On the Cultural Transmission of Son Preference

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Abstract. This paper studies the cultural transmission of son preference. We first develop a Bisin-Verdier model where son-preferring and gender-neutral traits compete. We show that parental socialization efforts lead to a stable poly- morphic equilibrium where both attitudes coexist, explaining the trait's per- sistence. The long-run prevalence of son preference depends on the relative utility parents derive from transmitting their values. We then extend the analysis to a three-trait system including daughter preference, using an evo- lutionary game framework. This extension reveals a mechanism for cultural polarization. If intolerance between the extreme son and daughter prefer- ences is high relative to intolerance for the neutral view, the moderate trait is driven to extinction, polarizing the population. Conversely, sufficiently high intolerance for the neutral view allows all three traits to coexist. The model thus formalizes how cultural norms can either persist in heterogeneous states or collapse into polarized opposition.

Keywords: Son Preference, Cultural Transmission, Social Norm.

1. Introduction

Son preference, the deeply rooted cultural bias for male over female offspring, rep- resents one of the most significant and persistent forms of gender discrimination globally. Its consequences are starkly visible in the demographic landscapes of nu- merous countries, particularly across a vast region stretching from East Asia to the Middle East and North Africa (Das Gupta et al., 2003). The most alarming manifestation of this preference is the phenomenon of ”missing women,” a term coined by Amartya Sen to describe the shortfall of women in a population due to sex-selective abortion, female infanticide, and postnatal neglect of girls (Sen, 1990). Initial estimates placed this number at over 100 million; subsequent research sug- gests the figure continues to grow, with a cumulative total potentially exceeding 140 million (Sen, 2003). This demographic violence is starkly reflected in distorted sex ratios at birth (SRB). While the natural biological norm is approximately 105 boys for every 100 girls, SRBs in parts of China have soared to over 130, and regions in India, such as Punjab and Haryana, have recorded similar extremes (Guilmoto, 2009).

The societal fallout from these skewed demographics is profound and far-reaching. The resulting ”bride squeeze”—a severe shortage of women in the marriage mar- ket—creates intense competition among men, leading to delayed or foregone mar- riages for a significant portion of the male population. This has been linked to increased social friction, psychological distress, and higher rates of crime and vio- lence (Hesketh and Xing, 2011). Furthermore, these imbalances fuel the trafficking of women and children, both within and across national borders, creating a vul- nerable class of individuals subjected to forced marriage and exploitation (Edlund, 1999). This grim reality presents a challenging paradox: while economic develop- ment and modernization were widely expected to foster gender equality and erode such traditional biases, the advent and proliferation of modern medical technologies, such as prenatal ultrasound, have often exacerbated the problem by providing an efficient, low-cost tool for acting on son preference. This highlights that the roots of son preference are not merely economic but are deeply embedded in cultural value systems that are remarkably resilient to change.

To understand this persistence, it is crucial to examine the institutional and economic structures that have historically underpinned son preference. In many agrarian and patrilineal societies, sons have been essential for a range of functions: continuing the family lineage, performing ancestral rites, inheriting land and prop- erty, and providing physical labor. The historical importance of plow agriculture, which favored male physical strength, has been shown to be a deep determinant of contemporary gender roles and son preference (Alesina et al., 2013). Further- more, sons have traditionally served as the primary source of old-age security for parents in societies lacking formal pension systems (Caldwell, 1976). Conversely, daughters have often been perceived as a net economic cost, particularly in cultures with strong dowry traditions, where a daughter's marriage requires a substantial transfer of wealth from her family. While these economic rationales are powerful, their explanatory power is incomplete. For instance, son preference persists even in developed economies and among educated, urban families, suggesting that the preference has detached from its original economic logic and now operates as a self-sustaining cultural norm.

This observation necessitates a framework that can explicitly model the trans- mission of cultural values. Standard economic models, which often treat prefer- ences as stable and exogenous, are ill-equipped to analyze such dynamics. Cultural transmission theory, pioneered by Cavalli-Sforza and Feldman (1981) and Boyd and Richerson (1985) and formalized for economics by Bisin and Verdier (2001, 2011), provides the necessary analytical lens. This framework posits that individuals' preferences are shaped by a dual process: direct socialization by parents (vertical transmission) and indirect influence from the surrounding society (oblique trans-

mission). Parents, driven by an" imperfectly empathetic" altruism, actively seek to instill their own values in their children. A key insight from this literature is the concept of" cultural substitution": parents tend to exert more effort in social- izing their children when their own cultural trait is a minority view, a mechanism that helps minority traits survive. The power of this cultural-only transmission is starkly illustrated by studies of immigrant communities, which show the persistence of son preference among families living in Western countries where the economic and institutional incentives for it are entirely absent (e.g., Almond and Edlund, 2008).

