# Socializing, Shared Experience and Popular Culture

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**Abstract**

We argue that socializing is an important economic activity because it is vital to our well being, and that the set of experiences that is shared by people is an important input into socializing. A person's experiences are generated, in part, by standard economic choices, and therefore the set of shared experiences in any social encounter is driven by the prior economic choices of individual participants. One implication is that these prior choices are not purely private since the utility that individual participants derive from a social encounter is linked to them. Our model of this link provides an explanation of a number of interesting cultural phenomena, including the domination of one culture by another, the existence of media superstars and certain sorts of conformity.

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## 1. Introduction

We human beings spend a significant portion of our time socializing with other human beings. Rarely do we attend movies or concerts or ball games or eat a meal by ourselves; we tend to ski and hike and canoe, and in general to recreate, in groups; many of us spend half an hour or more per day socializing via e-mail or on the telephone; most of us spend a significant portion of our waking hours in conversation; we sometimes strike up conversations with total strangers; our dreams are filled with imagined conversation.

Conversation, and socialising in general, rests on a bedrock of shared experience. Socialising is more enjoyable and more efficient if the participants have a set of common experiences. However, some shared experiences are more valuable than others as inputs into socialising. Commodities like toothpaste, concrete and microchips carry little metaphorical content and have few links to other aspects of our social, emotional and cultural lives. Consumption of these commodities is essentially independent from the utility of socialising. In contrast, commodities like CDs, books, movies, and television programs—cultural commodities—carry with them rich metaphorical content that make them especially valuable as inputs to socialising. Consumption of these commodities yields benefits in terms of socialising, but only if we choose the right ones, the ones chosen by everyone else. There are thus consumption externalities attached to cultural commodities.

In this paper, we argue that socializing is important to our well being, and is therefore an important economic activity, and that it is tightly linked to a set of familiar economic choices that economists usually regard as purely private. This link means that these choices are not private. Our model of the link that connects socializing to standard economic choices allows us to explain a number of puzzling cultural phenomena, including the domination of one culture by another, the existence of media superstars, and certain sorts of conformity

such as fads and cultural fetishism.

Direct evidence regarding the relationship between socializing and well-being comes from the health sciences. In epidemiology, public health, and gerontology, many scholars have concluded that social interaction is an important determinant of health, and at least one researcher sees social interaction as perhaps the most important determinant of health: "While still largely overlooked in epidemiologic thinking, social system influences ... may account for as much (if not more) of the variation in health and/or illness statics as do environmental influences, or the attributes and life-styles of individuals." (McKinlay, 1995, p. 2).[1] Further, the fact that social deprivation is a widespread and very effective form of punishment (for example, solitary confinement, shunning and banishment) suggests that socializing with others is an important source of utility.

We take it as given that social activities and encounters are important productive activities in that they contribute to our well-being. When we conceive of a social encounter as a form of production, we are immediately led to ask: what are the relevant inputs? Time spent by the participants is one important input. In addition, the set of experiences that participants share is, we argue, equally important, and shared experiences are at the core of the theory developed in this paper.

Shared experience enhances the utility of social encounters. It also contributes to the efficiency of social encounters. John Adams (a noted classical composer) observes in a New Yorker profile that "when we communicate, we point to symbols that we have in common. If people want to make a point, they reach for a reference. It might be a Woody Allen movie, or a John Lennon lyric, or 'I'm not a crook"' (Ross, 2001, p. 42).

[1] See Lomas (1998) for a review of the evidence and the implications for health policy. Berkman and Syme (1979) is one of the pioneering studies. Bosworth and Schaie (1997) is representative of the recent literature in gerontology and Antonucci, Fuhrer, and Dratigues (1997) of the recent literature on the relationship between mental health and social interaction.

One way to begin to get some notion of the importance of shared experiences in social encounters is to think about typical topics of conversation. When we encounter complete strangers, we often talk about the weather, national and world news, and major sporting and cultural events, because we are likely to have these types of experiences in common with total strangers. When we encounter people in lines of work similar to our own, we also talk about the weather, news, and sports, and in addition we often "talk shop", because it draws on another important stock of shared experience. When we encounter friends and relatives, one important topic of conversation is news regarding other friends and relatives not present, and again we are drawing on a set of common experiences. Interestingly, when the conversation turns to someone we do not personally know, we almost immediately lose interest, because we have no shared experiences on which to draw.

We get more indirect evidence on the importance of shared experiences by looking at expatriates. Finding themselves in unfamiliar circumstances where the set of experiences they share with the indigenous population is very limited, expatriates often come together in their own distinct communities, which allows them to draw and build upon the set of shared experiences they bring with them from another culture. In contrast, the children of expatriates, who lack the set of shared experiences that bind their parents together, tend to blend into the indigenous culture. By the same token, when we find ourselves in other cultures for extended periods of time, we tend to immerse ourselves in newspapers, television and history in a conscious attempt to augment the stock of experiences we share with the people we meet in the new culture.

We also take it as given that the utility of any social encounter for any individual depends on the set of experiences that the individual has in common with other participants. An individual's stock of experiences is generated by a series of economic decisions: by the movies

and TV programs seen, by the ball games attended, by the books, magazines and newspapers read, by the leisure and work activities pursued, in short, by a huge set of economic decisions. If we take seriously the notion that shared experiences are an important input into an important utility-generating activity, socializing, then we see that the rational choice of consumption activities like those listed above cannot be made without due consideration of the implications for the set of shared experiences in future social encounters. There is then a link, possibly a strong one, connecting social activity with what economists usually think of as private consumption decisions. It is this link that we motivate, model and explore in this paper.[2]

When this perspective is taken, every individual's decisions with respect to consumption and social activities are intertwined with those of other people. In a full analysis, individuals would choose their own consumption bundles, and to the extent possible, the set of people with whom they socialize, and the frequency of interaction. However, in many situations both the social encounters we have and the identities of the people we meet and interact with are beyond our control. For example, when we choose to take a particular job, we get a set

[2] In *The Winner-Take-All Society*, Frank and Cook (1995) clearly see this link when, in their discussion on page 191-192 of the forces driving the winner-take-all result in cultural industries, they observe the following: "Books, movies, sporting events, and television programs are often entertaining in their own right, but most people also enjoy discussing them with friends."

In *Television Culture*, the communications theorist John Fiske (1987) uses a framework that is in some respects similar to ours. He distinguishes both a cultural economy and what he calls a financial economy. Goods and services are produced in the financial economy. The cultural economy uses certain products of the financial economy, cultural commodities like television programs and movies, as inputs into a production process that involves social interactions among audiences for these cultural commodities. "So much critical and theoretical attention has been devoted to the mass media in a mass society that we have tended to ignore the fact that our urbanized, institutionalized society facilitates oral communication at least as well as it does mass communication. We may have concentrated much of our leisure and entertainment into the home ..., but we attend large schools and universities, many of us work in large organizations, and most of us belong to or attend some sort of club or social organization. And we live in neighborhoods or communities. And in all of these social organizations we talk. Much of this talk is about the mass media and its cultural commodities and much of it is performing a similar cultural function to those commodities – that is, it is representing aspects of our social experience in such a way as to make that experience meaningful and pleasurable to us. These meanings, these pleasures are instrumental in constructing social relations and thus our sense of social identity." Fiske (1987, pp 77-78).

of unpredictable social encounters with a set of largely unknown people along with the job. Similarly, except for our immediate companions, the identities of the people we encounter when we go skiing, or go to a ball game, or give a seminar, are largely unknown.

In this paper, we model some linked economic choices of a group of people that we might loosely call a society. We suppose that the social encounters among these people are random events with uniform probabilities and so focus on the unpredictable social encounters discussed above. In this framework, the consumption decisions of individuals are clearly interdependent because they jointly determine the set of shared experiences and hence the utility from the random encounters. But, in our model, the set of social encounters does not respond to the consumption decisions of individuals; there is no feedback from consumption decisions to the social encounters that occur. We think this framework, with its emphasis on random social interaction, is appropriate for the study of phenomena related to mass culture.

Herd behavior is the core phenomenon in our theory, and there are at least four bodies of literature where this phenomenon arises. It arises in the social norm literature under the name of conformity, where the behavior is driven either by punishment mechanisms (real or imagined) triggered by a deviation from the norm (see Akerlof (1976) and Bernheim (1994)), or by an innate desire to conform (see Akerlof (1980, 1997) and Jones (1984)). While this strand of the literature helps to explain community standards and norms like honesty, industry, and self-reliance, in our view it does not explain conformity in television viewing habits, in the sports we follow, in the fiction we read or in the movies we watch. For these kinds of activities, we argue that our approach, with its emphasis on social rewards as opposed to punishments, is more appropriate.

