases the amount of trading partners for those belonging to the network, and thus benefits all network participants. In most cases, direct network effects involve an initial investment of physical capital as a manifestation of the network. It is inevitable that property rights will be established in these networks that internalize the pecuniary externality. However, with the network of English speakers ownership is impossible, and so property rights cannot be established. There is also an absence of goods complimentary to the network which prevents the externality to be merely pecuniary. This network externality leads to an overprovision of unique languages and too much cultural diversity.

## 2.2 PUBLIC GOOD EXTERNALITY

Anthropologists and linguists believe that diversity across societies should be valued. Their arguments have a convincing ring. Of particular significance is the fact that languages embody the intellectual capital of the people who speak it. Some forms of verbal expression depend considerably on the formation, sounds, and rules of the language. In such cases, the intellectual and cultural tradition would cease to exist without the language.<sup>9</sup> An intellectual tradition may be so thoroughly a part of a

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<sup>9</sup> For example, within most Native American cultures, there is no clear distinction between ‘story’ and ‘history’. Both are part of what is known as the oral tradition. The oral tradition is the profusion of anecdotes and legends by which each tribe and nation explains the creation of the world and its own

culture's linguistic ethnography as to be inseparable from the language. In these circumstances, the loss of local languages and the cultural systems they express means an irreversible loss of diverse and interesting intellectual capital. Languages also represent different ways of perceiving and classifying the world. Languages are repositories for cultural tradition, localized knowledge and history. They represent more ways of thinking, understanding and describing. With no variation in language, there is no potential to meet changing conditions.

Language and culture satisfy the characteristics of a public good. Both language and culture are non-rival and non-excludable in consumption. Diverse culture and language create challenges to the efficiency of private actions because their benefits are not limited to a single consumer but rather are available to all. The distinction between public and private goods was first made in the late eighteenth century, when Adam Smith in *The Wealth of Nations* noted the existence of "...public works, which, though they may be in the highest degree advantageous to a great society, are, however, of such a nature, that the profit could never repay the expence to any individual or small number of individuals, and which it therefore cannot be expected that any individual or small number of individuals should erect or maintain."<sup>10</sup> Smith, though a devoted advocate of the market, recognized that the market fails to solve all economic problems. In addition, he concluded that because the market fails to provide public goods, government must intervene to do so. Paul Samuelson showed that the efficient provision of public goods, in this case the preservation of unique cultures and languages, calls for the marginal rate of

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origins and experience. Due to the fact that many of these tribes did not have a written language, if the verbal language ceases to exist, so does the recording of the history.

<sup>10</sup> Smith, Adam. 1784. *The Wealth of Nations*. New York: Random House. Page 779

transformation in production to equal the sum of the marginal rates of substitution in consumption.<sup>11</sup> It would, therefore, never be optimal for the government to prevent all language and culture loss from occurring. Determining the efficient level of diversity requires knowing consumer preferences. That knowledge is often assumed as given in theoretical models of the optimal provision of public goods, but obtaining it is a key challenge when it comes to actual public policy. With culture and language, benefits are nonrival; the consumption of one individual does not reduce the benefits derived by all other individuals. If many people are affected and exclusion from benefits is impractical (as is the case with culture and language), individual consumers will not reveal their preferences for diversity. Instead, they will free ride on others to pay to for cultural diversity. Because of this, market failure occurs because of the presence of this potential, marginal, Pareto-relevant externality. The result is that cultural and linguistic diversity is underprovided.

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<sup>11</sup> Samuelson, Paul. 1954. The Pure Theory of Public Expenditure. *Review of Economics and Statistics*. 36:4: 350-356.



## CHAPTER 3

### STATIC EQUILIBRIUM OF LANGUAGE NETWORKS

#### 3.1 PRIVATE BENEFITS AND COSTS OF DISTINCT CULTURE AND LANGUAGE

Cultural clusters with distinct languages are ubiquitous both in the past and the present. In the past, clusters typically resembled tribes. Groups were mostly independent except for occasional trade between clusters. Native Americans were a prime example of a society of cultural clusters. Scientists believe that, at the end of the fifteenth century, there were more than six hundred autonomous societies in what is now Canada and the United States.<sup>12</sup> Each of these cultural clusters followed its own way of life, with distinctive social orders and languages. The wide range of culture reflects, to a great extent, the huge geographic and climatic variations of North America. In northernmost Alaska and Canada there was a narrow rim of arctic tundra occupied by the Inuit. Further south, east of the Rockies, covering most of Canada to northern New England was a vast coniferous forest, too cold for agriculture, inhabited by nomadic hunting people like the Innu, the Cree and the Dene. Further south, one would encounter even more distinct tribes, each group developing a way of life finely adapted to its local environment and producing distinctive artifacts, crafts, songs, stories and dances.

