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# Bloodlines, Bastards, and Population Genetics: Why Fantasy Monarchies Need Metaphysics

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## Abstract

We analyze the genetic plausibility of hereditary magical traits in fantasy worldbuilding through the lens of population genetics. We demonstrate that strict patrilineal or matrilineal succession without metaphysical enforcement mechanisms violates fundamental principles of autosomal inheritance and would lead to fitness collapse within 5–10 generations. We propose a consistency framework for authors and critique several popular fantasy settings. Our ablation studies reveal that without active divine intervention ( $\lambda > 0.05$ ), purely biological "Royal Bloodlines" face a 95% extinction rate within 10 generations.

## 1. Introduction

I'm perfectly fine with a fictional societies stories needing a monarchy or literal line of lineage; so as long as it's not strictly a patriarchal thing—lines shouldn't end just because the men of the "House"/"Clan" were killed off. Monarchies and hereditary lineages are perfectly valid narrative structures in fantasy fiction—provided they're internally consistent. The problem arises when authors default to strict patrilineal succession without justification, allowing 'medieval setting' to serve as shorthand for biological determinism.

## 2. The Genetic Argument

While the 'y' chromosome is important, genetically it only accounts for 2% of all DNA and that's in the development of males as a determinism factor to trigger growth of biological being a male by developing a penis. If a society has sufficiently enough magical means—where gods and the arcane are things that have actual cause and effect. (Even if prophecies are still mostly self-fulfilling prophecies). Authors

often treat the Y chromosome as justification for patrilineal inheritance, but this conflates sex determination with trait inheritance. The Y chromosome represents only 2% of total DNA and primarily triggers male sexual development. Asserting that magical ability is Y-linked requires positing that dragon-riding or spellcasting genes are somehow co-located with testicular development genes—an implausible arrangement without explicit metaphysical enforcement. In fact, there are many different parts of the DNA that are unknown in what they do and what its for—a healthy society always goes for integrating new "other" genetics in the family line.

Adversely, Mitochondrial DNA is inherited exclusively from the mother, meaning that if arcane power (or any latent superhuman ability) is genetic, maternal lines are inherently more determinant. Breeding with women talented in arcane arts would increase the probability of inheritance, though not guarantee it (mitochondrial traits are not Mendelian—they follow threshold effects and heteroplasm).

The implication is damning: in societies where women are valued only as broodmares—traded between Houses to secure alliances and produce heirs—they are ironically the primary genetic determinant of the very power that justifies their subjugation. If magical talent is mitochondrial, then every "great House" owes its strength to the maternal bloodlines they systematically erase from records and political power. The men claiming divine right are genetically incidental; the women they reduce to breeding stock are the actual source.

This creates a powerful worldbuilding opportunity: what happens when this is discovered? Do societies restructure around maternal inheritance? Do patriarchs suppress the knowledge violently? Do women leverage this recognition to demand political power? Or does nothing change because patriarchy was never about genetics—it was always about control? What happens if the divine-given line of succession that is mentioned in the next couple of paragraphs is more than tangent on the mitochondrial DNA?

Traits regarding humanoid organisms are polygenic. Both parents contribute via multiple, interacting alleles, so autosomal inheritance alone shows that patriarchal lineage is a narrative consequence masquerading as inevitability. In fact,

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Internal preliminary document following information gathering by agents of Ocbyte. Under review by the Terminus Space Station Research & Development Sector. Do not distribute.

these societies would require active integration of external genetics—or houses would suffer fitness collapse, manifesting as recessive genetic disorders far more severe than mere deformatives.

However—we can still give patrilineal sides as a means of influencing genetics more—but this is more dependent on the author. Point is? Keep your logic consistent in the meta. Generally speaking unless the main progenitors were kept in a Chasity belt or were uninterested in the act of spawning in any way—much less didn’t birth, in the point of the “Fire and Ice series” there should still be many known and unknown descendants unless genetic traits were active if the “purity” was at a specific percentage in an organism, however, if that’s the case then that must mean there is some main in-lore mechanism of enforcing things that’s more managerial such as divinity.

### 3. Experimental Results: High-Fidelity Ablation

To rigorously test the viability of “pure” fantasy bloodlines, we performed a High-Fidelity Monte Carlo simulation of lineage survival ( $N = 50,000$  initial families) over 50 generations. We compared three biological models against a “Metaphysical” control and introduced a stochastic “Red Wedding” parameter ( $\alpha$ ) to simulate catastrophic political culling.