This paper leverages this theoretical framework to make two primary contribu- tions. First, we apply the canonical Bisin-Verdier model to formalize the dynamic competition between two traits: son preference and gender neutrality. This allows us to move beyond descriptive accounts and model the conditions for cultural iner- tia. We demonstrate how the interplay between parental socialization and societal influence can lead to a stable polymorphic equilibrium where son preference persists at a non-trivial level, even if it is not a majority view. This formalizes the idea that economic development alone may be insufficient to eradicate the trait if the cultural motivation for its transmission remains strong.

Second, we extend the analysis to a richer, three-trait environment comprising son preference, daughter preference, and gender neutrality. The emergence of an active preference for daughters, not just neutrality, is a documented response in some contexts and introduces the possibility of cultural polarization. Using the evolutionary game framework of Montgomery (2010), we model the system's dy- namics as a function of a "cultural intolerance" matrix. This extension yields a novel and powerful result: the survival of the moderate, gender-neutral view is not guaranteed. We derive the precise conditions under which the neutral trait is driven to extinction, leaving a society polarized into two opposing camps of son- and daughter-preferring individuals. This finding contributes not only to the study of gender norms but also to the broader literature on opinion dynamics, showing how cultural debates can lead to societal bifurcation rather than convergence to a moderate consensus.

The remainder of the paper is structured as follows. Section 2 presents the two-trait model of cultural transmission. Section 3 analyzes its dynamics, and Section 4 derives the steady-state equilibria. Section 5 introduces the three-trait extension and analyzes the conditions for polarization versus coexistence. Finally, Section 6 concludes with a discussion of the model's implications for policy and our understanding of cultural change.

2. The Model

We consider an overlapping generations model where individuals live for two periods: childhood and adulthood. In adulthood, each individual has one child and makes a decision about socializing their child to a particular cultural trait related to gender preference. Time, t, is continuous.

2.1. Cultural Traits and Population

There are two mutually exclusive cultural traits an individual can possess:

• Trait s: Son preference. Individuals with this trait derive higher utility from having sons or, more abstractly, from having children who also adopt the son-preference trait.

• Trait n: No son preference (or gender-neutral preference). Individuals with this trait value children irrespective of gender or value transmitting this neu- trality.

Let $q(t) \in [0, 1]$ be the proportion of the adult population with trait s at time t. Consequently, $1 - q(t)$ is the proportion of parents with trait n.

2.2. Parental Utility and Socialization

Parents are ”imperfectly empathetic”: they care about their children's welfare but evaluate it through the lens of their own preferences. A parent of type $i \in \{s, n\}$ derives utility from their child adopting a particular cultural trait $k \in \{s, n\}$. Let V_{ik} be the utility a parent of type i perceives their child of type k to obtain.

Parents prefer their children to be like them, which implies:

$V_{ss} > V_{sn}$ and $V_{nn} > V_{ns}$

The utility premium a parent of type i gets if their child also becomes type i (compared to the child becoming type $j \neq i$) is denoted by $\Delta V_i = V_{ii} - V_{ij} > 0$. This premium represents the parent's motivation to socialize their child.

Parents can exert costly effort to directly socialize their child to their own trait (vertical transmission).

• A parent of type s chooses a socialization effort $d_s \in [0, 1]$.

• A parent of type n chooses a socialization effort $d_n \in [0, 1]$.

The cost of socialization is given by a function C(di), which is increasing and convex: $C'(d_i) > 0$, $C''(d_i) > 0$ for $d_i > 0$, and $C(0) = C'(0) = 0$.

If direct socialization by a parent of type i (which occurs with probability d_i) is not chosen, the child is socialized obliquely by society. An obliquely socialized child adopts a trait by picking a random role model from the population. Thus, they adopt trait s with probability q(t) and trait n with probability 1 - q(t).

2.3. Optimal Socialization Effort

Parents choose their socialization effort di to maximize their expected utility.