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<sup>12</sup> Wilson, James. 1998. *The Earth Shall Weep*. New York: Grove Press.

Linguists believe that in what is now Canada and the United States there were around twelve distinct and unrelated linguistic groups.<sup>13</sup> This is in great contrast to Europe, where most languages can be traced back to one original source. What all this evidence points to is a land of vast cultural diversity, with numerous distinctive cultural clusters.

Cultural clusters formed in North America because it was economically advantageous for individuals to become a member of a tribe. If this were not the case, rational agents would not have chosen to participate, and clusters would not have existed. One of the most important economic reasons for clusters is that they enable trade to take place more efficiently.

As with countries, it is economically beneficial for agents to participate in trade with others. Trade allows individuals to use their comparative advantages to engage in specialized productive activities, and further their potential earnings, and improve their welfare. Trade benefits both participants, enabling each person to perform the task at which he is superior. Thus, trade increases each participant's total production. Trade also allows people to realize the benefits of mass production. The more trading partners an individual has, the more opportunity there is for maximizing growth and welfare. As Edward Lazear pointed out, common culture and language lead to the simplification of trade. Sharing the same language clearly reduces transaction costs.

When economic agents share the same culture, they will also share common traditions. This leads to increased efficiency in trade among individuals, where the perceived cost of the transaction is reduced. Having the same culture and traditions

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<sup>13</sup> Wilson, James. 1998. *The Earth Shall Weep*. New York: Grove Press.

greatly reduces the obstacles to trade. I. M. Pei, a famous architect, had to grapple with this issue when he designed The Bank of China tower in Hong Kong in 1992. When Pei made his design public, it was heavily criticized by the citizens of Hong Kong. Original plans for the skyscraper included exposed horizontal braces which accentuated the X's made by the crossbracing. However, in China the X shape is a symbol of death, and many followers of 'Feng Shui' felt the design would bring bad luck. Pei had to invest much time in changing his design, and opted for removing the exposed horizontal bracing. The result transformed the X's into diamonds, a benign form with no negative 'Feng Shui' implications. This is one of many examples of the cost of transacting between unfamiliar cultures with different traditions and beliefs.

When people cluster into a common culture, familiarity and social order are bred. The distinctive clothing and language of the tribe become signals to economic agents. People can easily decipher tribal memberships by merely looking at one another, determining whether they are friends or foes. The chance that members of a cultural cluster, subject to the same rules and order, would cheat on a trade without being subject to retribution is much lower than it would be for strangers. In Native American tribes, murder was not considered a crime against an abstract and impersonal state but rather an injury to the victim's kin group. This obliged the victim's relatives to seek retribution. In most tribes, the taking of a murderer's life could be commuted into a payment of goods to the dead person's family, which simultaneously re-established equilibrium between the two clans and stopped the dispute from unraveling into an endless blood feud. This familiarity and social order between members of a common culture aids trade. The perceived risk of the

transaction is reduced, as people are able to read each other's intentions more easily through facial expressions and body movements. The knowledge that a trading partner is subject to the same rules, regulations, and punishments also reduces the risk of trade.

These traits all lead to one economic motivation behind cultural clusters. Members of a cluster trade with each other to further their economic standing; common culture, common language and familiarity all facilitate this trade.

There are many other economic motivations for people to cluster into a common cultural group besides the facilitation of trade. Within the North American tribes, comparative advantages were greatly exploited. The clusters bred a social structure of rules and order. This social order usually led to a well-organized tribe, with each member performing those duties to which the member was best suited in order to maximize the benefit to all members of the tribe. In Native American tribes, women's lives revolved largely around sowing, hoeing, and harvesting. Men's work consisted primarily of hunting and fishing. Men and women also had differing social roles. The stronger and larger of the sexes, men would protect the tribe in times of war. The women's duties generally consisted of child rearing in order to propagate the tribe, and cooking to provide energy for all members.