Herd behavior also arises in the literature on informational cascades (see especially

Bikhchandani, Hirshleifer and Welch (1992, 1998)), where it is used to explain fads, among other things. In this literature, herd behavior arises in an environment of identical preferences with sequential choice and imperfect observability of quality. Our environment is one with heterogeneous preferences, and we generate herd behavior with simultaneous choice and perfect observability of quality. However, our model can be adapted to environments with sequential choice with similar results.

Herd behavior arises in the literature initiated by Leibenstein's (1950) famous article on bandwagon, snob and Veblen effects (see also Corneo and Jeanne 1997). The defining feature of this literature is formally modeled in Schelling (1971) who explores environments in which aggregate behavior appears as an argument in individual utility functions (see also Granovetter (1978), Granovetter and Soong (1983, 1986), Basu (1987), and Bloomquist (1993), Church and King (1993)).

More recently, this line of argument is developed in the 'social interactions' literature and is applied to understanding neighbourhood effects and other phenomena (see especially Brock and Durlauf (2001, 2000), but not to understanding mass culture. Our paper is a new application of these ideas and proposes a novel theoretical basis for the presence of aggregate behaviour in individual utility functions—the value of social encounters.

Closely related to the literature on bandwagon effects is the literature on network externalities (see Katz and Shapiro (1994) for an overview), and at a technical level, our analysis is an application or adaptation of these ideas. In particular, our model is quite similar to models of communication networks. Rohlfs (1974) is one of the earliest articles on externalities in communication networks. Church and King (1993), which deals with the issue of a common language in a society in which initially everyone speaks one of two languages, is of particular interest since a common language is perhaps the most important shared

experience. Becker (1991), Grilo, Shy, and Thisse (1998), and Karni and Levin (1994) are concerned with the pricing strategies of firms that sell goods that are subject to externalities of the sort that arise in our model.

While our model is similar to models found in these other literatures, we propose a novel and, we believe, important theoretical basis for the externality-it arises from the fact that shared experiences are a significant input in the production of socializing. Building on the properties of equilibrium in this sort of model, we offer a unified explanation of a range of phenomena related to mass culture, including cultural imperialism, the existence of superstars, fads and cultural fetishism, and suggest extensions in several other directions.

## 2. The Model

Our model encompasses a series of discrete choice problems, but since there is no link between them, we proceed by examining a typical problem. Each individual first chooses one *consumption experience* from a set of consumption experiences; subsequently, individuals have a series of pairwise *social encounters*. Consumption experiences have a direct *private value* to individuals, and an indirect or derived *potential social value* that is realized (in part, or in whole) in their subsequent social encounters. Social encounters are random events with uniform probabilities across individuals, so that the probability that any one individual encounters any other individual in the population is the same for all individuals. To capture the underlying hypothesis that shared experiences enhance social encounters, we assume that in any encounter, the *realized social value* of participant $j$ is larger if the other participant chose the same consumption experience that participant $j$ chose than it is if the other participant chose a different consumption experience.

There are $M$ *socially linked* consumption experiences denoted by $E_i$, $i = 1, ..., M$, and

one *asocial* consumption experience, denoted by $E_0$. We denote the private value of $E_i$ to an individual, net of any out-of-pocket costs, by $\theta_i$. We normalize private values by setting $\theta_0 = 0$. We impose no *a priori* restrictions on $\theta_i$ for $i > 0$—they may be positive, negative, or zero.

Each individual has a total of $T$ social encounters, and gains an increment $s > 0$ of utility from every encounter in which the two participants share the same consumption experience. Letting $N_i$ $(0 \leq N_i \leq 1)$ denote the proportion of the population that chooses $E_i$, the expected utility of $E_i$, denoted by $V_i$, is given by:

$$V_0 = 0 \tag{1}$$
$$V_i = \theta_i + s \sum_{j=1}^{T} N_i \quad i = 1, ..., M$$

Defining $S = sT$, this can be rewritten as

$$V_i = \theta_i + SN_i \quad i = 1, ..., M$$

$E_k$ is a solution to the individual's choice problem if and only if $V_k \geq V_i$ for all $i \neq k$.

We assume a continuum of individuals to ensure that $N_i$ is independent of the choice made by any one individual. Private consumption values, $\theta = [\theta_1, ..., \theta_M]$ , differ across individuals, and are distributed across the population according to some probability density function, $f(\theta) = f(\theta_1, ..., \theta_M)$[3] . Because the comparative static experiments that are of most interest deal with the effect of potential derived social value on equilibrium choices, we assume that $S$ is common to all individuals.

[3] Brock and Durlauf (2001) explore a model with a similar utility function. Their model restricts the private valuations of individuals relative to our model, but has a more general form for the social interaction component. In particular, we do not restrict the distribution of $\theta_i$, but Brock and Durlauf consider only private valuations that are identical across individuals but for white noise. However, Brock and Durlauf allow for a very general utility effect of aggregate choices which contrasts with our linear effect. We note, though, that our linear effect is derived from an underlying model of socialising. Finally, because Brock and Durlauf are particularly interested in potential empirical investigations, their model is explicitly embedded in a stochastic framework.

The exogenous elements of this discrete choice problem are $S$ and $f$, and the endogenous variablesof interest are the aggregate choices $N = [N_1, ..., N_M]$. Although there are $M + 1$ consumption experiences, there are only $M$ independent proportions, so that

$$N_0 = 1 - \sum_{i=1}^{M} N_i$$

Asterisks denote equilibrium, so $N^* = [N_1^*, ..., N_M^*]$ are the equilibrium proportions for consumption experiences $E_1, ..., E_M$.

We have in mind many discrete choice problems of this sort. We get one such problem if we focus on the choice of a TV program in some time slot, another if we focus on choice of a sporting activity, and yet another if we focus on choice of a long distance phone company. Different discrete choice problems have different, non-overlapping, sets of consumption experiences, different probability density functions, and most importantly, different values of $S$. The value of $S$ for the problem in which individuals choose a long distance phone company would seem to be 0, while the value of $S$ for the other choice problems listed above are positive because TV shows and sporting activities are among the experiences that come up when we socialize.

Define $\Omega_k(N)$ as the set of individuals who would prefer $E_k$, given $N$, as follows:

$$\Omega_k(N) = \{\theta | V_k \geq V_i \; \forall \; i \neq k\} \quad k = 1, ..., M \tag{2}$$

Integrating $f$ over $\Omega_k(N)$ we get $\eta_k(N)$, the proportion of individuals who would prefer $E_k$ to all other consumption experiences, given $N$:

$$\eta_k(N) = \int_{\Omega_k(N)}, ..., \int f(\theta_1, ..., \theta_M) d\theta_M, ..., d\theta_1 \quad k = 1, ..., M. \tag{3}$$

Equilibrium proportions satisfy:

$$N_k^* = \eta_k(N^*), \quad k = 1, ..., M. \tag{4}$$

Some general results on equilibrium and welfare are easily established. Ignoring for the moment the potential social value of consumption experiences, notice that $-\theta_i$ is the inducement required to cause an individual to voluntarily switch from $E_0$ to $E_i$ (an inducement that is positive only if $\theta_i < 0$), and that $|\theta_i - \theta_j|$ is the inducement required to cause the individual to voluntarily switch from the more preferred to the less preferred of $E_i$ and $E_j$. Now define $\Delta$ to be the maximum over all individuals of these inducements. If we assume that $f$ has finite support—so that $\Delta$ is finite—the following general results are easily shown to be true[4] .

**Proposition 1** *If $S > \Delta$, there are $M$ stable corner equilibria, and in each of these equilibria, one of the socially linked consumption experiences captures the entire market. If $S$ is sufficiently large, these are the only stable equilibria of the model. If $S$ is very small relative to $\Delta$ the equilibrium is unique and stable, and is driven by private consumption values.*

Defining *social welfare* as the sum of utility over all individuals, the following welfare proposition is easily established.

**Proposition 2** *Corner equilibria are locally optimal, and may be globally optimal, but interior equilibria are suboptimal. In particular, for any interior equilibrium, switching an individual who is on the margin of indifference between two socially linked consumption experiences from the consumption experience with the smaller market share to the other consumption experience increases social welfare, and switching an individual who is on the margin of indifference between the asocial consumption experience, $E_0$, and a socially linked consumption experience, $E_k$, from $E_0$ to $E_k$ increases social welfare.*

Hence, when $S$ is sufficiently large, there are multiple equilibria characterized by herd behavior. Further, as in any model with positive externalities, an equilibrium may be inefficient in that too little of the positive externality producing activity—in this case, coordinating on a single consumption experience—takes place. To shed more light on the model, in subsequent

[4] Brock and Durlauf (2001) establish similar results for their theoretical environment. In particular, they show the existence of multiple equilibria and demonstrate that equilibria may not maximise total (or average) utility.

sections we explore its properties in more restricted environments, with both simulation and analytical methods.