A parent of type s chooses ds to maximize:

$U_s = [d_s + (1 - d_s)q]V_{ss} + [(1 - d_s)(1 - q)]V_{sn} - C(d_s)$

The first-order condition (FOC) for an interior solution is found by differentiating with respect to ds:

$$\frac{\partial U_s}{\partial d_s} = (1-q)V_{ss} - (1-q)V_{sn} - C'(d_s) = 0$$

This simplifies to:

$$C'(d_s) = (1 - q)(V_{ss} - V_{sn}) = (1 - q)\Delta V_s \quad (1)$$

Similarly, a parent of type n chooses dn to maximize:

$U_n = [(1 - d_n)q]V_{ns} + [d_n + (1 - d_n)(1 - q)]V_{nn} - C(d_n)$

The FOC for an interior solution is:

$$\frac{\partial U_n}{\partial d_n} = -qV_{ns} + qV_{nn} - C'(d_n) = 0$$

This simplifies to:

$$C'(d_n) = q(V_{nn} - V_{ns}) = q\Delta V_n \quad (2)$$

From the FOCs, we can derive the optimal socialization efforts $d_s^*(q)$ and $d_n^*(q)$ as functions of the population state q. Since $C'' > 0$, the inverse of C' exists. Let $H = (C')^{-1}$. Then:

$d_s^*(q) = H((1 - q)\Delta V_s)$ and $d_n^*(q) = H(q\Delta V_n)$

Note that $\frac{\partial d_s^*}{\partial q} < 0$ and $\frac{\partial d_n^*}{\partial q} > 0$. This property is known as cultural substitution: parents of a given type socialize their children more intensely when their trait is less common in the population.

2.4. Dynamics of Cultural Transmission

The evolution of the proportion of individuals with son preference, q(t), is governed by the inflows and outflows from the sub-population of type s.

The probability that a child of a type s parent becomes type n is $P_{sn} = (1 - d_s)(1 - q)$. The outflow from the type-s population is $q \cdot Psn$. The probability that a child of a type n parent becomes type s is $P_{ns} = (1 - d_n)q$. The inflow to the type-s population is $(1 - q) \cdot P_{ns}$.

The law of motion for q(t) in continuous time is given by the difference between inflows and outflows:

$\dot{q} = (1 - q)P_{ns} - qP_{sn}$

$= (1 - q)[(1 - d_n)q] - q[(1 - d_s)(1 - q)]$

$= q(1 - q)[(1 - d_n) - (1 - d_s)]$

$= q(1 - q)(d_s - d_n)$

Substituting the optimal efforts $d_s^*(q)$ and $d_n^*(q)$, the full dynamic equation is:

$$\dot{q} = q(1 - q)[H((1 - q)\Delta V_s) - H(q\Delta V_n)] \quad (3)$$

3. Main Results

A steady state q^* is a value of q where $\dot{q} = 0$. From Equation (3), there are three possibilities for a steady state:

1. $q^* = 0$ (son preference disappears)
2. $q^* = 1$ (son preference becomes universal)
3. $q^* \in (0, 1)$ such that $d_s(q^*) = d_n(q^*)$ (polymorphic equilibrium)

We assume throughout that parents of both types are motivated to transmit their preferences, i.e., $\Delta V_s > 0$ and $\Delta V_n > 0$.

Proposition 1 (Instability of Homogeneous States). If $\Delta V_s > 0$ and $\Delta V_n > 0$, the homogeneous steady states $q^* = 0$ and $q^* = 1$ are both unstable.

Proof. We analyze the stability by checking the sign of $\dot{q}$ near the steady states.

1. Stability of $q^* = 0$**:** Consider $q \to 0+$. The socialization efforts are:

• $d_s(q) \to d_s(0) = H(\Delta V_s)$. Since $\Delta V_s > 0$ and H is increasing, $d_s(0) > 0$.

• $d_n(q) \to d_n(0) = H(0) = 0$.

For q small and positive, $\dot{q} \approx q(1)[d_s(0) - d_n(0)] = q \cdot d_s(0)$. Since $d_s(0) > 0$, we have $\dot{q} > 0$. The population share q moves away from 0. Thus, $q^* = 0$ is an unstable steady state.

2. Stability of $q^* = 1$: Consider $q \to 1-$. Let $\epsilon = 1 - q \to 0^+$. The socialization efforts are:

• $d_s(q) \to d_s(1) = H(0) = 0$.