Search costs were often a great obstacle to trade in the past. Costly search activities include the identification of buyers and sellers and the discovery of their offer and asking prices; these costs greatly affect the economic activities of agents. The time involved in determining the location and identity of the seller with the highest quality products at the lowest prices meant high transaction costs for an agent who was not a

member of a cluster. Due to the lack of communication and transportation technologies, finding agents to trade with entailed long journeys until trade partners were found. This made information on the prices and quality of the goods offered difficult to ascertain.

Economic agents continue searching until the expected marginal gain equals the marginal cost of searching. Being a member of a common language group leads to a decline in search costs in total and at the margin. The former provides an incentive to join a cluster, while the latter implies that search is more intensive once a cluster is joined. Both effects increase the gains from trade enjoyed by the individual. Living in close proximity to familiar people reduces the time spent finding trading partners and obtaining information on the relative prices of the goods available. The same logic applies to reproductive partners. Instead of having to travel vast distances to find a woman to reproduce with, men would only have to look within the tribe. Being inside a cluster reduces the search costs for both trading and reproductive partners.

Team production is another aspect of cultural clusters that leads to economic benefit. Team production occurs when each individual in a group specializes in a complementary task. Adam Smith illustrated this with the example of a pin-making factory over two centuries ago. Increases in the scale of production and worker specialization go hand in hand. Performing fewer tasks allows workers to become more productive at their jobs. Each member of the team specializes, but the value of the output of the team depends on the coordinated activities of all the team members.

This team production is much more efficient than a single person trying to produce each of a panoply of goods and services alone.

Economies of scale are also present within cultural clusters. Economies of scale are most often associated with firms, implying that output can be doubled for less than twice the cost. Within a culture, economies of scale occur when an increase in the number of members providing the culture brings a decrease in the average total cost of producing it. A single person trying to maintain a language, culture or religion is more costly per capita than for a group of people. When a group of people maintains a common culture, the cost is spread over all members. For example, a single person cannot maintain a language unless the agent is speaking and hearing it constantly. It would be very expensive, if not impossible, for a single individual to be the only one speaking a language and trying to maintain it. Within a cluster, the common language is spoken constantly may be recorded in writings. Additionally, many cultures have a system of beliefs that includes statues, sacrifices, or places of worship that help sustain the culture. The cost borne by each member of maintaining the culture is smaller as the cultural cluster is larger.

A cultural cluster also experiences economies of scope when an increase in the range of goods produced brings a decrease in the average total cost of production. For example, suppose that a culture has only a spoken language and people want to transcribe the language into a written form. The written form helps maintain the language and reduces the cost of teaching children to speak it. It also helps maintain systems of belief, such as religious writings and historical stories.

The costs associated with clustering arise primarily from the difficulty of trading with members from other clusters. Though clustering facilitates trade within the group, trade outside the group becomes more difficult. There are often barriers to entry and exit present with cultural clusters. Members of a tribe cannot easily exit their cluster and enter into a new one. For example, Native American tribes were often geographically separated; rivers, steep mountains, and vast distances all contributed to this isolation. A member of a unique cluster who deserted his cluster and attempted to join a different tribe would face large time and transportation costs. Often, clusters will have distinguishing speech and distinctive clothing. For an individual to enter into a new tribe, he must learn the culture unique to that cluster. One of the main obstacles is the language barrier. Cultural clusters have distinctive and unique ways of communicating, and it was very costly for someone to enter into a new tribe. Furthermore, tribes were often wary of individuals who did not belong to their cluster. Individuals attempting to join a new cluster were unlikely to be accepted.

### 3.2 EQUILIBRIUM

With no technological change, there would be an unchanging equilibrium number of language networks. The highest number of language networks the economy could maintain is unknown. It could not be equal to the population, with each person having a unique language, as the essence of language is communication with others. The lowest number that could be supported is equal to one, with

everyone speaking the same language. With no technological change in the transportation of goods and information, the economy could potentially obtain static equilibrium, such as shown in Figure 1.

Marginal social cost (MSC) is the marginal private cost (MPC) incurred by the sustainer of the language plus the marginal cost imposed on others, which is the network externality. The marginal private cost is increasing because as more diversity is obtained the more costly the maintenance of the languages becomes. Marginal social benefit (MSB) is the marginal private benefit (MPB) received by the sustainer of the language plus the marginal benefit to others, which is the public good externality. The marginal private benefit is decreasing, because as more languages are sustained the benefits from one extra language are not as large.