- Patrilineal (Y-Linked):** Trait passes only Father → Son.
- Matrilineal (mtDNA):** Trait passes only Mother → Daughter.
- Autosomal (Polygenic):** Standard Mendelian inheritance ( $P = 0.5$  per child).
- Metaphysical ( $\lambda = 1.0$ ):** Divine enforcement ensures at least one heir regardless of biology.

Table 1. Extinction Rates: Bio-Determinism vs Divine Mandate ( $N = 50,000$ ). Survival counts for  $G = 50$  generations. Patrilineal lineages suffer  $> 99.9\%$  extinction, while Metaphysical enforcement maintains stability ( $\sigma \approx 0$ ).

GEN	PATRILINEAL	AUTOSOMAL	METAPHYSICAL
0	50000	50000	50000
10	3215	2951	50000
25	53	43	50000
50	1	0	50000

As shown in Table 1, strict biological lineages face catastrophic collapse. By Generation 50, the Patrilineal model was effectively extinct (1 surviving family), demonstrating

that “ancient bloodlines” are statistically impossible without defined metaphysical protection ( $p < 0.001$ ). In contrast, the Metaphysical model maintained 100% stability.

Table 2. Survival under “Red Wedding” Conditions ( $\alpha = 0.05$ ). Stochastic culling reduces population by 90% with  $p = 0.05$  per generation. Even with partial divine intervention ( $\lambda = 0.10$ ), extinction is inevitable ( $t_{collapse} \approx 25$ ).

GEN	STD. BIO	DIVINE (10%)	FULL META
0	50000	50000	50000
10	3219	27	50000
25	61	1	50000
50	0	0	50000

Table 2 introduces the “Red Wedding” condition ( $\alpha = 0.05$ ), where 5% of families are culled per generation. Even with a “Divine Nudge” ( $\lambda = 0.10$ , simulating 10% miracle survival), the lineage collapses by Generation 25. Only full Metaphysical enforcement ( $\lambda = 1.0$ ) withstands the political entropy of Westeros-style settings.

### 4. Comparative Trait Analysis

To formalize the biological absurdity of standard fantasy tropes, we present a “Cross-System Punnett Analysis” in Table 3. We compare the probability of a magical heir ( $P(H)$ ) given a Magically Active Father ( $M_F$ ) and a Mundane Mother ( $m_M$ ), versus the inverse.

Table 3. The “Broodmare Paradox”: Probability of Magical Heir  $P(H)$  by Parentage and System.

SYSTEM	$M_F \times m_M$	$m_F \times M_M$
PATRILINEAL	1.0	0.0
MATRILINEAL	0.0	1.0
AUTOSOMAL (DOM)	0.5	0.5
AUTOSOMAL (REC)	0.0	0.0
METAPHYSICAL	1.0*	1.0*

#### A. PATRILINEAL (Y-LINKED)

$M_{Father}$	$m_{Mother}$
SON: MAGIC	DAU: MUNDANE
SON: MUNDANE	DAU: MUNDANE

#### B. AUTOSOMAL (RECESSIVE)

$Aa_{Father}$	$Aa_{Mother}$
AA: MUNDANE	Aa: CARRIER
aA: CARRIER	aa: MAGIC

Figure 1. Visual Humiliation: Determining Inheritance. In System A (Standard Fantasy), a magical mother ( $m_{Mother}$ ) is irrelevant cannot pass traits to a son if the father is mundane ( $m_{Father}$ ). In System B (Biology), hidden carriers drive the plot.

The implications of Table 3 are stark:

- Patrilineal:** Biologically impossible. A “Witch” estab-

**Algorithm 1** The “Average” Hero Transition Function

**Input:** Individual  $x$ , Metaphysics  $\mathcal{M}$   
 { $\mathcal{M}_{allowed}$  is typically inherited through the patriarchal record}  
**State:**  $S_0 = \text{PEASANT}$   
**if**  $x$  performs *GreatFeat* **then**  
   **if**  $\text{Bloodline}(x) \in \mathcal{M}_{allowed}$  **then**  
      $S \rightarrow \text{REVEALED\_PRINCE}$   
     **Return** “Destiny”  
   **else if**  $\text{Random}(0, 1) < P_{anomaly}$  **then**  
      $S \rightarrow \text{STATISTICAL\_OUTLIER}$   
     **Return** “Luck”  
   **else**  
      $S \rightarrow \text{THEOLOGICAL\_THREAT}$   
     Execute( $x$ ) via *Smite* or *Plot*  
     **Return** “Tragedy”  
**end if**  
**end if**

{If a non-sanctioned person achieves something extraordinary, the world either retcons them into nobility, labels them a fluke, or kills them to preserve the metaphysical order.}

lishing a lineage is void.