## 2.1 Simulation Model

In this section we outline and illustrate a simulation approach, and in subsequent sections use it to explore a number of questions. There are two socially linked consumption experiences, $E_1$ and $E_2$, and one asocial consumption experience, $E_0$. Private values $\theta_1$ and $\theta_2$ are distributed independently and normally in the population, so that $f$ is just the product of two normal distributions. We use an *adaptive adjustment dynamic* to go from initial conditions, $N^0 = (N_1^0, N_2^0)$, to equilibrium proportions, $N^* = (N_1^*, N_2^*)$. Our convergence criterion is $|\eta_i(N) - N_i|/\eta_i(N) \leq 0.000001$ for all $i$. If the convergence criterion is not satisfied, then each $N_i$ is adjusted by the addition of $(\eta_i(N) - N_i)/10$. We note that this sort of technique identifies only the stable equilibria of the model.

Figures 1 through 4 illustrate the comparative statics with respect to $S$ for the revealing case in which $\theta_1$ and $\theta_2$ are independent normally distributed and have different means. In this environment, one consumption experience is 'better' than the other in terms of private valuations[5] . In these figures, the mean of the $\theta_1$ distribution is 0.25 and the mean of the $\theta_2$ distribution is -0.25, and both variances are 1 (and the covariance is zero). Each figure is an attractor space, with $N_1$ and $N_2$ on the two axes, where the lines depict adaptive dynamic adjustment paths from a variety of initial conditions to the equilibrium (equilibria), denoted in the figures by filled squares[6] . The allocations which maximise social welfare, defined as the sum of individual utility, are shown in the figures with empty squares.

In Figure 1, $S = 0$, and in equilibrium, 49.8% of the population chooses $E_1$ and 26.1%

[5] The case where $\theta_k$ are identically distributed has results which are similar in spirit to those shown here with one important difference: there may be multiple social welfare maxima.

[6] In the text, we report population proportions in (0.999,1.000) as 99.9% to distinguish them from corner solutions at 100.0%.

of the population chooses $E_2$. Because $S = 0$, the welfare optimum coincides with the equilibrium. Because the average private valuation of $E_1$ is higher than that of $E_2$, the equilibrium proportions favour $E_1$.

In Figure 2, $S = 1$, and in equilibrium, 70.3% of the population chooses $E_1$ and 20.9.% of the population chooses $E_2$. At the welfare optimum, 94.0% of the population chooses $E_1$ and 5.4% of the population chooses $E_2$. Due to the externality from $S > 0$, the unique equilibrium has too few people choosing $E_1$ in comparison with the welfare optimum.

In Figure 3, $S = 2$, and in equilibrium, 93.9% of the population chooses $E_1$ and 5.1% of the population chooses $E_2$. At the welfare optimum, 99.9% of the population chooses $E_1$. In Figure 4, $S = 3$, and there are now two equilibria. The first equilibrium has 99.3% of the population choosing $E_1$ and 0.7% of the population choosing $E_2$ and the second equilibrium has 7.1% of the population choosing $E_1$ and 92.7% of the population choosing $E_2$. The basins of attraction for these equilibria are asymmetric—the basin for the first equilibrium is much larger than that for the second equilibrium because private valuations favour $E_1$. The unique welfare optimum has 99.9% of the population choosing $E_1$. In this case, the two equilibria may be ranked in terms of social welfare. The equilibrium favouring $E_1$has social welfare close to that at the optimum, but the equilibrium favouring $E_2$ is clearly inferior in terms of social welfare.

## 2.2 Analytical Model

The simulation model has a number of attractive features. In particular, it allows for normally distributed private values. However, for some purposes simulation is not entirely satisfactory, and to get a firmer grasp of the model including its stability and welfare properties, in this section we adopt assumptions that generate a simpler model for which closed form analytical solutions are possible.

Assume that, for every individual, either $\theta_1$ or $\theta_2$ is positive, so that in equilibrium everyone will choose either $E_1$ or $E_2$; that is, $N_1^* + N_2^* = 1$. Defining $\phi = \theta_2 - \theta_1$, we can write $\Omega_1$ as a function of just $N_1$:

$$\Omega_1(N_1) = \{(\theta_1, \theta_2) | \phi \leq S(2N_1 - 1)\}. \tag{5}$$

Any density function $f$ induces a density of $\phi$, which we denote by $g(\phi)$, and the associated cumulative density by $G(\phi)$. Then, from (3) and (5), it is apparent that

$$\eta_1(N_1) = G\left(S\left(2N_1 - 1\right)\right). \tag{6}$$

Since $N_2^* = 1 - N_1^*$, just one condition is sufficient to determine the equilibrium of the model:

$$N_1^* = \eta_1(N_1^*) \tag{7}$$

Assume further that $g$ is uniform on support $[-X, Y]$. Notice that the proportion of individuals for whom $\theta_1 > \theta_2$ is $\frac{X}{X+Y}$. The associated cumulative distribution $G$ is given by

$$G(\phi) = \min[1, \max(0, \frac{X + \phi}{X + Y})]. \tag{8}$$

From (5), (6), and (8) we see that $\eta_1(N_1)$ is given by

$$\eta_1(N_1) = \min[1, \max(0, \frac{X + S(2N_1 - 1)}{X + Y})]. \tag{9}$$

Notice that $\eta_1(N_1)$ is piecewise linear in $N_1$(because $g$ is uniform).

In Figure 5, we illustrate the equilibria of the model, supposing that $X > Y$. Equilibrium points occur where $\eta_1(N_1)$ intersects the 45° line. Stability is a significant issue in models like this where there is positive feedback. To distinguish stable equilibria, we use an *adaptive adjustment dynamic:* an adjustment dynamic is said to be adaptive if $N_1$ increases when $\eta_1(N_1) > N_1$, and decreases when $\eta_1(N_1) < N_1$. In Figure 5, an equilibrium is stable if the

slope of $\eta_1(N_1)$ at the equilibrium point is less than 1, and unstable if the slope exceeds 1. When $S = 0$, $\eta_1(N_1) = X/(X+Y)$, as indicated by the horizontal line in Figure 5, and the equilibrium is at $e_1$ where $N_1^* = X/(X+Y)$. This equilibrium is unique and stable, and since $X > Y$, $N_1^* > 1/2$.

As $S$ increases, $\eta_1(N_1)$ pivots in counterclockwise fashion around the fixed point $(1/2, X/(X+Y))$, as indicated by the arrows in Figure 5, and this is the key to understanding comparative statics with respect to $S$. When $N_1 < 1/2$, increasing $S$ makes $E_1$ less attractive because the majority of people are choosing $E_2$, so that $\eta_1(N_1)$ shifts downward. In contrast, when $N_1 > 1/2$, increasing $S$ makes $E_1$ more attractive because the majority of people are choosing $E_1$, so $\eta_1(N_1)$ shifts upward. Hence, as $S$ increases from 0, the unique stable equilibrium point, $N_1^* = (X-S)/(X+Y-2S)$, travels rightward along the 45° line, for example to $e_2$.

When $S > Y$, we get the corner equilibrium in which $N_1^* = 1$, and so long as $S < X$, this corner equilibrium is the unique, stable equilibrium. But, when $S = X$, we pick up the other corner equilibrium in which $N_1^* = 0$, and when $S > X$, there are two stable corner equilibria. In addition, when $S > X$, there is an unstable equilibrium, $N_1^* = (X-S)/(X+Y-2S)$. This case is shown in Figure 5 with the three equilibria denoted $e_3$. These results are summarized in first four lines of Table 1.

| Table 1: Equilibria and Welfare in the Analytical Model | | | |
|---|---|---|---|
| Restrictions | Stable Equilibria | Unstable Equilibrium | Optimum |
| $S < Y/2 < Y < X$ | $\frac{X-S}{X+Y-2S}$ | none | $\frac{X-2S}{X+Y-4S}$ |
| $Y/2 < S < Y < X$ | $\frac{X-S}{X+Y-2S}$ | none | 1 |
| $Y < S < X$ | 1 | none | 1 |
| $Y < X < S$ | $\{0, 1\}$ | $\frac{X-S}{X+Y-2S}$ | 1 |
| | | | |
| $S < Y/2 \quad Y = X$ | $1/2$ | none | $1/2$ |
| $Y/2 < S < Y = X$ | $1/2$ | none | $\{0, 1\}$ |
| $Y = X < S$ | $\{0, 1\}$ | $1/2$ | $\{0, 1\}$ |

Under an adaptive adjustment dynamic, the unstable equilibrium defines the basins of attraction for the two stable equilibria. Specifically, given that $S > X$, if initial conditions are such that $N_1 > (X - S)/(X + Y - 2S)$, then an adaptive adjustment dynamic picks the $N_1^* = 1$ stable equilibrium, while if $N_1 < (X - S)/(X + Y - 2S)$, an adaptive adjustment dynamic picks the $N_1^* = 0$ stable equilibrium. Notice that, as $S$ increases without bound, $(X - S)/(X + Y - 2S)$ approaches $1/2$, and the basins of attraction approach $[0, 1/2)$ and $(1/2, 1]$. Consequently, when $S$ is very large there are two stable corner equilibria that are, in some sense, equally likely.