• $d_n(q) \to d_n(1) = H(\Delta V_n)$. Since $\Delta V_n > 0$, $d_n(1) > 0$.

For q close to 1, $\dot{q} \approx (1)\epsilon[d_s(1) - d_n(1)] = \epsilon \cdot (-d_n(1))$. Since $d_n(1) > 0$, we have $\dot{q} < 0$. The population share q moves away from 1 (i.e., decreases). Thus, $q^* = 1$ is an unstable steady state.

Since both boundary steady states are unstable, the system cannot converge to a state where one preference type dominates entirely.

The instability of the homogeneous states leads directly to our second result concerning the existence of an interior, or polymorphic, equilibrium.

Proposition 2 (Existence of a Stable Polymorphic Equilibrium). If $\Delta V_s > 0$ and $\Delta V_n > 0$, there exists at least one stable interior steady state $q^* \in (0, 1)$ where son preference and gender-neutral preference coexist. This steady state is characterized by the condition:

$$d_s(q^*) = d_n(q^*) \Longleftrightarrow H((1 - q^*)\Delta V_s) = H(q^* \Delta V_n) \quad (4)$$

Furthermore, if the cost function is quadratic, $C(d) = kd^2/2$, this interior steady state is unique and globally stable.

Proof. Existence: The function f(q) = q. is continuous in q. As shown in Propo- sition 1, f(q) > 0 for q near 0 and f(q) < 0 for q near 1. By the Intermediate Value Theorem, there must be at least one $q^* \in (0, 1)$ such that $f(q^*) = 0$. Since $q^* \in (0, 1)$, this implies $d_s(q^*) - d_n(q^*) = 0$.

Stability and Uniqueness (with quadratic cost): Let's assume a specific, common form for the cost function: $C(d) = \frac{k}{2}d^2$, where $k > 0$. Then $C'(d) = kd$, and its inverse is $H(x) = x/k$. The dynamic equation becomes:

$$\dot{q} = q(1-q)\left[\frac{(1-q)\Delta V_s}{k} - \frac{q\Delta V_n}{k}\right] = \frac{q(1-q)}{k}[\Delta V_s - q(\Delta V_s + \Delta V_n)]$$

The interior steady state q* is found by setting the term in brackets to zero:

$\Delta V_s - q^* (\Delta V_s + \Delta V_n) = 0$

Solving for q^* yields a unique interior solution:

$$q^* = \frac{\Delta V_s}{\Delta V_s + \Delta V_n} \quad (5)$$

Since $\Delta V_s, \Delta V_n > 0$, it is clear that $0 < q^* < 1$. To check for stability, we can analyze the sign of q. around q^*. Let $g(q) = \Delta V_s - q(\Delta V_s + \Delta V_n)$.

- If $q < q^*$, then $q(\Delta V_s + \Delta V_n) < \Delta V_s$, so $g(q) > 0$ and q. > 0.
- If $q > q^*$, then $q(\Delta V_s + \Delta V_n) > \Delta V_s$, so $g(q) < 0$ and q. < 0.

The system always moves towards q^*, so this unique interior steady state is globally stable.