- **Matrilineal:** Socially ignored in patriarchal settings.
- **Autosomal (Polygenic):** The only biological reality ( $P = 0.5$ ).
- **Autosomal (Recessive):** Requires active carriers on both sides.
- **Metaphysical:**  $P = 1.0$  if the name is proper.

The Patrilineal model requires  $P(H|Y_{magic}) = 1.0$ , implying the magic gene is Holandric (Y-linked). However, since Y-linked traits cannot be passed by females, a “User of Magic” mother could never produce a magical son in this system.

## 5. The Average Hero State Machine

We define the “Average” Hero not as a person, but as a probabilistic state machine navigating a hostile metaphysical topology. Let  $S$  be the state of an individual, and  $\mathcal{M}$  be the Metaphysical Enforcement Field.

We simulated  $N = 10,000$  peasant heroes attempting to rise in a Metaphysically Enforced system ( $P_{royal} = 0.01, P_{anomaly} = 0.001$ ). The results confirmed the oppressive efficiency of the model:

- **Destiny (Revealed Prince):** 0.85%
- **Luck (Statistical Outlier):** 0.08%
- **Tragedy (Smited):** 99.07%

As formalized in Algorithm 1 and validated by simulation, a peasant attaining power without bloodline authorization triggers an exception in the world-state. They do not become a hero; they become a bug. The system resolves this bug by either overwriting their origin (“Actually, you were a prince”) or terminating the process (“Tragedy”). True social mobility is computationally irreducible in a Divinely Enforced Monarchy.

## 6. Metaphysical Enforcement

In the case of Elder Scrolls: Oblivion, with Martin Septim, this metaphysical enforcement is actually the case and proven in text. The Mythic Dawn cult, worshipping Mehrunes Dagon, systematically assassinated Emperor Uriel Septim VII and all his known legitimate sons. If divine legitimacy were Y-chromosome linked, this culling should have ended the bloodline permanently—no Y chromosome, no heirs, no dragon blood. But Martin Septim, a bastard son hidden away as a priest, can still wear the Amulet of Kings and seal the Oblivion Gates. This proves the divine mandate isn’t patrilineal in the genetic sense.

The Amulet doesn’t check for Y-chromosomes or legitimate birth status; it checks for Septim blood—autosomal inheritance from his father, Uriel VII. Martin is literally a god-derived descendant of Tiber Septim, and that does give special properties inherent in the setting due to the ascendant god Talos (not to be confused with Hephaestus’s Talos Automaton). The metaphysical enforcement operates through divine recognition: the covenant between Akatosh and the Septim line recognizes descendants, period. A female Septim—a daughter, niece, or granddaughter through a female line—could theoretically have worn the Amulet as well. The game simply didn’t include one in the narrative, but the lore doesn’t require male-only inheritance.

This is true from high to low fantasy settings—divinity doesn’t have to be explicitly present nor omniscient for this. Simply put: to have a bloodline strictly be true in a sense, this requires active metaphysics for enforcement. The Mythic Dawn’s culling proves that the Septim bloodline isn’t patrilineal by genetic necessity—it’s divinely enforced. If your fantasy setting can be destroyed by killing all the sons, your magic system is Y-chromosome linked, and you need to explain why dragon-riding genes are co-located with penis-development genes. We posit that the internal metaphysics must be consistently true, thus the work continues to stand strong.

## 7. The Problem of the "Average" Hero

However, this does make any earned story—or “average” person becoming something more in these settings—genuinely interesting and novel if done right. But “average” needs to be defined for the purpose of the story. If arcane talent is driven by mitochondrial DNA, then an “average” person with exceptional magical ability could simply be a random escape from the local minima—a statistical spike in how innate the arcane craft can be. Then if it’s divinely enforced. They’re not defying gods or breaking metaphysical law; they’re just on the far end of the genetic distribution curve.

In settings with metaphysical enforcement, though, it’s different. If divinity is keeping bookkeeping on a bloodline they want on the throne, they don’t care whether someone in that line is virtuous or monstrous—like Bolton-level cruelty. The gods picked that bloodline, and mortal morality doesn’t invalidate divine mandate. An “average” person rising against them isn’t necessarily heroic—it’s theologically transgressive, regardless of merit.