Whether this equilibrium is economically efficient depends on the relative magnitudes of the direct network and public good externalities. The public good externality leads to a marginal private benefit curve that is below the marginal social benefit curve. This reflects that there are social benefits of cultural or linguistic diversity that are not privately represented. This results in language networks being underprovided. The direct network externality means that there are costs associated with language networks that are not embedded in the marginal private cost curve. The marginal social cost curve is higher than the marginal private cost curve, and so language networks are overprovided.

As is shown in Figure 1, these two potentially offset each other. If the two opposing effects are equal, the market equilibrium will be equivalent to the outcome that would result if all external effects were internalized. If this is the case, then no



public policy changes need be prescribed, and an efficient level of language networks is achieved.

## CHAPTER 4

### MOVEMENT TOWARDS STATIC EQUILIBRIUM WITH TECHNOLOGICAL CHANGE

Recent studies have shown a sharp decline in linguistic diversity. The technological revolution has changed the costs and benefits an individual faces when deciding whether to leave his cultural cluster. With the flow of information among countries increasing, individuals belonging to unique cultural clusters now have greater knowledge of world events. Individuals know that a large percentage of the world's population speaks English.<sup>14</sup> Most people have become aware of the fact that the flows of goods, services and information across borders is increasing due to less costly transportation. Agents have a choice of actively participating in this global culture by learning English, or remaining inside their native cultural bounds.

Whether an individual chooses to learn a second language, or whether a parent decides to teach her child an indigenous language, is a matter of individual, rational choice. People maximize their individual welfare as they envision it. There are several constraints on achieving an optimum from this maximization process, such as limited time, scarce resources, imperfect information, and imperfect memory. Perhaps the most important constraint is the scarcity of time. A person will live for only a

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<sup>14</sup> It is estimated (Crystal 1999) that 400 million people use English as mother tongue, while another 400 million use it as a second language. Another 500 million people are able to speak English with some degree of competence. This means that about 25% of the worlds population has the ability to speak English.

limited period and, being forward looking, must form some estimate of the length of his lifespan.

Faced with a new global economy, people must decide what language or languages to learn and teach their children. After making the decision about what new language(s) to learn, the individual must make a judgment concerning how much he or she is willing to assimilate into the new culture, and consequently, how much he or she is willing to leave the former cultural cluster behind. A high degree of desired assimilation can involve moving to another country if the individual believes that migration will further his or her economic standing in the new global economy. If the agent chooses not to participate at all in the global economy, this does not necessarily mean the individual will not learn English. Someone may want to learn English for intellectual or purely consumption reasons. Learning English provides the ability to read English literature or watch English language television.

The costs associated with learning English depend predominately on the time the learning process takes. Other costs include the means of obtaining English instruction. Learning English may be the result of reading books or taking classes, or plunging oneself into a predominately English society and learning through immersion. If the agent is a child and incapable of rational decision making on this level, the decision must be made for him by a parent. It is assumed that a parent acts in the best interest of the child, subject to the costs that the parent is faced with and given the information available. The benefits parents obtain by teaching their children English is the knowledge that their child will reap the benefits of learning that language, including an increase in potential earnings. It is assumed the child does not

have the ability to take on self-instruction, whereas an adult does. The costs to the parent are the opportunity costs of time and capital spent on educating the child in the language. However, the government may also make a decision about what languages a child learns. The government may act in a way that is in the best interest of those in government, subject to the costs that government is faced with and given the information available, rather than the best interests of the children.<sup>15</sup>

Learning English exhibits increasing marginal costs. It is fairly easy to learn a couple of words, but extremely difficult and costly to lose completely one's native accent to achieve total assimilation. Learning English can also increase the cost of retaining one's indigenous language. It is more expensive to keep up a native language when an agent has acquired a new language. Maintenance depends on the time spent speaking and writing the language. Time spent speaking the newly acquired language directly takes time away from maintenance of the native language. The cost of learning the English language also depends on whether or not the agent is surrounded by people who speak it. If there were no speakers of English around the agent, it would be more costly to learn, as there would be no practice easily obtained.