To write social welfare as a function of $N_1$, we must first choose the $N_1$ individuals who will be assigned to $E_1$. There are $N_1$ individuals for whom $\phi$ is in the interval $[-X, N_1(X + Y) - X]$, and these are the $N_1$ individuals who have the strongest preference for $E_1$ relative to $E_2$. If we assign these individuals to $E_1$ and the remaining individuals to $E_2$, we can derive social welfare as a function of $N_1$, up to a constant $K$ that is determined by the underlying

density function $f(\theta_1, \theta_2)$ that induces the uniform $g(\phi)$. The welfare function, $W(N_1)$, is

$$W(N_1) = K + \frac{Y^2 - (N_1(X+Y) - X)^2}{2(X+Y)} + S[(N_1)^2 + (1-N_1)^2] \tag{10}$$

$W(N_1)$ is concave in $N_1$ if $X+Y > 4S$, and convex in $N_1$ if $X+Y < 4S$. Assuming that $X > Y$, welfare is maximized at $\widetilde{N}_1 = (X-2S)/(X+Y-4S)$ if $S < Y/2$, and at $\widetilde{N}_1 = 1$ if $S > Y/2$. Notice that when $Y < S < X$, the equilibrium and the optimum are coincident ($N_1^* = \widetilde{N}_1 = 1$). But, when $S < Y$, $N_1^* < \widetilde{N}_1$, and when $S > X$, one of the stable equilibria ($N_1^* = 1$) is optimal and the other ($N_1^* = 0$) is not.

When there is an interior stable equilibrium, the divergence of the equilibrium from the optimum is readily understood. The equilibrium is determined by the condition that the marginal individual be indifferent between $E_2$ and $E_1$. Now imagine an exercise in which the marginal individual switches from $E_2$ to $E_1$. This switch has no impact on the utility of the marginal individual, but it affects the utility of everyone else; it imposes a negative externality on the group of people who prefer $E_2$, and a positive externality on the group of people who prefer $E_1$. From Equation (10), it is apparent that the sizes of the externalities are determined by sizes of the groups, and since $N_1^* > N_2^*$, the positive externality dominates the negative externality. Hence, $1/2 < N_1^* < \widetilde{N}_1$. More generally, in any case where there is an interior equilibrium in which $N_1^* \neq 1/2$, the optimum is more asymmetric than the equilibrium.

When $Y = X$, the comparative statics with respect to $S$ are somewhat different. As regards equilibrium points, when $S < X(= Y)$, there is a unique and symmetric stable equilibrium, $N_1^* = 1/2$, and when $S > X$, there are two stable corner equilibria, $N_1^* = \{0, 1\}$, and an unstable interior equilibrium. As regards optimal points, when $S < X/2(= Y/2)$, there is a unique and symmetric optimum, $\widetilde{N}_1 = 1/2$, and when $S > X/2$, there are two corner optima, $\widetilde{N}_1 = \{0, 1\}$. These results are summarized in last three lines of Table 1.

## 3. Cultural Imperialism

Traditional explanations for state subsidies to the arts focus on externalities and resulting market failure. Recent work (Zimmer and Toepler, 1999) has criticized this approach for its failure to explain the significant variation in subsidies across countries. Throsby (1994, p. 21) reports that whereas public expenditure on the arts is only \$3 per capita in the USA, it is \$16 per capita in the UK, \$28 per capita in Canada and \$45 per capita in Sweden. Although the Canadian population is only a tenth of the U.S. population, Canada spends almost as much as the U.S. does in this area. The application of our model presented below responds to the challenge posed by Zimmer and Toepler, and suggests a reason that small countries such as Canada and Sweden spend more on the arts and cultural preservation than large countries like the UK and USA. First, it suggests that the smaller a country is the more prone it is to foreign cultural influences. Second, it suggests that a country may have to worry about the possibility that its culture may be discontinuously swamped by the influence of a larger culture with which it interacts. If we suppose that countries desire to maintain their own cultural identities, both of these dictate larger expenditures in smaller countries. Finally, our model suggests that the welfare implications of this sort of cultural imperialism, and the cultural protectionism that it engenders, are far from straight forward, and it may very well be the case that social welfare in small countries is decreased by their efforts to support their cultures.

### 3.1 Simulation Results

To get some insight into the domination of a small culture by a large culture, we adapted our simulation approach to a situation in which two countries, a large one and a small one, exist side-by-side, with the same two consumption experiences to choose from, but with different

distributions of private values in each country. In country A, which has a population of 300 million, most people privately prefer $E_1$, while in country B, which has a population of 30 million, most people privately prefer $E_2$. Specifically, in country A the means of the $\theta_1$ and $\theta_2$ distributions are 0.25 and -0.25, respectively, while in country B they are -0.25 and 0.25, respectively. The standard deviations of all four $\theta$ distributions are 1.

We then imagine a scenario in which the frequency of cross-border socializing increases over time as communication and mobility costs decrease, and we focus on the ways in which the equilibria in the two countries change as cross-border socializing increases. This scenario is intended to mimic the ever increasing levels of cross-cultural interaction over at least the last century. We use as initial proportions the equilibrium proportions from equilibria favoring $E_1$ in country A and $E_2$ in country B.

We define a *cross-border socializing* parameter, $C$, on the unit interval [0,1] such that with $C = 0$, all social encounters occur within countries, and with $C = 1$, social encounters are independent of national borders. Specifically, residents of either country have a fraction $C$ of their social encounters with individuals drawn randomly from the pooled population, and a fraction $1 - C$ of their social encounters with individuals drawn randomly from the population of their own country. Thus, with $C = 1$, residents of country A have 91% (or 10/11s) of their social encounters with other residents of country A, while residents of country B have only 9% (1/11th) of their social encounters with other residents of country B.

In Figure 6, $S = 1$, filled squares denote $N_2^A$ (the number of people who choose $E_2$ in country A's equilibrium), and filled triangles denote $N_2^B$ (the number of people who choose $E_2$ in country B's equilibrium). Because $S$ is relatively small, there is just one equilibrium in each country. We see from the figure that as $C$ increases, the equilibria in the two countries

are drawn toward each other. The larger is $C$, the more attractive is $E_1$ for individuals in country B because a larger portion of their social encounters are with people in country A, most of whom choose $E_1$; similarly, the larger is $C$, the more attractive is $E_2$ for individuals in country A because a larger portion of their social encounters are with people in country B, most of whom choose $E_2$. But, because the population of country B is much smaller than that of country A, country B's equilibrium is much more sensitive to cross border social encounters than is country A's equilibrium: with $C = 0$, $N_2^A = .210$ and $N_2^B = .703$, and with $C = 1$, $N_2^A = .226$ and $N_2^B = .471$.

In the Figure 7, empty squares denote welfare for country A and empty triangles denote welfare for country B, with each welfare measure scaled so that within-country welfare equals one when $C = 0$. Notice that welfare is highest for both countries when $C = 0$ and that it declines in $C$. This is because when $C = 0$, relatively homogeneous within-country populations are engaging in social encounters only with other residents of their own county. However, as $C$ rises, the frequency of social encounters with people who have chosen different consumption experiences rises, which diminishes the realized social value of consumption experiences.[7]

Figure 8 shows the simulation with $S = 4$. Now $S$ is so large that there are two equilibria in both countries (when $C$ is small, at least). When there are multiple equilibria, for country B we show the equilibrium in which the majority of people chooses $E_2$, and for country A we show the equilibrium in which the majority of people choose $E_1$. For $C < 0.28$, the pattern is similar to what we saw in Figure 6: as $C$ increases $N_2^A$ moves (imperceptibly) upward toward $N_2^B$, while $N_2^B$ moves downward toward $N_2^A$. But, at $C = 0.28$, in country B, the equilibrium in which $N_2^B$ is large simply disappears, and residents of country B flock to $E_1$.

[7] Clearly, our partial equilibrium model does not capture the standard welfare effects associated with decreasing costs of mobility, communication, and transportation, most of which are positive. Accordingly, one should not conclude based on results reported here that $C = 0$ is optimal in a global sense.