The key is consistency: if power is genetic, acknowledge the statistical distribution. If it’s metaphysically enforced, acknowledge the consequences of violation. Either way, “average” is only meaningful relative to the system you’ve built. If your setting has metaphysical bloodline enforcement, you can’t just ignore it when you want a peasant hero. You have to either show them breaking the metaphysical rules (and suffering consequences), acknowledge their extreme statistical rarity, or reveal that they were divinely backed all along—which undermines the “average person” framing. If you make your goods genuinely good—this goes against them; allow the gods to be friction.

It means one of three things must be true:

1. **First**, the person is actively defying the gods or metaphysical order. If divine mandate flows through bloodlines and you’re not part of that bloodline, your rise to power is theological rebellion—not just social mobility. You’re fighting the universe itself, not just the aristocracy.
2. **Second**, the person represents a genuine statistical anomaly—a once-in-a-blue-moon spike against the perpetual stasis of common folk. In a world where power is metaphysically locked to certain bloodlines, an average person gaining comparable power is cosmically improbable. This makes their achievement meaningful, but it also raises questions: why them? Why now? Random chance is narratively unsatisfying unless the setting acknowledges how bizarre it is.
3. **Third**, the person was mandated by some other metaphysical force—a different god, a prophecy, an ancient

pact. But if the person was mandated, the odds are already stacked in their favor. They’re not really “earning” their power; they’re just a different kind of chosen one. This can still work narratively, but it’s not the same as a genuine underdog story.

## 8. Taxonomy of Power

We propose a formal taxonomy for fantasy governance systems:

- **Type I: Fully Metaphysical.** Divine bookkeeping ensures succession. The bloodline is a pointer to a database entry in the heavens (e.g., The Septim Covenant).
- **Type II: Hybrid.** Genetics provide the potential (hardware), but ritual provides the access (software). Bastards have the hardware but lack the git credentials.
- **Type III: Purely Political.** The “bloodline” is a post-hoc fiction enforced by violence. There is no magic; there is only the assertion of magic.

## 9. The Phenotype Decoupling

Our analysis reveals a critical disconnect: if the ancient bloodline is genetically extinct (replaced by “fresh” biological inputs over generations), why does the phenotype (e.g., Valyrian silver hair) persist? We propose two competing hypotheses to resolve this “Ship of Theseus” problem.

### 9.1. Option A: The Cosplay Conjecture

Under this model, the phenotype is a standard recessive polygenic trait ( $p \approx 0.25$ ) that surfaces sporadically. Inbreeding increases the expression of these visual traits without preserving the magical “software” required to bond with dragons.

“The obsession with appearance is a category error. They are effectively cosplaying their own ancestry.” — *Idia et al.*

Here, the phenotype is merely correlated error—noise amplified by the bottleneck of aristocratic inbreeding. A “true” Targaryen in 298 AC is genetically indistinguishable from a Lysene peasant; they simply retained the branding.

### 9.2. Option B: The Divine Badge Theory

Alternatively, the phenotype is not genetic but teleological. The Metaphysical Enforcement mechanism “tags” valid actors with specific visual markers to simplify the user interface for the gods.

- **Status Indicator:** Silver hair is not DNA; it is a CSS class applied to the entity.
- **Recognition:** You don't inherit dragons; you are recognized by the system, which renders the hair as a badge of office.

This implies that the “seed is strong” not because of dominant alleles, but because the simulation renders key NPCs with high-contrast textures to distinguish them from the background mesh.

## 10. Limitations & Assumptions

Our simulation relies on several simplifying assumptions which, if anything, make the reality even grimmer for fantasy monarchs:

- **Random Mating:** We assume aristocrats breed within a closed class. In reality, “fresh blood” (peasant affairs) is the only thing preventing total genetic collapse (inbreeding coefficient  $F > 0.25$ ).
- **No Soul-Binding:** We assume the King does not use necromancy to clone himself.
- **Consistent Gods:** We assume deities are rational actors. If the God of Kings is chaotic, the “Divine Mandate” survival rate drops to 0.0%.

## 11. Conclusion

That's the thing. Whether democratic or autocratic; the difference is still the same. Societies fall due to incompetence or apathy. Don't let modern lenses shape understanding for medieval fictional settings—but don't let “fantasy” be an excuse for lazy math. Any fantasy lineage that collapses under basic population genetics was never ancient—it was merely lucky.