Benefits to learning English include an increase in the number of trading partners that do not require intermediaries such as translators. Because a large proportion of the world's population speaks English, learning the language means that

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<sup>15</sup> An extreme example of government involvement in language education occurred in Canada and the United States when Native children were forced into English schools and forbidden to speak their native tongue. The pioneer of Native American education was Captain Richard Pratt. Pratt was convinced that Native American languages and cultures were worthless relics from an earlier stage of development. Native Americans were forced to learn English and forbidden to speak their own languages. The action of the government reflected a perception that the costs of forcing the children to abandon their native tongue and cultural cluster were less than the benefit to the country of those children learning English.

these agents are available as trading partners. In addition, learning English leads to a decrease in the cost of transactions outside of the indigenous language. With this investment in language, the agent facilitates improvements in earnings and occupational status.

The benefits associated with learning a new language depends directly on the expected lifespan of an individual. Being forward looking, individuals will invest in human capital only if the expected present value of the future returns outweighs the cumulative costs. Very few elderly people invest in learning the English language. There is not enough time in their life to reap the rewards to counteract the immediate cost. On the other hand, children will receive the benefits from learning English for a much longer period. This goes some way toward explaining the vast differences in linguistic diversity between countries. People in linguistically diverse countries such as Papua New Guinea and Brazil have a shorter lifespan than do natives of linguistically homogenous countries such as Canada and the United States. Faced with fewer years to benefit from learning English, people living in countries with shorter lifespans would choose not to make the investment.

Microeconomic theory states that profit-maximizing firms produce output where marginal revenue equals marginal cost. The same is the case for utility-maximizing agents. Rational agents will continue to learn English and assimilate as long as the marginal cost is less than the marginal benefit. Due to the increasing marginal cost of assimilation, this will almost certainly occur in a state of bilingualism for individuals who are not taught English from birth. It is not welfare-maximizing for agents to leave behind completely their native language and culture to

assimilate. What most agents find is that they can learn enough English to obtain the majority of the benefits, and still retain their former culture. This is why linguists have seen a recent trend towards bilingualism. It is profitable for agents to learn enough English to participate with more trading partners. However, it is too expensive to completely abandon their former culture. Thus, many people retain aspects of their native culture, like the native dress and language, and still participate in the global economy. Languages then become extinct because parents do not believe it is worthwhile for their child to learn the native tongue. With a thorough knowledge of English, the children are able to trade with many more partners. Learning the native tongue would only open up trade with the very few people who have not learned English as well. If this, usually small, advantage is greater than the cost of educating, then the parent will not choose to have their child be bilingual.

As people leave a cultural cluster, it becomes more expensive for other people in the cluster to retain their unique way of life. The number of trading partners speaking the unique language will be reduced. Economies of scale are exhibited in cultural clusters, and as members depart it becomes more expensive for people to maintain the unique culture. The efficiency of team production within the culture is also reduced due to the exiting of native members. With fewer people participating in production within the native culture, the remaining members become much less efficient.

#### 4.1 THE NEW FORM OF CLUSTERS

People abandon their native cultural cluster to enter into a global culture. Inside this global culture, they may retain some traits of the former culture, such as accents, religion, and cuisine, yet are still able to effectively trade with more people. As these agents enter the global culture, they are still separated from those who have completely assimilated. These latter members have likely been born into the global culture.

There are some members of minority cultures who find it beneficial to relocate to large cultures such as America. These people often form groups inside these cultures. Most large cities contain areas with a concentration of these immigrants. One only need look at areas like Little Italy or Chinatown to see the evidence for this effect. Once these individuals decide to immerse themselves into a global culture, they still find it advantageous to cluster with people who share the same culture. Here they obtain two advantages.

Because complete assimilation is nearly impossible or extremely costly, individuals choose instead to retain their native culture with others who have also moved into the larger global culture. This partial assimilation will occur where the marginal benefit of additional assimilation exactly equals the marginal cost. Agents obtain the ability to trade effectively with other members of the global culture and still retain the advantages of clustering and sharing a similar culture with other people from the same experiences.<sup>16</sup>

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<sup>16</sup> One study (Edin, Fredriksson, Aslund 2003) found that the earnings increase associated with a one-standard-deviation increase in ethnic concentration is around 13% for some immigrants.

Due to the change in technology, and the resulting decrease in marginal private benefits associated with maintaining distinct cultures, many individuals find it rational to abandon their native culture. This leads to a continual decrease in unique language networks until a new equilibrium is found. In Figure 2, it is shown that linguistic diversity is decreasing, from twenty thousand languages initially to a new, unknown equilibrium  $E^*$ . With continual technological change resulting in continual decreases in the marginal private benefit of unique linguistic clusters, it is possible that diverse language networks could be completely eliminated.