This is a really dramatic form of cultural imperialism: increasing cross-border socializing abruptly destroys the equilibrium in country B in which most people chooses $E_2$, and further if we focus only on the evolution of $N_2^B$ when $C < 0.28$, there is really no warning of the impending discontinuity – no warning that the culture of the smaller country is about to be destroyed.

In the Figure 9, empty squares denote welfare for country A and empty triangles denote welfare for country B, with each welfare measure scaled so that within-country welfare equals one when $C = 0$. With large $S$, the welfare effects are dramatic. Within-country welfare is highest for each country when $C = 0$. As $C$ rises from zero, welfare declines slightly in country A and precipitously in country B. This is because for any given increase in $C$, the frequency of social contact with residents of the other country increases slightly for residents of country A and greatly for residents of country B. At the switch-point of $C = 0.28$, welfare in both countries jumps up, as residents of both countries coordinate on the same consumption activity, $E_1$. In country A, welfare jumps back up to nearly its value with $C = 0$. However, in country B, welfare never recovers to its value with $C = 0$, because they are coordinating on a consumption experience that is intrinsically inferior given their preferences.

## 3.2 Analytical Results

In this section, we adapt the analytical model to the problem of cultural imperialism, focusing particularly on the discontinuity seen in the simulation results. Assume that in country A, $\phi = \theta_2 - \theta_1$ is uniformly distributed on $(-X, Y)$, that in country B, $\phi$ is uniformly distributed on $(-Y, X)$, that $X > Y$, that the population of country A is $\lambda > 1$ times the population of country B, and that $S > X$.

Given these assumptions, in isolation (when $C = 0$), there are two stable corner equilibria

in each country, and the preferred equilibrium in country A is the one in which everybody chooses $E_1$ (the *all choose* $E_1$ *equilibrium*), while the preferred equilibrium in country B is the all choose $E_2$ equilibrium. Beginning with $C = 0$ and each country in its preferred equilibrium, we ask three questions. How large must $C$ be to destroy the initial equilibrium? What happens when this initial equilibrium is destroyed? Who gains and who loses when the initial equilibrium is broken?

Letting $P_{IJ}$ denote the proportion of social encounters that residents of country $I$ have with residents of country $J$, we find that: $P_{AA} = (1 + \lambda - C)/(1 + \lambda)$; $P_{AB} = C/(1 + \lambda)$; $P_{BA} = \lambda C/(1 + \lambda)$; and $P_{BB} = (1 + \lambda - \lambda C)/(1 + \lambda)$. Given the numbers of people who choose $E_1$ in countries A and B, $N_1^A$ and $N_1^B$ respectively, the set of individuals in country A who prefer $E_1$ is

$$\Omega_1^A(N_1^A, N_1^B) = \{(\theta_1, \theta_2)|\phi \leq S[P_{AA}(2N_1^A - 1) + P_{AB}(2N_1^B - 1)]\} \tag{11}$$

Similarly, the set of individuals in country B who prefer $E_1$ is

$$\Omega_1^B(N_1^A, N_1^B) = \{(\theta_1, \theta_2)|\phi \leq S[P_{BB}(2N_1^B - 1) + P_{BA}(2N_1^A - 1)]\} \tag{12}$$

Integrating the uniform density function for country A over $\Omega_1^A(N_1^A, N_1^B)$, we see that the proportion of individuals in country A who would choose $E_1$, given $N_1^A$ and $N_1^B$, is given by the following expression:

$$\eta_1^A(N_1^A, N_1^B) = \min[1, \max(0, \frac{X + S[P_{AA}(2N_1^A - 1) + P_{AB}(2N_1^B - 1)]}{X + Y})] \tag{13}$$

Similarly, the proportion of individuals in country B who would choose $E_1$, given $N_1^A$ and $N_1^B$, is given by the following expression:

$$\eta_1^B(N_1^A, N_1^B) = \min[1, \max(0, \frac{Y + S[P_{BB}(2N_1^B - 1) + P_{BA}(2N_1^A - 1)]}{X + Y})] \tag{14}$$

Because $S > X$, the only stable equilibria are corner equilibria. The situation in which everyone in country A chooses $E_1$ and everyone in country B chooses $E_2$ is an equilibrium if and only if $\eta_1^A(1,0) = 1$ and $\eta_1^B(1,0) = 0$. The first of these conditions, the condition for country A, is satisfied if and only if $C \leq (1+\lambda)(S-Y)/(2S)$, and the condition for country B is satisfied if and only if $C \leq (1+\lambda)(S-Y)/(2\lambda S)$. Of course, both are satisfied when $C = 0$, but as $C$ increases, people in both countries find that a smaller and smaller proportion of their social interactions are with people who have the same consumption experience as themselves, and as a result the initial corner equilibria become progressively less attractive. However, because country A is the larger country (that is, because $\lambda > 1$), the condition for country B is the binding constraint. Hence, when $C$ passes through $(1+\lambda)(S-Y)/(2\lambda S)$ the initial equilibrium is destroyed, as all residents of country B switch from $E_2$ to $E_1$. So, we have answered the first two questions posed above: as C passes through $(1+\lambda)(S-Y)/(2\lambda S)$ the initial equilibrium vanishes, producing a new equilibrium in which all individuals in both countries choose $E_1$. Notice that the critical value of $C$ at which country B flips from one corner equilibrium to the other is a decreasing function of $\lambda$ and $Y$ and an increasing function of $S$, and that it can be quite small. For example, if $\lambda = 10$, $S = 4$ and $Y = 2$, the all choose $E_2$ equilibrium in country B vanishes when $C = 11/80$.

A partial answer to the third question is immediate: social welfare in country A increases because after the flip, all social interactions are perfectly coordinated – in fact, everyone in country A is better off after the flip. In country B, the situation is less clear: realized social value increases in country B for the same reason that it increases in country A, but private value decreases since, on average, $\theta_2 > \theta_1$ in country B. The increase in realized social value from better coordination is equal to $\frac{S-Y}{2}$, and the loss in private value from the switch to $E_1$ is equal to $\frac{X-Y}{2}$. Since $S > X$, the first effect dominates the second, with the result

that when country B flips to the all choose $E_1$ equilibrium, social welfare in country B also increases.

| Table 2: Equilibria of the Two Country Model | | | |
|---|---|---|---|
| General Restriction: $S > X$ | | | |
| Equilibria | Restriction | Welfare in A | Welfare in B |
| $N_1^A = 1, N_1^B = 0$ | $C \leq \frac{(1+\lambda)\cdot(S-Y)}{2\lambda S}$ | $K_A + S \cdot (1 - \frac{C}{1+\lambda})$ | $K_B + S \cdot (1 - \frac{\lambda C}{1+\lambda})$ |
| $N_1^A = 1, N_1^B = 1$ | none | $K_A + S$ | $K_B + S - \frac{X-Y}{2}$ |
| $N_1^A = 0, N_1^B = 0$ | none | $K_A + S - \frac{X-Y}{2}$ | $K_B + S$ |
| $N_1^A = 0, N_1^B = 1$ | $C \leq \frac{(1+\lambda)\cdot(S-X)}{2\lambda S}$ | $K_A + S \cdot (1 - \frac{C}{1+\lambda}) - \frac{X-Y}{2}$ | $K_B + S \cdot (1 - \frac{\lambda C}{1+\lambda}) - \frac{X-Y}{2}$ |

With $S > X$, all four of the possible corner equilibria in this two country model are sometimes possible, depending on the degree of cross-border socializing. For completeness, in Table 2 we summarizes the possibilities. Notice that $K_A$ and $K_B$ are constants of integration whose values are determined by the underlying density functions that induce the two uniform distributions of $\phi$.

## 4. Superstars

The superstar literature is focussed on explaining why some actors, musicians and authors enjoy immense earnings both in an absolute sense and relative to the incomes of an army of equally (or almost equally) talented starving artists. For example, over the 15 years from 1980 through 1994, there were 150 top 10 books of fiction. According to *People Entertainment Almanac's* list, one person wrote 19 of them, another wrote 18, and the top six authors wrote 66 (or 44%) of them. The dominant explanations (eg, see Rosen (1981), Adler (1985), McDonald (1988) and Frank and Cook (1995)) for the existence of superstars stress the supply side, for example, increasing returns in production driven by large development costs and

insignificant costs of reproduction. In contrast, our analysis suggests an exclusively demand side story.

Our explanation of superstars is straightforward. When $S$ is large, consumers want to coordinate their choices so as to realize potential social value, but, in any choice situation, there are multiple equilibria that achieve the desired coordination, and hence an important coordination problem. We argue that consumers use superstars to solve this coordination problem. One implication is that when superstars are used in this way, there can be only a small number of them since superstar opposite superstar yields no coordination value. Another implication is that more talented newcomers may be forced to wait a long time before becoming superstars — witness the examples of Van Gogh, Mozart and Lenny Breau, all of whom died penniless.