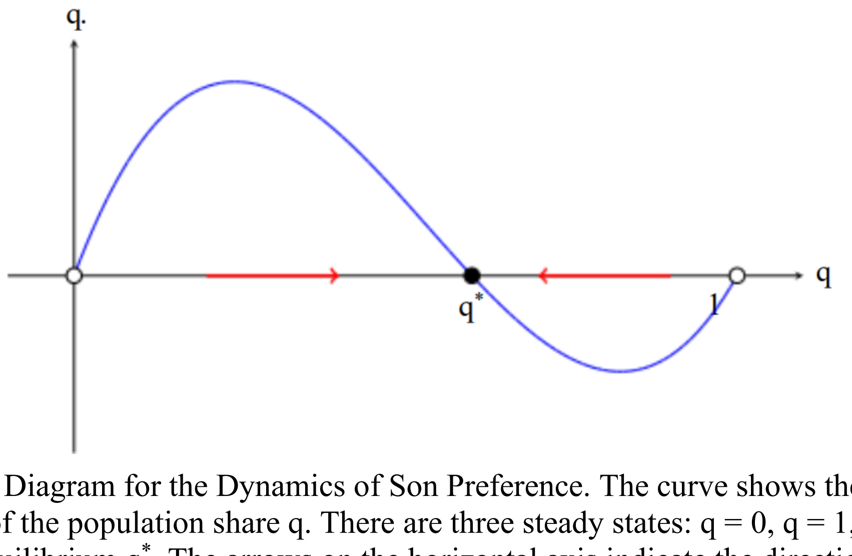

Figure 1. Phase Diagram for the Dynamics of Son Preference. The curve shows the rate of change q. as a function of the population share q. There are three steady states: q = 0, q = 1, and the interior polymorphic equilibrium q^*. The arrows on the horizontal axis indicate the direction of evolution. Since q. > 0 for $q \in (0, q^*)$ and q. < 0 for $q \in (q^*, 1)$, the homogeneous states q = 0 and q = 1 are unstable (open circles), while the interior state q^* is stable (filled circle).

3.1. Discussions

This model provides several key insights into the cultural transmission of son pref- erence. First, the model demonstrates how cultural traits like son preference can persist even if they are not universally adopted. The existence of a stable polymor- phic equilibrium ($0 < q^* < 1$) means that both son-preferring and gender-neutral attitudes can coexist indefinitely in a society. This occurs because of cultural sub- stitution: as a trait becomes rarer, its adherents are more motivated to transmit it, preventing it from disappearing entirely. This dynamic explains the stubborn persistence of minority cultural traits in many contexts.

Second, the long-run prevalence of son preference, q^*, is determined by the relative motivation of parents to instill their values. As shown in Equation (5), q^* is increasing in ΔV_s and decreasing in ΔV_n. The term ΔV_s represents the net utility gain for a son-preferring parent if their child also adopts son preference. This value is likely high in societies where sons provide old-age security (Caldwell, 1976), continue the family lineage, perform essential religious rites, or bring in brideprice, while daughters are seen as an economic burden due to dowry systems (Edlund, 1999). Conversely, ΔV_n represents the motivation of gender-neutral parents. This value is influenced by factors such as exposure to modern education and global norms emphasizing gender equality, increased female labor force participation, legal reforms granting women equal rights, and a simple desire to see daughters achieve their full potential.

Third, the model offers clear policy implications. To reduce the prevalence of son preference (q^*), policies must aim to alter the underlying parental motivations. This can be achieved in two ways:

1. Reducing ΔV_s: Policies that improve the economic and social value of daugh- ters can directly reduce the perceived benefit of son preference. Examples in- clude ensuring female inheritance rights, promoting female employment, pro- viding conditional cash transfers for girls' education (like the "Beti Bachao, Beti Padhao" initiative in India), and establishing robust public pension sys- tems to reduce reliance on sons for old-age support.

2. Increasing ΔV_n: Policies that strengthen the value of gender neutrality can also shift the equilibrium. Education and media campaigns that promote gen- der equality, celebrate the achievements of women, and challenge traditional gender roles can increase the psychological benefit parents derive from raising children with gender-neutral values.

Furthermore, policies that increase the cost of acting on son preference, such as stricter enforcement of laws against prenatal sex determination, can be interpreted as increasing the cost of socialization $C(d_s)$, thereby discouraging the transmission of the trait.

Finally, the model helps explain why cultural change is often slow. Even as economic conditions change (e.g., through modernization), deeply ingrained social norms can keep Δ_{V_s} high. This intergenerational transmission inertia means that son preference can persist for long periods, even if its original economic justifications have weakened.

4. An Extension

We now extend the model to consider a richer set of preferences: son preference (s), gender-neutral (n), and daughter preference (d). This allows us to investigate phenomena such as cultural polarization. To analyze this three-trait system, we adopt the evolutionary game framework of Montgomery (2010), where the dynamics are driven by a matrix of" cultural intolerance."

4.1. The Framework

Let the population state be given by the vector $q = (q_s, q_n, q_d)$, where qi is the share of the population with trait $i \in \{s, n, d\}$, and $\varepsilon\ q_i = 1$. The state space is the 2- simplex. Following Montgomery (2010), we define a matrix of cultural intolerance, Δ, where the element Δ_{ij} represents the disutility or "intolerance" a parent of type i feels when their child adopts trait j. We assume $\Delta_{ii} = 0$ for all i. The core assumption for this extension is that intolerance is greater for more "distant" cultural traits. We can order the preferences along a spectrum: son preference ↔ neutral ↔ daughter preference. This leads to the following structure for the intolerance matrix:

• The intolerance between adjacent traits (s-n and n-d) is symmetric and given by a parameter $\delta_1 > 0$.