## CHAPTER 5

### SUMMARY AND CONCLUSIONS

When discussing the cultural impact of globalization, it is important to realize that economics has the ability to shape human behavior. The current state of the diversity of culture and language has been carved out over time by the choices that humans make. Analyzing the costs and benefits of diversity leads to an understanding of why people are choosing to abandon their unique cultural clusters to participate in the global economy. Individuals leave their native culture behind to learn English and participate in the global economy to further their economic welfare. The process of abandonment leads to externalities, both positive and negative. If market failure is present in culture and language, the efficiency of the cultural abandonment process is in doubt and policy interventions may be required.

Though it is theoretically convenient, it should not be assumed that the direct network externalities and public good externalities exactly offset each other. It is possible that language networks could be underprovided or overprovided. If the direct network externality overwhelms the public good externality, then public policy to reduce the number of language networks to an efficient level might be required. To do this, governments could encourage the learning of English. The government could provide subsidies for those who learn English to increase the marginal private cost of retaining a native culture and language.

If it is found that the public good externality is larger than the direct network externality, then efforts to increase the number of language networks may be undertaken. This could include educational programs encouraging bilingualism. These programs would internalize some of the effects of the externality, leading to a more efficient outcome.

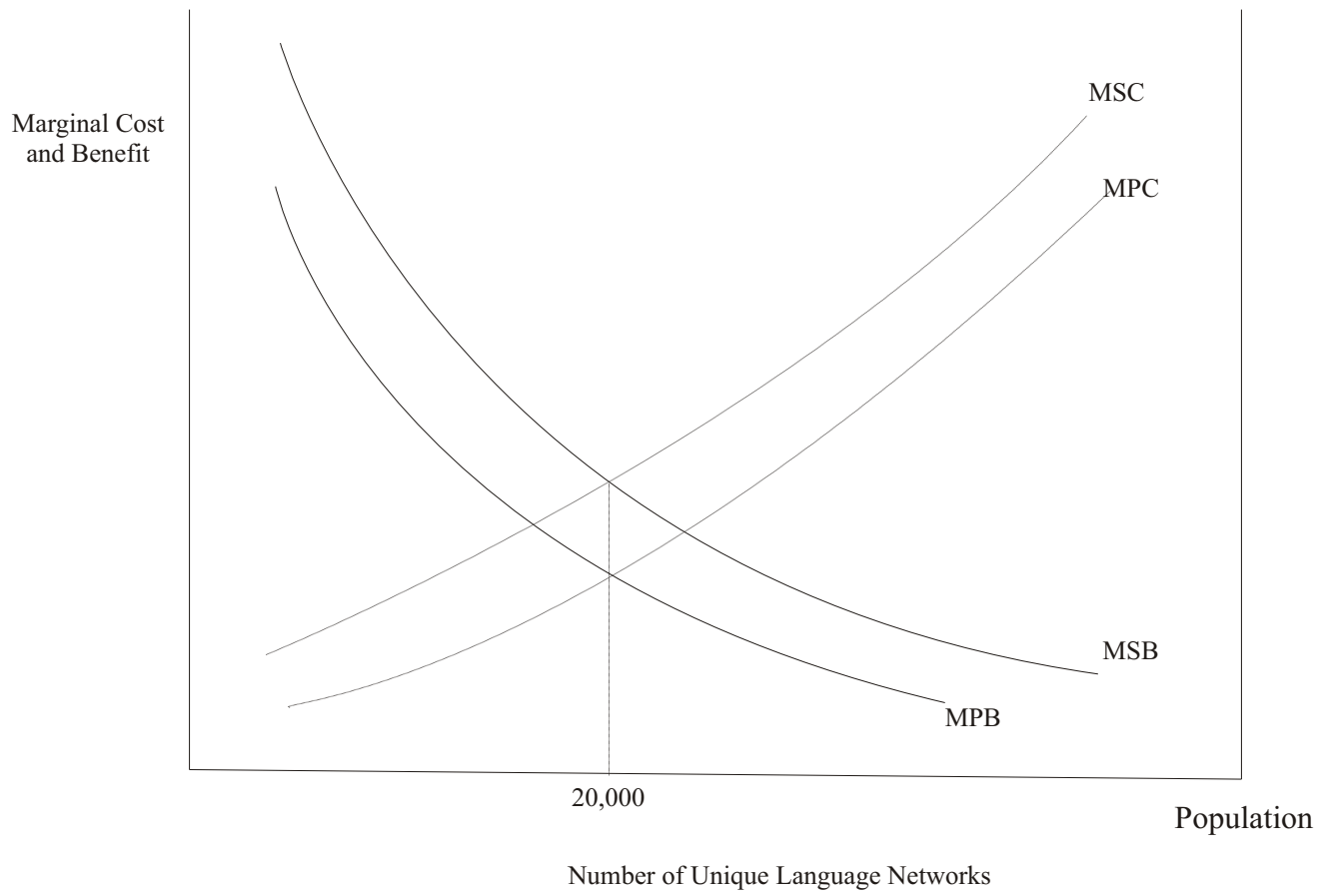


Figure 1  
Potentially Efficient Equilibrium for a Given Set of  
Technologies

Marginal Cost  
and Benefit

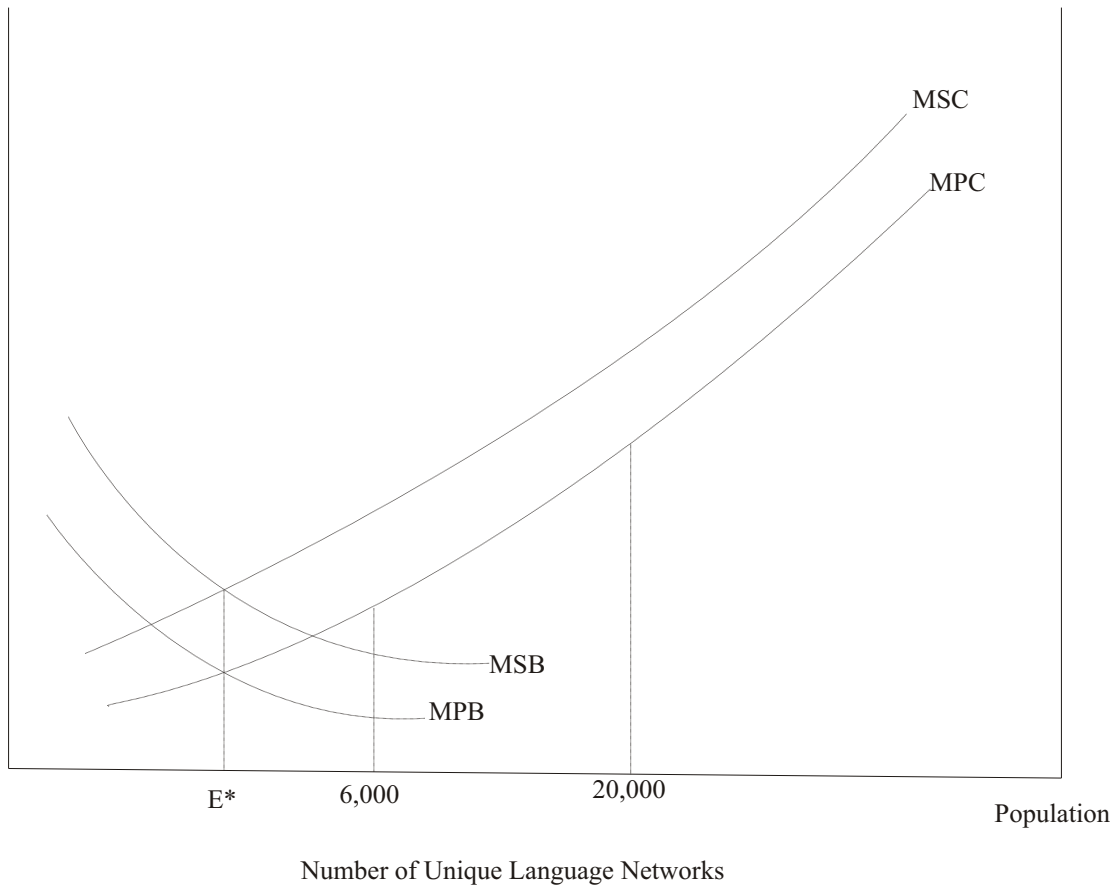


Figure 2  
Movement Towards Potentially Efficient Equilibrium for a Given Change  
of Technologies

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