We use a tournament simulation of binary choice to illustrate the emergence of superstars in a setting where past histories of actors are used to establish initial conditions that enter an adaptive adjustment dynamic. In these simulations $S = 4$ and the distribution of private values is nearly symmetric so that there are almost always two stable equilibria, which for all practical purposes are corner equilibria in which everyone chooses the same consumption experience. Since they establish initial conditions, actors' histories pick the equilibrium that is attained.

| Table 3: Superstars | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Rank | $\sigma = 100$ | $\sigma = 16$ | $\sigma = 4.00$ | $\sigma = 1.00$ | $\sigma = 0.25$ | $\sigma = 0.05$ | $\sigma = 0.000001$ | reference |
| 1 | 0.61 | 0.60 | 0.64 | .66 | 0.93 | 1.00 | 0.95 | 9/9 |
| 2 | 0.54 | 0.58 | 0.58 | .63 | 0.87 | 0.85 | 0.93 | 8/9 |
| 3 | 0.54 | 0.56 | 0.53 | .62 | 0.78 | 0.78 | 0.72 | 7/9 |
| 4 | 0.52 | 0.56 | 0.52 | .52 | 0.69 | 0.70 | 0.66 | 6/9 |
| 5 | 0.52 | 0.55 | 0.49 | .51 | 0.51 | 0.46 | 0.62 | 5/9 |
| 6 | 0.51 | 0.50 | 0.47 | .50 | 0.45 | 0.41 | 0.27 | 4/9 |
| 7 | 0.49 | 0.43 | 0.46 | .47 | 0.27 | 0.39 | 0.25 | 3/9 |
| 8 | 0.46 | 0.42 | 0.44 | .43 | 0.19 | 0.21 | 0.18 | 2/9 |
| 9 | 0.45 | 0.39 | 0.44 | .42 | 0.14 | 0.12 | 0.03 | 1/9 |
| 10 | 0.35 | 0.39 | 0.42 | .15 | 0.00 | 0.00 | 0.00 | 0/9 |

In each period, two consumption experiences vie for market share, the standard deviations of both private value distributions are 1, and the means of the two distributions are random draws from a normal density function with standard deviation $\sigma$ and mean 0. One of 10 actors (or writers or musicians) is randomly assigned to each consumption experience, and initial conditions are determined by the sum of the actors' market shares in all previous periods. In this environment, an actor's market share in any period is either very close to 1 or very close to 0. Naturally, an actor that is not assigned in that period gets a market share of zero. Letting $H_i$ denote the sum of the market shares of the actor associated with $E_i$, the initial value of $N_1$ in any period of the simulation is $H_1/(H_1 + H_2)$. Table 3 reports results for 7 simulations that differ by value of $\sigma$, each of which was run for 1000 periods. Average market shares of the 10 actors over the last 200 periods of the simulation are reported in

rank order.

The results reported in this table show an interesting interplay between the role of initial conditions and differences in the inherent quality of consumption experiences in picking the equilibrium that emerges. When $\sigma$ is large, there is considerable variance in average quality. Hence the better consumption experience in any period tends to have a very large basin of attraction, which implies that only rarely do differences in initial conditions pick the equilibrium in which the inferior one dominates the market. Because initial conditions are essentially irrelevant when $\sigma$ is large, average market shares of all actors tend toward 0.5. In contrast, when $\sigma$ is small, there is very little variance in the average quality of consumption experiences. Hence, in most periods there is very little difference in the sizes of the basins of attraction, which means that initial conditions play a dominant role in picking the equilibrium that emerges. Accordingly, an actor's relative success in the first few periods of the simulation determines the actor's relative success for the entire simulation. Necessarily, there are significant differences in relative success in the first few periods of any simulation, which persist throughout the entire simulation. In short, when $\sigma$ is small, we get superstars – that is, actors who get very large market shares over extended periods of time, not because they are inherently superior to other actors, but simply because they were lucky in the first few periods of the simulation.

Notice that the explanation of superstars that we are offering is applicable to situations where there are small differences in the inherent quality of the consumption experiences, and a large utility from coordinated consumption. We would argue that these conditions prevail in a variety of entertainment industries, including music, movies, and books.

The last column of Table 3 presents analytical results from a restricted version of this model. Here, we assume that there are no inherent quality differences between consumption

experiences, and that there is a cyclic, as opposed to random, pairing of actors. Consider, for example, a model involving just three actors, and cyclic pairings in which: actors 1 and 2 are chosen in periods 1, 4, 7, ...; actors 1 and 3 in periods 2, 5, 8, ...; and actors 2 and 3 in periods 3, 6, 9, ... . As one can readily verify, after the first 3 periods, one actor's history will have two 1s, another's will have a 0 and a 1, and another's will have two 0s. In all subsequent pairings, the actor who luckily started with two 1's dominates both of her opponents, the actor who got one 1 and one 0, dominates one of her opponents and is dominated by the other, and the actor who unluckily got two 0s is dominated by both of her opponents. Consequently, average market shares over any number of complete cycles are 1, 1/2, and 0. When there are n actors, average market shares over any number of complete cycles are $1, 1-1/(n-1)$, $1-2/(n-1), ..., 0$.

It might be argued that all we have done is to add another argument for the existence of superstars to an already plausible set of arguments. Our case is strengthened by the following observation. While superstars dominate mass culture films, in another market for movies, superstars are notable for their absence. *The Economist* (1999) reports that in pornography, the studio system—with actors on payroll—has emerged as the dominant form of organization. We explain this contrast in the following way. Since cultural norms restrict people from sharing their pornography experiences in social encounters, superstars are not useful as coordination devices. Rather there is an information problem but not a coordination problem. What is needed is a producer with a good reputation — just what has emerged in pornographic movies.

## 5. Fads and Related Phenomena

Fads refer to herd behavior that is ephemeral. They are common in the market for children's toys, where one toy may capture a huge market share, but for a small period of time. Pet rocks, for example, were a dominant toy for a short time, while cabbage patch dolls were dominant for a number of years, but eventually faded from the scene. The dominant explanation of fads is informational cascades (see Bikhchandani, Hirshleifer, and Welch (1992, 1998). This explanation requires that consumers have identical preferences over quality, that they sequentially observe the purchasing decisions but not utility of others, and that no specialized expertise in quality assessment exists on which consumers may rely. These conditions are difficult to rationalize for the kinds of cultural goods we are concerned with. Book reviews, movie reviews, television and sporting event previews and restaurant guides are pervasive. Our experience is that people, especially children, delight in telling everyone about their cultural experiences often in the hope that others will choose to share them. Our model, which incorporates heterogeneous preferences, simultaneous choice and perfect information, is more appropriate for cultural goods. Further, with the addition of quality decay, described below, our model generates fads.

We use a tournament framework in which popular consumption experiences survive and unpopular ones are eliminated and replaced by new consumption experiences drawn randomly from a quality distribution. Both private value decay, and the heavy hand of the past in determining initial conditions are central to our story. If consumption experiences are TV shows, decay could arise for a number of reasons: if sitcom writers exploit their best ideas first, then decay is a natural phenomenon; similarly, since most of the real news in the Clinton/Lewinsky affair came out in the first few weeks, the informational content of news broadcasts featuring the affair decayed over time; similarly, in TV serials, decay may

be driven by consumers' boredom with the set of main characters or other elements of the show's formula.

In every period two consumption experiences vie for market share. The variances of the private value distributions for all consumption experiences are equal to one. The means of these distributions are generated by random draws from a standard normal distribution. A consumption experience that captures a market share less than 20% is eliminated and replaced by another, whereas those that have a market share greater than 20% survive. The private values of all consumers for a surviving consumption experience decay by an absolute amount $D$. In each period except the first, initial conditions are determined by market shares in the previous period. When $S$ is large, one consumption experience will survive and one will be eliminated in each period, and initial conditions in the next period will favor the surviving consumption experience. Since the extreme market shares associated with large values of $S$ are the stuff of which fads are made, we restrict attention to values of $S \geq 2$ that tend to create equilibria with extreme market shares.