• The intolerance between the most distant traits (s-d) is symmetric and given by a parameter $\delta_2 > 0$.

• The central assumption is that intolerance for the extreme opposite view is greater than for the adjacent neutral view: $\delta_2 > \delta_1$.

The cultural intolerance matrix Δ is therefore:

$$\Delta = \begin{pmatrix} \Delta_{ss} & \Delta_{sn} & \Delta_{sd} \\ \Delta_{ns} & \Delta_{nn} & \Delta_{nd} \\ \Delta_{ds} & \Delta_{dn} & \Delta_{dd} \end{pmatrix} = \begin{pmatrix} 0 & \delta_1 & \delta_2 \\ \delta_1 & 0 & \delta_1 \\ \delta_2 & \delta_1 & 0 \end{pmatrix}$$

The dynamics of the system are described by the replicator equations:

$$q_{\cdot i} = q_i (f_i - f) \quad (6)$$

Where fi is the ”fitness” of trait i, defined as its average intolerance towards other traits, $f_i = \Sigma_{j \neq i} q_j \Delta_{ij}$, and $f = \Sigma_k q_k f_k$ is the average fitness in the population.

4.2. Analysis of Dynamics and Steady States

The fitness of each type is:

$f_s = q_n \delta_1 + q_d \delta_2$

$f_n = q_s \delta_1 + q_d \delta_1 = (q_s + q_d)\delta_1$

$f_d = q_s \delta_2 + q_n \delta_1$

The long-run outcome of this system depends crucially on the relative magni- tudes of the intolerance parameters.

Proposition 3 (Polarization vs. Coexistence). The long-run state of the population depends on the relationship between δ_1 and δ_2:

1. Coexistence: If intolerance for the neutral type is relatively high, specifically if $\delta_1 > \frac{1}{2}\delta_2$, then all boundary equilibria are unstable. The system converges to a unique, stable interior equilibrium (q^*_s, q^*_n, q^*_d) where all three traits coexist.

By symmetry, this equilibrium is (1/4, 1/2, 1/4).

2. Polarization: If intolerance for the neutral type is relatively low, specifically if $\delta_1 < \frac{1}{2}\delta_2$, the system converges to a stable equilibrium at (q^*_s, q^*_n, q^*_d) = (1/2, 0, 1/2). In this state, the moderate, gender-neutral trait is driven to extinction, and the population becomes polarized between son-preferring and daughter-preferring factions.

Proof. We analyze the stability of the boundary equilibria. The vertices (homoge- neous states) are always unstable because any missing trait has a positive invasion fitness. We focus on the stability of the two-trait equilibria on the edges of the simplex.

1. Stability of the Son-Daughter Edge: Consider the edge where $q_n = 0$. The dynamics between s and d are governed by intolerances $\Delta_{sd} = \delta_2$ and $\Delta_{ds} = \delta_2$. This leads to a stable two-trait equilibrium at $(q_s, q_d) = (1/2, 1/2)$. The full population state is $q^E = (1/2, 0, 1/2)$.

We must check if this equilibrium is stable against invasion by the neutral trait (n). The neutral trait can invade if its fitness at q^E is greater than the average fitness at q^E. At $q^E = (1/2, 0, 1/2)$:

• The fitness of the neutral type is $f_n (q_E) = (q_s + q_d)\delta_1 = (1/2 + 1/2)\delta_1 = \delta_1$.

• The fitnesses of the existing types are $f_s(q^E) = q_d\delta_2 = \frac{1}{2}\delta_2$ and $f_d(q^E) =$ qs $\delta_2 = \frac{1}{2}\delta_2$.

• The average fitness is $\bar{f}(q^E) = q_s f_s + q_d f_d = \frac{1}{2}(\frac{1}{2}\delta_2) + \frac{1}{2}(\frac{1}{2}\delta_2) = \frac{1}{2}\delta_2$.

The neutral trait can invade if fn $(q^E) > \bar{f}(q^E)$, which means $\delta_1 > \frac{1}{2}\delta_2$. If this condition holds, the son-daughter equilibrium is unstable.