Table 4 summarizes results for 12 simulations distinguished by different values of the parameters $D$ and $S$. Each simulation ran for 1000 periods. A consumption experience is called *successful* if it lasted for more than one period—that is, if it captured a market share of at least 20% in at least one period. The table reports the number of successful consumption experiences, their mean duration, and the proportion of periods in which the successful consumption experience had a lower mean private value than the eliminated consumption experience.

| Table 4: Fads | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | $D = 0.00$ | | | $D = 0.05$ | | | $D = 0.10$ | | |
| $S$ | $N_{success}$ | mean | bad prop. | $N_{success}$ | mean | bad prop. | $N_{success}$ | mean | bad prop. |
| 2 | 5 | 201 | 0.000 | 91 | 14 | 0.160 | 145 | 9 | 0.137 |
| 3 | 3 | 334 | 0.009 | 49 | 21 | 0.091 | 85 | 13 | 0.125 |
| 4 | 1 | 1000 | 0.033 | 31 | 33 | 0.229 | 54 | 20 | 0.291 |

When there is no decay ($D = 0.00$), there are a small number of successful consumption experiences for any value of $S$, and the number of successful consumption experiences diminishes as $S$ increases. These results are intuitive. With no decay, a consumption experience with a good private value distribution (one with a high mean) can be dislodged only by one with a better private value distribution (one with a higher mean), and the better the private value distribution, the longer on average is the interval of time before it is dislodged. In addition, the bias in initial conditions favoring surviving consumption experiences increases in $S$, so that the average interval of time before a show is dislodged increases in $S$.

With $D > 0$ the ephemeral dominance characteristic of fads becomes evident. In addition, there is a clear and readily understood pattern in the results for $D > 0$. The larger is $D$, the larger is the number of successful consumption experiences, and the smaller is the mean number of periods a successful consumption experience survives. The larger is $S$, the smaller is the number of successful consumption experiences, and the larger is the mean number of periods a successful consumption experience survives.

With no decay ($D = 0$) or with no utility gained from shared experience ($S = 0$), there are no fads—high quality consumption experiences dominate forever. Fads are possible if decay in private values overwhelms the persistence of equilibria caused by a high value of shared experience. The length of fads thus depends on the interaction of $D$ and $S$.

There is a sense in which the United States is, and has been for a very long time, a football culture, while western Europe is, and has been for a very long time, a soccer culture. There have been numerous attempts to introduce American style professional football in Europe and to introduce professional soccer in the United States, but success has been limited. We would argue that the limited success is evidence of a large $S$ and a very small $D$. There is old joke that captures the essence of our explanation. Question: Why did God invent soccer? Answer: So that Englishmen would have something to talk about in the pub. (In America it might go something like this. Question: Why did God invent football? Answer: So American men would have something to say on talk radio.) Americans never tire of watching and talking about football, and because they don't, soccer will never replace it. If our explanation is accepted, then the difference between fads like cabbage patch dolls and mass entertainments like football, both of which are linked to socializing, is just the rate at which private values decay.

*The New York Times* (June 20, 1999) recently used the term "cultural fetishism" to describe the behavior of people who wallow in the minutiae of information on pop culture. A similar puzzle is explored in a 1997 *Slate* article (Menand, 1997) concerning the extremely large audience for the re-release of the Star Wars movies, movies that had been available on videotape for years. Why did people spend so much time and resources on activities in which the private return must be very small? The paradox is even more evident in television news. The exhaustive coverage of the O. J. Simpson trial, the death of Princess Diana, and the Clinton/Lewinsky scandal[8] caused many to complain that television news had become too painful (or uninteresting) to watch. Yet they still watched. We resolve this paradox through

[8] The extreme nature of the television coverage of this story has been documented by the Center for Media and Public Affairs (Media Monitor, 1999). In 1998, U.S. television networks devoted one-seventh of their news airtime to the Clinton/Lewinsky scandal (1636 stories). Second place went to the standoff with Iraq (642 stories) followed by the Asian economic crisis (227 stories) and the bombing of U.S. embassies in Africa (180 stories).

the distinction between the private utility derived from an activity and the utility derived from improved socializing. In the cases cited above, negligible or even negative private rewards are more than compensated for by the benefits resulting from increased utility from social encounters.

When $S$ is large, cultural fetishism is clearly possible. In addition, when private preferences decay with repeated exposure, there may be a strong path-dependence at work which pushes us towards doing the things we have done in the past, even if they are no longer intrinsically rewarding.

Consider a many period simulation in which the equilibrium in the first period is as pictured in Figure 4, with almost the entire population choosing $E_1$. We set $S = 3$, and the standard deviations of both distributions to 1. The mean of the $\theta_1$ distribution is 0.25 and the mean of the $\theta_2$ distribution is -0.25. Given these $\theta$ distributions, on the basis of private values alone, 60% of the population prefers $E_1$ to $E_0$ while only 40% of the population prefers $E_2$ to $E_0$. Suppose that, in any subsequent period $t$, initial conditions are identical to the equilibrium values in period $t-1$. Thus, initial conditions in period 2 have 99.2% of the population choosing $E_1$. Suppose too that in all subsequent periods, every individual's $\theta_1$ declines.

Table 5 shows results of this simulation when each consumer's $\theta_1$ decreases by 0.1 each period. When the mean of the $\theta_1$ distribution is -.85 or greater, initial conditions are in the basin of attraction of the equilibrium in which $E_1$ dominates, and from period 7 through 12, this society is in the inferior $E_1$ dominant equilibrium. In the last period in which $E_1$ dominates, 86.5% of the population choose $E_1$, and $\theta_1$ is negative for virtually everyone who chooses $E_1$. The last column of the table reports social welfare in equilibrium.

| Table 5: Cultural Fetishism | | | | |
|---|---|---|---|---|
| period | mean of $\theta_1$ | $N_1^*$ | $N_2^*$ | welfare |
| 1 | 0.25 | 99.2 | 0.7 | 3.23 |
| 2 | 0.15 | 99.0 | 0.9 | 3.13 |
| 3 | 0.05 | 98.8 | 1.1 | 3.02 |
| 4 | -0.05 | 98.5 | 1.4 | 2.91 |
| 5 | -.15 | 98.2 | 1.7 | 2.80 |
| 6 | -.25 | 97.7 | 2.1 | 2.69 |
| 7 | -.35 | 97.1 | 2.6 | 2.58 |
| 8 | -.45 | 96.3 | 3.2 | 2.46 |
| 9 | -.55 | 95.3 | 4.1 | 2.34 |
| 10 | -.65 | 93.9 | 5.3 | 2.20 |
| 11 | -.75 | 91.6 | 7.2 | 2.05 |
| 12 | -.85 | 86.5 | 11.6 | 1.84 |
| 13 | -.95 | 0.5 | 99.3 | 2.73 |

When $S$ is large, coordination is important to consumers – above all, they want to choose the same consumption experience. Unfortunately, if private values for a particular consumption experience decay with exposure, consumers may nevertheless continue to choose an experience that is privately no longer attractive, because there is no obvious way to coordinate the switch to a better experience.

## 6. Concluding Remarks

This paper is built on two hypotheses, and two straightforward implications. The first hypothesis is that socializing is an important economic activity, and the second is that shared

experiences are an important input into the activity of socializing. The first implication is that certain sorts of consumption experiences have, in addition to a private value, a potential social value. The second implication is that in situations where, for most people, potential social value is large relative to differences in private values, there are multiple equilibria, and in all of them we see herd behavior, or conformity.

The model we develop allows us to see a number of cultural phenomena in a new light. Consider cultural subsidies. In an increasingly globalised world, the residents of small countries have an increasing amount of their social contact with residents of other countries. Our model predicts that in the absence of subsidies (government or otherwise), the local culture of small countries will be put at risk as individuals seek common experiences with more and more foreign people.

Our model also illuminates the phenomenon of media superstars. If people want to see the movies that everyone else is seeing so that they can talk about them, then they may use actors as coordinating devices to ensure that they see the 'right' movies. In this case, there will exist superstar actors whose viewership may be unrelated to their talent.

Finally, we show that cultural fads and fetishes may easily be generated through the externality linking cultural consumption choices with the utility generated from socialisation. This externality is most important when the consumption experiences are good candidates for conversation and socialisation, for example, movies, books, television shows.

In our model, equilibrium herd behaviour in cultural consumption choices results from an externality connecting these choices with the utility derived from socialising. Previous work in the social interactions literature tells us that these equilibria are not generally efficient with respect to private preferences. This means that cultural choices may not reflect the private preferences of any group or individual in the population, and that people may get

locked into equilibria of low-quality culture.

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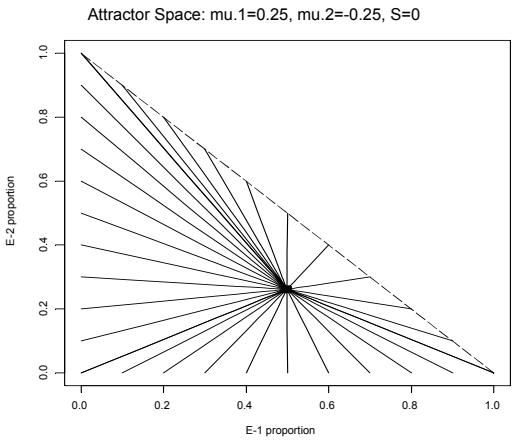



Figure 1

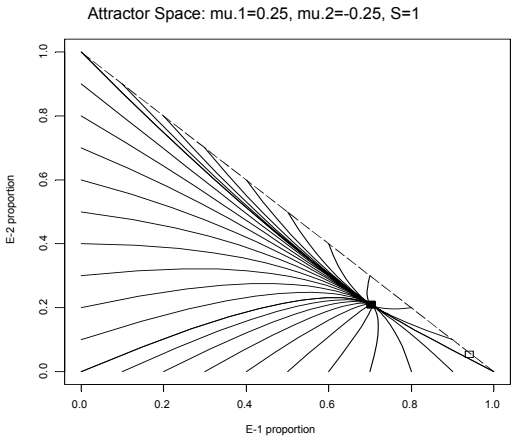
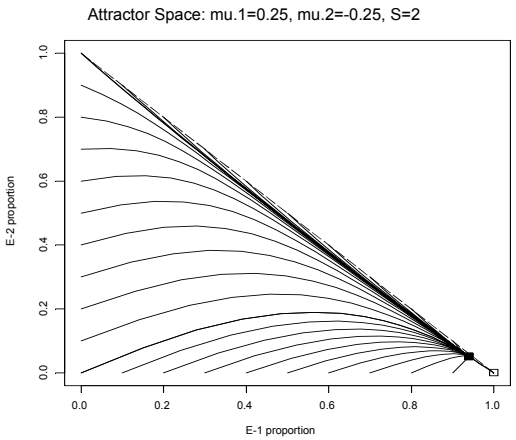



Figure 2

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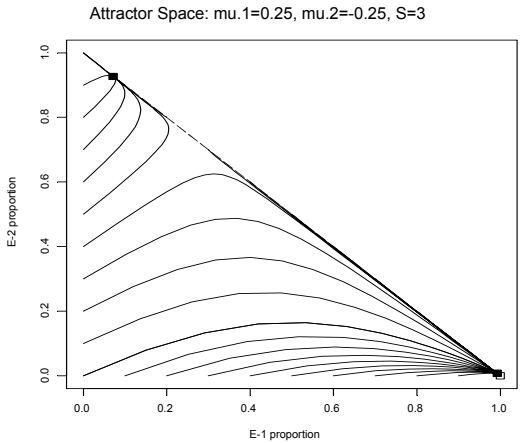


Figure 4

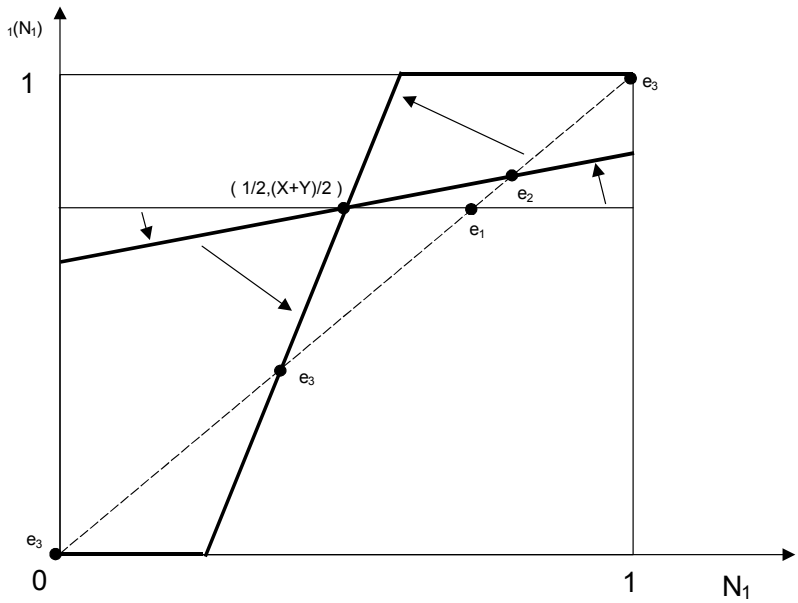


Figure 5

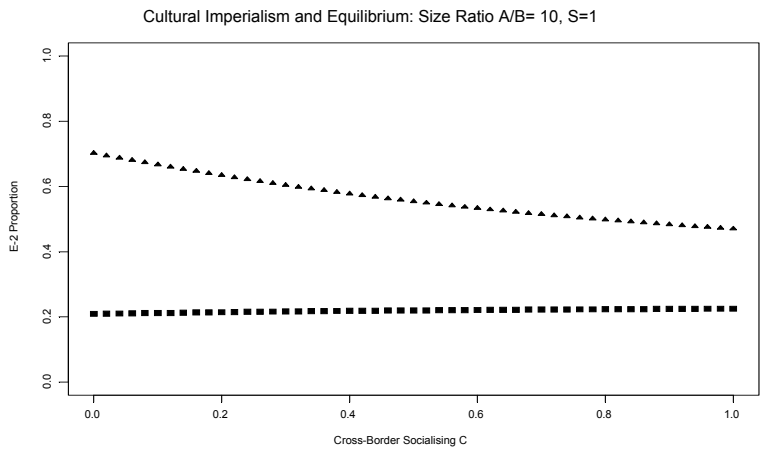


Figure 6

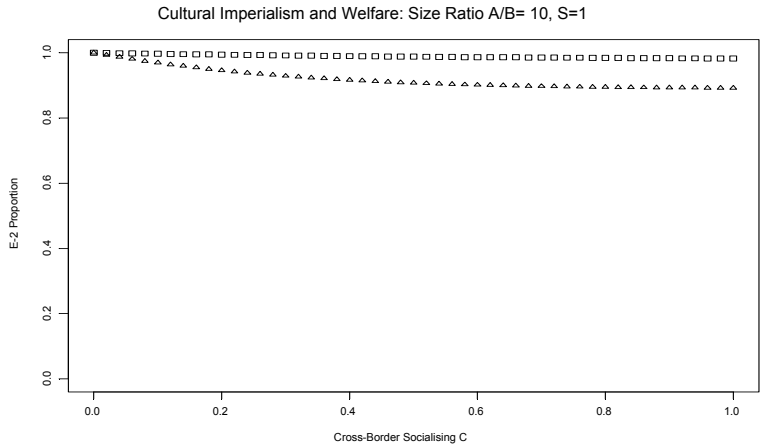


Figure 7

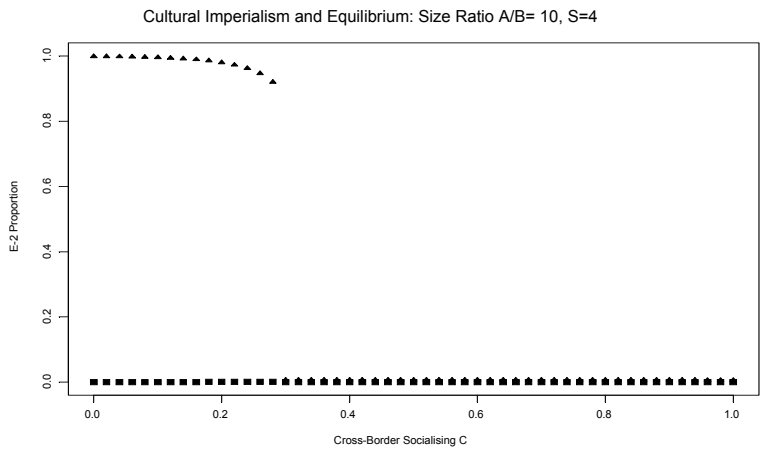


Figure 8

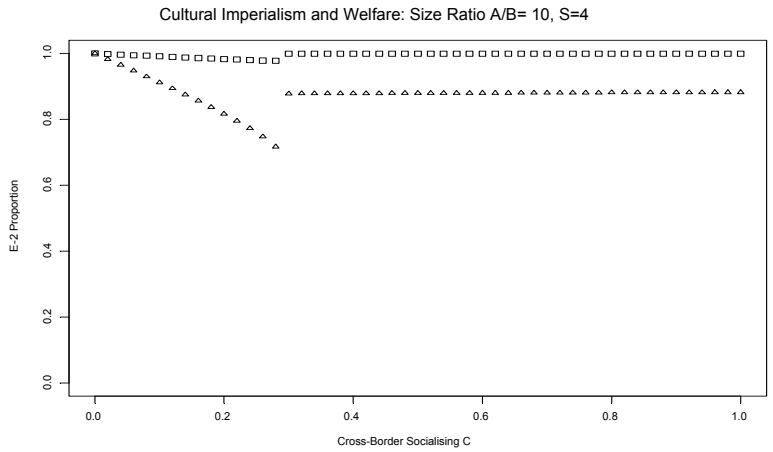


Figure 9