2. Stability of Other Edges: By a similar logic, the son-neutral edge has an equilibrium at (1/2, 1/2, 0). This can be invaded by the daughter-preference trait if $f_d > \bar{f}$. At this point, $f_d = q_s \delta_2 + q_n \delta_1 = \frac{1}{2}\delta_2 + \frac{1}{2}\delta_1$, while $\bar{f} = \frac{1}{2}\delta_1$.

Since $\delta_2 > 0$, $f_d > f$ is always true. Thus, the son-neutral and (by symmetry) daughter-neutral edge equilibria are always unstable.

3. Conclusion: If $\delta_1 > \frac{1}{2}\delta_2$, all boundary equilibria (vertices and edges) are unstable. By the properties of replicator dynamics on the simplex, the system must converge to a stable interior equilibrium where all three traits coexist.

If $\delta_1 < \frac{1}{2}\delta_2$, the son-daughter edge equilibrium at (1/2, 0, 1/2) is stable to invasion by the neutral trait. Since the other edge equilibria are unstable, the system will converge to this state of polarization. The case $\delta_1 = \frac{1}{2}\delta_2$ leads to neutral stability.

This extension yields a fascinating and non-obvious result: the survival of the moderate, gender-neutral preference depends on it being sufficiently ”intolerant” of (or distinct from) the extreme positions.

When $\delta_1 < \frac{1}{2}\delta_2$, intolerance between the extremes (s and d) is very high com- pared to the intolerance involving the neutral type. In this scenario, the neutral type becomes an easy target for conversion by both extreme factions, who find it ”cheaper” to convert neutrals than to fight each other. This dynamic drives the moderate view to extinction and leads to a society polarized into two opposing camps. This could represent a society where gender issues become a central, divisive cultural battleground.

Conversely, when $\delta_1 > \frac{1}{2}\delta_2$, the neutral position is more resilient. The intense conflict between the son-preferring and daughter-preferring factions (high δ_2) ef- fectively ”protects” the neutral type. The neutral type can successfully invade a polarized state because it suffers less from the high intolerance that the extremes direct at each other. This allows a stable three-part society to emerge, where a significant portion of the population maintains a moderate, gender-neutral stance, acting as a buffer between the extremes.

This result suggests that the persistence of moderate cultural views may para- doxically depend on maintaining a clear cultural distinction from extreme positions. It provides a formal mechanism for understanding how a society might either main- tain a diverse spectrum of views on a contentious issue like gender preference or collapse into a polarized state.

5. Conclusion

This paper has developed a formal model of the cultural transmission of son prefer- ence to understand its persistence and the dynamics of its potential decline. Using the canonical framework of Bisin and Verdier (2001), our two-trait model demon- strates that the interplay between parental socialization and societal influence can lead to a stable polymorphic equilibrium. In this state, both son-preferring and gender-neutral attitudes coexist. This occurs because of cultural substitution: as a trait becomes rarer, its adherents are more motivated to transmit it, preventing its complete erosion. The model highlights that the long-run prevalence of son prefer- ence is a function of the relative net benefits parents perceive in transmitting their values, which are shaped by economic incentives, institutional structures, and social norms.

Furthermore, we extended the model to a three-trait setting—son preference, daughter preference, and gender neutrality—to explore the potential for cultural polarization. This extension, based on the evolutionary framework of Montgomery (2010), yields a key insight: the survival of the moderate, gender-neutral view is not guaranteed. If the cultural intolerance between the extreme positions is sufficiently high relative to the intolerance for the moderate view, the population becomes polarized. The neutral trait is driven to extinction, leaving a society divided between son- and daughter-preferring factions. This result suggests a formal mechanism for the bifurcation of public opinion on contentious social issues and provides a cautionary tale: simply opposing a traditional norm may not lead to a moderate consensus but could instead foster a new, opposing extreme.

From a policy perspective, our findings suggest that interventions must be multi- faceted. To reduce son preference, policies should aim to decrease its perceived benefits (e.g., by ensuring female property rights and strengthening old-age so- cial security) while simultaneously increasing the value of gender neutrality (e.g., through education and media campaigns). The polarization result adds another layer of complexity, suggesting that the framing of such campaigns is crucial to avoid inadvertently fueling a cultural backlash.

Further extensions could incorporate assortative mating, explicitly model the economic returns to different traits, or empirically estimate the structure of the cultural intolerance matrix. Nevertheless, the framework presented here offers a solid and tractable foundation for thinking formally about the complex, and often slow-moving, dynamics of a critical socio-economic issue.

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